

Our Ref: BC-16090
 Your Ref:

19 January 2023

City of Gold Coast
 PO Box 5042
 GOLD COAST MC QLD 9729

To whom it may concern,

**RE: OPERATIONAL WORKS APPLICATION – STAGE 2
 LOTS 188-192 ON RP173728 (79-99 COURTNEY DRIVE, UPPER COOMERA)
 HYDRAULIC ASSESSMENT**

This letter has been prepared to provide information regarding the hydraulic performance of the culvert structure proposed as part of the Stage 2 Operational Works application at Lots 188-192 on RP173728 (79-99 Courtney Drive, Upper Coomera).

The modelling relied upon for this assessment is from the approved Stormwater Management Plan completed by Biome Consulting in November 2019 associated with the previous ROL approval.

The previous modelling proposed a 3600 x 3600 RCBC to be constructed at the Yaun Creek crossing on Courtney Drive. The operational works application for stage 2 proposes to change this culvert arrangement to 2 x 2700 x 2400 RCBC. The culvert arrangement is shown on the Mortons Urban Solutions drawings numbered 41901-02-626-C and 41901-02-614-B attached and extract below.

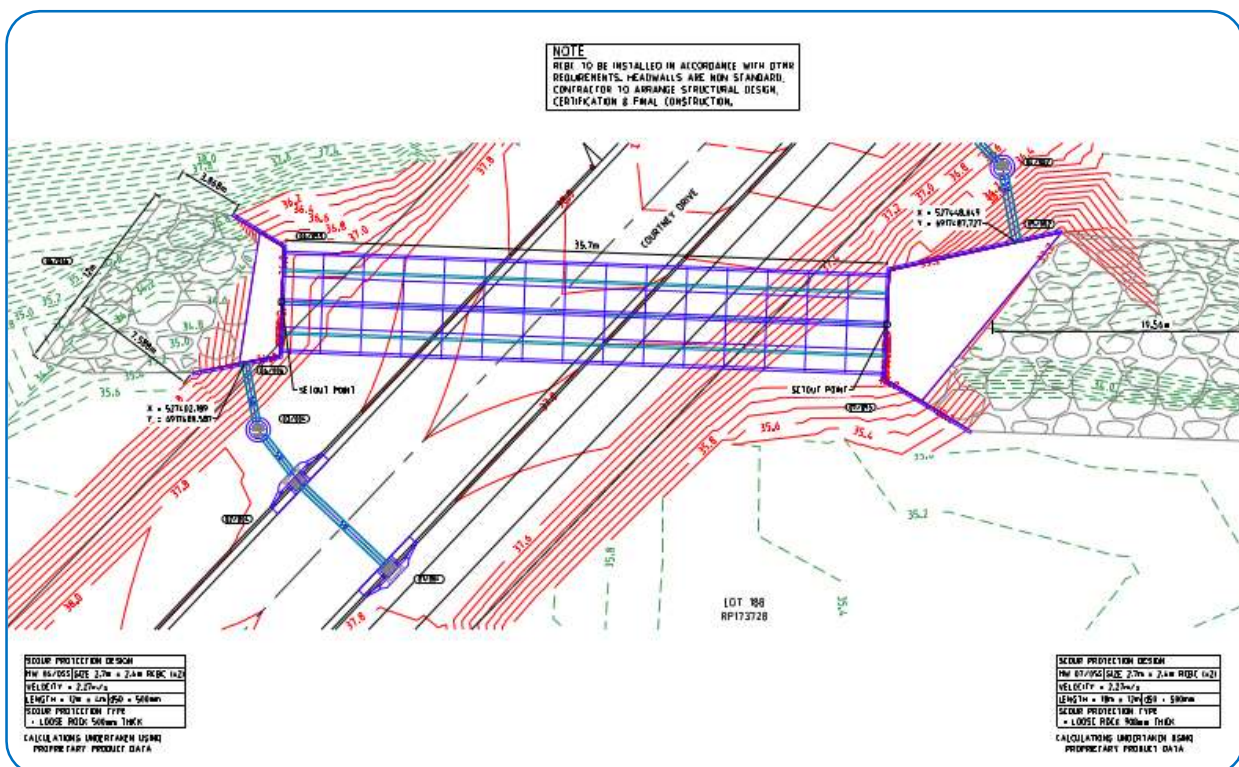


Figure 1 – General Culvert Arrangement



To assess the hydraulic performance of the new culvert size, the approved TUFLOW model has been amended to reflect the new culvert size, levels, and surrounding earthworks extent. All other parameters from the approved model remain.

The post-development 1% AEP depth plot is presented below in Figure 2 indicating an upstream depth of up to 2.70 m and a downstream depth of up to 2.23 m.

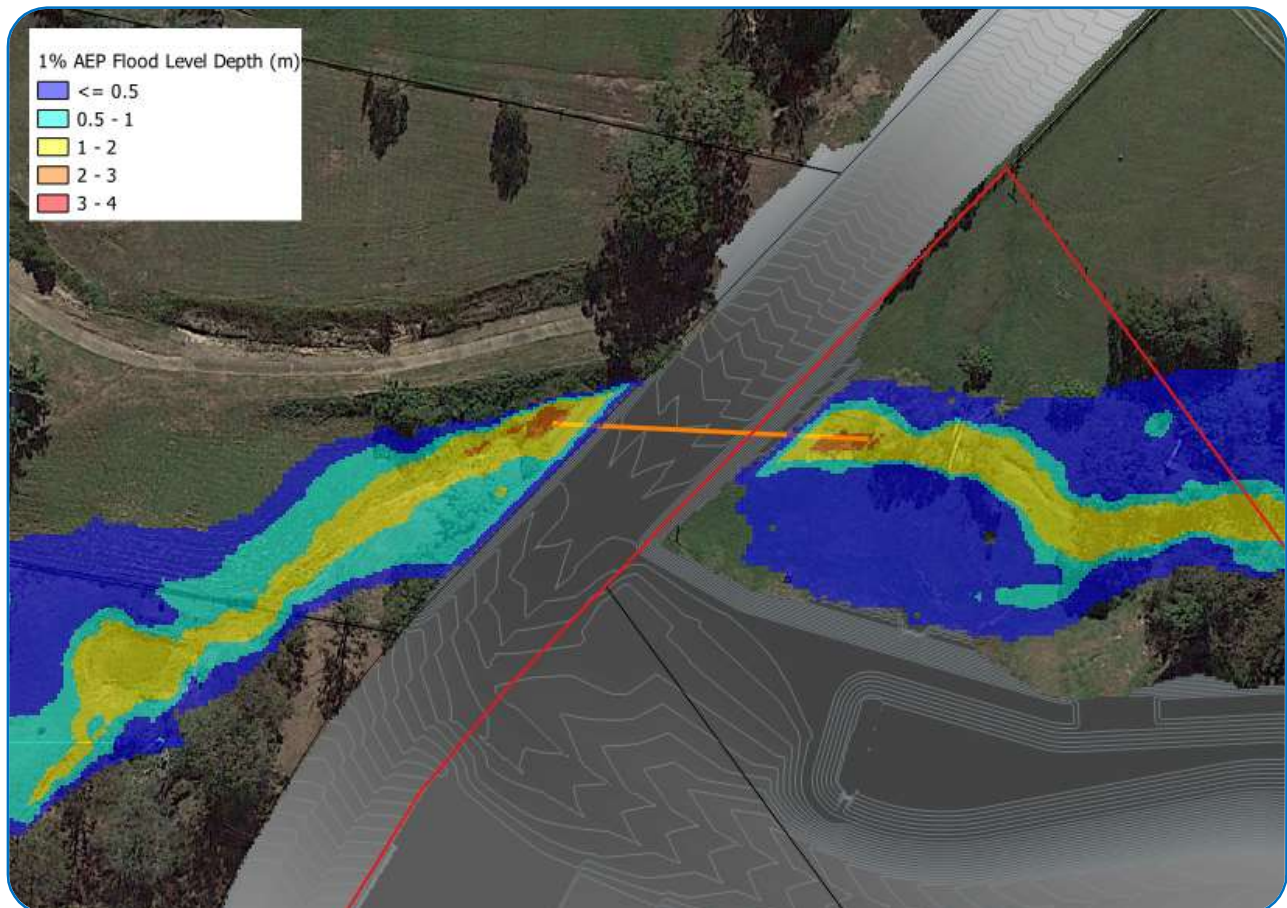


Figure 2 - 1% AEP Peak Post-Development Flood Depth

To assess the impact of the new culvert arrangement, a spatial analysis of pre and post-development peak 1% AEP flood levels has been undertaken. The results in Figure 3 below indicate that there is no expected increase in peak water levels upstream or downstream of the proposed culverts.

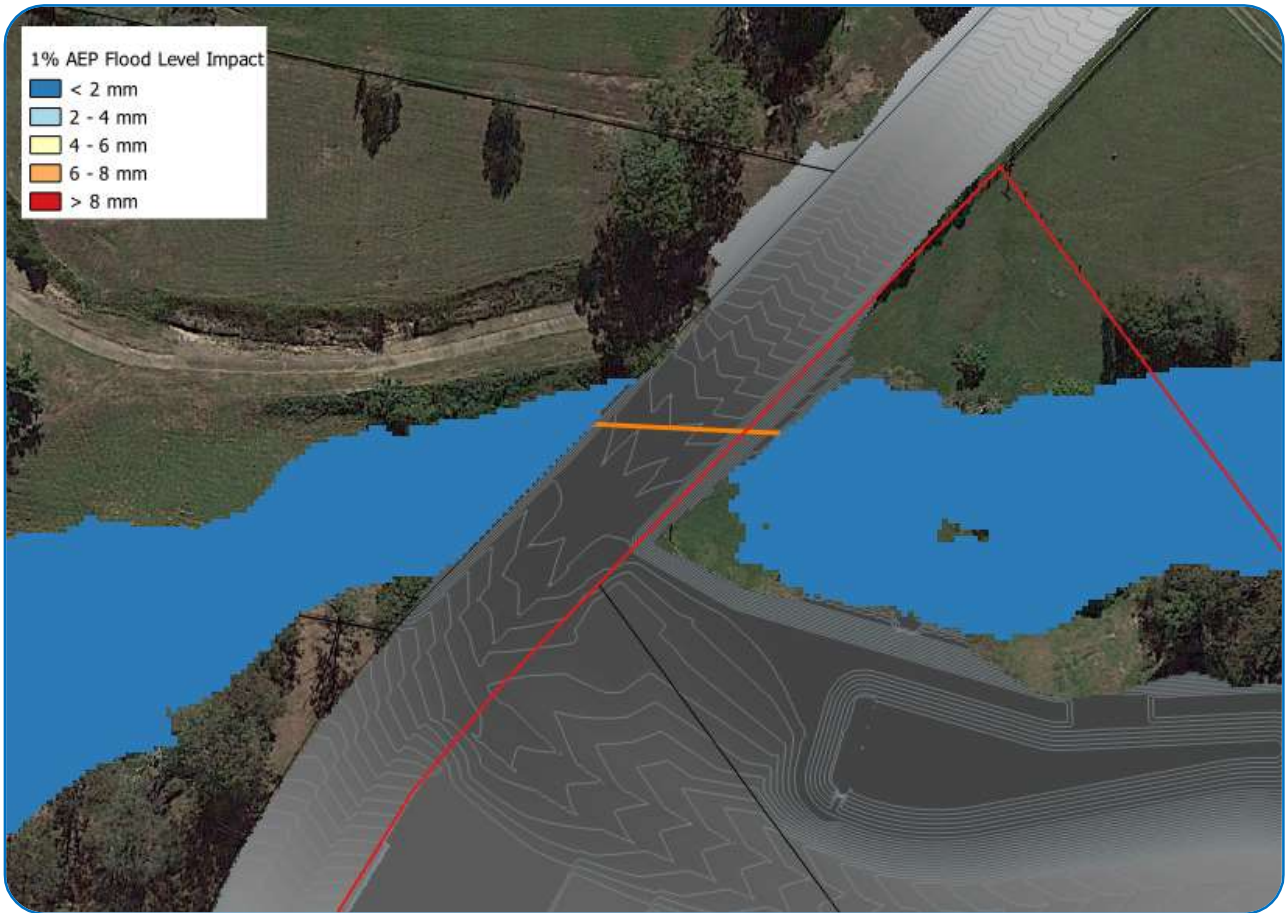


Figure 3 – 1% AEP Flood Level Impact

The proposed culvert size change achieves a very similar design outcome to the previously approved design and does not create any adverse impacts to peak flood levels on neighbouring properties. Additionally, the proposed road has approximately 1 m freeboard to the 1% AEP level at the location of the crossing.

If you would like clarification of any of the information included within this certification, please contact the undersigned.

Yours faithfully

JOE MCDONALD
BEng, NER, RPEQ

Encl: Mortons Urban Solutions Drawings

\\raulocad-client\419 - hb land\01 - courtney drive\prelctick-stage 02\engineering drawings\Current\41901-02-626.dwg, SHEET 07, 17/01/2024 11:53:52 PM, 1:2

STRUCTURE NAME

STRUCTURE DESCRIPTION



NOTES

1. WHERE STRUCTURE DEPTHS ARE 0m TO 3m REFER TO IPWEA STANDARD DRAWINGS FOR STRUCTURE DETAILS.
WHERE STRUCTURE DEPTHS ARE 3m TO 5m REFER TO TMR STANDARD DRAWINGS FOR STRUCTURE DETAILS.
WHERE STRUCTURE DEPTHS EXCEED 5m STRUCTURES ARE NON-STANDARD AND STRUCTURAL DESIGN IS REQUIRED.
2. STRUCTURAL DESIGN IS NOT PROVIDED AS PART OF THE TENDER DOCUMENTS, THE CONTRACTOR SHALL INCLUDE IN THEIR PRICE THE STRUCTURAL DESIGN AND CERTIFICATION OF THESE STRUCTURES.

PIPE GRADE (%)

PIPE DIAMETER (mm)

VELOCITY (m/s)

PIPE FLOW (m³/s)

PIPE CLASS

DATUM R.L.

DEPTH TO INVERT

HYDRAULIC GRADE LINE

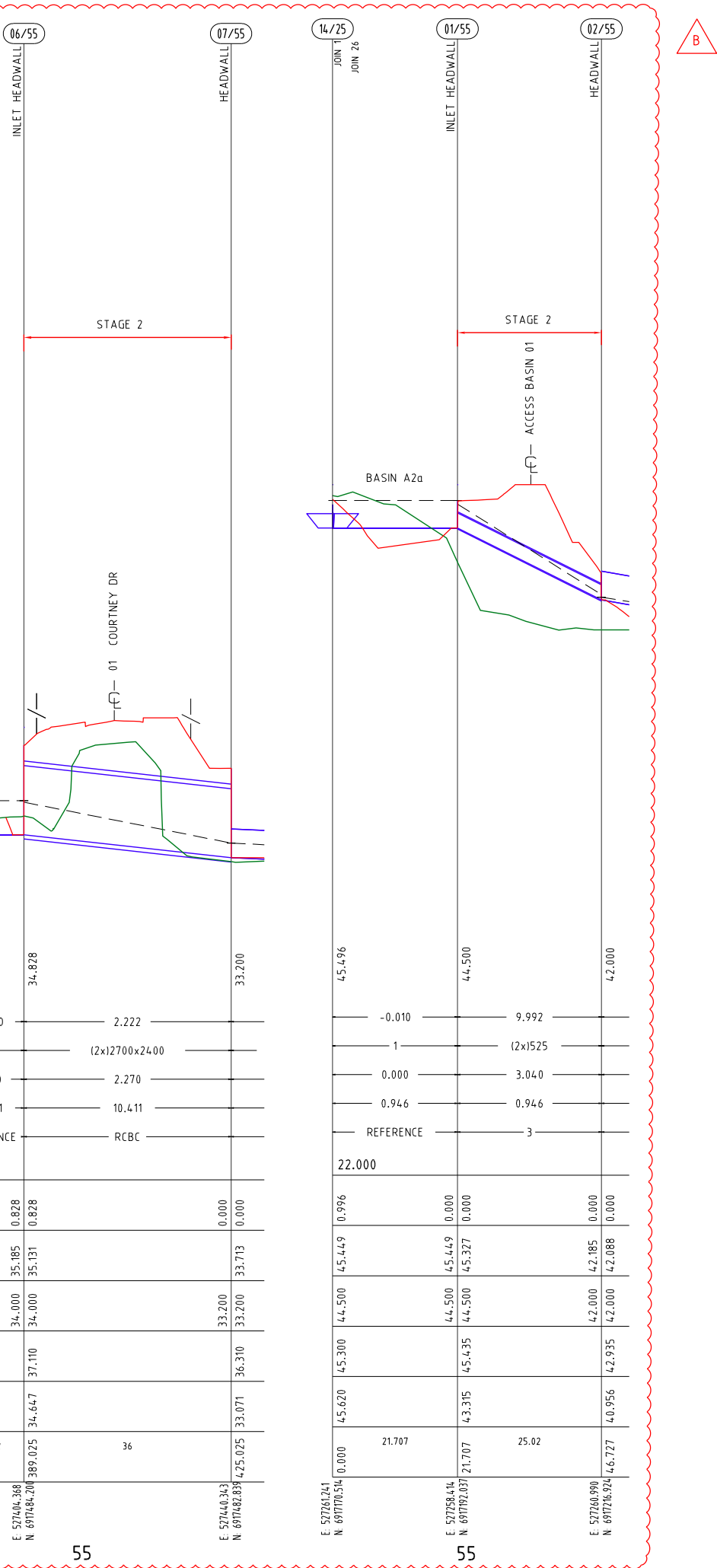
PIPE INVERT LEVELS

DESIGN SURFACE LEVELS

EXISTING SURFACE LEVELS

CHAINAGE

DRAINAGE LINE



PROJECT NAME

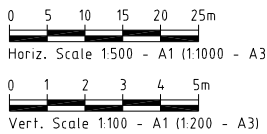
COURTNEY DR
UPPER COOMERA

STAGE 02

RP DESCRIPTION

LOT 188, 189, 190, 191 & 192 ON RP173728
COURTNEY DRIVE
LOCALITY OF UPPER COOMERA
LOCAL AUTHORITY - GOLD COAST CITY COUNCIL

CLIENT



C	15-01-24	LONG SECTIONS AMENDED	BL
B	29-11-23	LONG SECTIONS UPDATED	BL
A	13-10-23	COUNCIL ISSUE	EP
REV	DATE	DESCRIPTION	INT

COPYRIGHT IS VESTED IN MORTONS-URBAN SOLUTIONS AND
WRITTEN CONSENT IS REQUIRED PRIOR TO REPRODUCTION.
DO NOT SCALE FROM THIS DRAWING.

ASSOCIATED CONSULTANTS



DRAWING TITLE

STORMWATER
PROFILES
SHEET 06



MUS Pty Ltd T/As:
Mortons-Urban Solutions
ABN: 39 116 375 065
mortons@urbansolutions.net.au
www.urbansolutions.net.au
Tel: 07 5571 1099

Postal Address:
PO Box 2484
Southport QLD 4215

Gold Coast Office:
Suite 9, 19 Short St
Southport QLD 4215

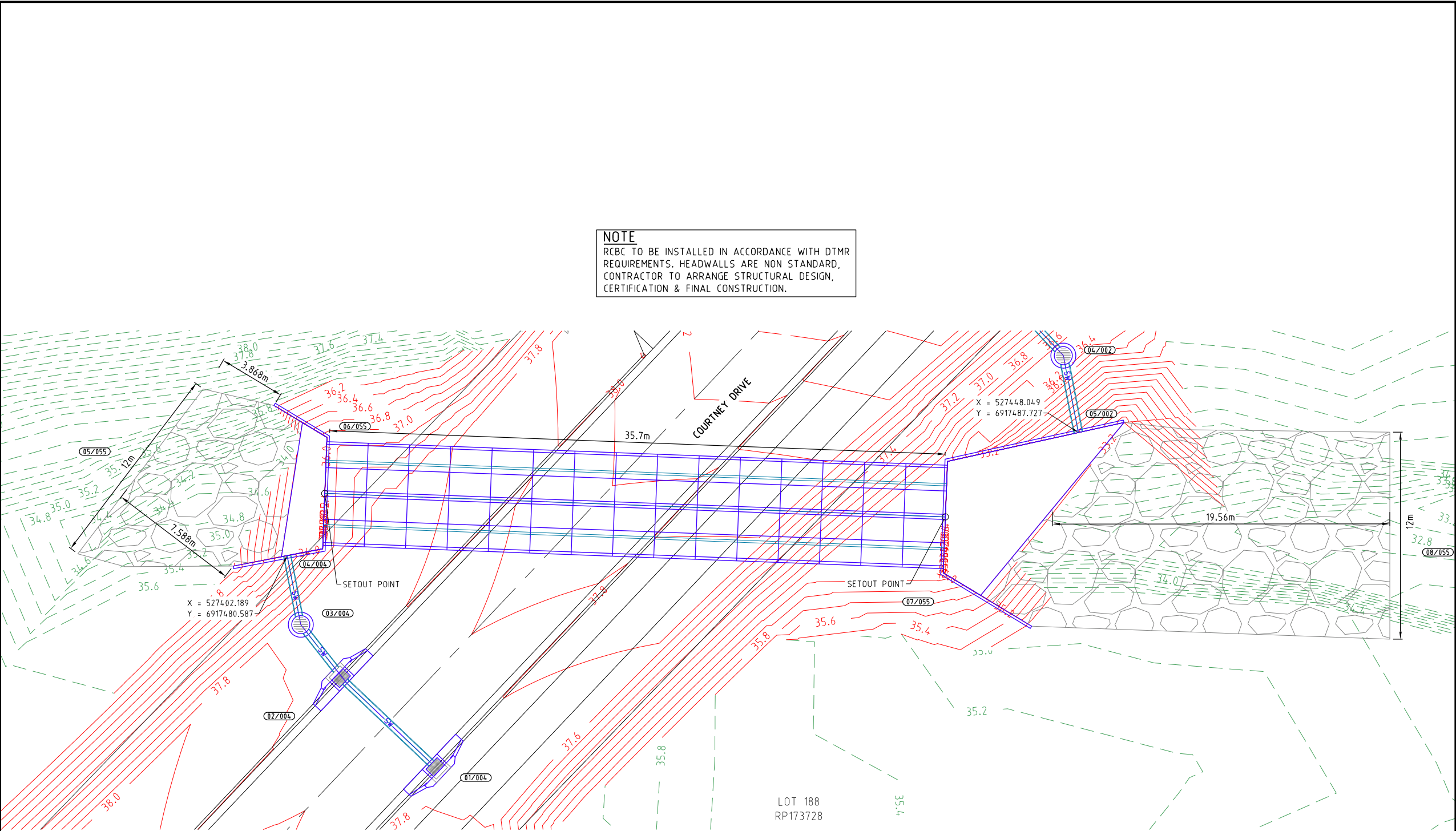
DESIGNED RB	DRAWN EP
APPROVED <i>[Signature]</i>	DATE 13-10-23

DRAWING NUMBER

41901-02-626

REV

C



SCOUR PROTECTION DESIGN	
HW 06/055	SIZE 2.7m x 2.4m RCBC (x2)
VELOCITY = 2.27m/s	
LENGTH = 12m x 4m d50 = 500mm	
SCOUR PROTECTION TYPE	
= LOOSE ROCK 500mm THICK	

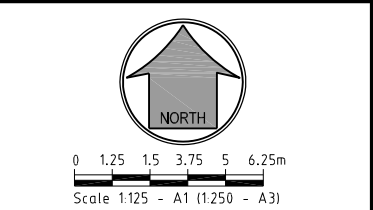
CALCULATIONS UNDERTAKEN USING
PROPRIETARY PRODUCT DATA

SCOUR PROTECTION DESIGN	
HW 07/055	SIZE 2.7m x 2.4m RCBC (x2)
VELOCITY = 2.27m/s	
LENGTH = 18m x 12m d50 = 500mm	
SCOUR PROTECTION TYPE	
= LOOSE ROCK 900mm THICK	

CALCULATIONS UNDERTAKEN USING
PROPRIETARY PRODUCT DATA

PROJECT NAME
**COURTNEY DR
UPPER COOMERA**

STAGE 02
RP DESCRIPTION
LOT 188, 189, 190, 191 & 192 ON RP173728
COURTNEY DRIVE
LOCALITY OF UPPER COOMERA
LOCAL AUTHORITY - GOLD COAST CITY COUNCIL



B	15-01-24	STORMWATER CULVERT AMENDED	BL
A	13-10-23	COUNCIL ISSUE	EP
REV	DATE	DESCRIPTION	INT

COPYRIGHT IS VESTED IN MORTONS-URBAN SOLUTIONS AND
WRITTEN CONSENT IS REQUIRED PRIOR TO REPRODUCTION.
DO NOT SCALE FROM THIS DRAWING.



DRAWING TITLE
**STORMWATER
RCBC
OUTLET
SHEET 01**

MORTONS
urbansolutions
Urban & Regional Planning
Civil Engineering
Project Coordination

MUS Pty Ltd T/As: Postal Address
Mortons-Urban Solutions PO Box 2484
ABN: 39 116 375 065 Southport QLD 4215
mortons@urbansolutions.net.au
www.urbansolutions.net.au Gold Coast Office
Tel: 07 5571 1099 Suite 9, 19 Short St
Southport QLD 4215

DESIGNED RB	DRAWN EP
APPROVED <i>[Signature]</i>	REQ 4706 DATE 13-10-23
DRAWING NUMBER 41901-02-641	
REV B	