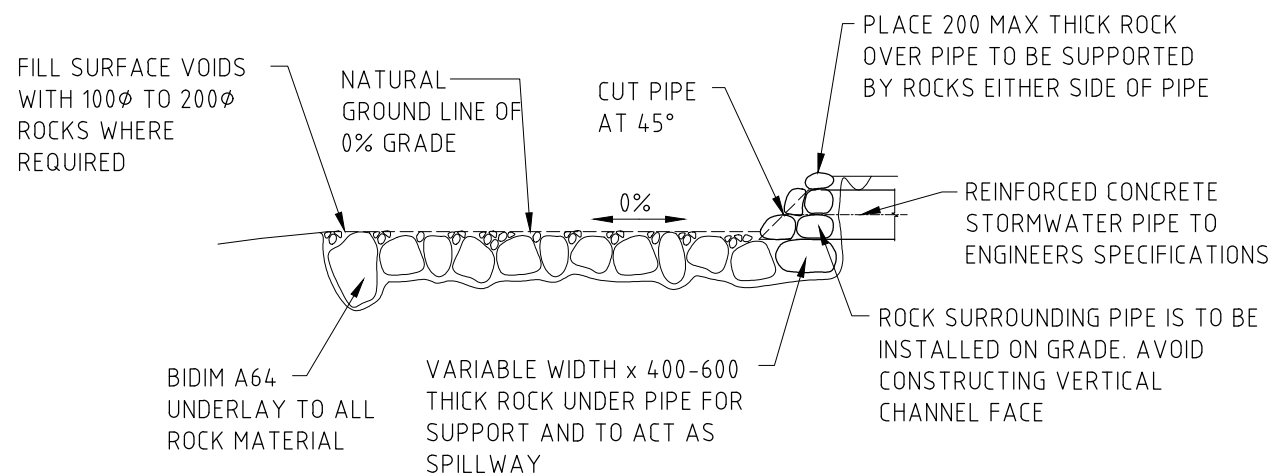
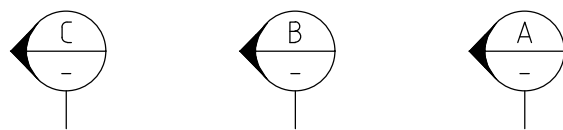


PLAN - 0% GRADE
SCALE 1:100

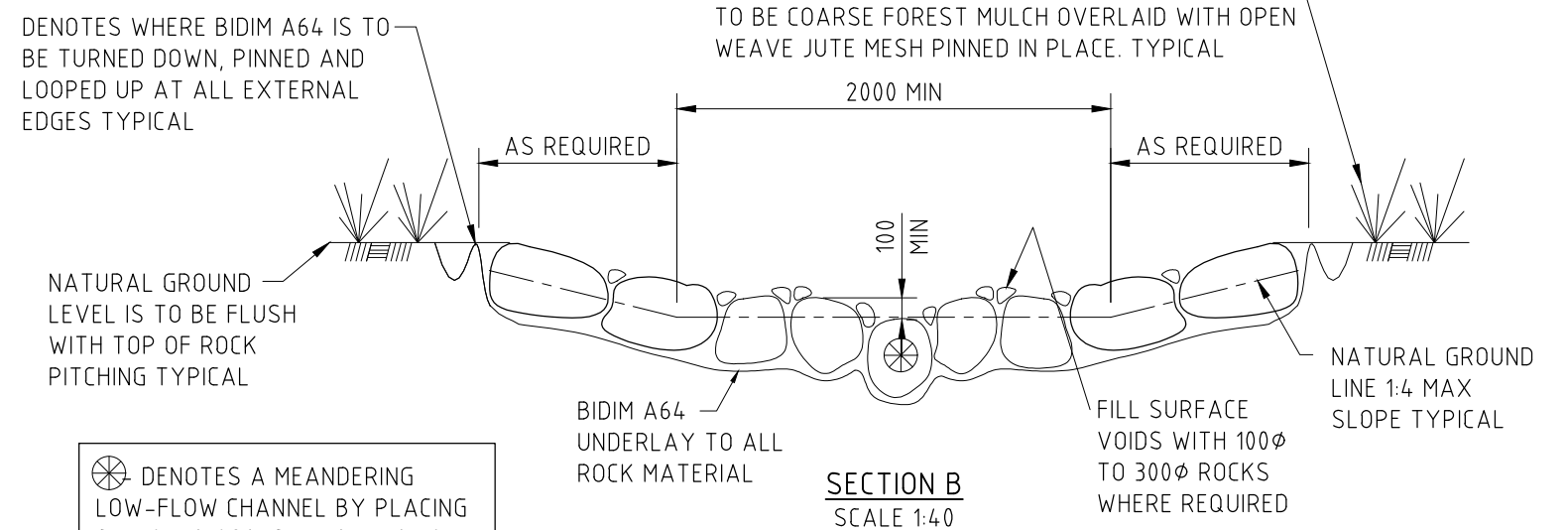
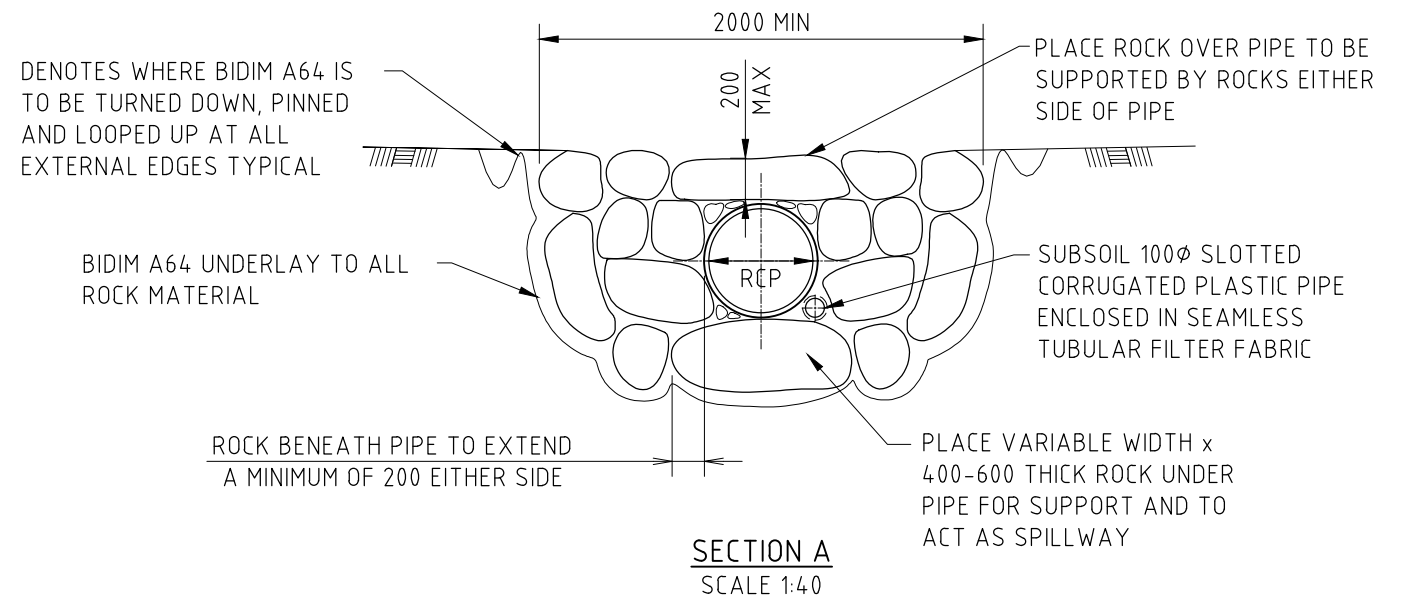
NOTE:
FOUNDING MATERIAL TO ACHIEVE A
MINIMUM ALLOWABLE BEARING
CAPACITY OF 150KPa



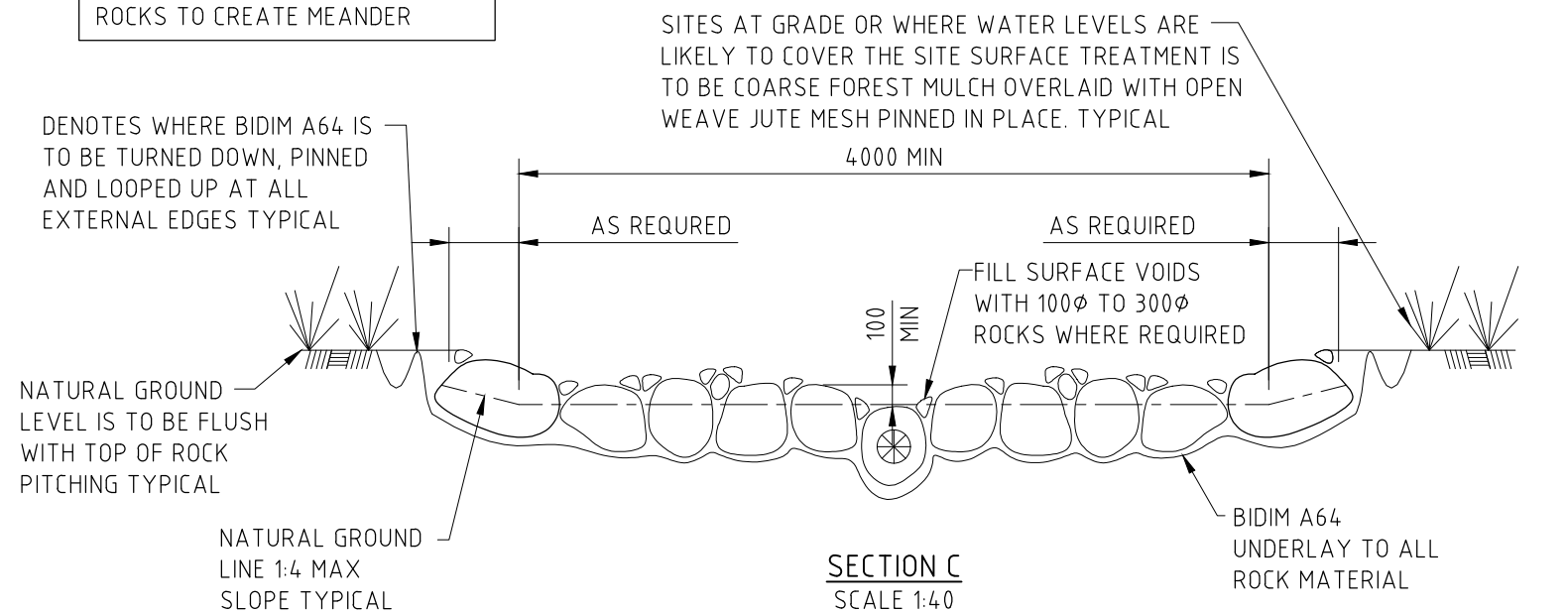
LONGITUDINAL SECTION
SCALE 1:100

ALL DIMENSIONS ARE IN
MILLIMETRES UNLESS
NOTED OTHERWISE

REFER TO DRAWING 2 OF 2 FOR ROCK NOTES AND TABLES



DENOTES A MEANDERING
LOW-FLOW CHANNEL BY PLACING
SELECTED ROCKS AT DIFFERING
HEIGHTS. STAGGER LOW-FLOW
ROCKS TO CREATE MEANDER



SITES AT GRADE OR WHERE WATER LEVELS ARE
LIKELY TO COVER THE SITE SURFACE TREATMENT IS
TO BE COARSE FOREST MULCH OVERLAID WITH OPEN
WEAVE JUTE MESH PINNED IN PLACE. TYPICAL

| ISSUE | AMENDMENT DETAILS | DATE | INITIALS |
|-------|-------------------|----------|----------|
| 2 | REVISION | 21/12/21 | T.C |
| 1 | CONSTRUCTION | 11/06/13 | J.C |
| 0 | PRELIMINARY | 11/01/13 | J.C |

| SCALE | REVIEWED |
|---------------------|----------|
| AS SHOWN | J.C |
| DON'T SCALE DRAWING | |



APPROVED:
SIGNED: *[Signature]*
MANGER ASSETS AND PROJECTS (Acting)
DATE: 22/12/2021

CITY OF NEWCASTLE STANDARD DRAWING
**ROCK PITCHED HEADWALL AND
ENERGY DISSIPATED OUTLET FOR
NATURAL GRADE OF 0%**

| NCC PLAN No. | | SHEET No. |
|--------------|---------|-----------|
| A2303 | | |
| SHEET A3 | ISSUE 2 | |

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE

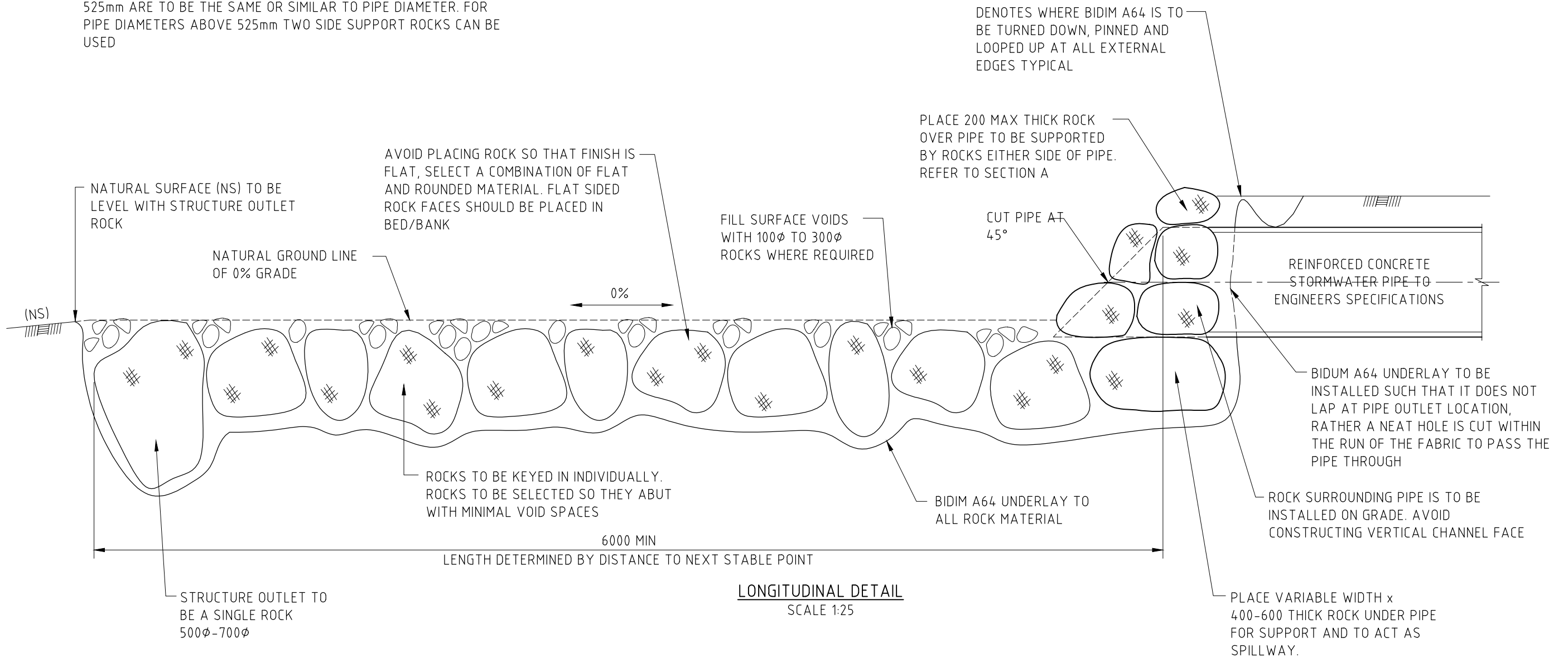
ROCK CONSTRUCTION NOTES

1. SIZE B ROCKS ARE TO BE USED FOR ALL CRITICAL POINTS IN STRUCTURE i.e. BED CONTROLS AND STRUCTURE OUTLETS.
2. 100 TO 300mm ROCKS ARE TO BE HAND PACKED INTO VOIDS WITHIN ROCK STRUCTURE BETWEEN SIZE A AND B ROCKS.
3. ROCK PLACED BETWEEN OUTLET OF PIPE IS TO EXTEND A MINIMUM OF 200mm EITHER SIDE OF PIPE.
4. ROCK SELECTION AND PLACEMENT FOR PIPE HEADWALL TO ENSURE NO LOAD BEARING WEIGHT IS PLACED ON PIPE.
5. SIDE SUPPORT ROCKS AT HEADWALL FOR DIAMETERS UP TO 525mm ARE TO BE THE SAME OR SIMILAR TO PIPE DIAMETER. FOR PIPE DIAMETERS ABOVE 525mm TWO SIDE SUPPORT ROCKS CAN BE USED

| ROCK SIZING | | |
|------------------|------|-----|
| PIPE ϕ (mm) | 0-5% | >5% |
| 375 to 600 | A | B |
| > 600 | B | B |

A - 500 ϕ TO 700 ϕ SANDSTONE
 B - 700 ϕ TO 1200 ϕ SANDSTONE

APPLICATION OF THIS STANDARD
 THIS STANDARD APPLIES TO SINGLE PIPE OUTLETS; WHERE DOWNSTREAM GRADES (BETWEEN PIPE AND STABLE POINT) RANGE FROM 0% TO 10%.
 THIS STANDARD IS UNSUITABLE IF:
 - PIPE DIAMETER IS GREATER THAN 750mm; OR
 - GRADE FROM PIPE END TO STABLE POINT IS GREATER THAN 10%; OR
 - SPACE FOR ROCKWORK IS LESS THAN 8.5 METRES; OR
 - DISTANCE TO STABLE POINT IS MORE THAN 18 METRES.
 IN THESE CASES, THE STANDARD MUST BE ADOPTED TO THE SITE BY SUITABLY QUALIFIED GEOMORPHOLOGIST. ROCKWORK IS TO END AT A STABLE POINT: FOR EXAMPLE WHERE GRADE REDUCES; OR AT THE BANK TOE OF THE RECEIVING WATERWAY. STABLE POINT MUST BE SPECIFIED ON PLANS.
 IF A LONGER LENGTH OF ROCKWORK IS NEEDED TO MEET THE STABLE POINT, BUILD ADDITIONAL WEIRS AND PONDS IN SERIES. NO WEIR DROP TO BE MORE THAN 400MM. ALWAYS END WITH ROW OF LEVEL SPREADER ROCKS. OUTFLOWS TO JOIN WATERWAY FLOWS IN SAME DIRECTION. IF DISCHARGING TO NARROW WATERWAY (CHANNEL FLOOR <4M WIDE); ROCKWORK CENTRELINE SHOULD BE BETWEEN 45 TO 60 <DEG> TO WATERWAY CENTRELINE.



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| 0 | PRELIMINARY | 11/01/13 | J.C |

| SCALE | REVIEWED |
|----------------------|----------|
| AS SHOWN | J.C |
| DO NOT SCALE DRAWING | |



APPROVED:
 SIGNED: *[Signature]*
 MANGER ASSETS AND PROJECTS (Acting)
 DATE: 22/12/2021

CITY OF NEWCASTLE STANDARD DRAWING
ROCK PITCHED HEADWALL AND ENERGY DISSIPATED OUTLET FOR NATURAL GRADE OF 0%

| NCC PLAN No. | | SHEET No. |
|--------------|---------|---------------|
| A2303 | | 2 OF 2 SHEETS |
| SHEET A3 | ISSUE 2 | |