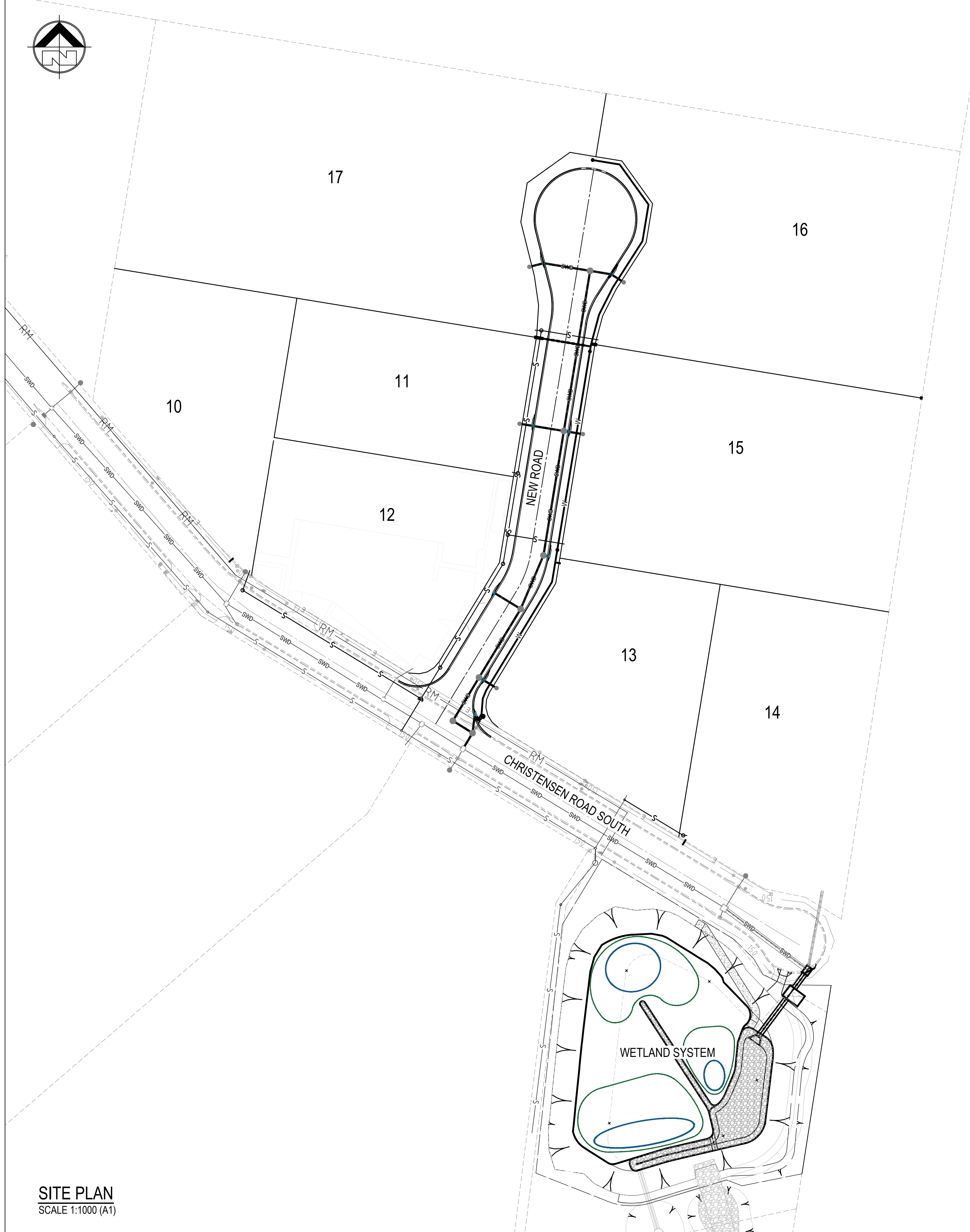


# 8 LOT INDUSTRIAL SUBDIVISION

## 86-160 CHRISTENSEN ROAD SOUTH, STAPYLTON

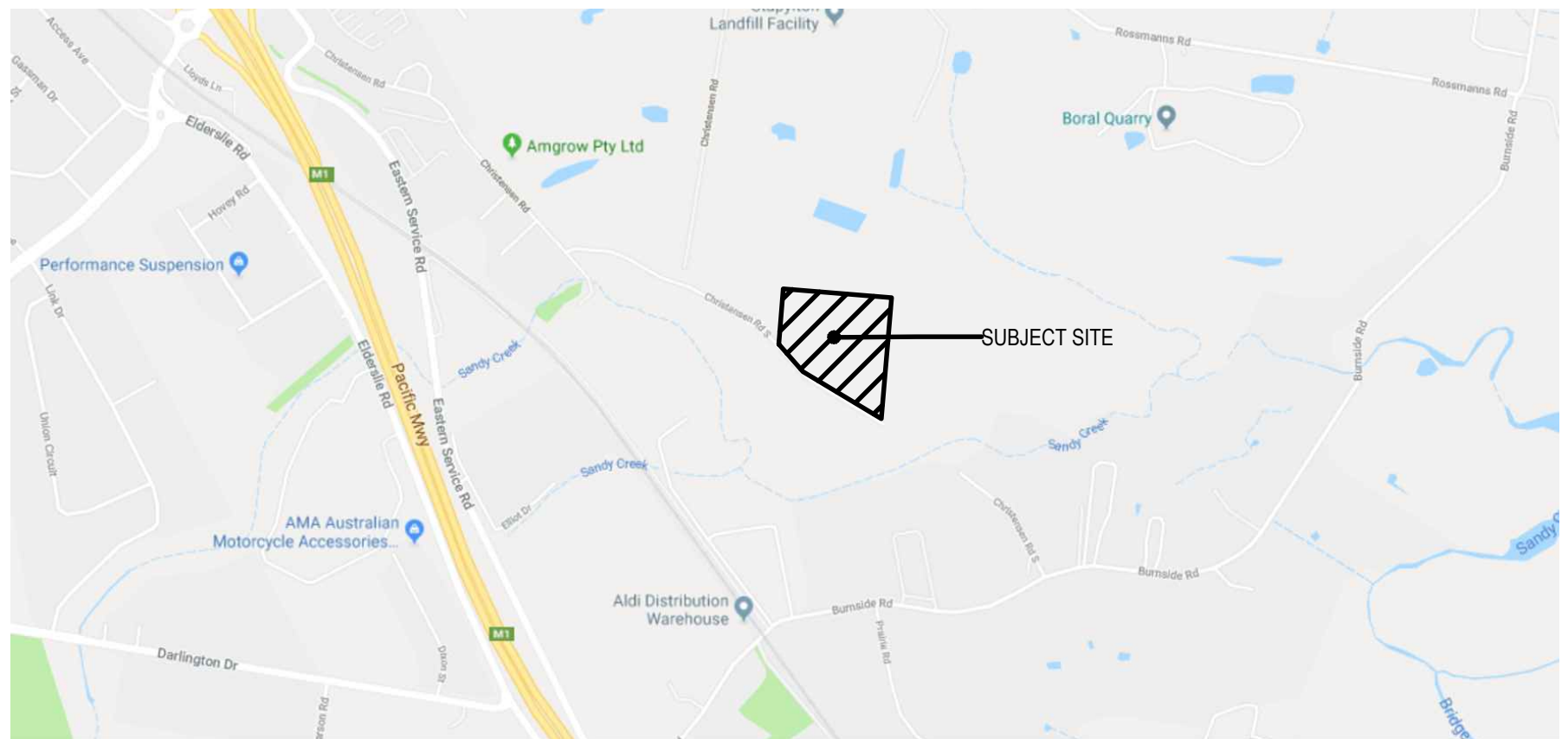
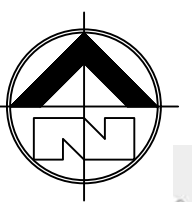


### WORKING DRAWINGS

- 17-209-C100-01 COVER SHEET, LOCALITY PLAN, DRAWING INDEX
- EARTHWORKS AND EROSION AND SEDIMENT CONTROL**
- 17-209-C101-01 EROSION & SEDIMENT CONTROL PLAN  
17-209-C101-02 EROSION & SEDIMENT CONTROL DETAILS AND NOTES
- 17-209-C102-01 BULK EARTHWORKS PLAN  
17-209-C102-02 BULK EARTHWORKS SECTIONS  
17-209-C102-03 RETAINING WALL LONG SECTION AND DETAILS
- ROADS AND DRAINAGE**
- 17-209-C103-01 ROADWORKS AND DRAINAGE PLAN - SHEET 1  
17-209-C103-02 ROADWORKS AND DRAINAGE PLAN - SHEET 2  
17-209-C103-02 ROADWORKS AND DRAINAGE NOTES AND DETAILS  
17-209-C103-04 WETLANDS LAYOUT PLAN
- 17-209-C104-01 NEW ROAD SECTIONS AND PAVEMENT DETAILS - SHEET 1  
17-209-C104-02 NEW ROAD SECTIONS AND PAVEMENT DETAILS - SHEET 2  
17-209-C104-03 NEW ROAD CROSS SECTIONS - SHEET 1  
17-209-C104-04 NEW ROAD CROSS SECTIONS - SHEET 2
- 17-209-C110-01 STORMWATER CATCHMENT PLAN & DETAILS  
17-209-C110-02 STORMWATER LONGITUDINAL SECTIONS - SHEET 1  
17-209-C110-03 STORMWATER LONGITUDINAL SECTIONS - SHEET 2  
17-209-C110-04 STORMWATER CALCULATION TABLES - SHEET 1  
17-209-C110-05 STORMWATER CALCULATION TABLES - SHEET 2
- SEWER RETICULATION**
- 17-209-C120-01 SEWER RETICULATION LAYOUT  
17-209-C120-02 SEWER LONGITUDINAL SECTION  
17-209-C120-03 SEWER NOTES AND DETAILS
- WATER RETICULATION**
- 17-209-C130-01 WATER RETICULATION PLAN  
17-209-C130-02 WATER RETICULATION NOTES AND DETAILS

### STANDARD DRAWINGS

- CITY OF GOLD COAST**
- 02-003 TYPICAL CROSS SECTIONS COLLECTOR STREETS PLAN 2 OF 2  
02-005 PUBLIC UTILITY PLANT CORRIDOR ALLOCATION IN PUBLIC ROAD VERGES  
03-001 SIDE INLET GULLY CAST IN-SITU DETAILS LIP IN LINE  
03-101 STORMWATER ACCESS CHAMBER 1050 DIA TO 1500 DIA  
03-201 EXCAVATION & BEDDING OF CONCRETE STORMWATER PIPES
- IPWEAQ**
- DS-068 DRAINAGE PITS KERB INLET - KERB IN LINE ANTI-PONDING  
RS-065 PATHWAYS CONCRETE PATHWAY CONSTRUCTION DETAILS  
RS-080 KERB AND CHANNEL PROFILES AND DIMENSIONS INCLUDING EDGE RESTRAINTS, MEDIAN & CHANNEL  
RS-090 KERB RAMPS RAMPED PEDESTRIAN CROSSINGS  
RS-092 KERB RAMPS INSTALLATION OF TGS's ON RAMPED KERB CROSSINGS  
RS-093 KERB RAMPS INSTALLATION OF TGS's ON RAMPED KERB CROSSINGS APPLICATION EXAMPLES  
RS-140 SUBSOIL DRAINS DETAILS AND LOCATIONS  
RS-142 SUBSOIL DRAINS ACCESS POINTS
- IECA**
- BEST PRACTICE EROSION AND SEDIMENT
- AUSTRALIAN STANDARDS**
- AS1289 METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES  
AS2439.1 PERFORATED PLASTICS DRAINAGE AND EFFLUENT PIPE AND FITTINGS  
AS1379 SPECIFICATION AND SUPPLY OF CONCRETE  
AS3600 CONCRETE STRUCTURES
- SEQ WATER SUPPLY AND SEWERAGE DESIGN AND CONSTRUCTION CODE**
- SEQ-SEW-1104-1 SEWERAGE HOUSE CONNECTION TYPICAL CONSTRUCTION DETAILS  
SEQ-SEW-1201-1 TYPICAL STANDARD EMBEDMENT FLEXIBLE & RIGID PIPES  
SEQ-SEW-1202-1 TYPICAL SPECIAL EMBEDMENT INADEQUATE FOUNDATIONS REQUIRING OVER EXCAVATION & REPLACEMENT  
SEQ-SEW-1300-1 MAINTENANCE HOLES < DN300 SEWER TYPES P1, P2 & P3 TYPICAL PRE-CAST  
SEQ-SEW-1301-1 CAST IN-SITU MAINTENANCE HOLE TYPICAL COPING & ANCHOR BRACKET DETAILS  
SEQ-SEW-1302-1 MAINTENANCE HOLES CAST IN-SITU AND PRECAST TYPICAL PIPE CONNECTION DETAILS  
SEQ-SEW-1303-1 MAINTENANCE HOLES SEWERS < 300 TYPICAL CHANGES IN LEVEL DETAILS
- SEQ-WAT-1105-1 TYPICAL PE WATER MAIN DETAILS  
SEQ-WAT-1106-1 TYPICAL PROPERTY SERVICE CONNECTION MAIN TO METER  
SEQ-WAT-1106-2 TYPICAL PROPERTY SERVICE CONNECTION MAIN TO METER  
SEQ-WAT-1200-2 EMBEDMENT & TRENCH FILL TYPICAL ARRANGEMENT  
SEQ-WAT-1201-1 STANDARD EMBEDMENT TYPICAL FLEXIBLE & RIGID PIPES  
SEQ-WAT-1202-1 TYPICAL SPECIAL EMBEDMENT INADEQUATE FOUNDATIONS REQUIRING OVER EXCAVATION & REPLACEMENT  
SEQ-WAT-1205-1 TYPICAL THRUST BLOCK DETAILS MASS CONCRETE  
SEQ-WAT-1206-1 TYPICAL THRUST AND ANCHOR BLOCKS FOR VALVES  
SEQ-WAT-1300-1 TYPICAL VALVE AND HYDRANT ROAD AND PAVEMENT MARKERS  
SEQ-WAT-1300-2 TYPICAL VALVE AND HYDRANT IDENTIFICATION MARKER POSTS  
SEQ-WAT-1302-1 TYPICAL HYDRANT INSTALLATION  
SEQ-WAT-1305-1 TYPICAL SURFACE FITTING INSTALLATION VALVE AND HYDRANT SURFACE BOXES TRAFFICABLE AND NON-TRAFFICABLE  
SEQ-WAT-1306-1 TYPICAL SURFACE FITTING INSTALLATION VALVE AND HYDRANT SURFACE BOXES SUPPORT AND SURROUND DETAILS



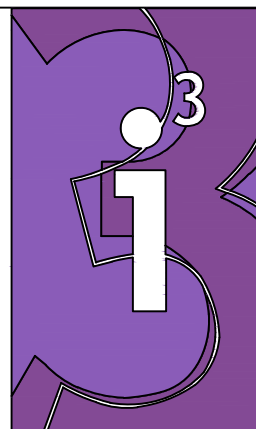
LOCALITY PLAN  
NTS

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SITE PLAN  
SCALE 1:1000 (A1)

File Location P:\17-209-Christensen Road Development\0  
Printed by Katherine Leggitt  
Print Date 3:21 PM

Consulting Engineer:



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|     |                      |            |        |
|-----|----------------------|------------|--------|
| B   | FOR COUNCIL APPROVAL | 30.01.2019 | K.J.L. |
| A   | PRELIMINARY          | 07.12.2018 | K.J.L. |
| REV | DESCRIPTION          | DATE       | BY     |

Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: 

Date: 05.02.2019

Project

PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON

for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title

COVER SHEET, LOCALITY PLAN  
DRAWING INDEX

GCCC REF: xxxx

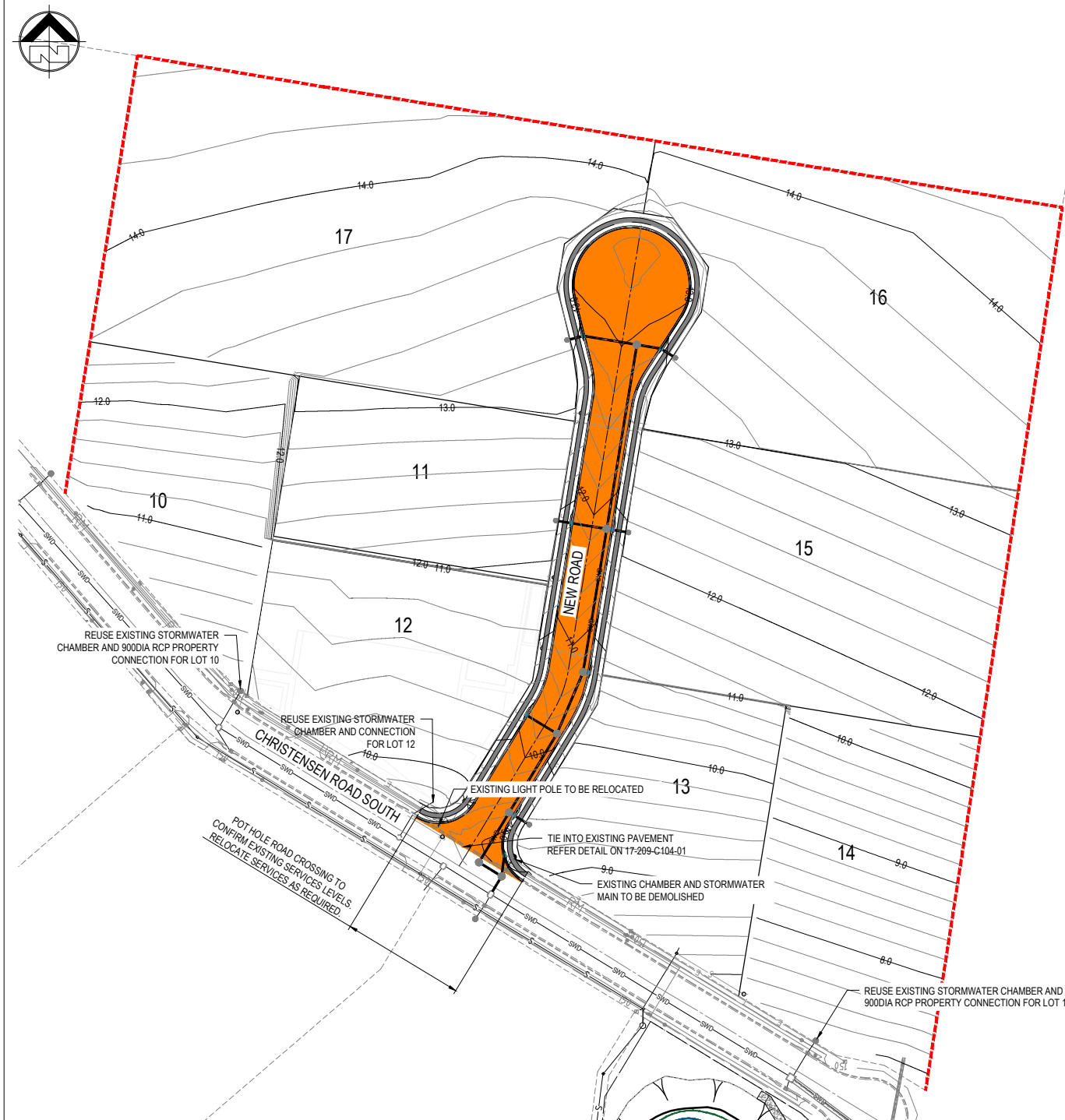


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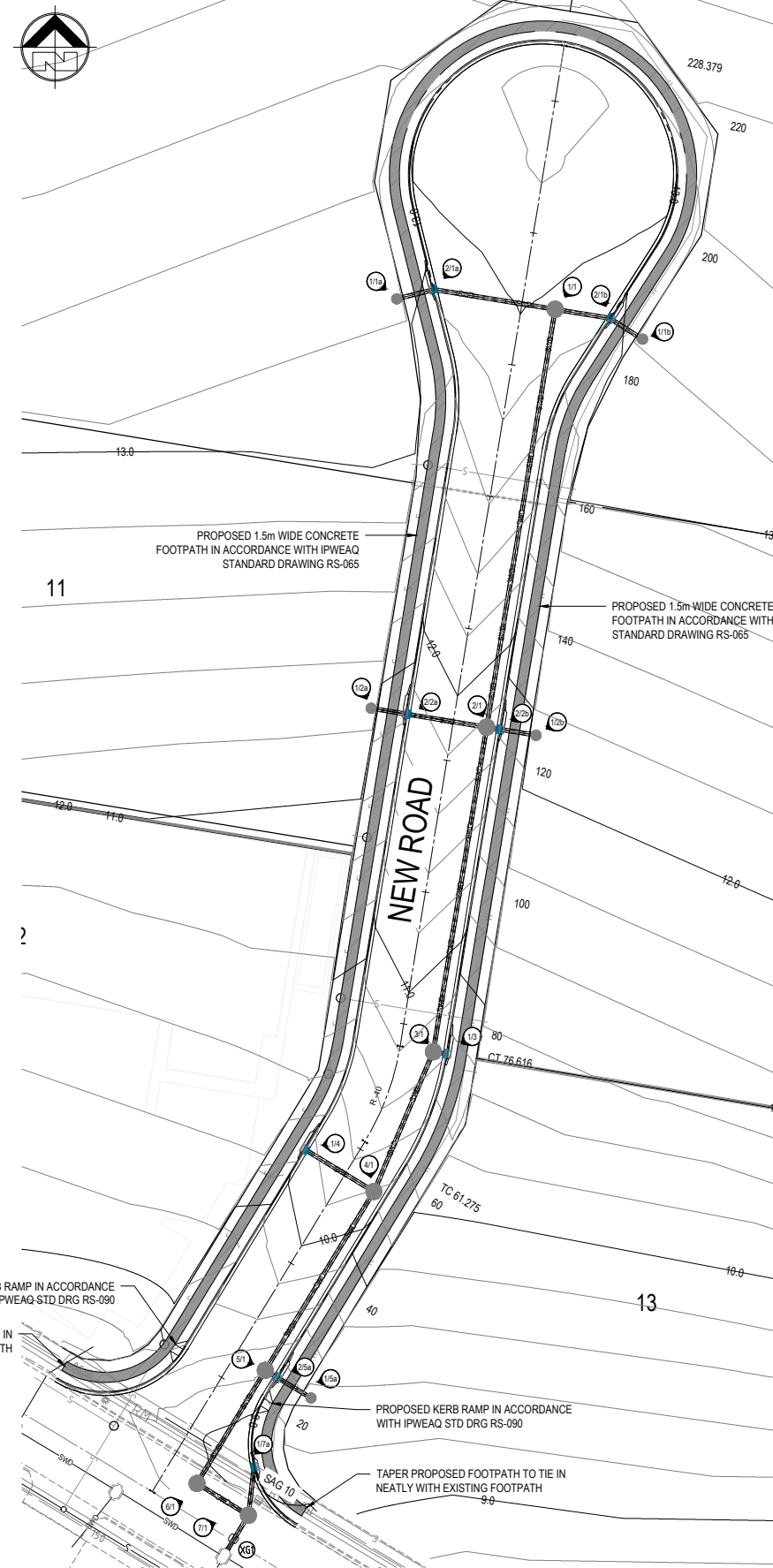
FOR COUNCIL APPROVAL

|             |          |        |          |
|-------------|----------|--------|----------|
| Drawn       | Date     | Chkd   | Date     |
| K.J.L.      | 07.12.18 | T.J.S. | 07.12.18 |
| Design      | Date     | Apprd  | Date     |
| T.J.S.      | 07.12.18 |        |          |
| Scale       | A1       | Certif | Date     |
| AS SHOWN    |          |        |          |
| Project No. | Dwg. No. | Rev.   |          |
| 17-209      | C100-01  | B      |          |

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OVERALL ROADWORKS AND DRAINAGE PLAN  
SCALE 1:1000 (A1)



DETAILED ROADWORKS AND DRAINAGE PLAN  
SCALE 1:500 (A1)

## LEGEND

| EXISTING |                                                                  |
|----------|------------------------------------------------------------------|
|          | EXISTING PROPERTY BOUNDARY                                       |
|          | EXISTING STORMWATER MAIN                                         |
|          | EXISTING WATER MAIN                                              |
|          | EXISTING SEWER MAIN                                              |
|          | EXISTING ELECTRICAL                                              |
| PROPOSED |                                                                  |
|          | PROPOSED LOT BOUNDARY                                            |
|          | FINISHED SURFACE CONTOURS                                        |
|          | PROPOSED RETAINING WALL                                          |
|          | PROPOSED STORMWATER MAIN                                         |
|          | PROPOSED LIP IN LINE GULLY PIT                                   |
|          | PROPOSED STORMWATER MANHOLE                                      |
|          | STORMWATER STRUCTURE LABEL                                       |
|          | EXISTING STORMWATER STRUCTURE L1                                 |
|          | PROPOSED WATER MAIN DN160 PE100 CLASS 16                         |
|          | PROPOSED WATER SERVICE CONDUIT 150DIA uPVC PN12 SERIES 1 CONDUIT |
|          | PROPOSED SEWER MAIN                                              |
|          | PROPOSED CONCRETE FOOTPATH                                       |
|          | PROPOSED ASPHALT PAVEMENT AREA                                   |

## JOB NOTES:

- ALL CONCRETE KERB AND CHANNEL SHALL BE TYPE B1 IN ACCORDANCE WITH IPWEAQ STANDARD DRAWING RS-080, WITH 450 WIDE CHANNEL INVERT WIDTH
- REFER ELECTRICAL DESIGN DRAWINGS FOR DETAILS OF ROAD CROSSINGS
- REFER TO IPWEAQ STANDARD DRAWINGS RS-092 AND RS-093 FOR TGS'S ON KERB RAMP CROSSINGS

## WARNING

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GCCC REF: xxxx



## Consulting Engineer:

**i<sup>3</sup> consulting pty ltd**  
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p 07 3870 8888

## Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature:

Date: 05/02/2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON

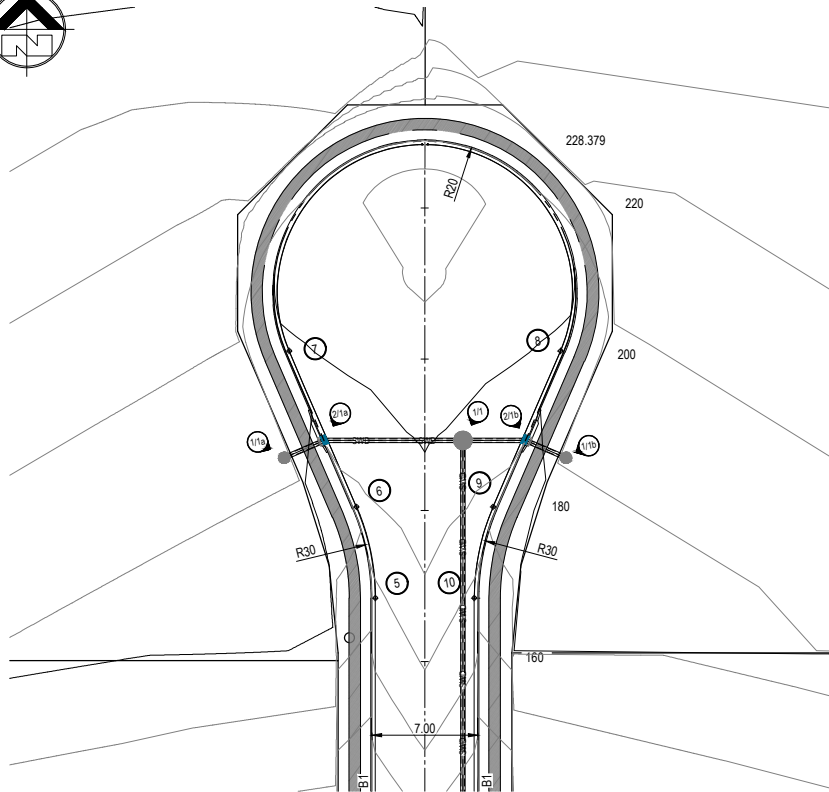
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
ROADWORKS AND DRAINAGE  
PLAN - SHEET 1

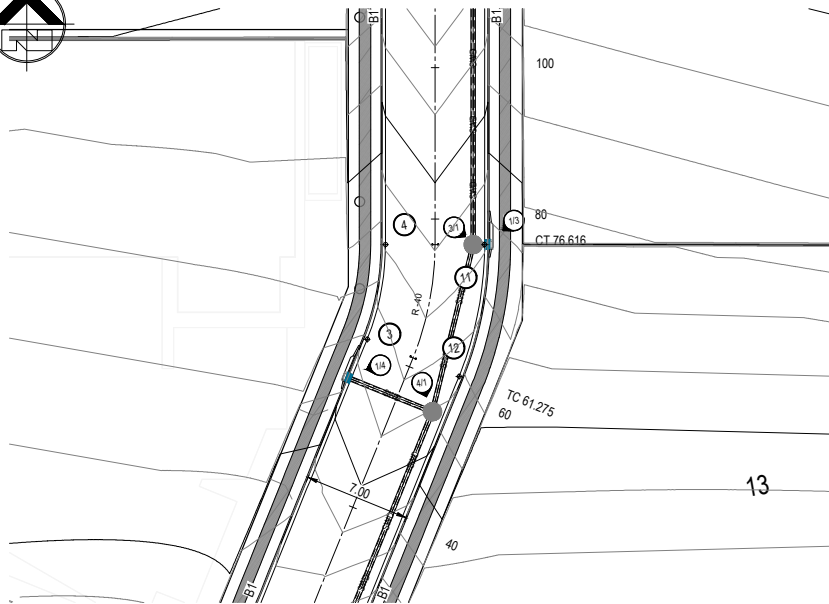
## FOR COUNCIL APPROVAL

| Drawn       | Date     | Chkd   | Date     |
|-------------|----------|--------|----------|
| K.J.L.      | 07.12.18 | T.J.S. | 07.12.18 |
| Design      | Date     | Apprd  | Date     |
| T.J.S.      | 07.12.18 |        |          |
| Scale       | A1       | Certif | Date     |
| AS SHOWN    |          |        |          |
| Project No. | Dwg. No. | Rev.   |          |
| 17-209      | C103-01  | B      |          |

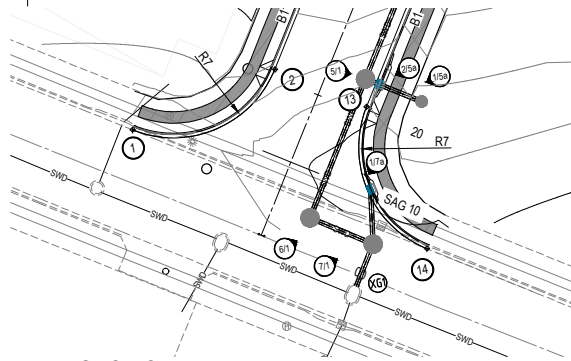
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CUL-DE-SAC DETAIL  
SCALE 1:500 (A1)



BEND DETAIL  
SCALE 1:500 (A1)



INTERSECTION DETAIL  
SCALE 1:500 (A1)

#### KERB LIP SETOUT DATA

| POINT | EASTING     | NORTHING     |
|-------|-------------|--------------|
| 1     | 524221.1073 | 6930997.8104 |
| 2     | 524240.9531 | 6931002.6584 |
| 3     | 524261.8884 | 6931037.1117 |
| 4     | 524266.3040 | 6931049.0574 |
| 5     | 524281.1508 | 6931139.6119 |
| 6     | 521280.6470 | 6931151.9074 |
| 7     | 524275.1965 | 6931173.7123 |
| 8     | 524310.6268 | 6931167.9323 |
| 9     | 524298.4990 | 6931149.0100 |
| 10    | 524294.0783 | 6931137.4927 |
| 11    | 524279.6792 | 6931046.8650 |
| 12    | 524273.0836 | 6931030.3090 |
| 13    | 524252.1519 | 6930995.8615 |
| 14    | 524256.9877 | 6930976.0149 |

#### LEGEND

|          |                                |
|----------|--------------------------------|
| EXISTING | EXISTING PROPERTY BOUNDARY     |
| EXISTING | EXISTING STORMWATER MAIN       |
| PROPOSED | PROPOSED LOT BOUNDARY          |
| PROPOSED | FINISHED SURFACE CONTOURS      |
| PROPOSED | PROPOSED STORMWATER MAIN       |
| PROPOSED | PROPOSED LIP IN LINE GULLY PIT |
| PROPOSED | PROPOSED STORMWATER MANHOLE    |
| PROPOSED | KERB SETOUT POINT              |

GCCC REF: xxxx



Consulting Engineer:

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p 07 3870 8888

Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: *T.J.S.*

Date: 05 / 02 / 2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
ROADWORKS AND DRAINAGE  
PLAN - SHEET 2

Status  
FOR COUNCIL APPROVAL

|             |          |          |          |
|-------------|----------|----------|----------|
| Drawn       | Date     | Chkd     | Date     |
| K.J.L.      | 07.12.18 | T.J.S.   | 07.12.18 |
| Design      | Date     | Apprd    | Date     |
| T.J.S.      | 07.12.18 |          |          |
| Scale       | A1       | Certif   | Date     |
| AS SHOWN    |          |          |          |
| Project No. | 17-209   | Dwg. No. | C103-02  |
|             |          | Rev.     | B        |

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ROAD WORKS NOTES

1. ALL DIMENSIONS WITH DECIMALS ARE IN METERS, THOSE WITHOUT ARE IN MILLIMETERS.
2. ALL KERBS TO BE BARRIER KERB AND CHANNEL TYPE B1, IN ACCORDANCE WITH IPWEAQ STANDARD DRAWING RS-080.
3. ALL FOOTPATHS TO BE IN ACCORDANCE WITH IPWEAQ STANDARD DRAWING RS-065.
4. KERB RAMPS TO BE IN ACCORDANCE WITH IPWEAQ STANDARD DRAWING RS-090.
5. GENERAL:

A. CBR TESTING SHALL BE CARRIED OUT ON THE SUBGRADE TO CONFIRM PAVEMENT DESIGN. THE NUMBER OF TESTS CARRIED OUT SHALL BE THE GREATER NUMBER OF THE FOLLOWING:

ROAD LENGTH ≤ 120m - NOT LESS THAN 2 TESTS FOR EACH SUBGRADE TYPE

ROAD LENGTH ≥ 120m - ONE TEST PER 60m OF ROAD OR PART THEREOF, BUT NOT LESS THAN 3 TESTS FOR EACH SUBGRADE TYPE

B. EACH PAVEMENT COURSE IS NOT TO BE COMMENCED UNTIL THE PREVIOUS COURSE (I.E. SUBGRADE, SUB-BASE, BASE OR EXISTING PAVEMENT) HAS BEEN INSPECTED, APPROVED AND CERTIFIED BY THE RPEQ WITH RESPECT TO COMPACTION, FINISHED LEVELS AND TEXTURE OF FINISH.

C. COMPACTION TESTS OF EACH LAYER ARE REQUIRED, AND THE RPEQ IS TO ENSURE THAT ALL TESTS MEET SPECIFICATION BEFORE PROCEEDING TO THE NEXT LAYER.

D. SUBGRADE AFFECTED BY RAINFALL AFTER FINAL TRIMMING IS NOT TO BE ACCEPTED UNTIL APPROPRIATE DRYING OUT, TESTING AND PROOF-ROLLING TREATMENT HAS BEEN EFFECTED.

E. UNBOUND PAVEMENT COURSE MATERIAL IS TO BE KEPT AT OPTIMUM MOISTURE CONTENT AT ALL TIMES.

F. MINIMUM COMPACTED LAYER THICKNESS IS TO BE 75 mm, WITH THE MAXIMUM COMPACTED THICKNESS NOT EXCEEDING 150 mm.
2. COMPACTION TESTING:

A. DETERMINATION OF THE COMPACTION PERFORMANCE OF THE EARTHWORKS, SUBGRADE AND PAVEMENT GRAVEL MATERIALS (I.E. LABORATORY REFERENCE DENSITY, FIELD DENSITY, OPTIMUM MOISTURE CONTENT, FIELD MOISTURE CONTENT) IS TO BE CARRIED OUT IN ACCORDANCE WITH AS 1289 METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES, IN PARTICULAR THE E SERIES TESTS.

B. THE MINIMUM FREQUENCY OF TESTING FOR ROADS IS TO BE AS FOLLOWS - 1 TEST PER LAYER PER 2 LANES OR 3 TESTS PER VISIT, WHICH EVER IS GREATER.

C. A LOT LAYOUT PLAN SHOWING THE LOCATION OF THE TESTS IS TO BE SUBMITTED TO THE COUNCIL WITH THE TEST RESULTS.

D. ALL TESTS ARE TO BE DISTRIBUTED REASONABLY EVENLY THROUGH THE FULL DEPTH AND AREA OF PAVEMENT.

E. THE TESTING FREQUENCIES ARE TO BE BASED ON A 'NOT ONE TO FAIL' BASIS.

F. FAILURE OF MATERIAL QUALITY TESTS WILL REQUIRE REMOVAL OF THE MATERIAL OR FURTHER IN SITU TESTING

G. FAILURE OF COMPACTION TESTS WILL REQUIRE:

RETESTING AT THE SAME DEPTH AND LOCATION IF THE FAILURE IS MINOR (E.G. LOCALISED SINGLE FAILURE BY 1% -3%)

REMOVAL OR REWORKING OF MATERIAL IF THE FAILURE IS SIGNIFICANT OR WIDESPREAD.

H. SUBGRADE AND BASE COURSES ARE TO BE COMPACTED TO THE FOLLOWING DENSITIES:

EARTHWORKS UP TO 300 mm BELOW SUBGRADE — 95% STD, THEN 100% STD

SUBGRADE — 100% STD

I. PAVEMENT COURSES

SUBBASE — 95% MODIFIED COMPACTION.

BASE — 98% MODIFIED COMPACTION.

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SUB-SURFACE DRAINAGE NOTES

1. ALL SUB-SURFACE DRAINS SHALL BE IN ACCORDANCE WITH IPWEAQ STANDARD DRAWINGS RS-140 AND RS-142

STORMWATER DRAINAGE NOTES

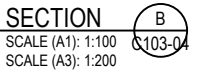
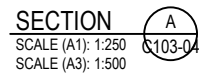
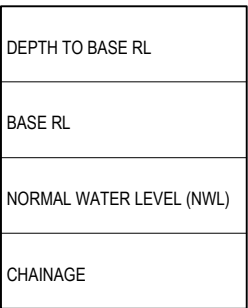
1. GULLY PITS SHALL BE LIP IN-LINE , REFER GCCC STD DRG 03-001 (SECTION 10 OF LDG)
2. EXCAVATION, BEDDING AND BACKFILLING SHALL BE IN ACCORDANCE WITH GCCC STD DRG 03-201 (SECTION 10 OF LDG)

|     |                      |            |        |                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|----------------------|------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                      |            |        | Consulting Engineer:                                                                                                                                                                                                                                                                                                                                                                 |
|     |                      |            |        | <div><div><div>3</div><div>i</div></div><div>i<sup>3</sup> consulting pty ltd</div><div>engineering consultants</div><div>innovation, ingenuity, inspiration</div><div>L2 39 Sherwood Rd PO Box 878</div><div>Toowoong, Qld 4066 Toowoong, Qld 4066</div><div>www.icubed.com.au mail@icubed.com.au</div><div>ABN 89 106 675 156 ACN 106 675 156</div><div>p 07 3870 8888</div></div> |
| B   | FOR COUNCIL APPROVAL | 30.01.2019 | K.J.L. |                                                                                                                                                                                                                                                                                                                                                                                      |
| A   | PRELIMINARY          | 07.12.2018 | K.J.L. |                                                                                                                                                                                                                                                                                                                                                                                      |
| REV | DESCRIPTION          | DATE       | BY     |                                                                                                                                                                                                                                                                                                                                                                                      |

|                                             |
|---------------------------------------------|
| Engineers Certification:                    |
| Travis Smith MIE Aust. CPEng.<br>RPEQ 16400 |
| Signature: <div>T. J. S.</div>              |
| Date: 05 / 02 / 2019                        |

|                                                                   |                                                                        |
|-------------------------------------------------------------------|------------------------------------------------------------------------|
| Project                                                           | PROPOSED SUBDIVISION AT<br>86-160 CHRISTENSEN ROAD<br>SOUTH, STAPYLTON |
| for<br>BURNSIDE DEVELOPMENTS P/L &<br>YELLOWSTONE INVESTMENTS P/L |                                                                        |
| Title                                                             | ROADWORKS AND DRAINAGE<br>NOTES AND DETAILS                            |

|                                                                                                                                                                                |          |          |          |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|---------------------------------------------------------------------------------------|
| GCCC REF: xxxx                                                                                                                                                                 |          |          |          |  |
| Status                                                                                                                                                                         |          |          |          | FOR COUNCIL APPROVAL                                                                  |
| Drawn                                                                                                                                                                          | Date     | Chkd     | Date     |                                                                                       |
| K.J.L.                                                                                                                                                                         | 07.12.18 | T.J.S.   | 07.12.18 |                                                                                       |
| Design                                                                                                                                                                         | Date     | Apprd    | Date     |                                                                                       |
| T.J.S.                                                                                                                                                                         | 07.12.18 |          |          |                                                                                       |
| Scale                                                                                                                                                                          | A1       | Certif   | Date     |                                                                                       |
| AS SHOWN                                                                                                                                                                       |          |          |          |                                                                                       |
| Project No.                                                                                                                                                                    | 17-209   | Dwg. No. | Rev.     |                                                                                       |
|                                                                                                                                                                                |          | C103-03  | B        |                                                                                       |
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| PLANTING SCHEDULE |                                        |                                           |
|-------------------|----------------------------------------|-------------------------------------------|
| LOCATION          | SCIENTIFIC NAME                        | PLANTING DENSITY<br>(QTY/m <sup>2</sup> ) |
| POOL              | MYRIOPHYLLUM PAPILLOSUM                | 1.00                                      |
| POOL              | POTAMOGETON CRISPUS                    | 1.00                                      |
| POOL              | RIBBONWEED                             | 1.00                                      |
| BATTER            | CYPERUS POLYSTACHYOS                   | 6-8                                       |
| BATTER            | LOMANDRA LONGIFOLIA VAR.<br>LONGIFOLIA | 4-6                                       |
| BATTER            | VIOLA HEDERACEA                        | 2-4                                       |

GCCC REF: xxxx



**Engineers Certification:**

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: T. Sha

Date: 05 / 02 / 2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

WETLANDS LAYOUT PLAN

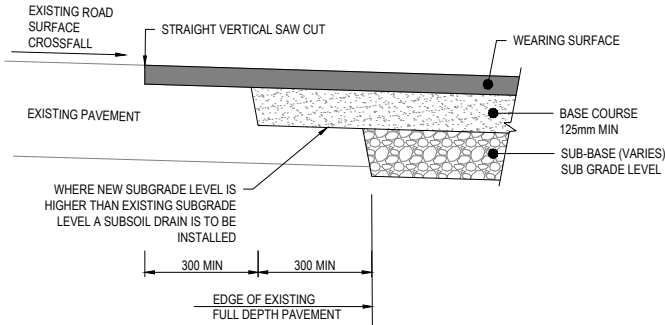
Status **FOR COUNCIL APPROVAL**

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| Design      | Date     | Apprd  | Date     |
| T.J.S.      | 07.12.18 |        |          |
| Scale       | A1       | Certif | Date     |
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| Project No. | Dwg. No. | Rev.   |          |
| 17-209      | C103-04  | B      |          |

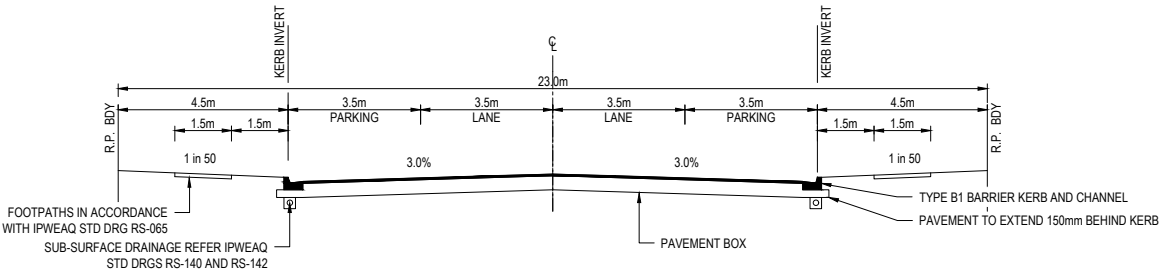
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| PRELIMINARY PAVEMENT DESIGN |          |              |                       |                             |                            |             |                           |                              |                                    |                |
|-----------------------------|----------|--------------|-----------------------|-----------------------------|----------------------------|-------------|---------------------------|------------------------------|------------------------------------|----------------|
| PAVEMENT TYPE               | LOCATION | SUBGRADE CBR | TRAFFIC ESA'S         | ROAD CLASS                  | AC SURFACING 10mm MIX (mm) | PRIMER TYPE | BASE CLASS 1A CBR 80 (mm) | SUB-BASE CLASS 2 CBR 45 (mm) | LOWER SUB-BASE CLASS 3 CBR 15 (mm) | TOTAL BOX (mm) |
| A                           | NEW ROAD | 5*           | 3.7 x 10 <sup>5</sup> | INDUSTRIAL COLLECTOR STREET | 40                         | PRIME       | 125                       | 125                          | 165                                | 455            |

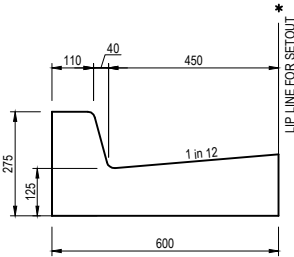
- \* PRELIMINARY SUBGRADE CBR  
PRELIMINARY PAVEMENT DESIGNS HAVE BEEN BASED ON THE SUBGRADE RESULTS FROM LOT 12, ACTUAL PAVEMENT DESIGNS WILL BE BASED ON TEST RESULTS TAKEN AFTER STRIPPING HAS BEEN COMPLETED.
- PAVEMENT THICKNESSES ABOVE REPRESENT MINIMUM DESIGN THICKNESS FOR EACH PAVEMENT SECTION. CONTRACTOR MAY INCREASE THICKNESS LAYERS OR REPLACE LOWER CLASS GRAVEL TYPE WITH HIGHER CLASS FOR EASE OF CONSTRUCTION IF REQUIRED AND INSTRUCTED BY THE SUPERINTENDENT. NOTE THAT THE MINIMUM AND MAXIMUM LAYER THICKNESSES FOR THE PLACEMENT OF EACH LAYER SHALL BE AS PER COUNCIL STANDARDS.
  - THE ACTUAL BOUNDARIES BETWEEN PAVEMENT SECTIONS OF VARYING DESIGN SUBGRADE CBR'S ARE TO BE VERIFIED ON SITE BY THE SUPERVISING ENGINEER
  - ROAD CLASS AND ESA'S HAVE BEEN BASED ON CITY OF GOLD COAST DEVELOPMENT GUIDELINES
  - PAVEMENT DESIGN DEPTHS HAVE BEEN BASED ON CITY OF GOLD COAST DEVELOPMENT GUIDELINES
  - FULL DEPTH PAVEMENTS MUST BE UNDERLAIN BY A 100mm GRANULAR WORKING PLATFORM IN ACCORDANCE WITH CITY OF GOLD COAST DEVELOPMENT GUIDELINES



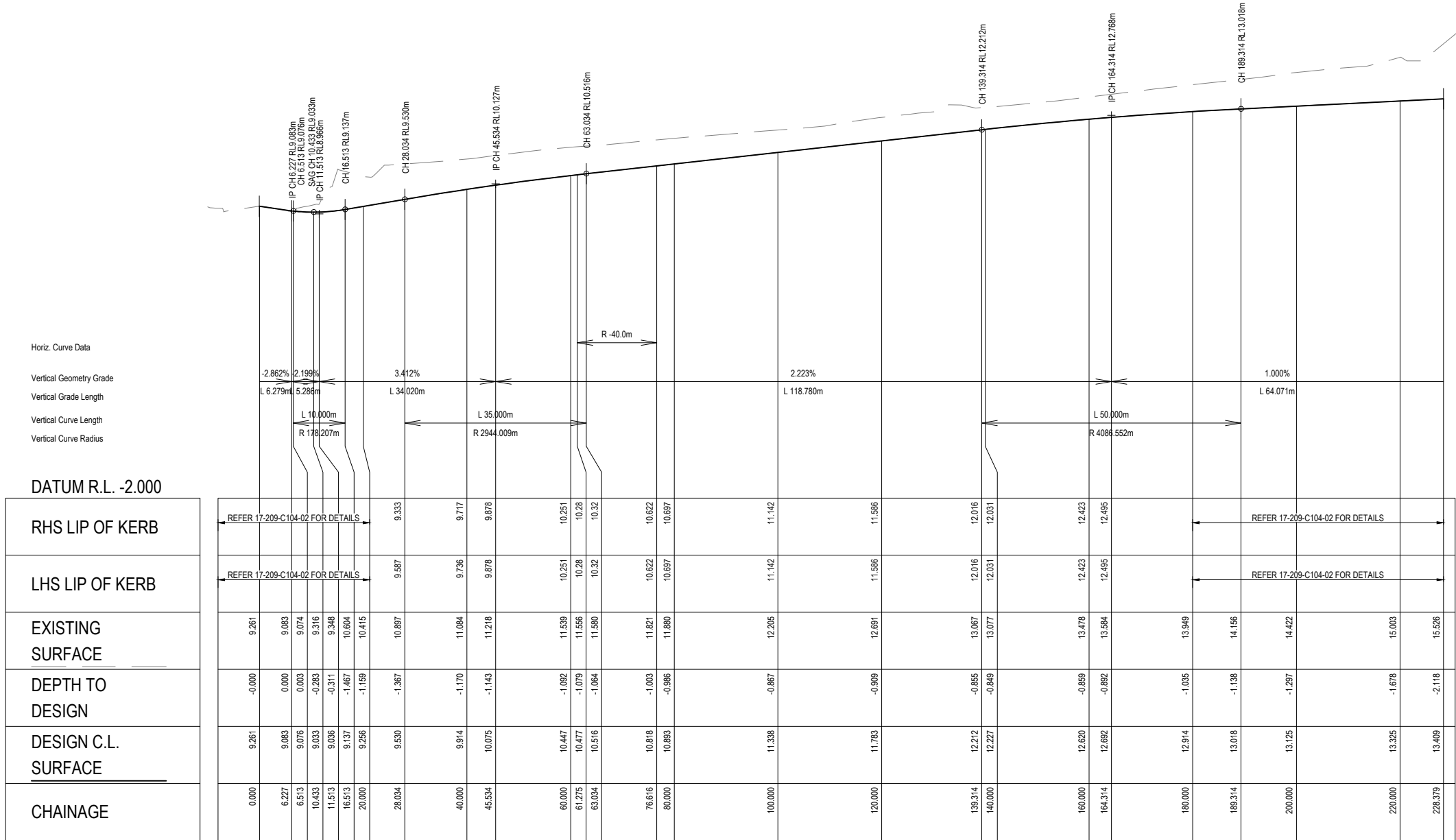
JOINING TO EXISTING PAVEMENT OR WIDENING  
NTS



ACCESS ROAD TYPICAL SECTION  
SCALE 1:10 (A1)



TYPE B1 BARRIER KERB AND CHANNEL  
NTS  
REFER IPWEAQ STD DRG RS-080



NEW ROAD LONGITUDINAL SECTION  
SCALE HORIZ 1:500  
SCALE VERT. 1:100

Consulting Engineer:

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Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: *T. Smith*

Date: 05, 02, 2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
NEW ROAD SECTIONS AND  
PAVEMENT DETAILS - SHEET 1

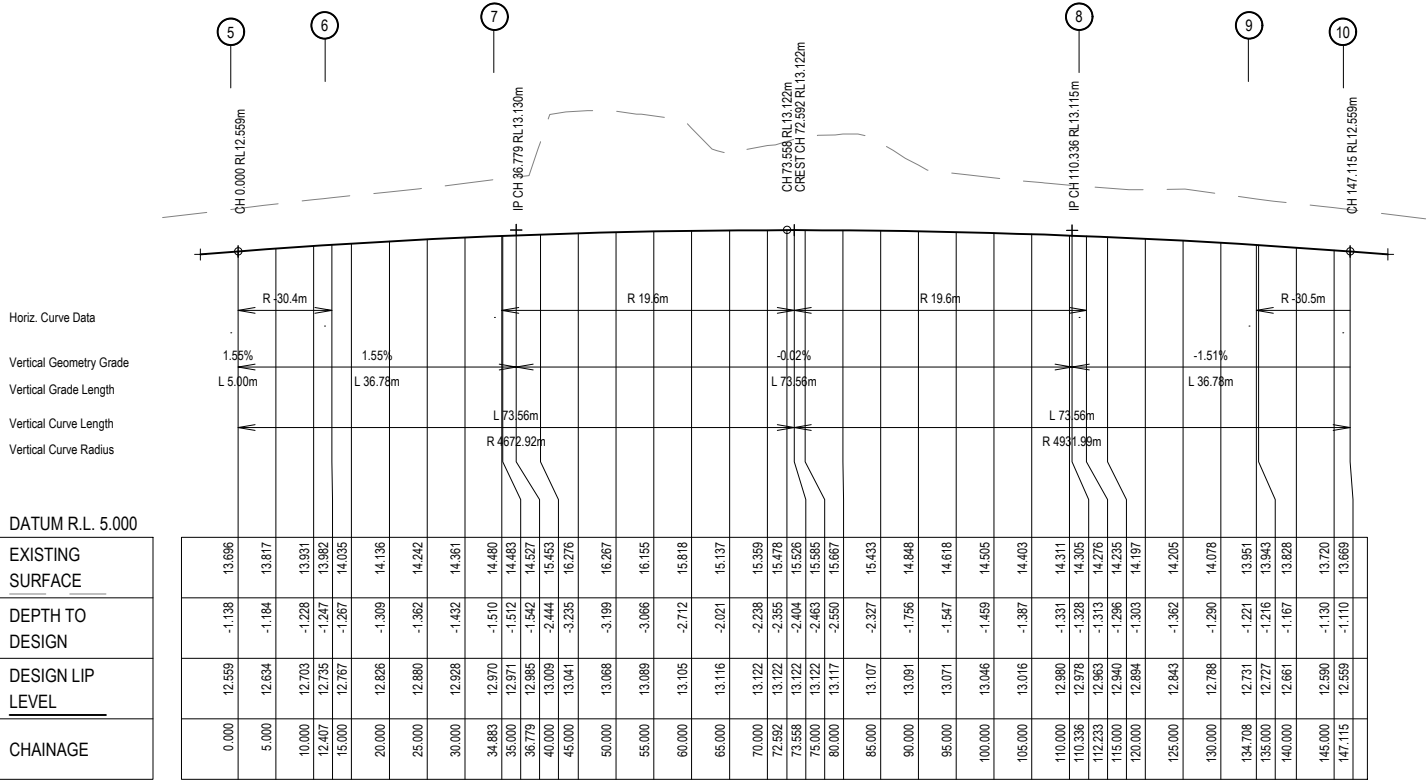
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Status  
PRELIMINARY

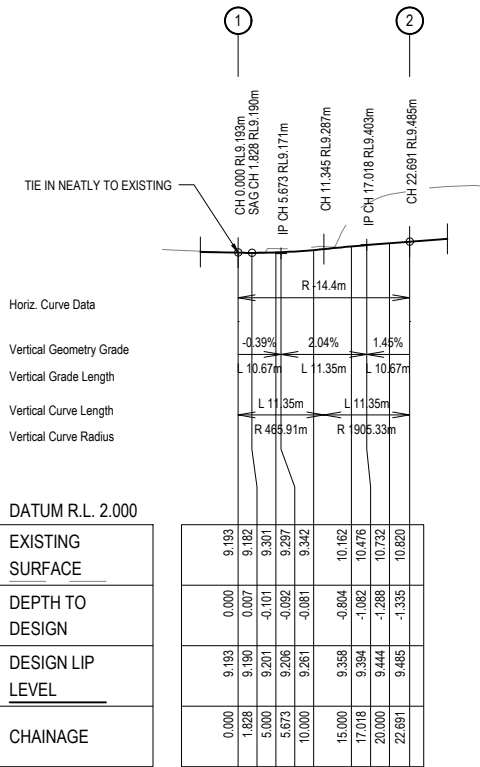
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| K.J.L.      | 07.12.18 | T.J.S.   | 07.12.18 |
| Design      | Date     | Apprd    | Date     |
| T.J.S.      | 07.12.18 |          |          |
| Scale       | A1       | Certif   | Date     |
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| Project No. | 17-209   | Dwg. No. | C104-01  |
|             |          | Rev.     | B        |

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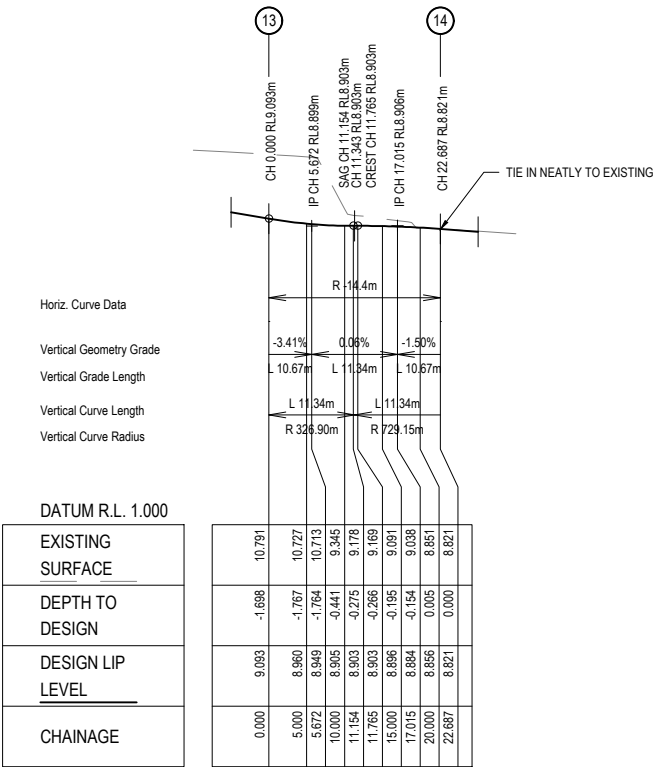
CUL-DE-SAC LONGITUDINAL SECTION

SCALE HORIZ. 1:500  
SCALE VERT. 1:100



KERB RETURN - ENTRY - LEFT HAND SIDE

SCALE HORIZ. 1:500  
SCALE VERT. 1:100



KERB RETURN - EXIT - RIGHT HAND SIDE

SCALE HORIZ. 1:500  
SCALE VERT. 1:100

Consulting Engineer:

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ACN 106 675 156

Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: *T. Smith*  
Date: 05.02.2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
NEW ROAD SECTIONS AND  
PAVEMENT DETAILS - SHEET 2

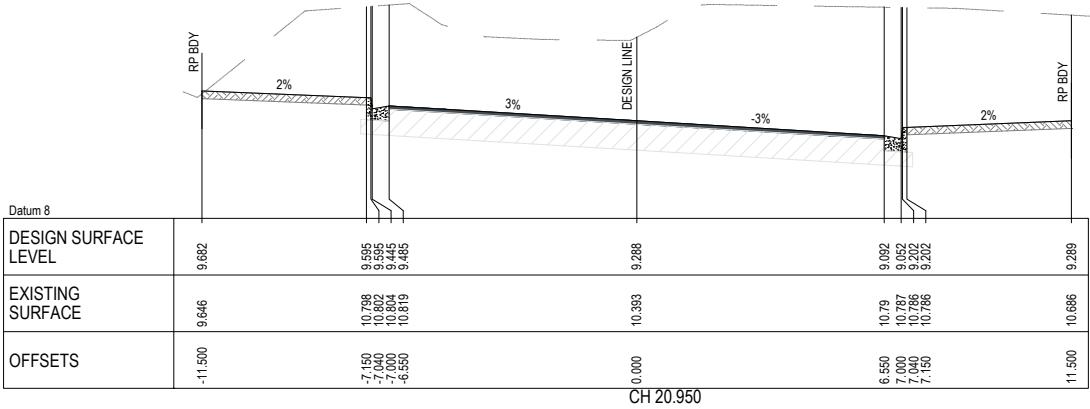
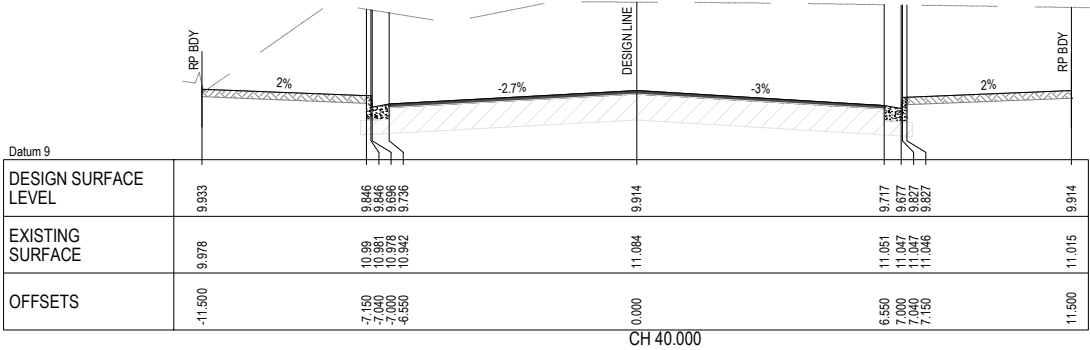
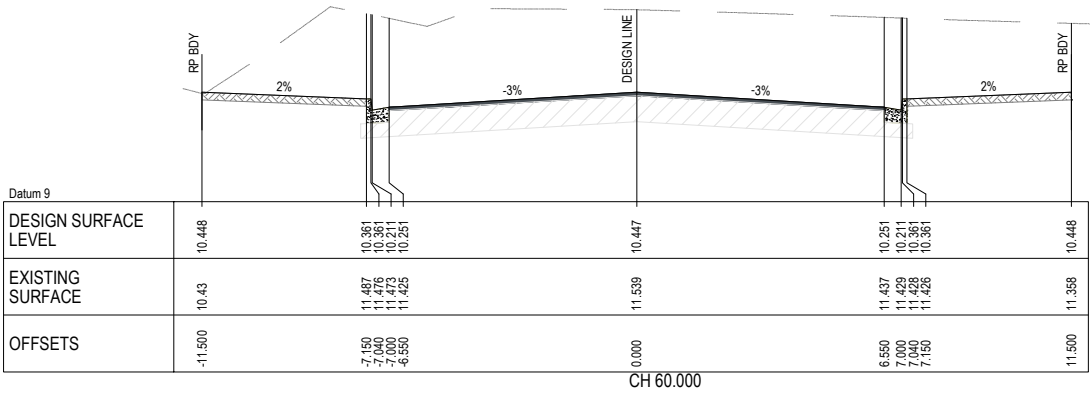
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Status  
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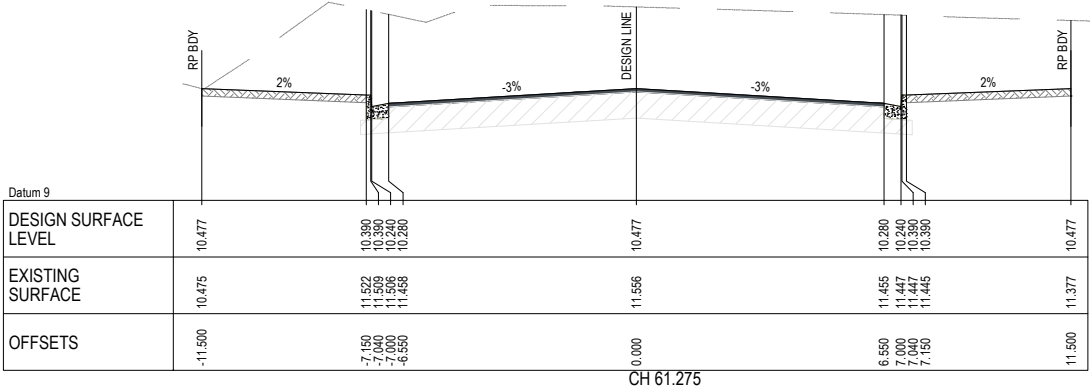
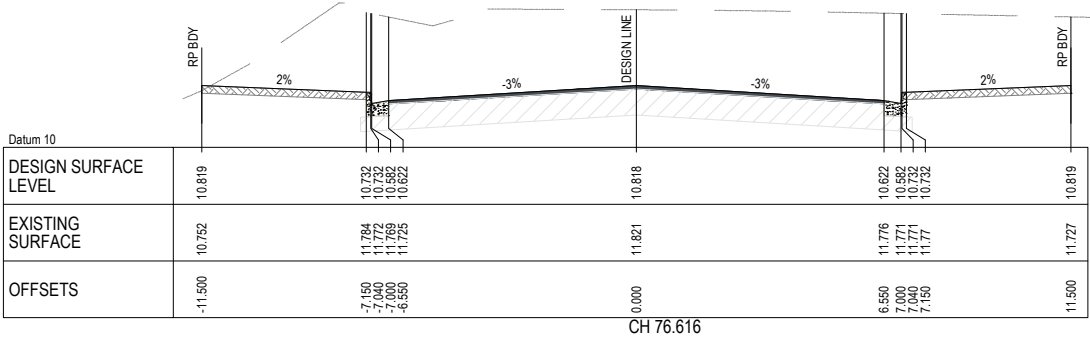
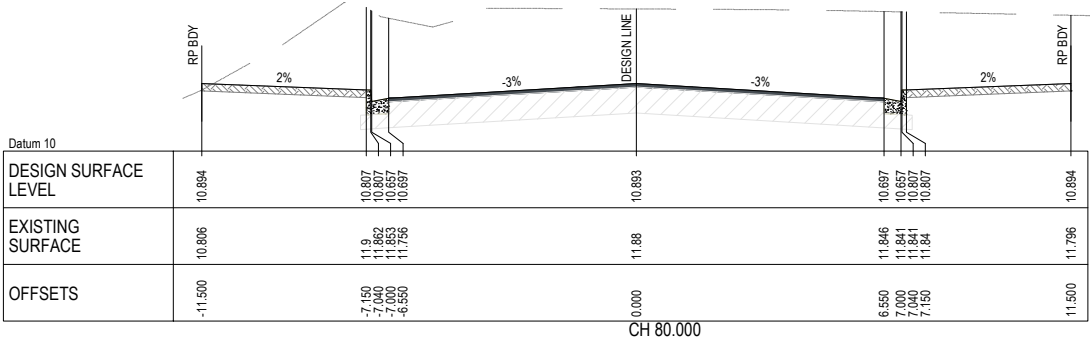
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| Design      | Date     | Apprd  | Date     |
| T.J.S.      | 07.12.18 |        |          |
| Scale       | A1       | Certif | Date     |
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### NEW ROAD CROSS SECTIONS

SCALE HORIZ. 1:100  
SCALE VERT. 1:50



Consulting Engineer:



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ABN 89 106 675 156 ACN 106 675 156  
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Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: *T. Smith*

Date: 05 / 02 / 2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
NEW ROAD CROSS SECTIONS -  
SHEET 1

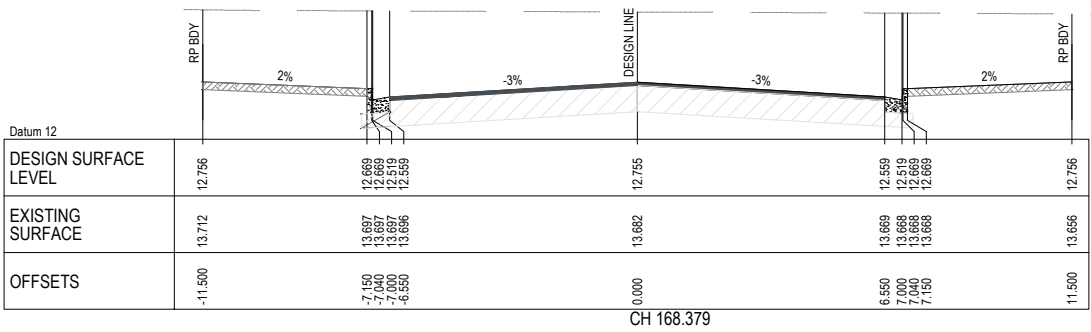
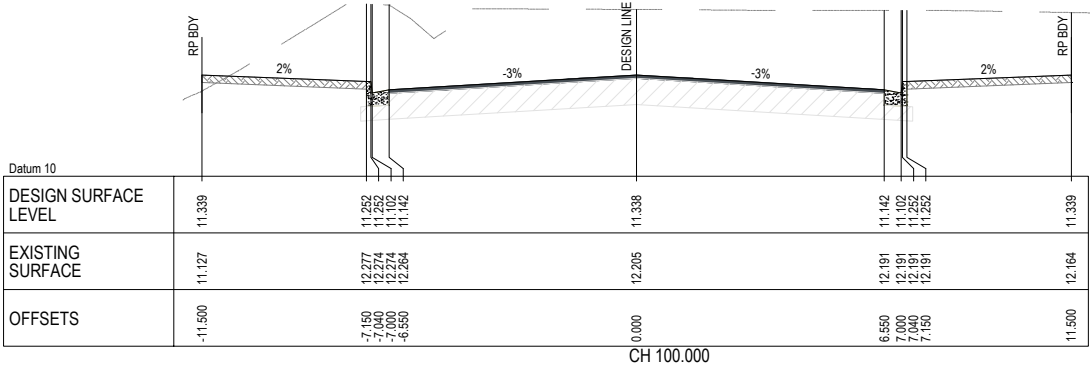
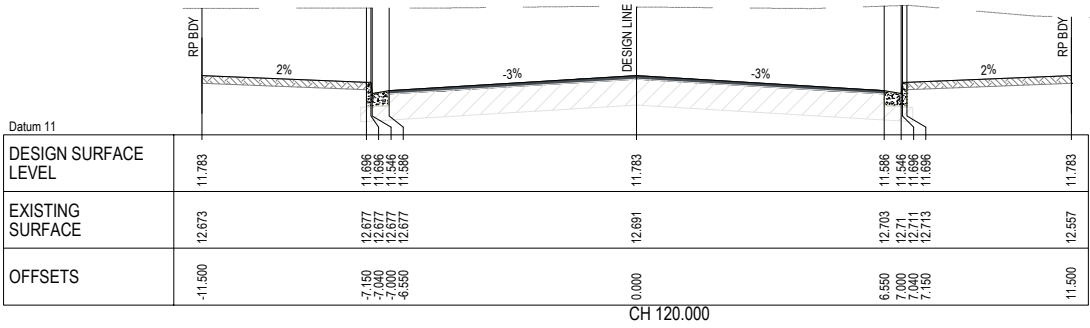
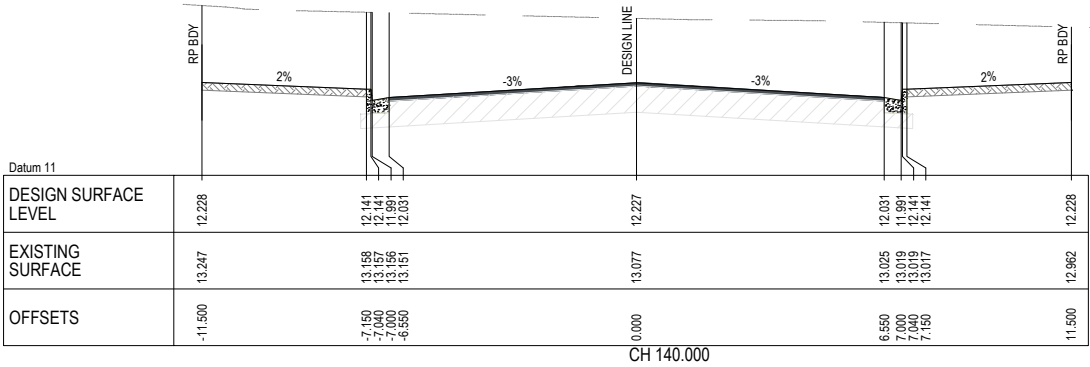
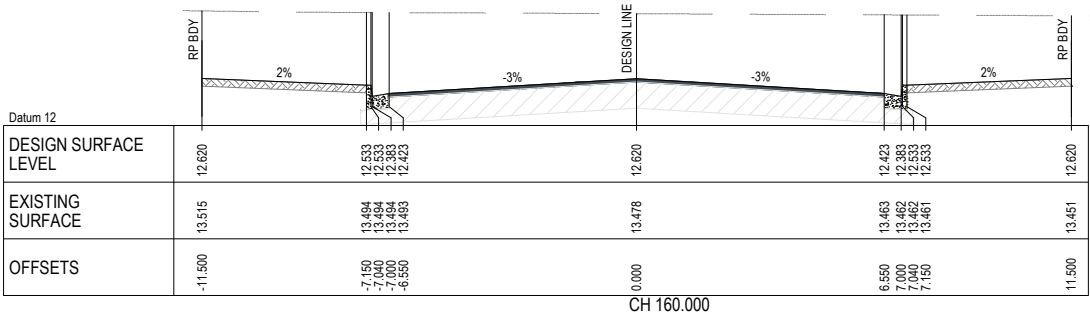
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Status  
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| K.J.L.      | 07.12.18 | T.J.S. | 07.12.18 |
| Design      | Date     | Apprd  | Date     |
| T.J.S.      | 07.12.18 |        |          |
| Scale       | A1       | Certif | Date     |
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## NEW ROAD CROSS SECTIONS

SCALE HORIZ 1:100  
SCALE VERT 1:50

Consulting Engineer:



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p 07 3870 8888

## Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: *T. Smith*

Date: 05.02.2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
NEW ROAD CROSS SECTIONS -  
SHEET 2

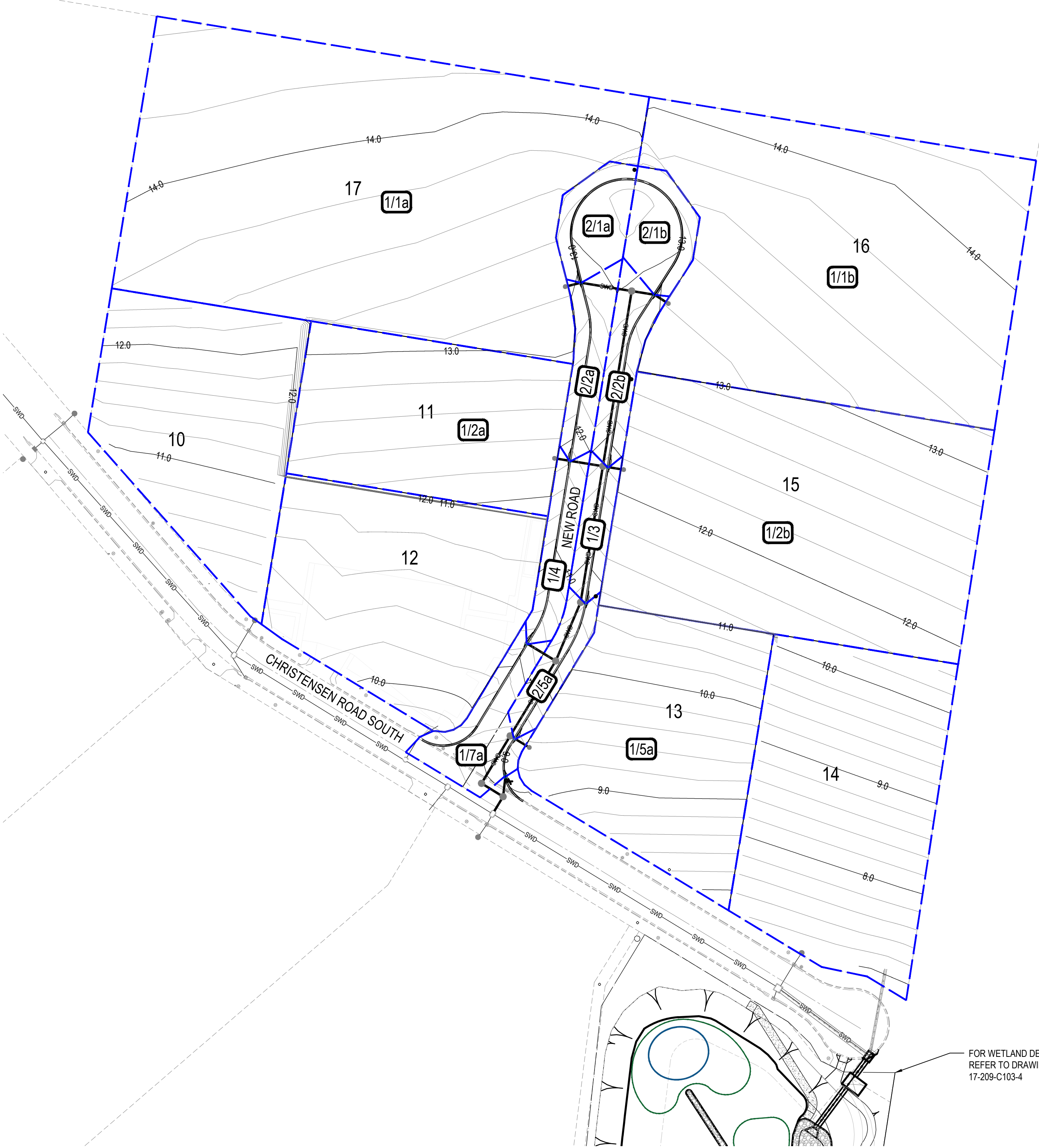
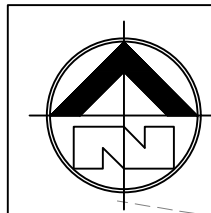
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## FOR COUNCIL APPROVAL

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| T.J.S.      | 07.12.18 |        |          |
| Scale       | A1       | Certif | Date     |
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| Project No. | Dwg. No. | Rev.   |          |
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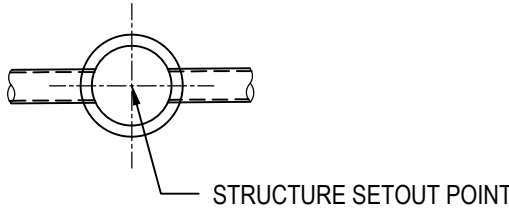
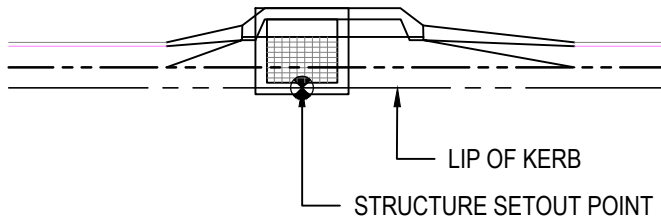


STORMWATER CATCHMENT PLAN  
SCALE 1:1000 (A1)

FOR WETLAND DETAILS  
REFER TO DRAWING  
17-209-C103-4

| CATCHMENT | AREA (ha) |
|-----------|-----------|
| 1/1a      | 1.6040    |
| 2/1a      | 0.0871    |
| 1/1b      | 1.2350    |
| 2/1b      | 0.0868    |
| 1/2a      | 0.5431    |
| 2/2a      | 0.0846    |
| 1/2b      | 1.0970    |
| 2/2b      | 0.0848    |
| 1/3       | 0.0566    |
| 1/4       | 0.0775    |
| 1/5a      | 0.6230    |
| 2/5a      | 0.0622    |
| 1/7a      | 0.112     |

- LEGEND
- EXISTING PROPERTY BOUNDARY
  - PROPOSED LOT BOUNDARY
  - FINISHED SURFACE CONTOURS
  - PROPOSED STORMWATER MAIN
  - EXISTING STORMWATER MAIN
  - PROPOSED LIP IN LINE GULLY PIT
  - PROPOSED STORMWATER MANHOLE
  - STORMWATER CATCHMENT BOUNDARY
  - STORMWATER CATCHMENT LABEL
  - STORMWATER STRUCTURE LABEL
  - EXISTING STORMWATER STRUCTURE LAI

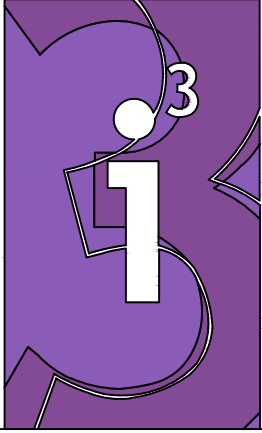


STRUCTURE SETOUT POINT - DETAILS  
NTS

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Printed by Katherine Leggitt  
Print Date: 5:22 PM

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| A   | PRELIMINARY          | 07.12.2018 | K.J.L. |
| REV | DESCRIPTION          | DATE       | BY     |

Consulting Engineer:



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ACN 106 675 156  
p 07 3870 8888

Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: *T. Smith*

Date: 05.02.2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
STORMWATER CATCHMENT PLAN  
& DETAILS

GCCC REF: xxxx



Status  
FOR COUNCIL APPROVAL

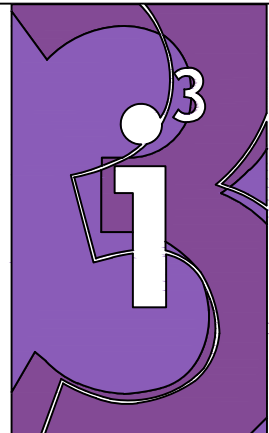
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| Design   | Date     | Apprd  | Date     |
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| REV | DESCRIPTION          | DATE       | BY     |

Consulting Engineer:



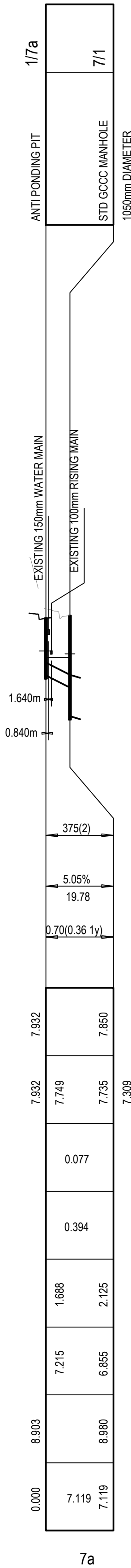
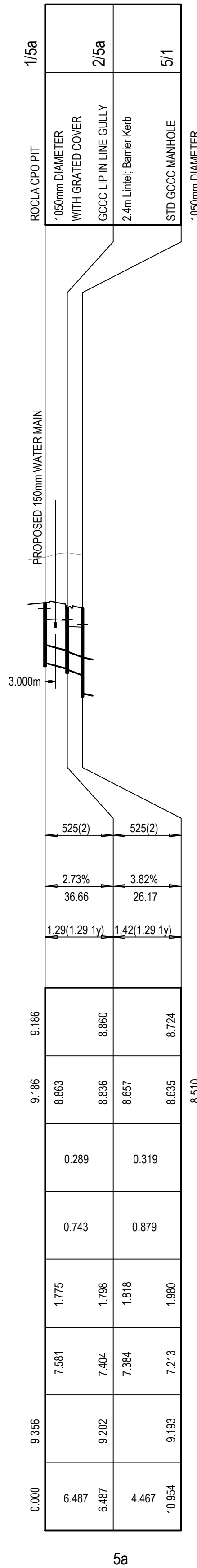
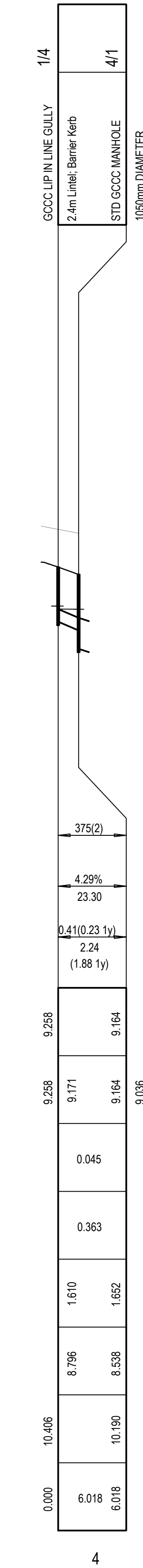
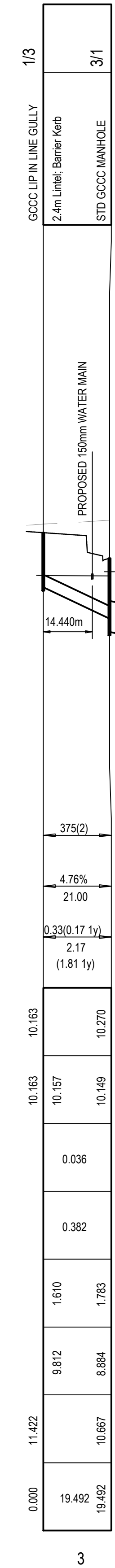
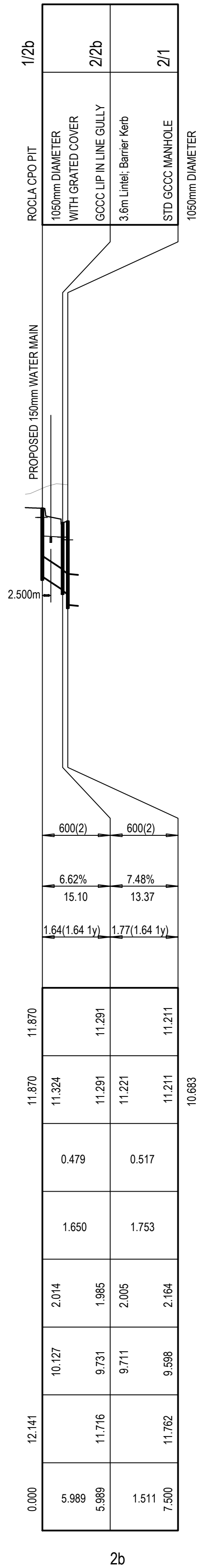
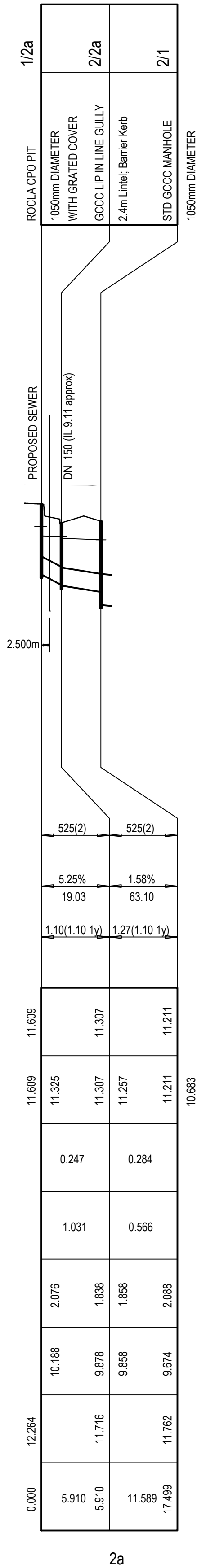
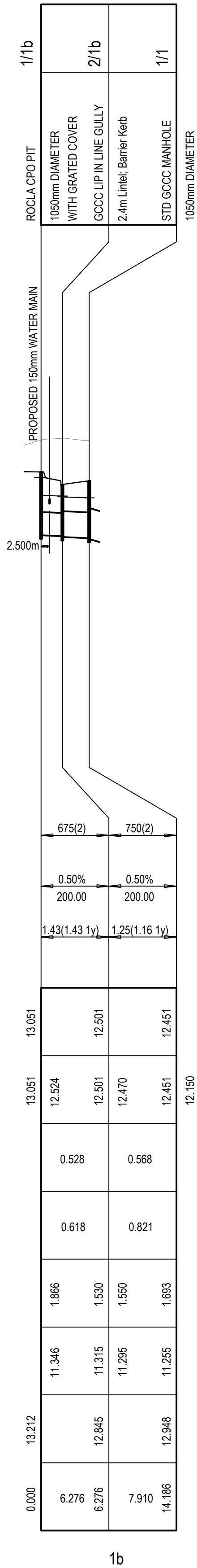
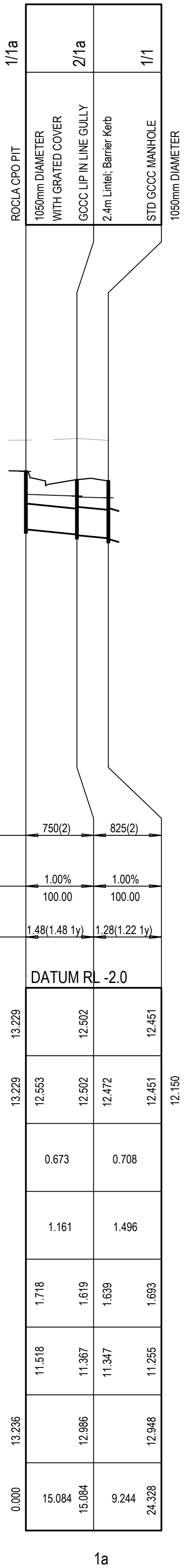
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Toowong, Qld 4066 Toowong, Qld 4066  
www.icubed.com.au mail@icubed.com.au  
ABN 89 106 675 156 ACN 106 675 156  
p 07 3870 8888

| STRUCTURE NAME | STRUCTURE DESCRIPTION |
|----------------|-----------------------|
|----------------|-----------------------|

PIPE SIZEmm (Class)  
PIPE GRADE %  
PIPE SLOPE 1 in X  
FULL PIPE FLOW VELOCITY (m/s)  
PART FULL FLOW VELOCITY (m/s)

| WATER LEVEL IN STRUCTURE | HYDRAULIC GRADE LEVEL | PIPE FLOW (Cumecs) | PIPE CAPACITY AT GRADE (Cumecs) | DEPTH TO INVERT | INVERT LEVEL OF DRAIN | DESIGN SURFACE LEVEL | RUNNING CHAINAGE |
|--------------------------|-----------------------|--------------------|---------------------------------|-----------------|-----------------------|----------------------|------------------|
|--------------------------|-----------------------|--------------------|---------------------------------|-----------------|-----------------------|----------------------|------------------|

LINE



GGCC REF: xxxx



### Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: .....

Date: 05.02.2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
STORMWATER LONGITUDINAL  
SECTIONS - SHEET 1

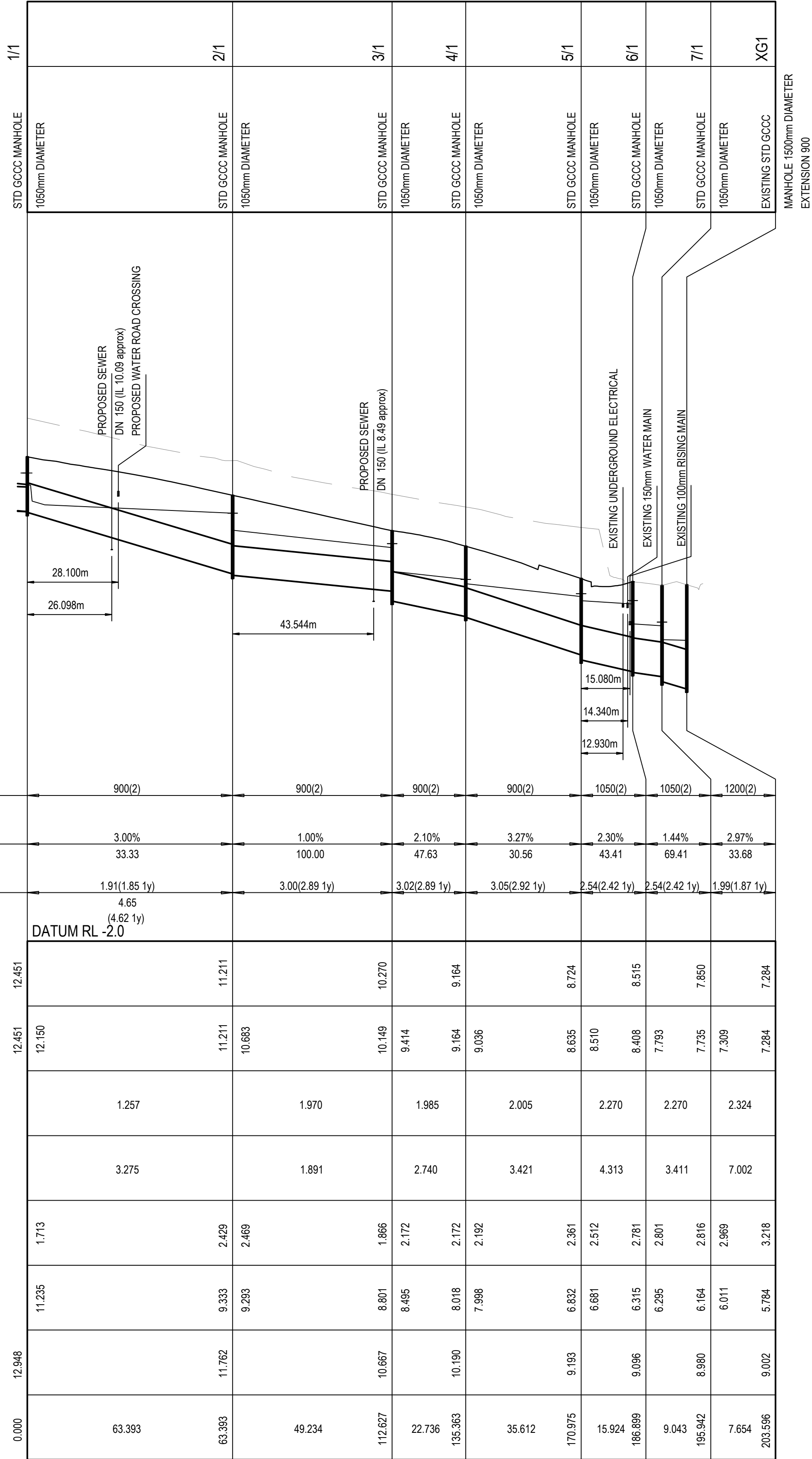
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| K.J.L.      | 07.12.18 | T.J.S. | 07.12.18 |
| Design      | Date     | Apprd  | Date     |
| T.J.S.      | 07.12.18 |        |          |
| Scale       | A1       | Certif | Date     |
| AS SHOWN    |          |        |          |
| Project No. | Dwg. No. | Rev.   |          |
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|                          |
|--------------------------|
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| STRUCTURE<br>DESCRIPTION |

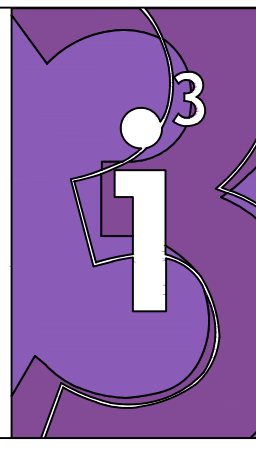
|                                    |                   |                  |                   |                   |                   |                  |                  |
|------------------------------------|-------------------|------------------|-------------------|-------------------|-------------------|------------------|------------------|
| PIPE SIZEmm (Class)                | 900(2)            | 900(2)           | 900(2)            | 900(2)            | 1050(2)           | 1050(2)          | 1200(2)          |
| PIPE GRADE %                       | 3.00%             | 1.00%            | 2.10%             | 3.27%             | 2.30%             | 1.44%            | 2.97%            |
| PIPE SLOPE 1 in X                  | 33.33             | 100.00           | 47.63             | 30.56             | 43.41             | 69.41            | 33.68            |
| FULL PIPE FLOW VELOCITY (m/s)      | 1.91(1.85 1y)     | 3.00(2.89 1y)    | 3.02(2.89 1y)     | 3.05(2.92 1y)     | 2.54(2.42 1y)     | 2.54(2.42 1y)    | 1.99(1.87 1y)    |
| PART FULL FLOW VELOCITY (m/s)      | 4.65<br>(4.62 1y) |                  |                   |                   |                   |                  |                  |
| WATER LEVEL<br>IN STRUCTURE        | 12.451            | 11.211           | 10.270            |                   | 8.724             | 8.515            | 7.284            |
| HYDRAULIC<br>GRADE LEVEL           | 12.451<br>12.150  | 11.211<br>10.883 | 10.149<br>9.414   | 9.164<br>9.036    | 8.635<br>8.510    | 8.403<br>7.793   | 7.735<br>7.309   |
| PIPE FLOW<br>(Cumecs)              | 1.257             | 1.970            | 1.985             | 2.005             | 2.270             | 2.270            | 2.324            |
| PIPE CAPACITY<br>AT GRADE (Cumecs) | 3.275             | 1.891            | 2.740             | 3.421             | 4.313             | 3.411            | 7.002            |
| DEPTH TO INVERT                    | 1.713             |                  | 1.886             | 2.172             | 2.361             | 2.801            | 3.218            |
| INVERT LEVEL<br>OF DRAIN           | 11.235            | 9.333<br>9.293   | 8.801<br>8.495    | 8.018<br>7.998    | 6.832<br>6.681    | 6.295<br>6.164   | 6.011<br>5.764   |
| DESIGN SURFACE<br>LEVEL            | 12.948            | 11.762           | 10.667            | 10.190            | 9.193             | 8.980            | 9.002            |
| RUNNING CHAINAGE                   | 0.000<br>63.393   | 63.393<br>49.234 | 112.627<br>22.736 | 135.353<br>35.612 | 170.975<br>15.924 | 186.899<br>9.043 | 195.942<br>7.654 |



LINE

1

Consulting Engineer:



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|     |                      |            |        |
|-----|----------------------|------------|--------|
| B   | FOR COUNCIL APPROVAL | 30.01.2019 | K.J.L. |
| A   | PRELIMINARY          | 07.12.2018 | K.J.L. |
| REV | DESCRIPTION          | DATE       | BY     |

Engineers Certification:

Travis Smith MIE Aust. CPEng.  
RPEQ 16400

Signature: 

Date: 05.02.2019

Project  
PROPOSED SUBDIVISION AT  
86-160 CHRISTENSEN ROAD  
SOUTH, STAPYLTON  
for  
BURNSIDE DEVELOPMENTS P/L &  
YELLOWSTONE INVESTMENTS P/L

Title  
STORMWATER LONGITUDINAL  
SECTIONS - SHEET 2

GCCC REF: xxxx



Status  
FOR COUNCIL APPROVAL

|          |          |        |          |
|----------|----------|--------|----------|
| Drawn    | Date     | Chkd   | Date     |
| K.J.L.   | 07.12.18 | T.J.S. | 07.12.18 |
| Design   | Date     | Apprd  | Date     |
| T.J.S.   | 07.12.18 |        |          |
| Scale    | A1       | Certif | Date     |
| AS SHOWN |          |        |          |

|             |          |      |
|-------------|----------|------|
| Project No. | Dwg. No. | Rev. |
| 17-209      | C110-03  | B    |

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## CALCULATIONS TABLE



**DIAL BEFORE  
YOU DIG**  
[www.1100.com.au](http://www.1100.com.au)

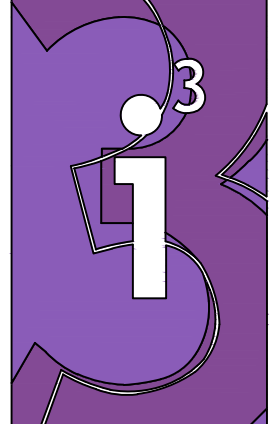
File Location P:\17-209 - Christensen Road Development\ID  
Plotted by Katherine Leggett  
Plot date 3:22 PM

| LOCATION   |               |                |                                       |          | TIME               |                             |                    | SUB-CATCHMENT RUNOFF     |                        |                    |                 |                | INLET DESIGN            |                           |                     |                          |            | DRAIN DESIGN    |             |                      |                        |                    |                |                  |                             |                                    |               | HEADLOSSES   |                        |                               |                                          |                                                                                                                                                                                                                                 |                     |                                             |               |                                                                                                                                                                                                            |                           | PART FULL                  |                            |                    |                 | DESIGN LEVELS       |                                |                |                |               |                     |                |            |        |                             |               |     |
|------------|---------------|----------------|---------------------------------------|----------|--------------------|-----------------------------|--------------------|--------------------------|------------------------|--------------------|-----------------|----------------|-------------------------|---------------------------|---------------------|--------------------------|------------|-----------------|-------------|----------------------|------------------------|--------------------|----------------|------------------|-----------------------------|------------------------------------|---------------|--------------|------------------------|-------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------|----------------------------|--------------------|-----------------|---------------------|--------------------------------|----------------|----------------|---------------|---------------------|----------------|------------|--------|-----------------------------|---------------|-----|
| DESIGN ARI | STRUCTURE No. | DRAIN SECTION  | SUB-CATCHMENTS CONTRIBUTING           | LAND USE | SLOPE OF CATCHMENT | SUB-CATCHMENT TIME OF CONC. | RAINFALL INTENSITY | 10yr RUNOFF CO-EFFICIENT | CO-EFFICIENT OF RUNOFF | SUB-CATCHMENT AREA | EQUIVALENT AREA | SUM OF (C * A) | SUB-CATCHMENT DISCHARGE | FLOW IN K&C (INC. BYPASS) | ROAD GRADE AT INLET | MINOR FLOW ROAD CAPACITY | INLET TYPE | FLOW INTO INLET | BYPASS FLOW | BYPASS STRUCTURE No. | CRITICAL TIME OF CONC. | RAINFALL INTENSITY | TOTAL (C * A)  | MAJOR TOTAL FLOW | MAJOR SURFACE FLOW CAPACITY | MAJOR SURFACE FLOW                 | PIPE FLOW     | REACH LENGTH | PIPE GRADE             | PIPE / BOX DIMENSIONS (CLASS) | FLOW VELOCITY FULL (PIPE GRADE VELOCITY) | TIME OF FLOW IN REACH                                                                                                                                                                                                           | STRUCTURE CHART No. | STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS | VELOCITY HEAD | U/S HEADLOSS COEFFICIENT                                                                                                                                                                                   | U/S PIPE STRUCT. HEADLOSS | LAT. HEADLOSS CO-EFFICIENT | LAT. PIPE STRUCT. HEADLOSS | W/S.E CO-EFFICIENT | CHANGE IN W.S.E | PIPE FRICTION SLOPE | PIPE FRICTION HEADLOSS (L * S) | DEPTH          | VELOCITY       | OBVERT LEVELS | DRAIN SECTION H.G.L | UPSTREAM H.G.L | LAT. H.G.L | W.S.E. | SURFACE OR K&C INVERT LEVEL | STRUCTURE No. |     |
| YRS        |               |                |                                       |          | %                  | min                         | mm/h               |                          |                        | ha                 | ha              | ha             | l/s                     | l/s                       | %                   | l/s                      |            | l/s             | l/s         |                      | min                    | mm/h               | ha             | l/s              | l/s                         | l/s                                | l/s           | m            | %                      | mm                            | m/s                                      | min                                                                                                                                                                                                                             |                     |                                             | m             |                                                                                                                                                                                                            | m                         |                            | m                          |                    | m               | m/s                 | m                              | m              | m              | m             | m                   | m              |            |        |                             |               |     |
| 10<br>100  | 6/1           | 6/1<br>to 7/1  | 2/1a;2/1b;2/2a;2/2b;1/3;1/4;2/5a      |          |                    |                             |                    |                          |                        |                    |                 |                |                         |                           |                     |                          | 24         |                 |             |                      | 13.03<br>13.03         | 174<br>261         | 0.496<br>3.302 | 2394             |                             | (Pipe flow+ Sum upstr atten flows) | 2270<br>9.043 | 1.44         | 1050(2.54)(2.42 (3.82) | 1.44                          | 0.06                                     | Qo 2.270 Do 1050<br>CHART 50 Du/Do 1.00 alpha 100<br>Kw 0.31 Vu 2.62 WSE 0.72<br>Ku 1.87 Kw 2.20                                                                                                                                | 0.329               | 1.87                                        | 0.615         |                                                                                                                                                                                                            |                           | 2.20                       | 0.722                      | 0.64               | 0.058           |                     |                                | 7.361<br>7.230 | 7.793<br>7.735 | 8.408         |                     | 8.515          | 9.096      | 6/1    |                             |               |     |
| 10<br>100  | 1/7a          | 1/7a<br>to 7/1 | 1/7a                                  |          |                    | 5.00<br>5.00                | 248<br>373         |                          | 0.92<br>0.93           | 0.122<br>0.122     | 0.112<br>0.113  | 0.112<br>0.113 | 77<br>118               | 77                        | 0.03                | 155                      | 1450.05    | 77              | 0           |                      | 5.00<br>5.00           | 248<br>373         | 0.112<br>0.113 | 117              |                             | 77<br>(Pipe flow= Grate flow)      | 7.119         | 5.05         | 375(20.70)(0.36 (3.57) | 1.12                          | 0.12                                     | Qg 0.077 Qo 0.077 Do 375<br>CHRT 32: Vo2/2gDo 0.07 H/Do 0.42<br>Kg side flow 7.33 end flow 5.52                                                                                                                                 | 0.025               | 7.33                                        | 0.183         |                                                                                                                                                                                                            |                           | 7.33                       | 0.183                      | 0.19               | 0.014           |                     |                                | 7.590<br>7.230 | 7.749<br>7.735 | 7.932         |                     | 7.932          | 8.903      | 1/7a   |                             |               |     |
| 10<br>100  | 7/1           | 7/1<br>to XG1  | 2/1a;2/1b;2/2a;2/2b;1/3;1/4;2/5a;1/7a |          |                    |                             |                    |                          |                        |                    |                 |                |                         |                           |                     |                          | 24         |                 |             |                      | 13.09<br>13.09         | 174<br>261         | 0.608<br>3.415 | 2476             |                             | (Pipe flow+ Sum upstr atten flows) | 2324<br>7.654 | 2.97         | 1200(2.99)(1.87 (6.00) | 1.06                          | 0.06                                     | Qo 2.324 Do 1200<br>Flow 1/7a made eqv grate flow<br>Angle 95 Chart 47 S/Do 2.5 chartdeg<br>Du/Do 0.88 K0 2.01 K0.5 2.27<br>Qu/Do 0.98 Cg 0.06 K 2.03<br>S/Do 2.0 K0 2.47 K0.5 2.40 K 2.46<br>S/Do 1.5 K0 2.69 K0.5 2.67 K 2.69 | 0.202               | 2.11                                        | 0.426         | Interp val for S/Do 1.51 Kw 2.68<br>CHART 46<br>S/Do 2.0 K0 2.00 K0.5 2.01 K 2.00<br>S/Do 1.5 K0 2.09 K0.5 2.31 K 2.11<br>Interp val for S/Do 1.51 Ku 2.11<br>K vals above for stepped pipes as grate flow |                           |                            |                            |                    | 2.68            | 0.541               | 0.33                           | 0.025          |                |               | 7.230<br>7.003      | 7.309<br>7.284 | 7.735      |        | 7.850                       | 8.980         | 7/1 |

CALCULATIONS TABLE

GGCC REF: xxxx



|                                                                                                                                                                                                                                                                                                                                                               |                      |            |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------|--------|
| Consulting Engineer:                                                                                                                                                                                                                                                                                                                                          |                      |            |        |
|  i <sup>3</sup> consulting pty ltd<br>engineering consultants<br>innovation, ingenuity, inspiration<br>L2 39 Sherwood Rd PO Box 878<br>Toowong, Qld 4066 Toowong, Qld 4066<br>www.icubed.com.au mail@icubed.com.au<br>ABN 89 106 675 156 ACN 106 675 156<br>p 07 3870 8888 |                      |            |        |
| B                                                                                                                                                                                                                                                                                                                                                             | FOR COUNCIL APPROVAL | 30.01.2019 | K.J.L. |
| A                                                                                                                                                                                                                                                                                                                                                             | PRELIMINARY          | 07.12.2018 | K.J.L. |
| REV                                                                                                                                                                                                                                                                                                                                                           | DESCRIPTION          | DATE       | BY     |

|                                                                                                                              |  |                                                                                                                                                                                |                                            |                      |          |        |          |
|------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------|----------|--------|----------|
| Engineers Certification:                                                                                                     |  | Project                                                                                                                                                                        |                                            | Status               |          |        |          |
| Travis Smith MIE Aust. CPEng.<br>RPEQ 16400                                                                                  |  | PROPOSED SUBDIVISION AT<br>86-160 CHRISTENSEN ROAD<br>SOUTH, STAPYLTON                                                                                                         |                                            | FOR COUNCIL APPROVAL |          |        |          |
| Signature: <br><br>Date: 05 / 02 / 2019 |  | for<br>BURNSIDE DEVELOPMENTS P/L &<br>YELLOWSTONE INVESTMENTS P/L                                                                                                              |                                            | Drawn                | Date     | Chkd   | Date     |
|                                                                                                                              |  |                                                                                                                                                                                |                                            | K.J.L.               | 07.12.18 | T.J.S. | 07.12.18 |
|                                                                                                                              |  |                                                                                                                                                                                |                                            | Design               | Date     | Apprd  | Date     |
|                                                                                                                              |  |                                                                                                                                                                                |                                            | T.J.S.               | 07.12.18 |        |          |
|                                                                                                                              |  |                                                                                                                                                                                |                                            | Scale                | A1       | Certif | Date     |
|                                                                                                                              |  |                                                                                                                                                                                |                                            | AS SHOWN             |          |        |          |
|                                                                                                                              |  | Title                                                                                                                                                                          | STORMWATER CALCULATION<br>TABLES - SHEET 2 | Project No.          | Dwg. No. | Rev.   |          |
|                                                                                                                              |  |                                                                                                                                                                                |                                            | 17-209               | C110-05  | B      |          |
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