

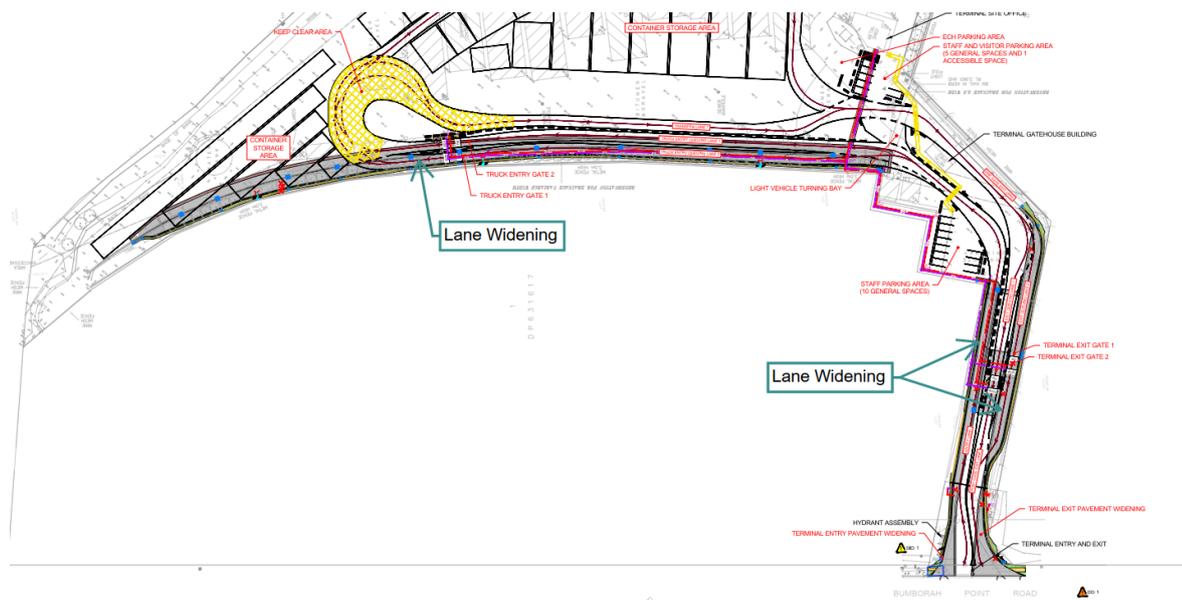
Project:	Tyne ACFS Bumborah Point Terminal Redevelopment		
Our reference:	703100695-MMD-01-XX-TN-C-0001	Your reference:	-
Prepared by:	F. Hassan, V. Huang	Date:	29/03/23
Approved by:	S. Freeman	Checked by:	J. Mail, E. Argany Moure
Subject:	Drainage Design Report		

1 Introduction

Tyne ACFS has commissioned Mott MacDonald (MM) to undertake the design of the civil engineering elements of the Tyne ACFS Bumborah Point Road Terminal Redevelopment (the Project).

As a part of the Project, lane widening is proposed around the site as shown in Figure 1.1.

Figure 1.1: Lane Widening Locations



Source: Mott MacDonald

This lane widening work has resulted in modification works being required to the existing drainage infrastructure to ensure ponding does not occur within the proposed area of work. Note that the proposed works have not been designed to improve any ponding that may currently occur within the lease area.

This document presents the Design Report (Report) for the drainage works within the lease area of 9 Bumborah Point Road (the Terminal). The purpose of this Design Report is to document the Basis of Design (BoD), Design Outcomes and Construction Requirements.

The Report presents information considered valid and appropriate when preparing the current revision.

2 General

The following sections provide details on general items relevant to the Project.

2.1 Datums and Coordinates

The datums and coordinate system adopted for the Project are:

- Vertical Datum: Australian Height Datum (AHD)
- Horizontal Datum: Geocentric Datum of Australia 2020 Map Grid of Australia Zone 56

2.2 NSW Ports Agreement for Lease

The Project is required to be developed in accordance with the Minimum Design Requirements as set out in the Agreement for Lease and Lease (AFL) between Port Botany Operations Pty Ltd (NSW Ports) and Tyne ACFS. MM has reviewed "Schedule 2 – Minimum Design Requirements" and "Schedule 3 – Works" of the AFL version 3450-4878-2872v10, which was provided by Global Projects (former project manager) on behalf of Tyne ACFS to MM. A summary of the Minimum Design Requirements for the Terminal from the AFL applicable to the scope of this Report are provided in Table 2.1.

Table 2.1: Summary of AFL Requirements

AFL Requirement	Notes
<p>Make Good Scope: 2 Stormwater</p> <p>The existing in-ground stormwater network and open channel is to be retained except for modification required to facilitate the new roundabout.</p> <p>Make good works are expected to incorporate a visual inspection of all pits to repair or replace any damaged covers only</p>	<ul style="list-style-type: none"> • As a part of the Project development. A roundabout is no longer proposed to be constructed as shown in the AFL. Modifications works are relative to the agreed lane widening activities agreed with NSW Ports.
<p>Improvement Works: 2 Stormwater</p> <p>The existing in-ground stormwater network and open channel is to be retained except for modification required to facilitate the new roundabout.</p> <p>Make good works are expected to incorporate a visual inspection of all pits to repair or replace any damaged covers only.</p>	<ul style="list-style-type: none"> • The improvement works text in the AFL matches the Make Good scope noted above. • As a part of the Project development. A roundabout is no longer proposed to be constructed as shown in the AFL. Modifications works are relative to the agreed lane widening activities agreed with NSW Ports.

Source: Agreement for Lease and Lease 3450-4878-2872v10

3 Basis of Design

The following information was used to develop the drainage design.

3.1 Survey

Survey information is based on a feature survey completed by Axiom Spatial Surveyors, File Reference 22616001-00, plan showing level and detail over Lot 21 in DP 1068292 dated 17/11/22. This survey information was provided by Statewide Civil to MM. A copy of this survey information is included in the Appendix.

3.2 Site Investigations

In addition to the survey, additional site investigations were required to support the assessment of the structural design of the stormwater pit modification works as as-built information for the culverts was not available. Therefore, the following investigation and testing reports were provided by Statewide Civil to MM:

- Statewide Civil Tynes-ACFS Gate B8 SW Pits Investigative Report provided 2/02/23
- Coffey Testing Report on concrete samples from culvert provided 9/02/23
- LMATS Report on steel reinforcement testing provided 9/02/23

A copy of this site investigation information is included in the Appendix.

3.3 Drainage Conditions

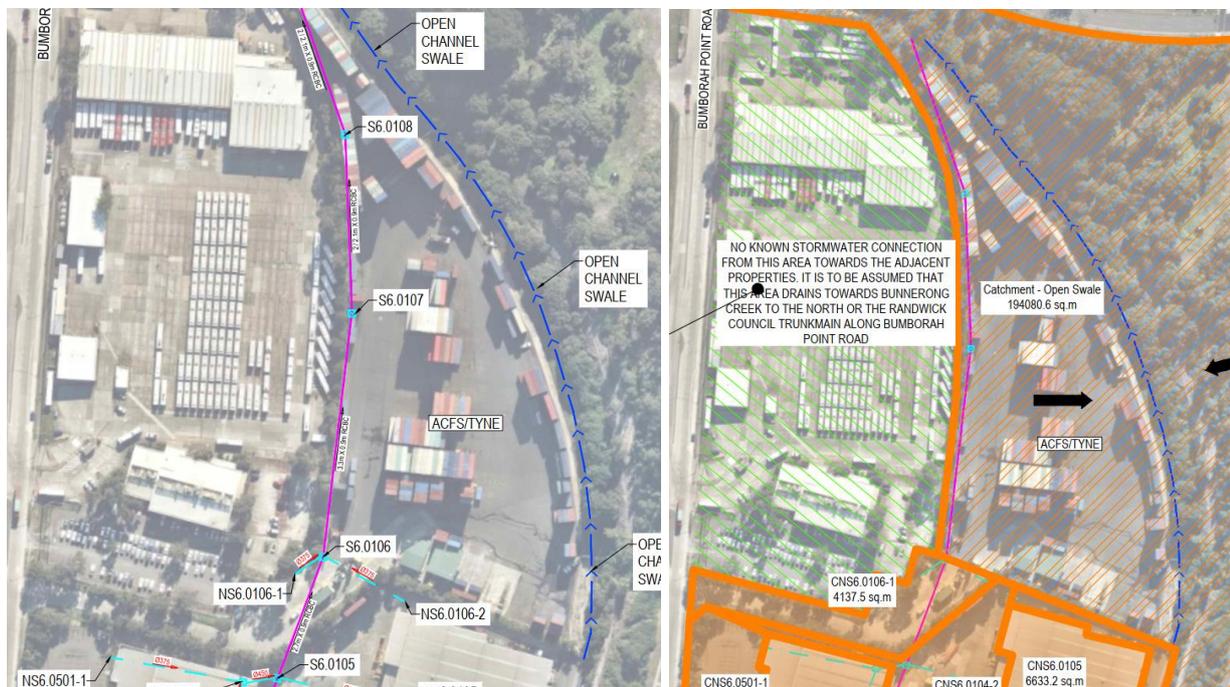
NSW Ports provided the existing drainage conditions for the Terminal to MM which included:

- Existing Stormwater Layout and Catchment Plan, file reference 301350403-CI-SMP-05_AppendixA provided 31/01/23
- DRAINS model associated with the Existing Stormwater Layout and Catchment Plan, file reference PB Site 5_STN-230131 provided 31/01/23

A copy of the Existing Stormwater Layout and Catchment Plan is included in the Appendix.

The Existing Stormwater Layout and Catchment Plan show the Catchment Area for the container stacking area of the Terminal as draining to the Open Swale as shown in an extract presented in Figure 3.1.

Figure 3.1: Existing Stormwater Layout and Terminal Catchment Areas



Source: Existing Stormwater Layout and Catchment Plan, file reference 301350403-CI-SMP-05_AppendixA provided 31/01/23

Survey information and site observations show that generally, the existing grading of the Terminal does not drain to the Open Swale but to the drainage pits to the site's western boundary. Additional drainage pits are present that drain into the existing box culvert(s) compared to the number shown in the Existing Stormwater Layout and Catchment Plan.

The Project does not propose to change the overall site grading or increase the effective impervious area based on the existing model that assumes the Terminal is 100% impervious. Therefore, the change in drainage conditions as a result of the Project only considered the modifications to the culvert and the impacts this has on properties upstream of the Terminal. It should also be noted that MM requested a wider survey of the Terminal. However, this has not been supplied to MM. Therefore, the catchment areas of each pit cannot be determined.

As a part of the Site Investigations, it was found that the Reinforced Concrete Box Culvert (RCBC) sizes in the DRAINS model associated with the Existing Stormwater Layout and Catchment Plan differed from the sizes recorded, as noted in Table 3.1.

Table 3.1: Culvert Size Changes

Upstream Node	Downstream Node	Existing Size	Recorded Size
S6.0106	S6.0107	3.3m x 0.9m RCBC	3.3m x 1.0m RCBC
S6.0107	S6.0108	2 / 2.1m x 0.9m RCBC	2 / 2.1m x 1.0m RCBC

Source: Mott MacDonald

3.4 Structural Requirements

The likely loading cases for the stormwater infrastructure agreed with ACFS are:

- Kalmar DCG100-45D 7/6 Empty Container Handlers, which have a maximum wheel load of 21.7t (axle load 43.4t)
- Empty containers stacked up to seven high, where the worst corner casting loading case would be a seven high stack of reefer containers where the load would be 8.3t per corner casting. Combined in a block stack where the minimum separation is 0mm side to side and 500mm end to end. Therefore, load cases of 16.6t or 33.3t could be considered.
- Roadworthy trucks that have a maximum wheel load of 4.5t based on a single axle dual tyre axle which is limited to 9t per single axle as regulated by the National Heavy Vehicle Regulator.

It was agreed with Tyne ACFS that the loading requirements for the drainage infrastructure would match the requirements for AS3996 Access Cover and Grates Class as follows

- Truck Driveway: Class D
- Container Handling Area: Class E

For Class E Pits, they are designed to accommodate the following loading:

- Serviceability Design Load of 267kN (27t)
- Ultimate limit state design of 400kN (40t)

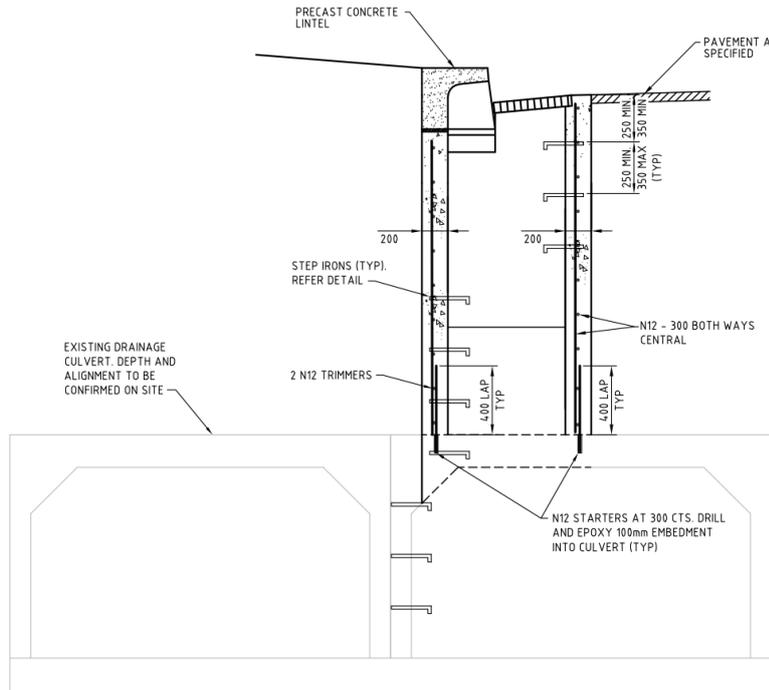
Note the worst-case loading of 33.3t for seven high reefer containers blocks stacked exceeds the serviceability load. However, based on AS3996, cover and grate loading is based on a single-point load in the centre of the cover or grate. Therefore, the maximum load for stacked containers is 16.6t, which is below the serviceability load of a Class E rated access cover or grate.

The existing RCBC invert is inundated with seawater within the tidal zone during the infrequent times when high tides exceed Mean High Water Springs and are intermittently exposed to seawater. Therefore, any proposed structural elements within the culvert are to be designed as a maritime structure, with a concrete surface exposure classification of C1.

3.5 Existing Stormwater Pits

Limited information regarding the built form of the existing stormwater pits is available from Tyne ACFS. The only information that Global Projects provided is shown in Figure 3.2 and extracted from a Tender Issue drawing set.

Figure 3.2: Existing Stormwater Pits



Source: Bumborah Point Road Container Depot Proposed Upgrade Typical Details Plan by AT&L, Tender Issue Not to be Used for Construction, Drawing No C010.

4 Design Outcomes

4.1 Structural Design

4.1.1 Incoming Roadway

Two existing pits are to be modified from side entry pits to inlet pits to accommodate the lane widening for the entry road from Bumborah Point Road prior to the existing gatehouse. These pits are assumed to be minimum Class D pit, and risers and new grate will be constructed to accommodate the proposed levels and pit lid type.

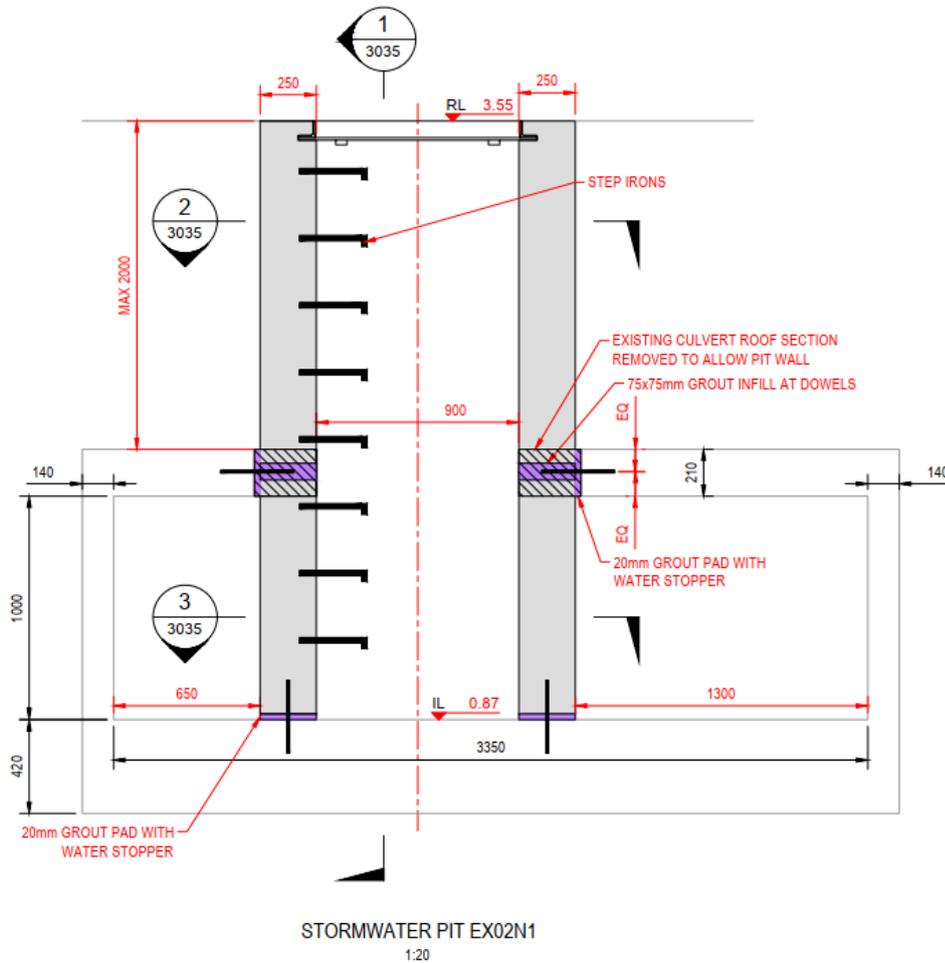
Modifications to these pits do not impact the existing drainage conditions. Therefore, these modifications were not reflected in the DRAINS modelling.

4.1.2 Culvert Riser Pits

Five existing stormwater pits currently connect to the roof of the existing RCBC. MM has assessed that these pits do not have the capacity to support the proposed structural requirements noted in the BoD. Therefore, the existing pits are to be removed and new stormwater pits constructed. These pits have been designed based on the structural requirements noted in the BoD and have two blade walls that are founded and fixed to the culvert base to minimise the impacts on the capacity of the RCBC to convey stormwater. The impacts

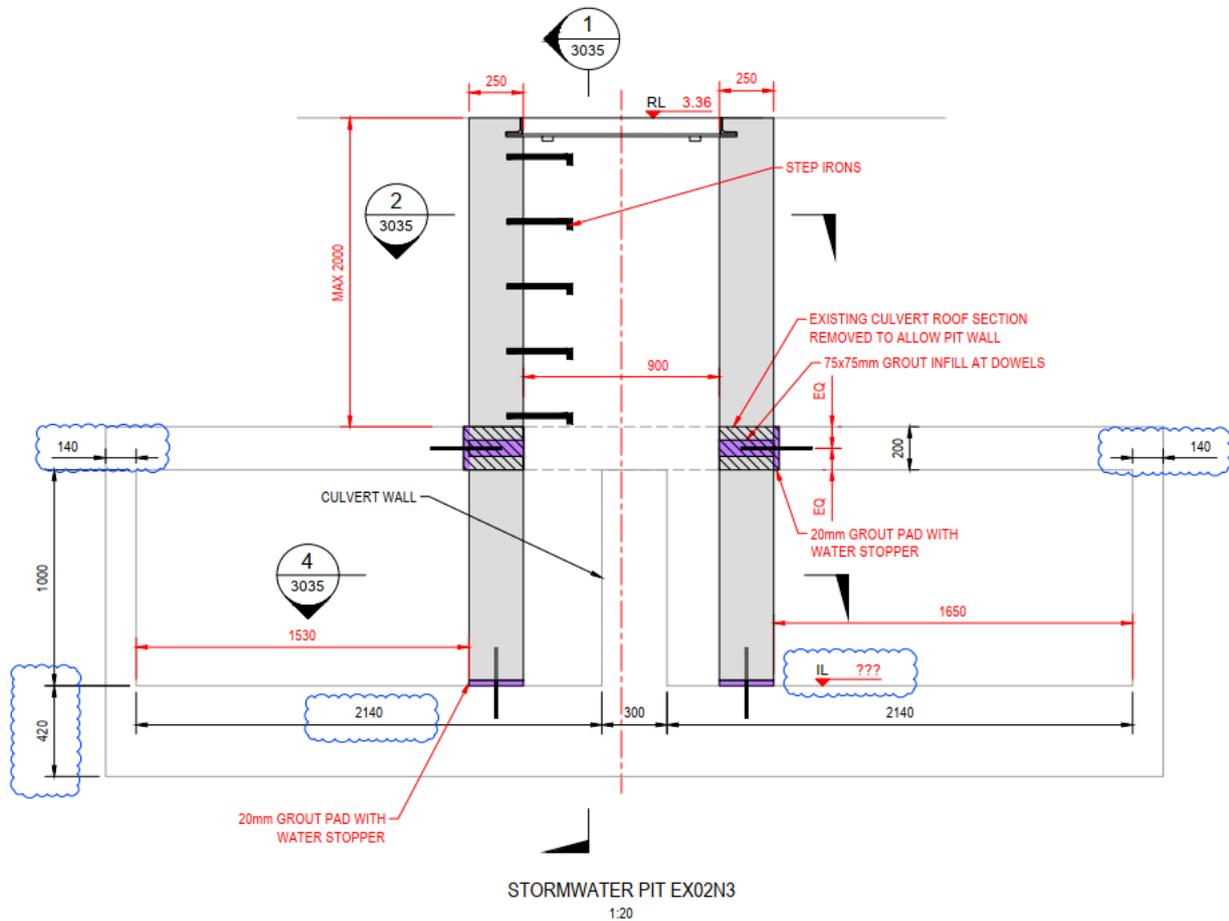
on the existing stormwater model are discussed in Section 4.2. The pit types for the two types of RCBC configurations at the Terminal are shown in Figure 4.1 and Figure 4.2. The structural design drawings are included in the Appendix. Refer to 703100695-MMD-01-XX-DR-C-3034-DRAINAGE DETAILS SHEET 4 to SHEET 6 for additional information.

Figure 4.1: Proposed Culvert Riser Pits Type 1: 3.3m x 1.0m RCBC



Source: Mott MacDonald

Figure 4.2: Proposed Culvert Riser Pits Type 2: 2 / 2.1m x 1.0m RCBC



Source: Mott MacDonald

In addition to the five existing stormwater pits connecting to the existing culvert, to achieve the minimum fall of 0.5% for the grading of the site an additional six stormwater pits are required to be constructed and connected to the existing RCBCs. The location of these pits are included in 703100695-MMD-01-XX-DR-C-3001-DRAINAGE LAYOUT PLAN-P1 provided in the Appendix.

4.2 Stormwater Modelling

As a result of the proposed blade walls to be constructed into the existing RCBCs to support the proposed stormwater pits, the capacity of the existing RCBC to convey stormwater will be reduced and could lead to flooding impacts upstream of the Terminal. Therefore, the DRAINS model was revised to include the modifications works to assess the change in conditions.

Due to the limitations of DRAINS modelling parallel culverts with varying sizes, MM modified the RCBC sizes as shown in Table 4.1 in the model.

Table 4.1: Modelled Culvert Size Changes

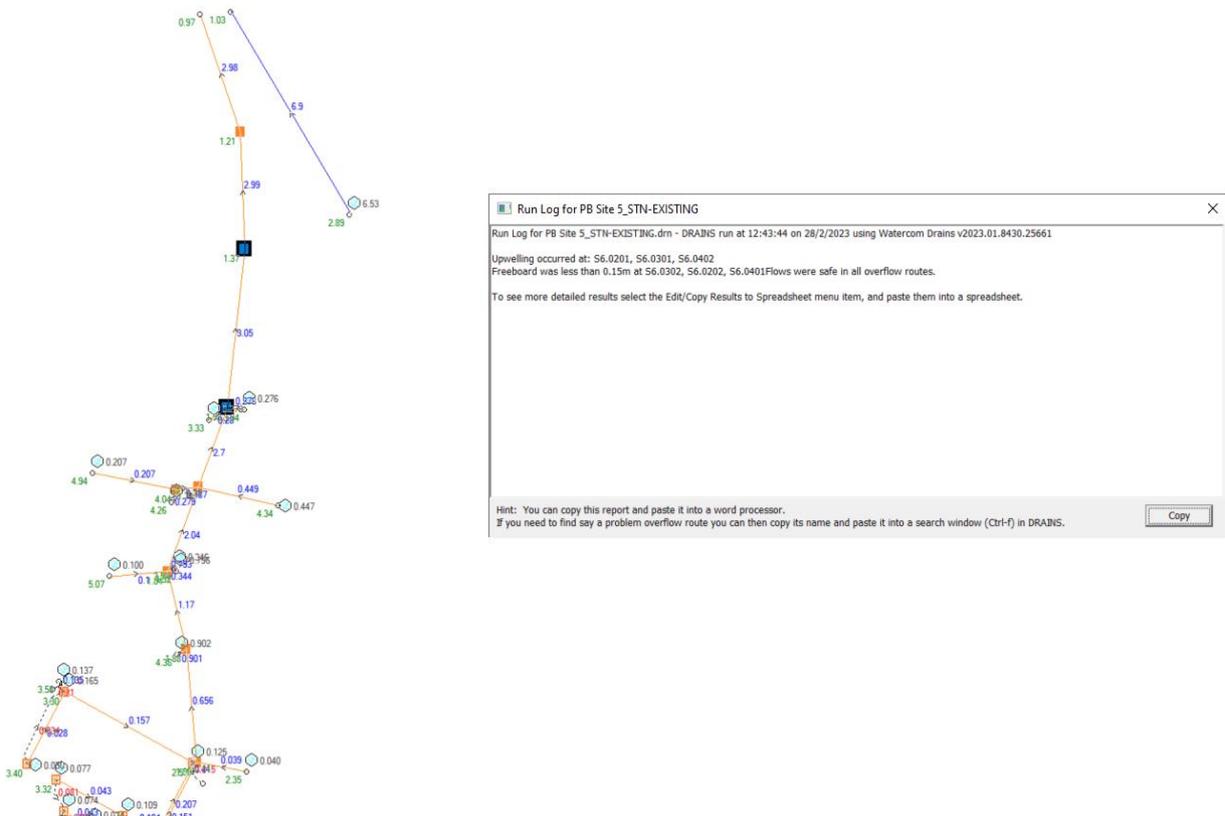
Upstream Node	Downstream Node	Model Existing Size	Proposed Modelled Size
S6.0106	S6.0107	3.3m x 0.9m RCBC	3 / 0.9m x 0.9m RCBC
S6.0107	S6.0108	2 / 2.1m x 0.9m RCBC	2 / 1.5m x 1.0m RCBC

Source: Mott MacDonald

Rather than modelling constant changes in RCBC size at each pit, the entire RCBC size was changed to the proposed modelled size, which is conservative when the actual length of the blade walls are 1.4m long in the direction of flow.

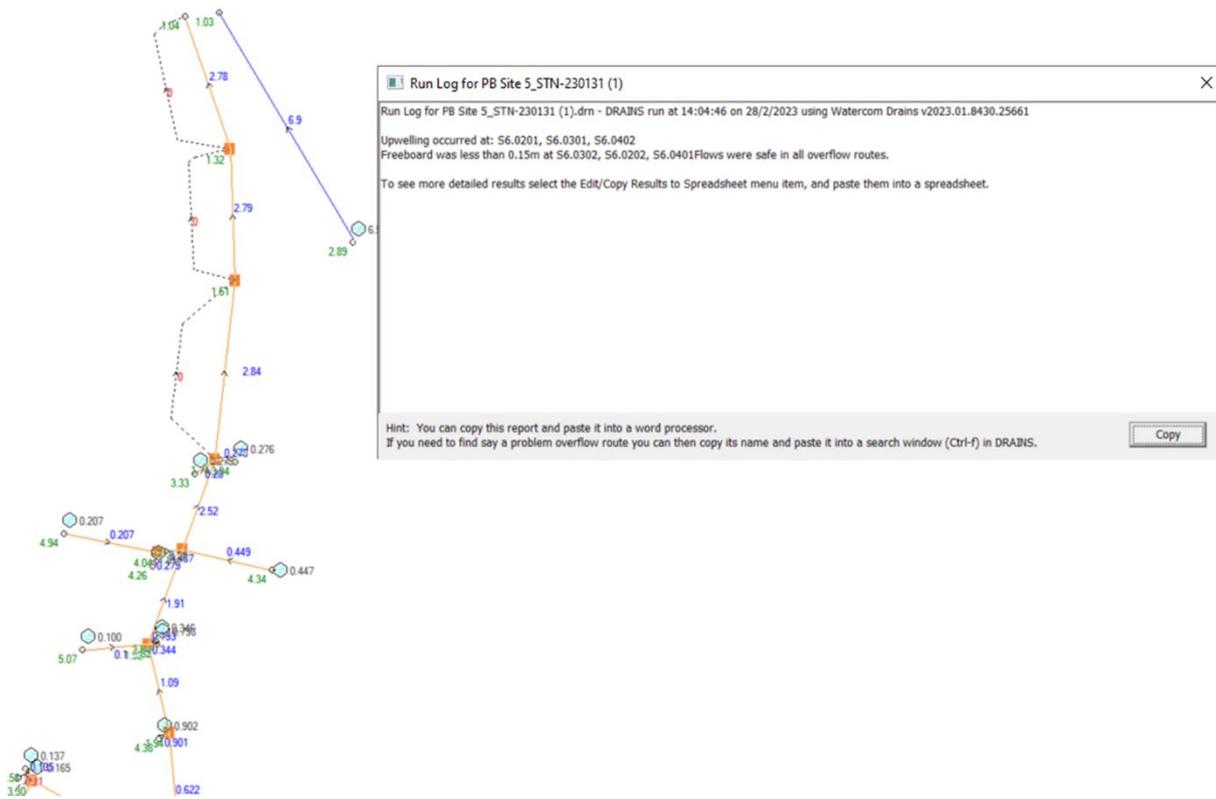
Extracts from the model showing the existing and proposed DRAINS model results for the major storm are shown in Figure 4.3 and Figure 4.4 along with the associated run log summaries.

Figure 4.3: Existing Major Storm DRAINS Model Results



Source: Mott MacDonald

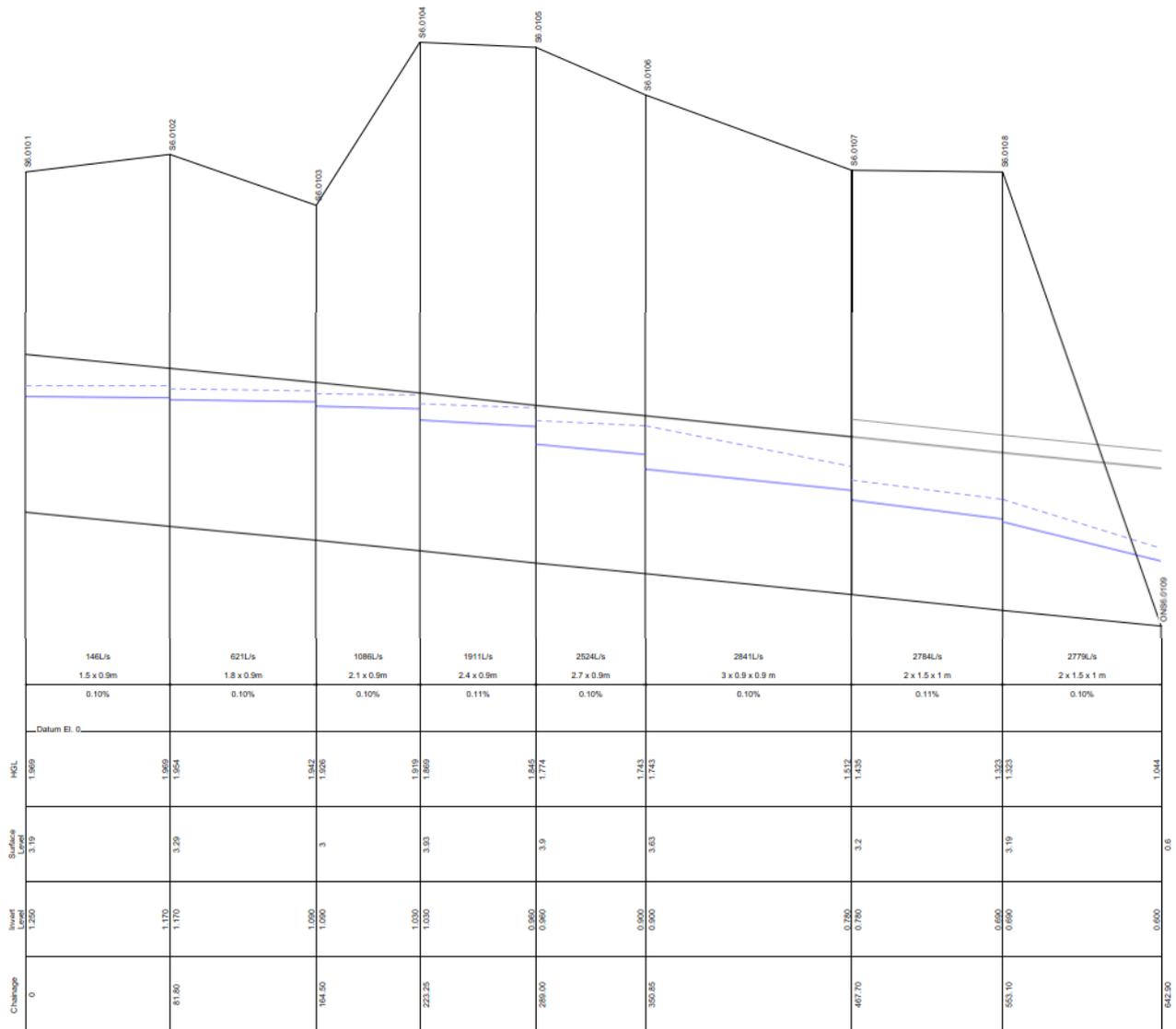
Figure 4.4: Proposed Major Storm DRAINS Model Results



Source: Mott MacDonald

The DRAINS model results show that changes to the RCBC sizes in the models does reduce the capacity of the RCBCs to convey stormwater and raises the Hydraulic Grade Line (HGL) as shown in Figure 4.5 where the modification works details at the bottom of the figure and the proposed HGL is shown by a dashed blue line and the existing HGL as a solid blue line.

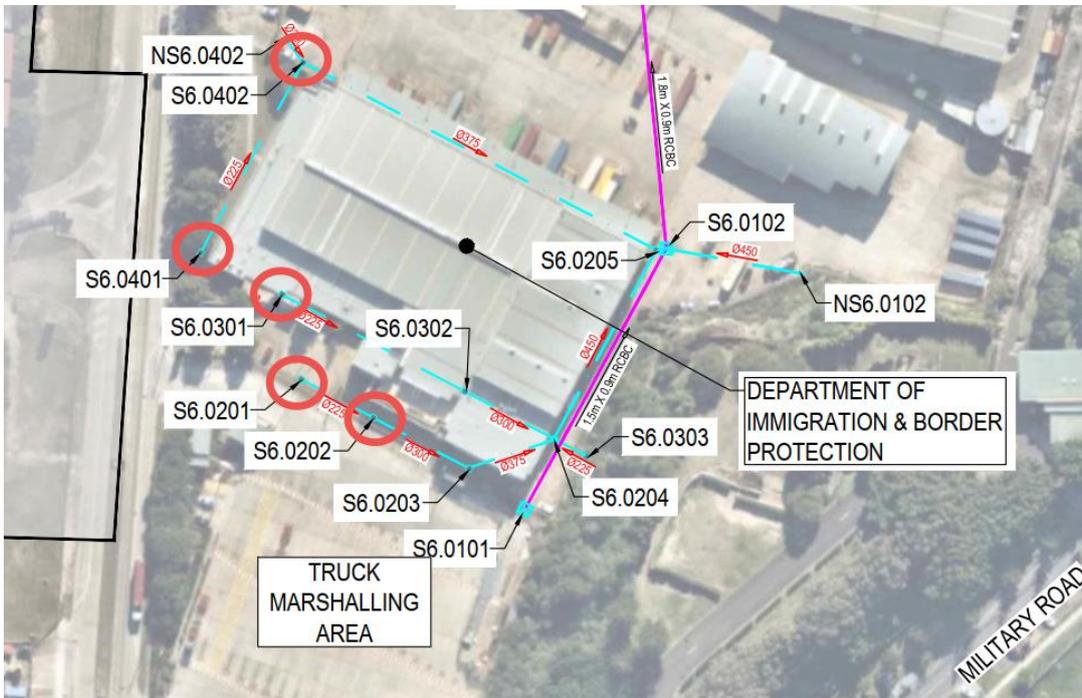
Figure 4.5: RCBC Long Section Major Storm (1% AEP)



Source: Mott MacDonald

The proposed modification works will reduce the capacity of the RCBCs as noted above. However, the existing locations in the stormwater network that experience upwelling and freeboard issues are upstream in smaller 375 diameter pipes with a vertical drop into the existing RCBC. This results in upwelling and freeboard issues at these pits being independent of the proposed rise in HGL of the RCBC. These locations are shown in Figure 4.6 circled in red.

Figure 4.6: Upwelling and Limited Freeboard Pit Locations



Source: Existing Stormwater Layout and Catchment Plan, file reference 301350403-CI-SMP-05_AppendixA provided 31/01/23

Table 4.2 provides a summary comparison of the existing and proposed model run logs demonstrating that the proposed modification works do not result in creating upwelling or reduced freeboard below 0.15m in upstream pits.

Table 4.2: DRAINS Model Existing and Proposed Run Log Comparison

Condition	Minor Storm	Major Storm
Existing	No water upwelling from any pit. Freeboard was less than 0.15m at S6.0201, S6.0301, S6.0401, S6.0402 Flows were safe in all overflow routes.	Upwelling occurred at: S6.0201, S6.0301, S6.0402 Freeboard was less than 0.15m at S6.0302, S6.0202, S6.0401 Flows were safe in all overflow routes.
Proposed	No water upwelling from any pit. Freeboard was less than 0.15m at S6.0201, S6.0301, S6.0401, S6.0402 Flows were safe in all overflow routes.	Upwelling occurred at: S6.0201, S6.0301, S6.0402 Freeboard was less than 0.15m at S6.0302, S6.0202, S6.0401 Flows were safe in all overflow routes.

Source: Mott MacDonald

Therefore, the stormwater modelling results show that the proposed pit modification works and the incorporation of the blade walls into the existing RCBCs will not be creating upwelling or reduced freeboard below 0.15m in upstream pits.

5 Construction Requirements

The proposed stormwater pits are to be constructed in accordance with the following drawings and TfNSW standard construction specifications.

- 703100695-MMD-01-XX-DR-C-3001-DRAINAGE LAYOUT PLAN
- 703100695-MMD-01-XX-DR-C-3034-DRAINAGE DETAILS SHEET 4
- 703100695-MMD-01-XX-DR-C-3035-DRAINAGE DETAILS SHEET 5
- 703100695-MMD-01-XX-DR-C-3036-DRAINAGE DETAILS SHEET 6

Appendix

1. Basis of Design Information

- a. Survey Information by Axiom Spatial Surveyors, File Reference 22616001-00, plan showing level and detail over Lot 21 in DP 1068292 dated 17/11/22.
- b. Statewide Civil Tynes-ACFS Gate B8 SW Pits Investigative Report provided 2/02/23
- c. Coffey Testing Report on concrete samples from culvert provided 9/02/23
- d. LMATS Report on steel reinforcement testing provided 9/02/23
- e. Existing Stormwater Layout and Catchment Plan, file reference 301350403-CI-SMP-05_AppendixA provided 31/01/23

2. Design Drawing:

- a. 703100695-MMD-01-XX-DR-C-3001-DRAINAGE LAYOUT PLAN-P1
- b. 703100695-MMD-01-XX-DR-C-3034-DRAINAGE DETAILS SHEET 4-P1
- c. 703100695-MMD-01-XX-DR-C-3035-DRAINAGE DETAILS SHEET 5-P1
- d. 703100695-MMD-01-XX-DR-C-3036-DRAINAGE DETAILS SHEET 6-P1

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- 703100695-MMD-01-XX-DR-C-3001-DRAINAGE LAYOUT PLAN
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- 703100695-MMD-01-XX-DR-C-3035-DRAINAGE DETAILS SHEET 5
- 703100695-MMD-01-XX-DR-C-3036-DRAINAGE DETAILS SHEET 6

Appendix

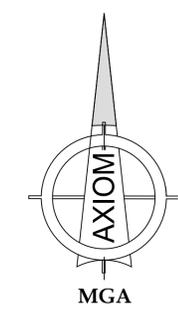
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L.G.A. : RANDWICK
 PARISH : BOTANY
 COUNTY : CUMBERLAND



LEGEND

	CONTOUR MAJOR		CONTOUR MINOR
	BOUNDARY SUBJECT		BOUNDARY ADJOINING
	EASEMENT		BUILDING EDGE
	RETAINING WALL BOTTOM		RETAINING WALL TOP
	FENCE		TOE OF BANK
	TOP OF BANK		ELECTRICITY LINE UNDERGROUND
	UNCLASSIFIED SERVICE LINE		WATER LINE
	BOLLARD		SIGN
	COMMUNICATIONS PIT SINGLE		SIGN CORNER
	COMMUNICATIONS PIT TWIN		SEWER MAN HOLE
	ELECTRICITY BOX		SEWER PIT
	LIGHT POLE		WATER HYDRANT
	POWER POLE		WATER METER
	ELEC DISTRIBUTION PILLAR		WATER TAP
	ELECTRICITY PIT		WATER STOP VALVE
	DRAINAGE MAN HOLE		UNCLASSIFIED POLE
	GAS VALVE BOX		DENOTES LEVEL AT SERVICE WITH DEPTH FROM SURFACE AND CLASSIFICATION
	GATE		

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 4. THE POSITION OF ALL FEATURES ON THE PLAN HAVE NOT BEEN ACCURATELY LOCATED IN RELATION TO THE BOUNDARIES. NO BOUNDARY SURVEY HAS BEEN MADE. DO NOT SCALE OFF THIS PLAN WHERE OFFSETS ARE CRITICAL. COPYING THIS PLAN MAY DISTORT THE SCALE.
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 6. BACKGROUND MODEL AS SHOWN IN GRAYSCALE WAS OBTAIN FROM A PREVIOUS SURVEY BY OTHER. AXIOM SPATIAL TAKE NO RESPONSIBILITY IN THE ACCURACY AND COMPLETENESS OF THE SURVEY.
 7. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN WHICH ARE NOT TO BE REMOVED

WARNING REGARDING SERVICES
 THE LOCATION OF ALL UNDERGROUND SERVICE LINES SHOWN HERON ARE APPROXIMATE AND INDICATIVE ONLY.

- ONLY THOSE LINES WHICH HAVE BEEN IDENTIFIED ON THE SURFACE BY SERVICE LOCATION CONTRACTORS ARE SHOWN HERON. THE SERVICES WERE IDENTIFIED BY MARKS SHOWN ON THE GROUND AND BY SURFACE EVIDENCE. THESE LINES ARE SAID TO BE INDICATIVE OF THE POSITION OF THE UNDERGROUND SERVICE BELOW.
- VISUAL CONFIRMATION OF THESE LINES BY POTHOLING TO ASCERTAIN ACCURATE POSITION AND DEPTH IS NECESSARY BEFORE ANY EXCAVATION OR DRILLING IS CARRIED OUT.
- THIS SERVICES INVESTIGATION WAS CARRIED OUT USING, AS A BASIS, INFORMATION SUPPLIED BY 'DIAL BEFORE YOU DIG' (DBYD) OBTAINED AT TIME SURVEY AND SERVICE SURFACE EVIDENCE (EG SERVICE LIDS ETC)
- A CURRENT SERVICES SEARCH, INCLUDING ALL 'DIAL BEFORE YOU DIG' SERVICES PLANS, AND SITE CHECKING OF ALL EXISTING SERVICES WILL BE NECESSARY PRIOR TO COMMENCING ANY DESIGN OF CONSTRUCTION WORKS
- THE INFORMATION SHOWN HEREON MAY VARY DUE TO SITE CONDITIONS ENCOUNTERED DURING THE COURSE OF THE SERVICE LOCATION.
- SOME COMPANIES WITH UNDERGROUND ASSETS DO NOT PARTICIPATE IN THE DBYD SERVICE. THESE SERVICES HAVE NOT BEEN LOCATED BY THIS SURVEY.
- OTHER UNDERGROUND SERVICES (IF ANY) MAY EXIST WITHIN THIS AREA. THESE SERVICES ARE SAID TO BE EITHER NOT LOCATABLE AT THIS TIME BY ELECTRONIC (UNOBTRUSIVE) METHODS (I.E. NO POTHOLING/EXCAVATION) NOR VISIBLE ON SITE NOR REVEALED BY THE DBYD SEARCH. THESE SERVICES HAVE NOT BEEN LOCATED BY THIS SURVEY.
- SERVICES WERE INVESTIGATED WITHIN THE PERIMETER OF THE SITES FENCING ONLY. NO INVESTIGATION HAS BEEN UNDERTAKEN TO IDENTIFY SERVICES WITHIN THE ADJACENT ROAD CORRIDOR OR NEIGHBOURING LOTS.
- SERVICE DETAILS AND LOCATIONS MUST BE CONFIRMED WITH ALL SERVICE AUTHORITIES, 'DIAL BEFORE YOU DIG'. THIS PLAN AND LOCATIONS MUST BE VALIDATED PRIOR TO CONSTRUCTION BY THE EXCAVATION/BUILDING CONTRACTOR.
- MAIN LINE SERVICE PIPE DETAILS DERIVED FROM DBYD PLANS. PLEASE REFER TO EACH PROVIDER FOR ACCURATE SERVICES INFORMATION. FOR ALL LOCAL CONNECTION PLEASE REFER TO DBYD PLANS FROM EACH SERVICE PROVIDER
- THE ABOVE NOTES ARE AN INTEGRAL PART OF THE PLAN.

ORIGIN OF LEVELS :
 PM 56809 RL 2.873 (AHD)
 FOUND AT THE CNR FRIENDSHIP RD
 AND BUMBORAH POINT ROAD

AREA
 LOT: 21
 VIDE: DP1068292 3.149 ha
 BY CALC :

CO-ORDINATES ARE
 MGA2020 GROUND BASED ON
 SSM 56809
 E 335 933.414
 N 6 239 509.611

CLASSIFICATION OF SUBSURFACE UTILITY INFORMATION (SUJ) AS PER AS5488	
A VALIDATED	POTHOLED & SIGHTED IS 'ABSOLUTE SPATIAL POSITION IN 3D (+/-50mm)
B TRACED	ELECTRONICALLY TRACED WITH GOOD SIGNAL WITH DEPTH 'GIVEN HORIZONTAL TOLERANCE (+/-300mm AND VERTICAL TOLERANCE OF +/-500mm)
C ALIGNED	ALIGNED USING SURFACE FEATURES AND HISTORICAL RECORD ELECTRONICALLY TRACED WITH DEPTH AND/OR POOL SCRATCHY SIGNAL
D INDICATIVE	INDICATIVELY 'LOCATION ONLY' USING DBYD/HISTORICAL RECORDS

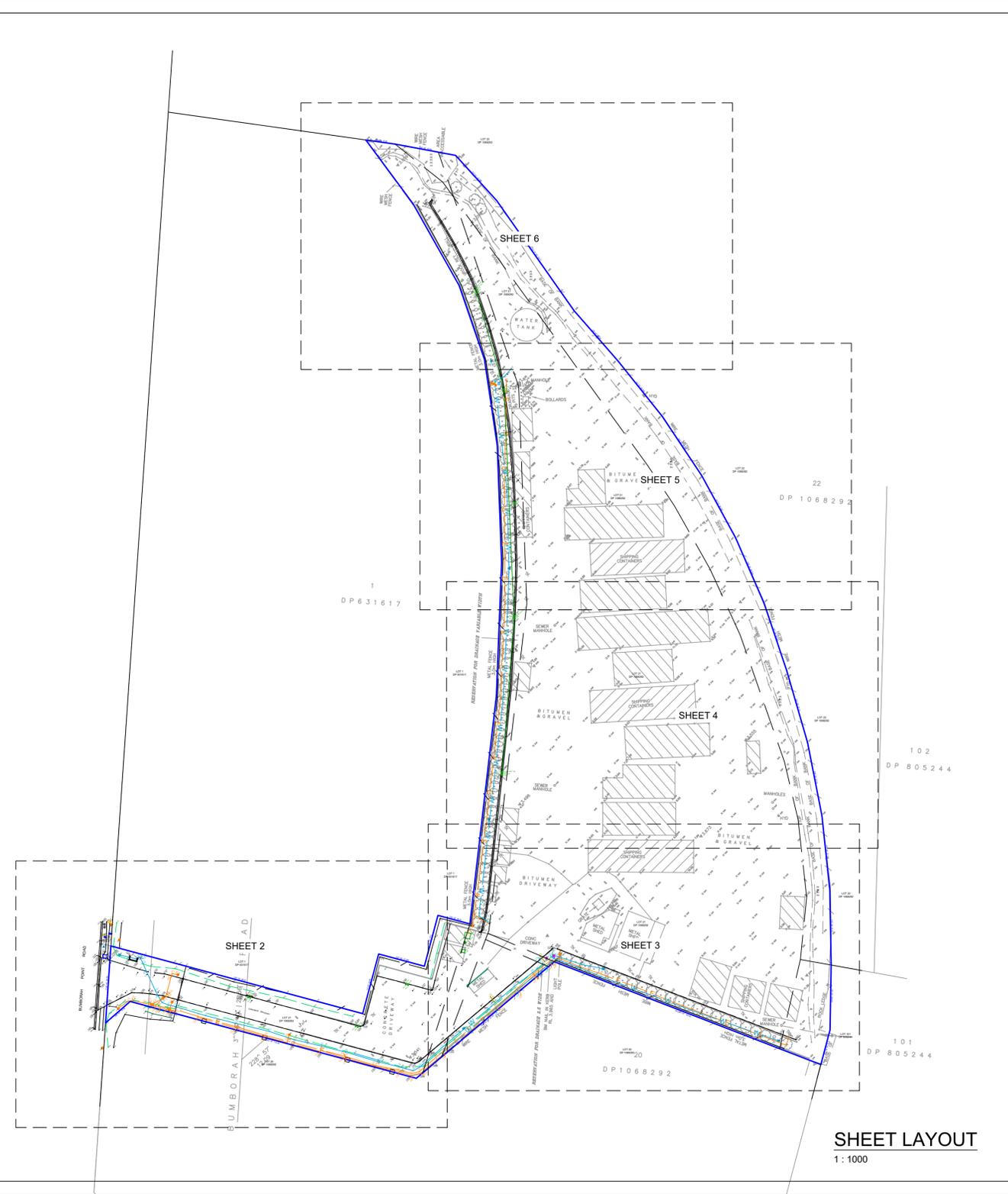
REVISION	DATE	DESCRIPTION	DATA REF
00	17/11/2022	ORIGINAL ISSUE	2021-11-14 LH

Axiom Spatial
 surveyors

Axiom Spatial Pty Ltd
 phone: 1300 019 992
 site: www.axiomspatial.com.au
 address: 14/35-37 Railway Parade
 Engadine NSW 2233

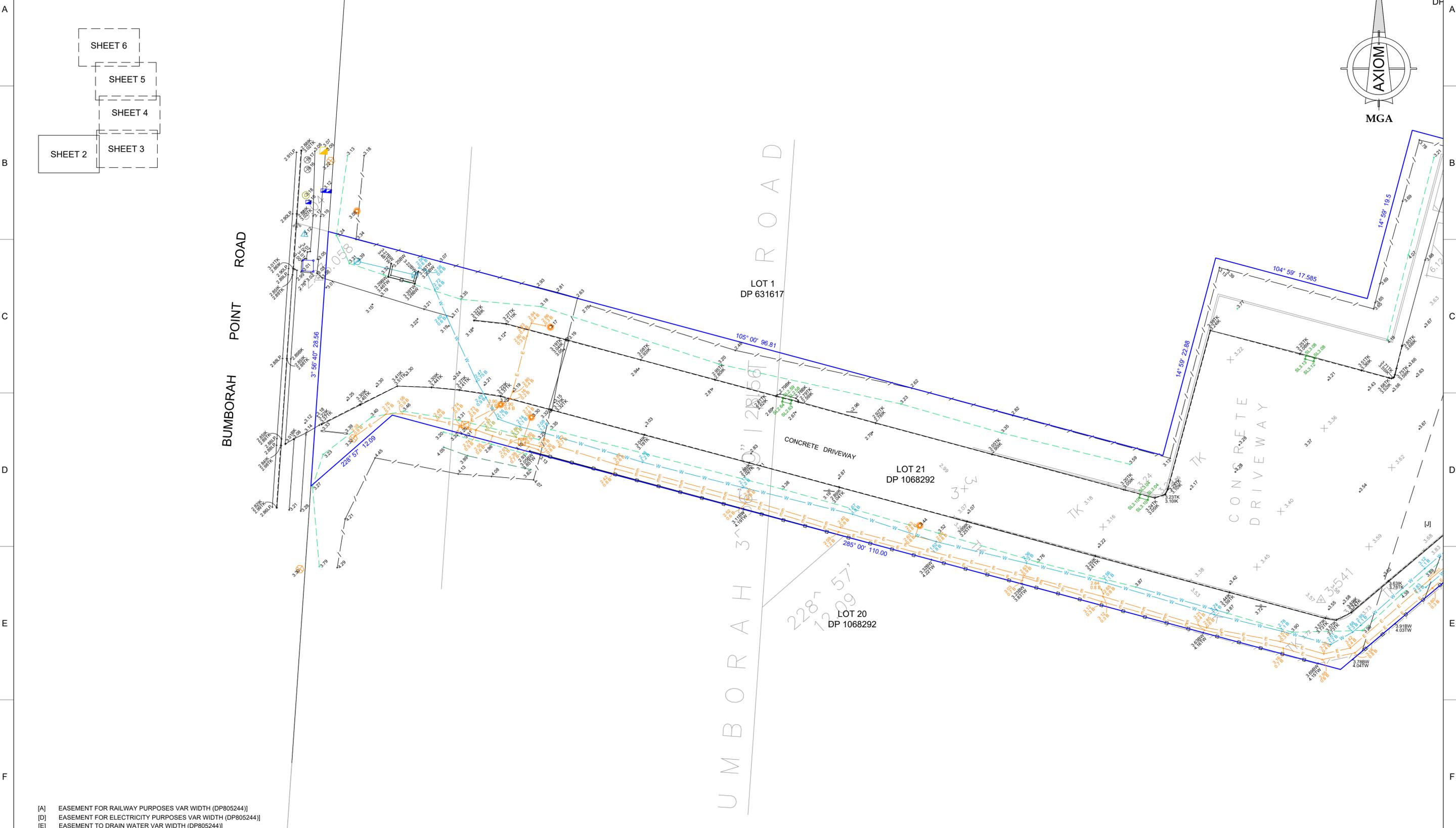
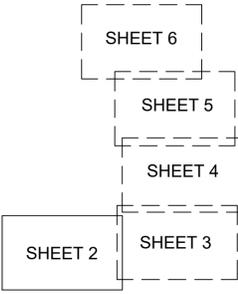
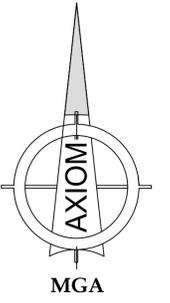
Liability limited by a scheme approved under Professional Standards Legislation

CLIENT: STATEWIDE CIVIL			PROJECT: 9 BUMBORAH POINT ROAD, PORT BOTANY		
SURVEYED LH			DRAWN CM		
DATE 17/11/2022			SCALE: 1:200		
DATUM AHD	GRID MGA 2020	CHECKED ME	SHEET 1 OF 6		
DRAWING No. 21616001		REV 00			



SHEET LAYOUT
 1: 1000

L.G.A. : RANDWICK
 PARISH : BOTANY
 COUNTY : CUMBERLAND



- [A] EASEMENT FOR RAILWAY PURPOSES VAR WIDTH (DP805244)
- [D] EASEMENT FOR ELECTRICITY PURPOSES VAR WIDTH (DP805244)
- [E] EASEMENT TO DRAIN WATER VAR WIDTH (DP805244)
- [G] EASEMENT FOR ACCESS VAR WIDTH (DP805244)
- [J] RESERVATION FOR DRAINAGE VAR WIDTH (DP1050505)
- [K] RESERVATION FOR DRAINAGE 2.5 WIDE (DP1068292)



REVISION	DATE	DESCRIPTION	DATA REF
00	17/11/2022	ORIGINAL ISSUE	2021-11-14 LH

Axiom Spatial
 surveyors

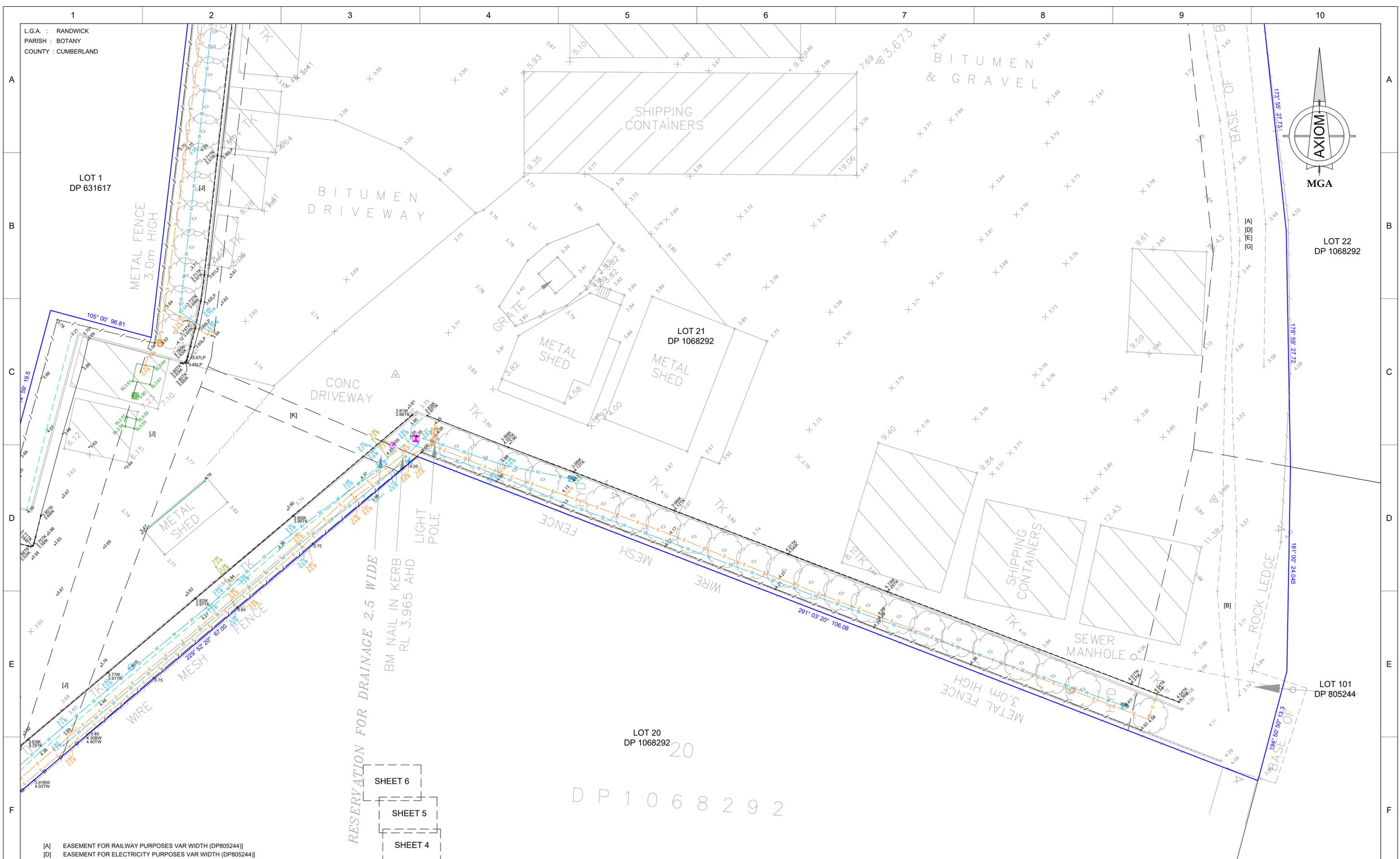
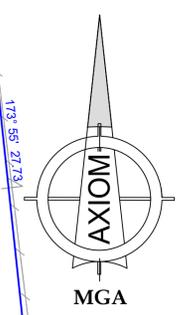
Axiom Spatial Pty Ltd
 phone: 1300 019 992
 site: www.axiomspatial.com.au
 address: 14/35-37 Railway Parade
 Engadine NSW 2233

CLIENT: STATEWIDE CIVIL			
SURVEYED LH	DRAWN CM	DATE 17/11/2022	
DATUM AHD	GRID MGA 2020	CHECKED ME	SCALE: 1:200

PROJECT: 9 BUMBORAH POINT ROAD, PORT BOTANY			
TITLE: PLAN SHOWING LEVEL AND DETAIL OVER LOT 21 IN DP 1068292			
SHEET	2	OF	6
DRAWING No.	21616001		
REV	00		

Liability limited by a scheme approved under Professional Standards Legislation

L.G.A. : RANDWICK
 PARISH : BOTANY
 COUNTY : CUMBERLAND



LOT 1
 DP 631617

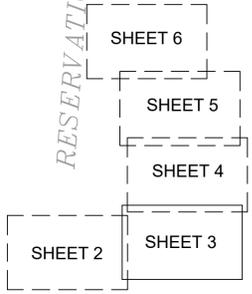
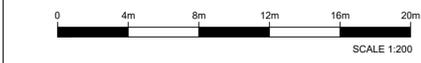
LOT 21
 DP 1068292

LOT 22
 DP 1068292

LOT 20
 DP 1068292

LOT 101
 DP 805244

- [A] EASEMENT FOR RAILWAY PURPOSES VAR WIDTH (DP805244)
- [D] EASEMENT FOR ELECTRICITY PURPOSES VAR WIDTH (DP805244)
- [E] EASEMENT TO DRAIN WATER VAR WIDTH (DP805244)
- [G] EASEMENT FOR ACCESS VAR WIDTH (DP805244)
- [J] RESERVATION FOR DRAINAGE VAR WIDTH (DP1050505)
- [K] RESERVATION FOR DRAINAGE 2.5 WIDE (DP1068292)



REVISION	DATE	DESCRIPTION	DATA REF
00	17/11/2022	ORIGINAL ISSUE	2021-11-14 LH

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 surveyors

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 Engadine NSW 2233

CLIENT: STATEWIDE CIVIL			PROJECT: 9 BUMBORAH POINT ROAD, PORT BOTANY		
SURVEYED LH			DRAWN CM		DATE 17/11/2022
DATUM AHD			CHECKED ME		SCALE: 1:200
SHEET 3 OF 6			DRAWING No. 21616001		REV 00

TITLE:
**PLAN SHOWING
 LEVEL AND DETAIL
 OVER LOT 21 IN DP 1068292**

L.G.A. : RANDWICK
 PARISH : BOTANY
 COUNTY : CUMBERLAND

RESERVATION FOR DRAINAGE VARIABLE WIDTH

METAL FENCE
 3.0m HIGH

LOT 1
 DP 631617

SEWER
 MANHOLE

LOT 21
 DP 1068292

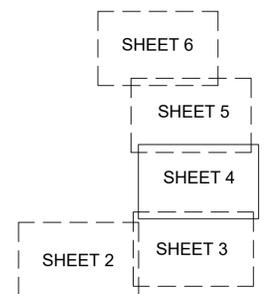
SHIPPING
 CONTAINERS

BITUMEN
 & GRAVEL

LOT 22
 DP 1068292

MANHOLES

BITUMEN
 & GRAVEL



- [A] EASEMENT FOR RAILWAY PURPOSES VAR WIDTH (DP805244)
- [D] EASEMENT FOR ELECTRICITY PURPOSES VAR WIDTH (DP805244)
- [E] EASEMENT TO DRAIN WATER VAR WIDTH (DP805244)
- [G] EASEMENT FOR ACCESS VAR WIDTH (DP805244)
- [J] RESERVATION FOR DRAINAGE VAR WIDTH (DP1050505)
- [K] RESERVATION FOR DRAINAGE 2.5 WIDE (DP1068292)



CONSULTING SURVEYORS NATIONAL
**PROFESSIONAL
 STANDARDS SCHEME**



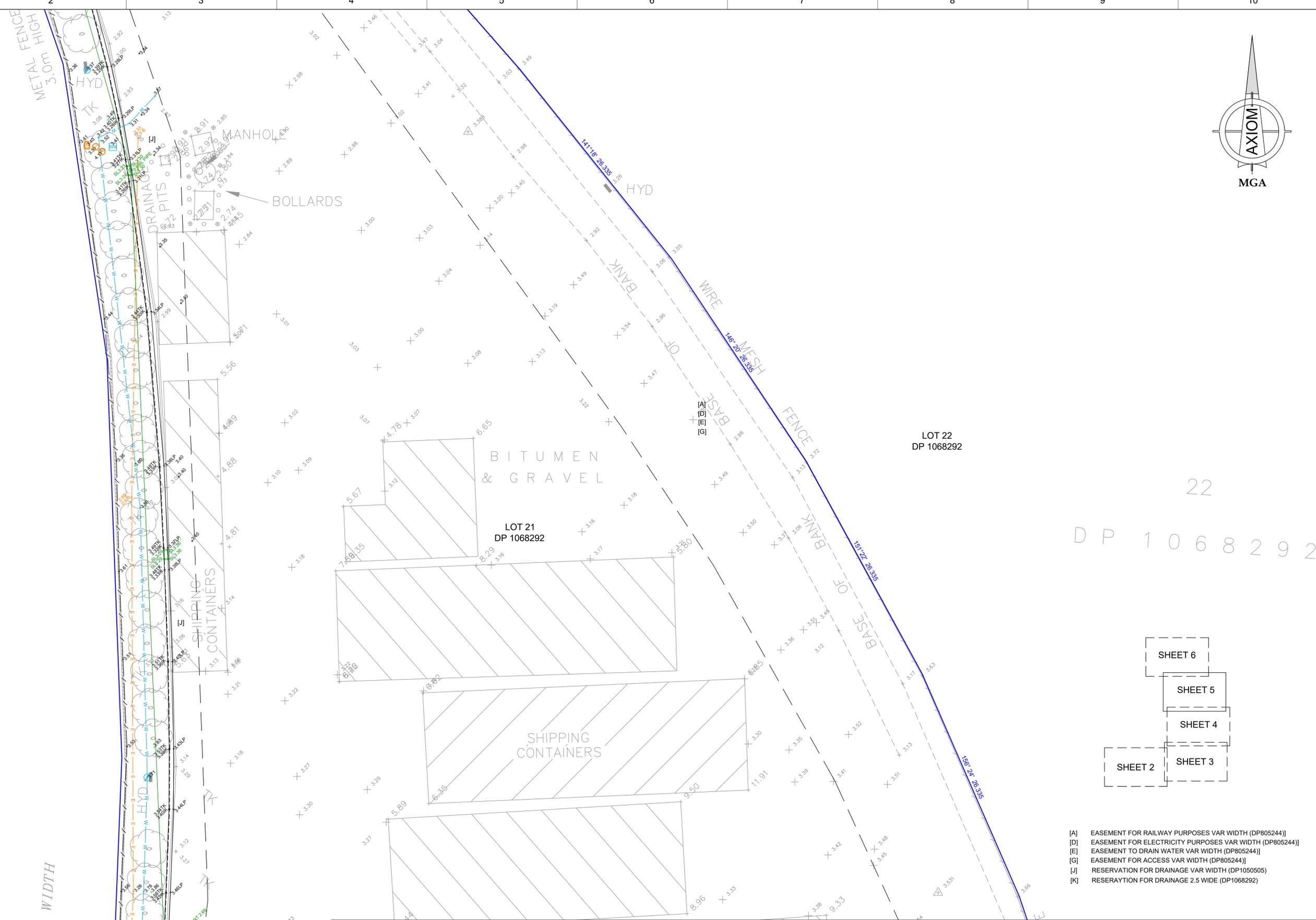
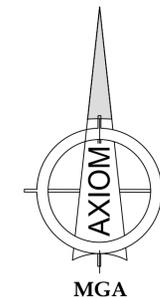
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REVISION	DATE	DESCRIPTION	DATA REF
00	17/11/2022	ORIGINAL ISSUE	2021-11-14 LH

CLIENT: STATEWIDE CIVIL			PROJECT: 9 BUMBORAH POINT ROAD, PORT BOTANY		
SURVEYED LH			DRAWN CM		DATE 17/11/2022
DATUM AHD	GRID MGA 2020	CHECKED ME	SCALE: 1:200	SHEET 4 OF 6	
DRAWING No. 21616001			REV 00		

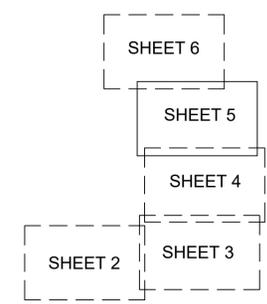
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 PARISH : BOTANY
 COUNTY : CUMBERLAND



LOT 22
 DP 1068292

LOT 21
 DP 1068292



- [A] EASEMENT FOR RAILWAY PURPOSES VAR WIDTH (DP805244)
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REVISION	DATE	DESCRIPTION	DATA REF
00	17/11/2022	ORIGINAL ISSUE	2021-11-14 LH

Axiom Spatial
 surveyors

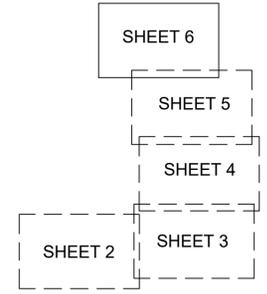
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CLIENT: STATEWIDE CIVIL			
SURVEYED LH	DRAWN CM	DATE 17/11/2022	
DATUM AHD	GRID MGA 2020	CHECKED ME	SCALE: 1:200

PROJECT: 9 BUMBORAH POINT ROAD, PORT BOTANY			
TITLE: PLAN SHOWING LEVEL AND DETAIL OVER LOT 21 IN DP 1068292			
SHEET	5	OF	6
A1	DRAWING No. 21616001		REV 00

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L.G.A. : RANDWICK
 PARISH : BOTANY
 COUNTY : CUMBERLAND



- [A] EASEMENT FOR RAILWAY PURPOSES VAR WIDTH (DP805244)
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REVISION	DATE	DESCRIPTION	DATA REF
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CLIENT: STATEWIDE CIVIL			
SURVEYED LH	DRAWN CM	DATE 17/11/2022	
DATUM AHD	GRID MGA 2020	CHECKED ME	SCALE: 1:200

PROJECT: 9 BUMBORAH POINT ROAD, PORT BOTANY			
TITLE: PLAN SHOWING LEVEL AND DETAIL OVER LOT 21 IN DP 1068292			
SHEET 6	OF 6	A1	DRAWING No. 21616001
			REV 00

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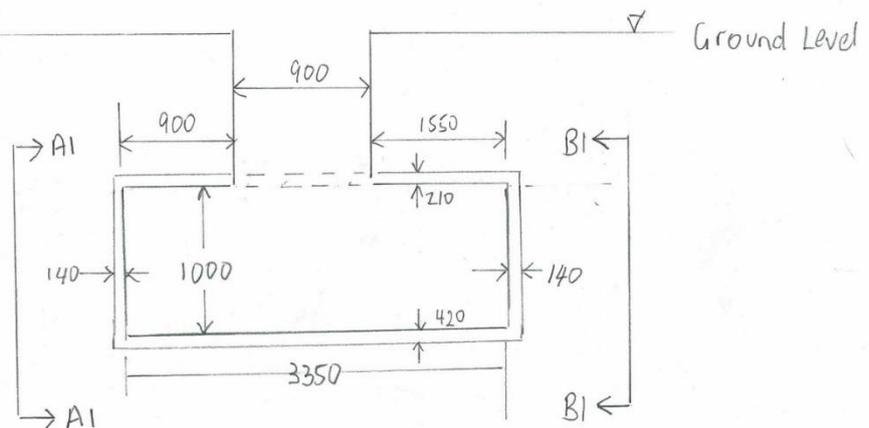
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REPORT FOR INVESTIGATION OF PITS IN TYNES- ACFS GATE B8

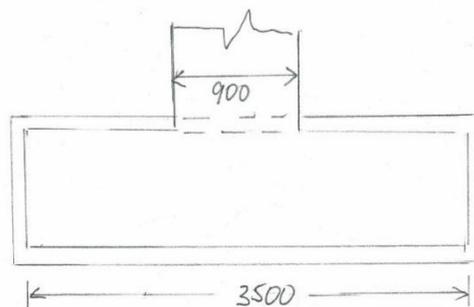
Pit 1

- This is the pit closest to the entry.
- In this pit we did conducted a search of the reinforcement We could not do the floor due to water laying there.
- The large bars are M20 at 200mm spacing. The smaller bars are M12 at 100mm spacing. There are a double layer of mesh.
- We cored the floor and the two walls. This was the only pit that we did cores.
- This pit is a single cell 3500mm x 1000mm. Both inflow and out flow

PIT 1



Depth to invert 2700



SECTION A1-A1

SECTION B1-B1 OPPOSITE

NOT TO SCALE



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REPORT FOR INVESTIGATION OF PITS IN TYNES- ACFS GATE B8

The following photos and information are from Pit 1:

- The thickness of the roof is 210mm. We cored the floor and the thickness was 420mm. The side walls were also cored and were 140mm. We will be testing the core samples.
- We will also be testing the reinforcement.
- Scott Munter from the Steel Reinforcement Institute of Australia believes that the steel reinforcement is probably from the period 1983-1988.
- This was the only pit where we did cores.
- No product codes were visible.



Looking down Pit 1



Head Office

A: Unit 9 / 40 Brookhollow Ave, Baulkham Hills 2153
T: 02 8824 7699

Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
T: 02 4089 3466

E: info@statewidecivil.com.au • P: PO Box 7120, Baulkham Hills 2153



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REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8



Inside the culvert



Looking up from inside Pit 1



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**REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8**



Looking up from inside Pit 1



Looking up from inside Pit 1



Head Office

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**REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8**



Looking up from inside Pit 1



Scanning for reinforcement from within Pit 1



Head Office

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Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
T: 02 4089 3466



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**REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8**



Photo showing the location of reinforcement within the pit. Larger lines are N20 reinforcement bars (@ 200mm centres) and smaller lines are N12 bars (@ 100mm centres). There is also double layer mesh.



Scan results for the wall and roof



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**REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8**



Scan results in the roof showing 200mm longitudinal spacing



Scan results in the roof showing 100mm transverse spacing



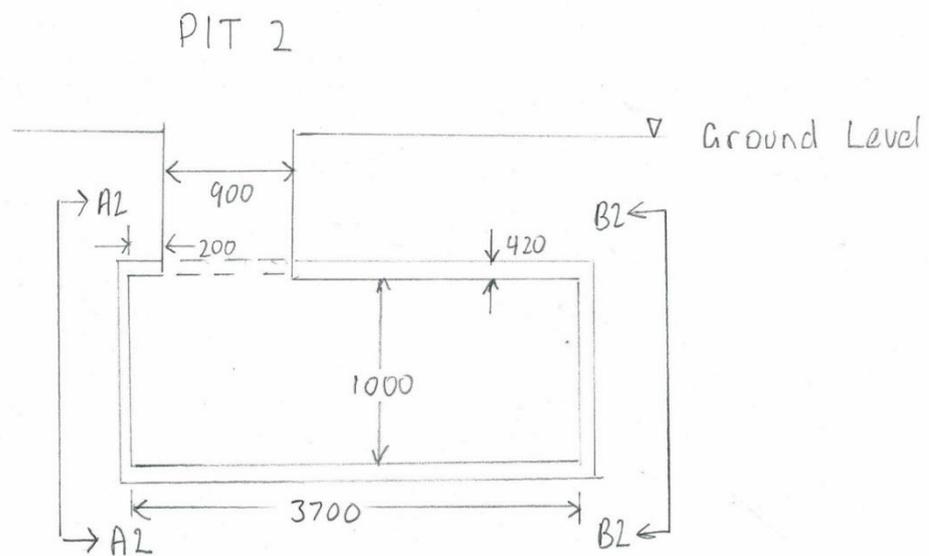
Head Office
A: Unit 9 / 40 Brookhollow Ave, Baulkham Hills 2153
T: 02 8824 7699

Newcastle Office
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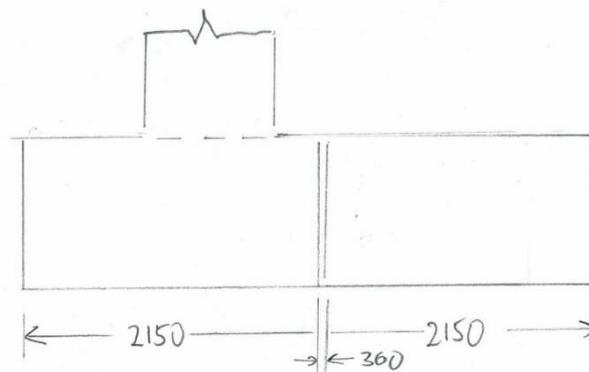
**REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8**

PIT 2

- In pit two we again scanned the roof and walls for reinforcement.
- The thickness of the roof was 400mm.
- The inflow culvert is 3500mm x 1000mm. The outflow culvert is 2 @ 2150mm x 1000mm.
- There is a culvert flowing into the pit. Its size is 1400mm x 1100mm



SECTION A2-A2 SIMILAR TO A1-A1



SECTION B2-B2

NOT TO SCALE



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**REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8**



Looking down into Pit 2



Looking down into Pit 2



Head Office

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Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
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REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8



Photos of the roof and wall scans for pit 2. Larger lines are N20 reinforcement bars (@ 200mm centres) and smaller lines are N12 bars (@ 100mm centres) There is also double layer mesh.



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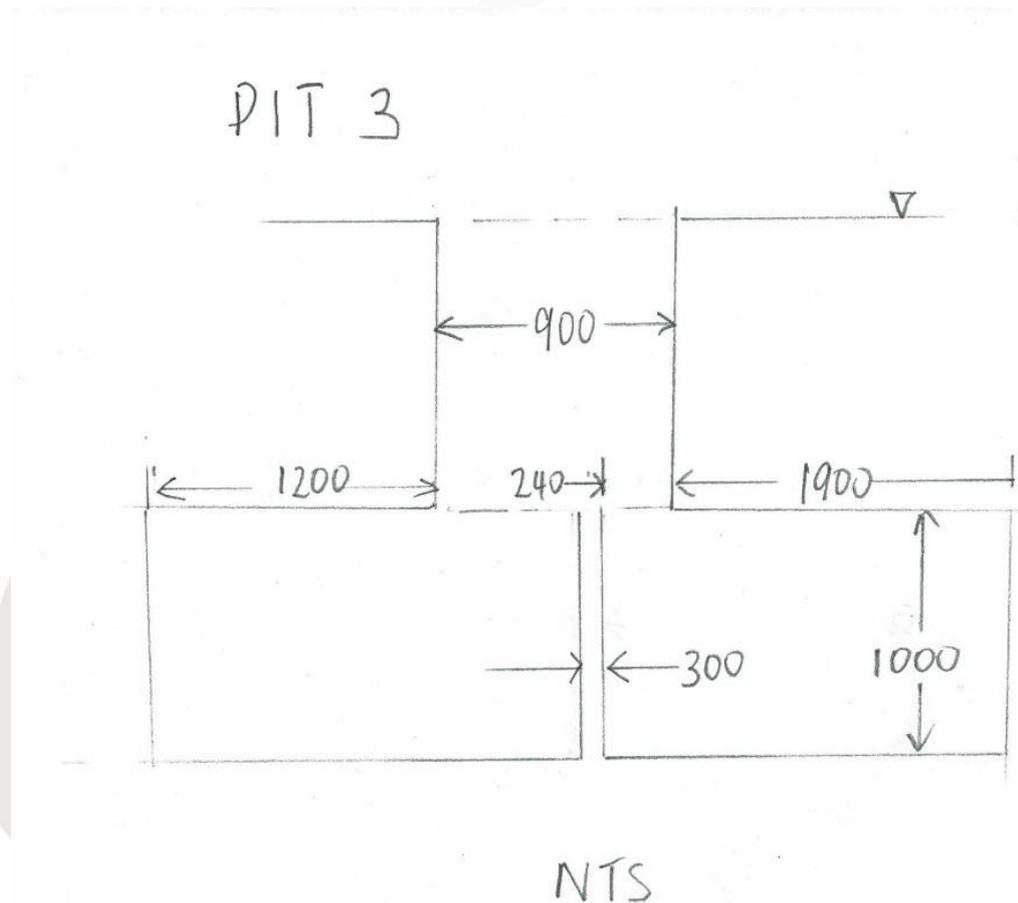


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REPORT FOR INVESTIGATION OF PITS IN TYNES- ACFS GATE B8

Pit 3

- The thickness of the roof is 200mm. The walls and floor were not cored.
- The inflow culvert and outflow culvert are both 2150mm x 1000mm.
- The following photos are the scans for reinforcement in pit 3.
- Both the inflow and outflow culverts are 2@ 2150mm x 1000mm



Head Office

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T: 02 8824 7699

Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton

T: 02 4089 3466



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REPORT FOR INVESTIGATION OF PITS IN TYNES- ACFS GATE B8



Looking down into Pit 3



Scan results for the wall and roof



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Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
T: 02 4089 3466



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REPORT FOR INVESTIGATION OF PITS IN TYNES- ACFS GATE B8



Photos of the roof and wall scans for pit 3. Larger lines are N20 reinforcement bars (@ 200mm centres) and smaller lines are N12 bars (@ 100mm centres) There is also double layer mesh.



Scan results for the wall and roof

Head Office

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T: 02 8824 7699

Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
T: 02 4089 3466





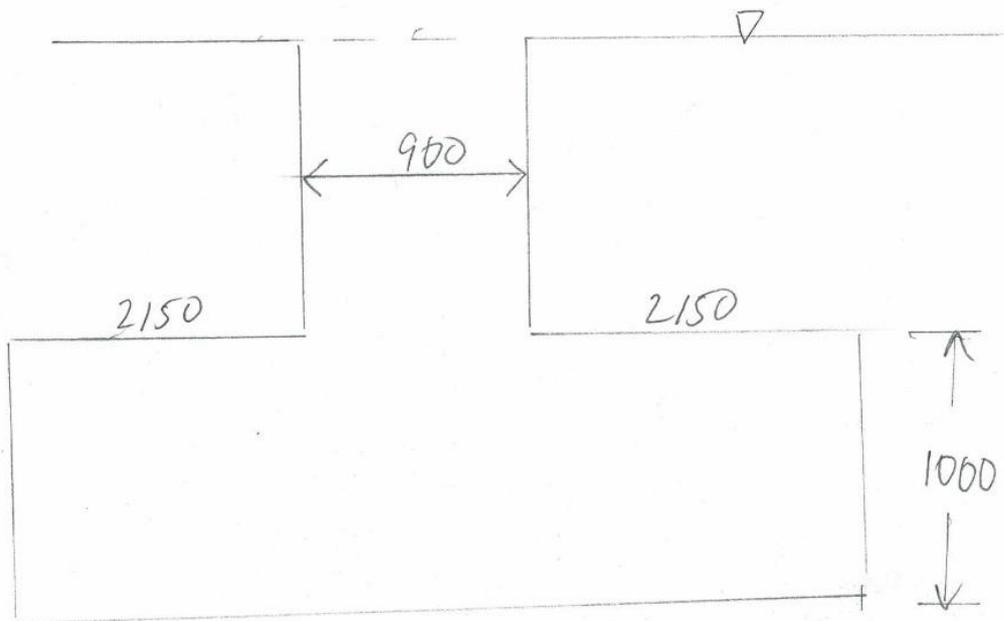
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REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8

PIT 4

- Roof thickness 200mm. Walls and floor were not cored.
- We did not scan for reinforcement or do cores.
- Both the inflow and outflow culverts are 2@ 2150mm x 1000mm.

PIT 4



Head Office

A: Unit 9 / 40 Brookhollow Ave, Baulkham Hills 2153
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Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
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**REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8**



Looking down into Pit 4



Head Office

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Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
T: 02 4089 3466



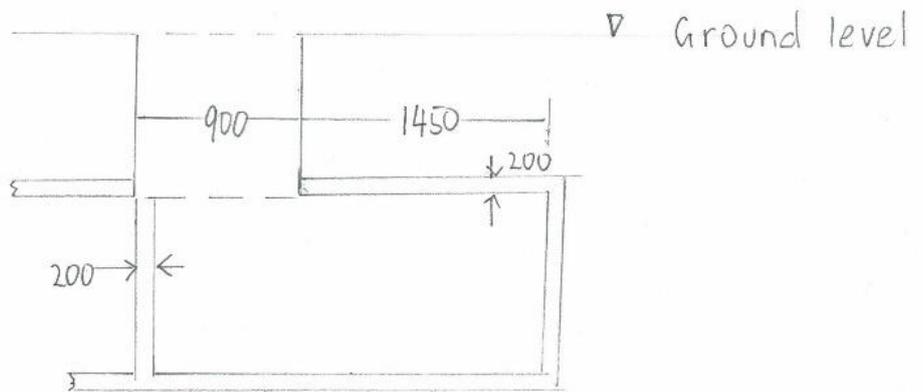
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REPORT FOR INVESTIGATION OF PITS IN TYNES-
ACFS GATE B8

PIT 5

- Roof thickness 200mm.

PIT 5



NTS

Head Office

A: Unit 9 / 40 Brookhollow Ave, Baulkham Hills 2153
T: 02 8824 7699

Newcastle Office

A: Unit 5 / 77 Beaumont St, Hamilton
T: 02 4089 3466

Concrete Test Report

Client:	Statewide Civil Pty Ltd PO Box 7120 Baulkham Hills NSW 2153
Project No.:	TESTSYDC01799AA
Project Name:	Gate B8 Bumborah Road, Port Botney
Project Location:	Gate B8 Bumborah Road, Port Botney
Lot No.:	TRN:
Supplier:	



Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates

Ben Kirk
Approved Signatory: Ben Kirk
(Geotechnician)
NATA Accredited Laboratory Number:431
Date of Issue: 7/02/2023

COMPRESSIVE STRENGTH OF CONCRETE CORES

Details of Sampled Concrete				Concrete Specimens and Results										
-----------------------------	--	--	--	--------------------------------	--	--	--	--	--	--	--	--	--	--

Date & Time Batched	Time Sampled	Plant Code	Grade(MPa)	Air(%)	Specimen Ident.	Dimensions (mm)	Density (kg/m ³)	Length Diameter	Load Ratio	Prep at or Failure Cap	Date of Test	Age (days)	Strength/ Marks Corrected (MPa)	Fail Mode	Location & Remarks
Date Cored	Truck No	Docket No	Agg(mm)	Slump(mm)	Design	Avg. Diameter	Height	/Corrcn	(kN)	Type					
					413A	84.0	152	2360	1.8/1.00	274.8	S	06/02/23	49.5/49.5	N	Wet-conditioning, Temperate Zone Floor
					414A	84.6	122	2440	1.4/0.95	213.5	S	06/02/23	38.0/36.5	N	Wet-conditioning, Temperate Zone Right Wall
					415A	82.2	127	2440	1.5/0.96	291.9	S	06/02/23	55.0/53.0	N	Wet-conditioning, Temperate Zone Left Wall

Notes	Remarks
<ol style="list-style-type: none"> 1. Sampling in accordance with AS 1012.14 2. Preconditioning in accordance with AS 1012.14, unless otherwise stated 3. Prep/Cap Type: S = Filled sulphur mixture 4. Compressive strength in accordance with AS 1012.9 5. Density in accordance with AS 1012.12.1 6. Moisture condition SSD in accordance with AS 1012.12.1, unless otherwise stated 	<p>FailureMode: N = Normal</p> <p>The concrete was not sampled by this laboratory. Data reported on initial curing, consistence and age at test is not covered by this NATA Accreditation, therefore notes 1 to 2 do not apply.</p> <p>Concrete Cores were not sampled by this laboratory. Some details were not supplied to the laboratory by the client</p>

Rebar tensile test report

Report number	LS23-0222-01 Rebar-TEN
Customer name	Statewide Civil Pty Ltd
Address	160 Cattai Ridge Road Glenorie NSW Australia 2157
Requested by	Joe Morrison
Purchase order	25002
Accredited lab.	LMATS Sydney Laboratory
Job address	LMATS Sydney Laboratory
Activity dates	06/02/2023
Item description	Tensile test on reo-bar sample
Identification	Gate B8 Bumborah Road Port Botany
Material grade	AS/NZS 4671 Grade 500N
Test specification	AS/NZS 4671: 2019 - Cl. 7.2 Mechanical properties
Test method	AS/NZS 4671:2019-Clause C2 - Rebar tensile test
Testing rate	ISO 6892-1: Method B
Specimen data	Longitudinal Rebar Uncoated Location as per specification Standard
Test temperature	Ambient
Approved tester	Hillman Lao (B.Eng Materials)

Normative notes:

- All test and inspection items will be discarded after 6 weeks, unless retrieved by the clients representative
- Samples, identification of samples and all job specific details were supplied by the client.
- Any stated nominal pipe sizes and nominal thickness of the material were provided by the client.
- Where applicable, the Measurement Uncertainty (MU) applies to the test results as per LMATS procedure. MU can be obtained by contacting one of the LMATS ISO 17025 accredited laboratory.
- If this report does not specify acceptance criteria, then the test or inspection results should be referred to a competent authority for further action.
- Refer to the attached revision notes (if this report is revised). This report shall not be reproduced except in full without approval of the issuing laboratory to ensure that parts of a report are not taken out of context. The client or their representatives shall not edit this report.
- LMATS or its professional indemnity insurance provider do not indemnify the contents within this report or the conformity of a tested product unless the invoice for the reported work is paid in full within the agreed credit terms. Reports will be revoked if the invoice for the completed work is not paid in full.



Accreditation No. 15840

Accredited for compliance with
ISO 17025-Testing

Signatory
Hillman Lao
(B.Eng Materials)

LS23-0222-01 Rebar-TEN StatewideCivilPtyLtd
Report LS23-0222-01 Rebar-TEN
StatewideCivilPtyLtd Report LS23-0222-01
Rebar-TEN StatewideCivilPtyLtd Report
LS23-0222-01 Rebar-TEN StatewideCivilPtyLtd
Report LS23-0222-01 Rebar-TEN
StatewideCivilPtyLtd Report LS23-0222-01

Report issued on 07/02/2023

Report no. LS23-0222-01 Rebar-TEN, Statewide Civil Pty Ltd, Page 1 of 2, Format no. MF-RP-02 Rebar TEN (Rev. OMS 5.0 20230101)

LMATS Pty Ltd
ABN: 41 107 100 925
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admin@lmats.com.au
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Melbourne
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 Albury
 Newcastle
 Perth

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1C/137 Silverwater Road, Silverwater NSW 2128
14/121 Kerry Road, Archerfield QLD 4108
4/856 Leslie Drive, Albury NSW 2640
2/22 Ironbark Close, Warabrook NSW 2304
3/52 Cocos Drive, Bibra Lake WA 6163

Item identification	Specimen ID	Nominal \varnothing (mm)	GL (mm)	0.2% Proof force (kN)	Max. force (kN)	UTS (MPa)	0.2% Proof stress (MPa)	Ratio (R_m/R_e)	Uniform E (Agt %)	Test result
Gate B8 Bumborah Road Port Botany	1	20.00	100.0	179.68	206.06	656	572	1.15	8.83	C
Requirements						Minimum	500	1.08	5	
						Maximum	650	NA	NA	

Legends: C Comply DNC Did not comply NA Not applicable RP Report findings UTS Ultimate Tensile Strength PS Proof Stress ROA Reduction of Area E Elongation

Comments

Nil

NOTES	
1.	PITS TO BE REMOVED INCLUDES THE REMOVAL OF THE PIT STRUCTURE AND MAKE GOOD WORKS OF THE EXISTING CULVERT STRUCTURE.
2.	FOR DRAINAGE AND KERB SCHEDULES REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3011.
3.	FOR DRAINAGE PROFILES REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3021.
4.	FOR DRAINAGE DETAILS REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3031 TO 3033.

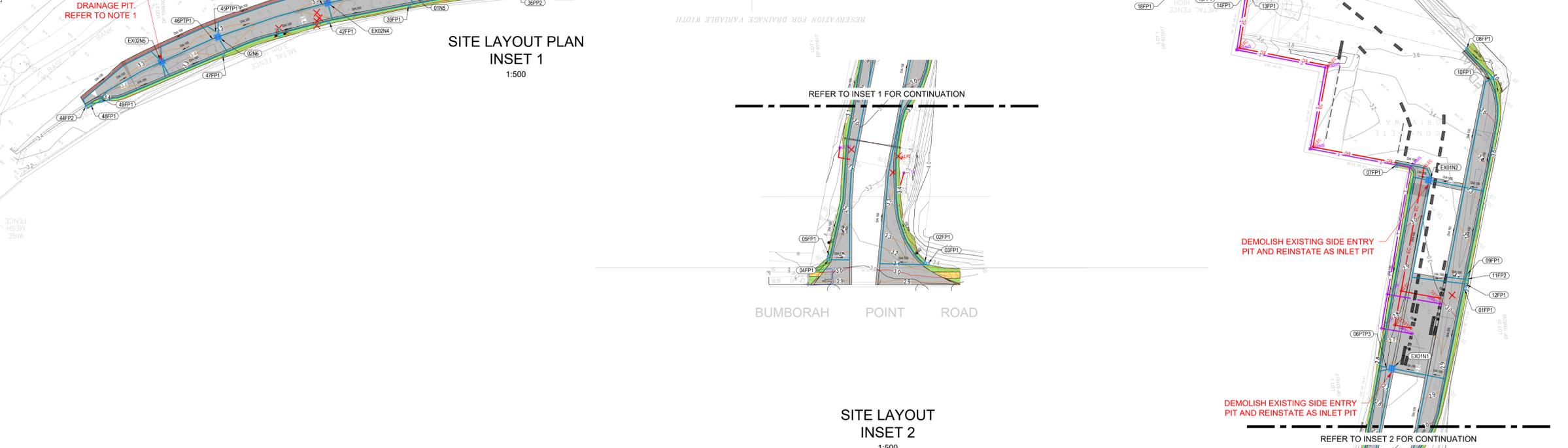
SAFETY IN DESIGN RISK TABLE	
▲ SID: 1	SAFETY IN DESIGN RISK ITEM. REFER TO THE NUMBER IN THE SAFETY IN DESIGN RISK TABLE FOR SPECIFIC DETAILS. ACFS HAS ACCEPTED THE FOLLOWING RESIDUAL RISKS SHOWN IN THIS CONCEPTUAL DRAWING. THESE RISKS WILL BE FURTHER RISK ASSESSED DURING LATER STAGES OF DESIGN INCLUDING THE DETAILS OF MITIGATIONS: 1. CONTRACTOR TO ENSURE SAFE BATTERS OR SHORING ARE MAINTAINED DURING EXCAVATION WORKS INCLUDING THE CONSIDERATIONS OF LOADS FROM ADJACENT SITES.

REFERENCES	
1.	SURVEY INFORMATION FROM AXIOM SPATIAL SURVEYORS FILE REFERENCE 22616001-00, PLAN SHOWING LEVEL AND DETAIL OVER LOT 21 IN DP 1068292 DATED 17/11/22. MOTT MACDONALD DRAWINGS: 703100695-MMD-01-XX-DR-C-3011 DRAINAGE AND KERB SCHEDULE 703100695-MMD-01-XX-DR-C-3021 DRAINAGE PROFILES 703100695-MMD-01-XX-DR-C-3031 TO 3033 DRAINAGE DETAILS

DESIGN DEVELOPMENT TABLE	
▲ DD: 1	DESIGN DEVELOPMENT NOTE. REFER TO THE NUMBER IN THE DESIGN DEVELOPMENT TABLE FOR SPECIFIC DETAILS. 1. EXTENDED SURVEY INFORMATION TO BE PROVIDED TO DESIGN INTERFACE WITH EXISTING.

LEGEND	
— 1.0 —	EXISTING MAJOR CONTOUR
— 0.2 —	EXISTING MINOR CONTOUR
— 0.5 —	PROPOSED MAJOR CONTOUR
— 0.1 —	PROPOSED MINOR CONTOUR
X	ELEMENT TO BE DEMOLISHED
—	CONCRETE F-TYPE BARRIER - LENGTH 2m
● B1 ● B2	STEEL BOLLARD, B1:150mm DIA, B2: 300mm DIA
—	STORMWATER PIPE
□	PROPOSED STORMWATER INLET PIT
—	SUBSURFACE DRAIN AND FLUSHING POINT
—	PROPOSED WATER MAIN AND FIRE HYDRANT
— ec —	PROPOSED ELECTRICAL CONDUIT AND PIT
— LP1	PROPOSED LIGHT POLE
— COMMS	PROPOSED COMMUNICATION CONDUIT AND PIT
— CCTV	PROPOSED CCTV POLE
■	PROPOSED CONCRETE PAVEMENT
■	PROPOSED ASPHALT OVERLAY
■	PROPOSED CONCRETE FOOTPATH
■	PROPOSED KERB AND VEHICULAR CROSSING
■	PROPOSED GRASS SURFACE

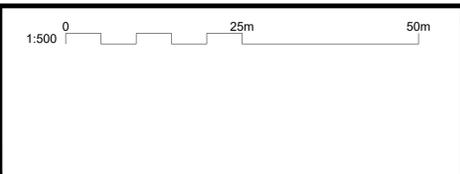
ABBREVIATIONS	
#	PIT NUMBER PLACEHOLDER FOR ABBREVIATIONS
##FP#	SUBSURFACE DRAINAGE END FLUSH OUT RISER
##PTP#	SUBSURFACE DRAINAGE PIT WALL FLUSH OUT RISER
##INP#	SUBSURFACE DRAINAGE INTERMEDIATE FLUSH OUT RISER
EX##N#	EXISTING PIT OR CULVERT CONNECTION
SS	SUBSURFACE DRAINAGE



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Rev	Date	Drawn	Description	Ch'k'd	App'd
P1.2			WORK IN PROGRESS		
P1.1			WORK IN PROGRESS		



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Title

**TYNE ACFS BUMBORAH POINT
TERMINAL REDEVELOPMENT
DRAINAGE LAYOUT PLAN**

Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A1	Status	Rev	Security
1:500	WORK IN PROGRESS	P1	STD
Drawing Number 703100695-MMD-01-XX-DR-C-3001			

NOTES

- GENERAL**
- FOR DRAINAGE LAYOUT PLAN REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3001.
 - FOR DRAINAGE AND KERB SCHEDULES REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3011 AND 3012.
 - FOR REINFORCEMENT DETAILS REFER TO DRAWING 703100695-MMD-01-XX-DR-C-3036.
 - FOR STEP IRONS DETAILS REFER TO DRAWING 703100695-MMD-01-XX-DR-C-3036.
 - ALL EXISTING DIMENSIONS AND DETAILS SHOWN ON THE DESIGN DRAWINGS HAVE BEEN EXTRAPOLATED FROM THE SURVEY DETAILS AND TESTING REPORTS PROVIDED BY THE CLIENT. REFER TO REFERENCES FOR DETAILS.
 - REFER ANY DISCREPANCY, AMBIGUITY, OMISSION OR INCONSISTENCY TO THE PRINCIPAL BEFORE PROCEEDING WITH THE WORK.
 - DO NOT OBTAIN DIMENSIONS BY SCALING THE STRUCTURAL ELEMENTS FROM DRAWINGS.
 - SETTING OUT DIMENSIONS SHALL BE VERIFIED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION/FABRICATION, AND SHALL BE RESPONSIBLE FOR THEIR CORRECTNESS.
 - MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CURRENT EDITION OF THE NATIONAL CONSTRUCTION CODE (NCC), THE APPROPRIATE AUSTRALIAN STANDARDS, THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
 - DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH ALL WORKCOVER REQUIREMENTS, THE WORK HEALTH AND SAFETY ACT AND THE WORK HEALTH AND SAFETY REGULATION.
- REINFORCEMENT**
- ALL REINFORCEMENT SHALL BE GRADE 500N DEFORMED BAR IN ACCORDANCE WITH AS4671.
 - REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
 - BARS SHALL NOT BE PULLED INTO POSITION THROUGH WET CONCRETE.
 - REINFORCEMENT BARS USED FOR DOWELLING SHALL BE HOT DIP GALVANISED.
- CONCRETE**
- ALL CONCRETE WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600:2018 AND AS4997:2005.
 - CONCRETE SURFACE EXPOSURE CLASSIFICATION: C1, MINIMUM 28 DAY CONCRETE STRENGTH OF 50MPa. MINIMUM COVER TO REINFORCEMENT SHALL BE 50mm.
 - WATER STOPPER TO BE INSTALLED AT ALL CONSTRUCTION JOINTS.
 - 20mm NOMINAL GROUT PAD TO BE PROVIDED BETWEEN EXISTING CULVERT AND NEW PITS.

REFERENCES

- SURVEY INFORMATION FROM AXIOM SPATIAL SURVEYORS FILE REFERENCE 22616001-00, PLAN SHOWING LEVEL AND DETAIL OVER LOT 21 IN DP 1068292 DATED 17/11/22.
- MOTT MACDONALD DRAWINGS: 703100695-MMD-01-XX-DR-C-3001 DRAINAGE LAYOUT PLAN 703100695-MMD-01-XX-DR-C-3011 AND 3012 DRAINAGE AND KERB SCHEDULES 703100695-MMD-01-XX-DR-C-3035 AND 3036 DRAINAGE DETAILS
- STATEWIDE CIVIL INVESTIGATION AND TESTING REPORTS: TYNES-ACFS GATE B8 SW PITS INVESTIGATIVE REPORT PROVIDED 2/02/23 COFFEY TESTING REPORT ON CONCRETE SAMPLES FROM CULVERT PROVIDED 9/02/23 LMATS REPORT ON STEEL REINFORCEMENT TESTING PROVIDED 9/02/23

SAFETY IN DESIGN RISK TABLE

SID: 1 SAFETY IN DESIGN RISK ITEM. REFER TO THE NUMBER IN THE SAFETY IN DESIGN RISK TABLE FOR SPECIFIC DETAILS.

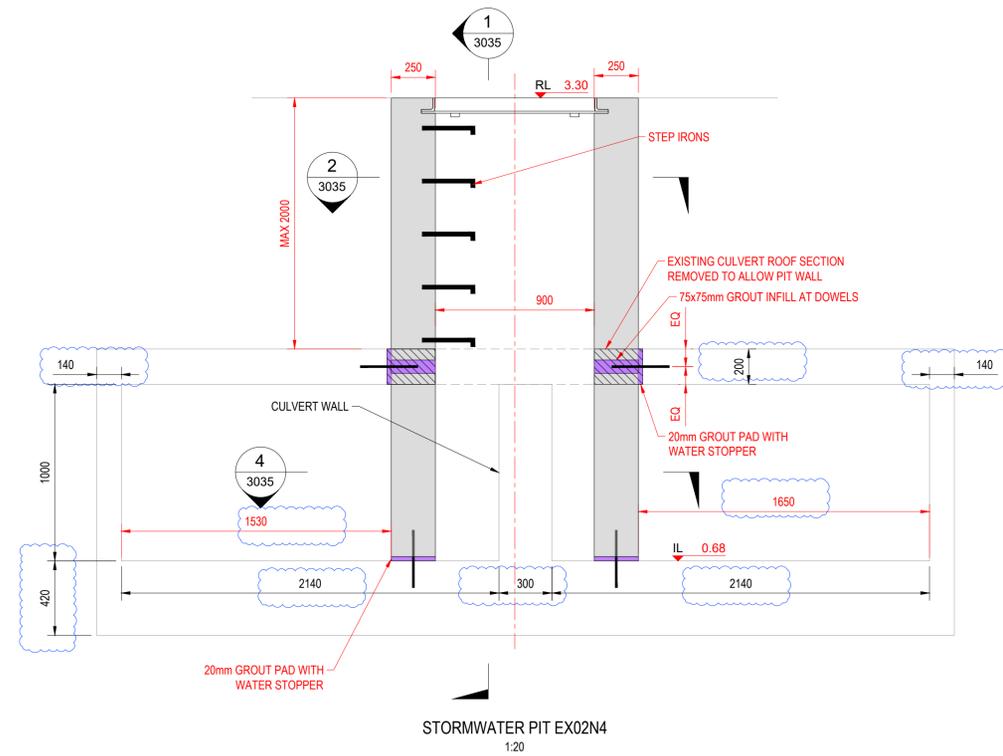
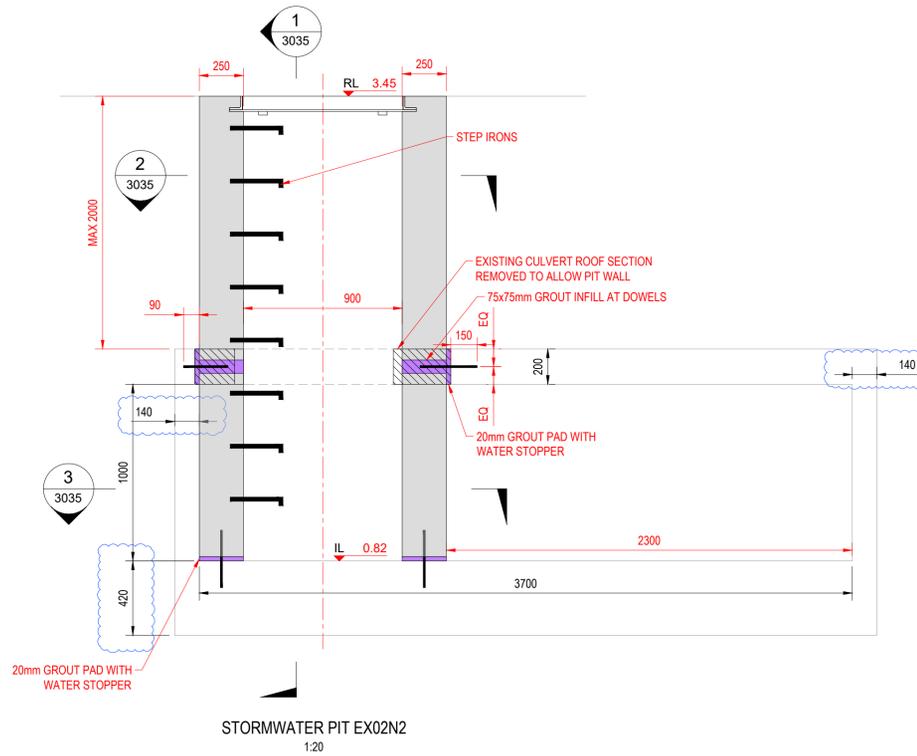
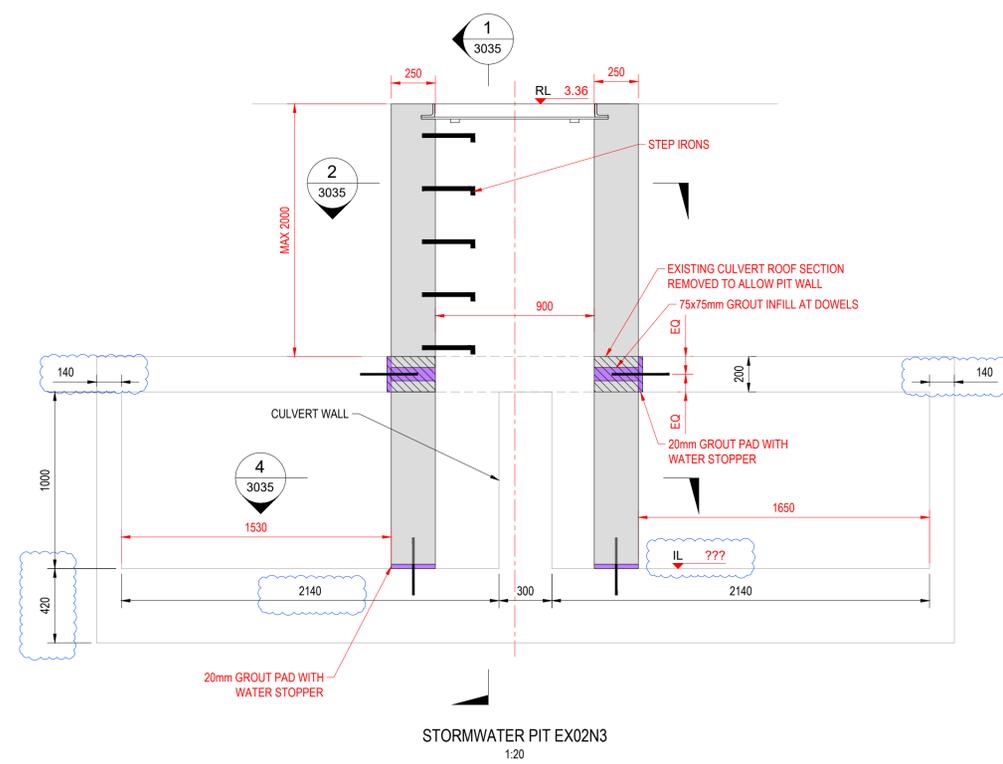
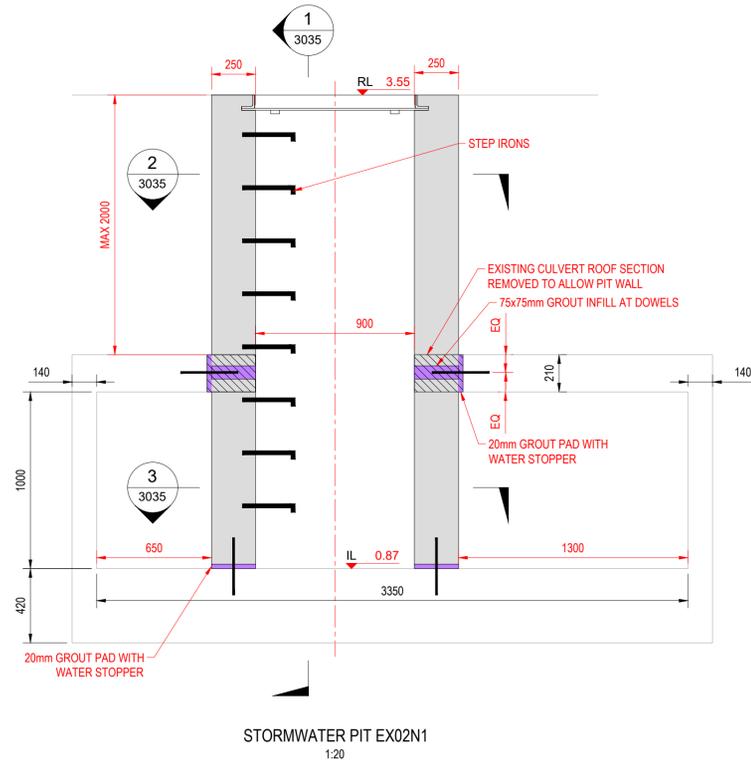
ACFS HAS ACCEPTED THE FOLLOWING RESIDUAL RISKS SHOWN IN THIS CONCEPTUAL DRAWING. THESE RISKS WILL BE FURTHER RISK ASSESSED DURING LATER STAGES OF DESIGN INCLUDING THE DETAILS OF MITIGATIONS:

- N/A

DESIGN DEVELOPMENT TABLE

DD: 1 DESIGN DEVELOPMENT NOTE. REFER TO THE NUMBER IN THE DESIGN DEVELOPMENT TABLE FOR SPECIFIC DETAILS.

- N/A



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Title

**TYNE ACFS BUMBORAH POINT
TERMINAL REDEVELOPMENT
DRAINAGE DETAILS
SHEET 4**

Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A1	Status	Rev	Security
1:20	PRE	P1	STD
Drawing Number		703100695-MMD-01-XX-DR-C-3034	

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1			WORK IN PROGRESS		

NOTES

- GENERAL**
- FOR DRAINAGE LAYOUT PLAN REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3001.
 - FOR DRAINAGE AND KERB SCHEDULES REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3011 AND 3012.
 - FOR DRAINAGE STRUCTURAL NOTES REFER TO DRAWING 703100695-MMD-01-XX-DR-C-3034.
 - FOR STEP IRONS DETAILS REFER TO DRAWING 703100695-MMD-01-XX-DR-C-3036.

REFERENCES

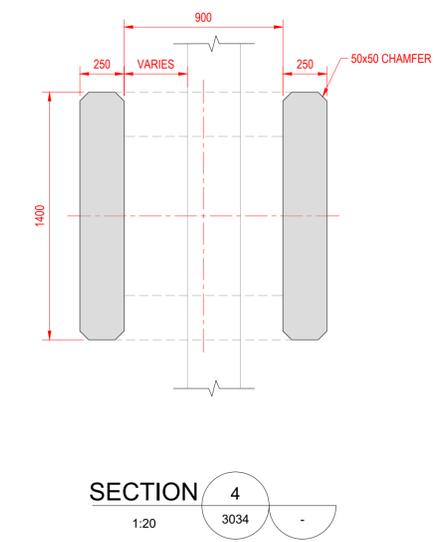
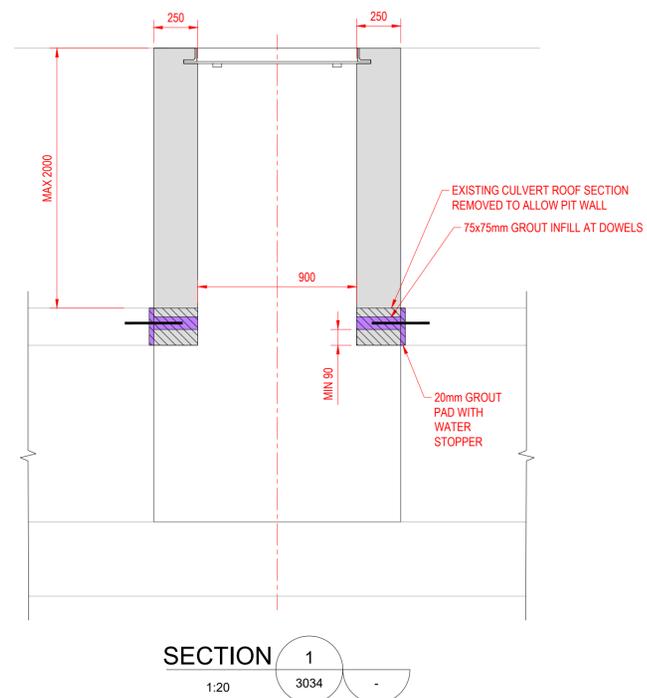
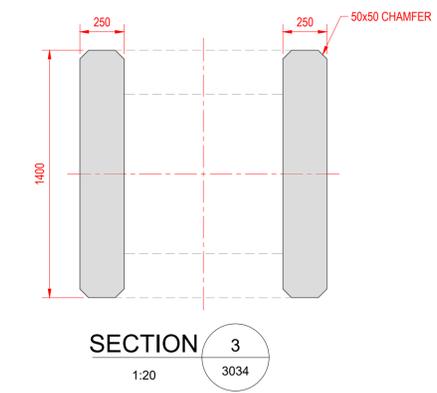
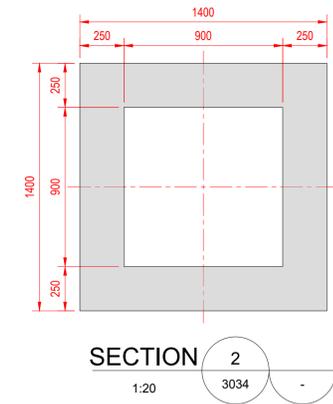
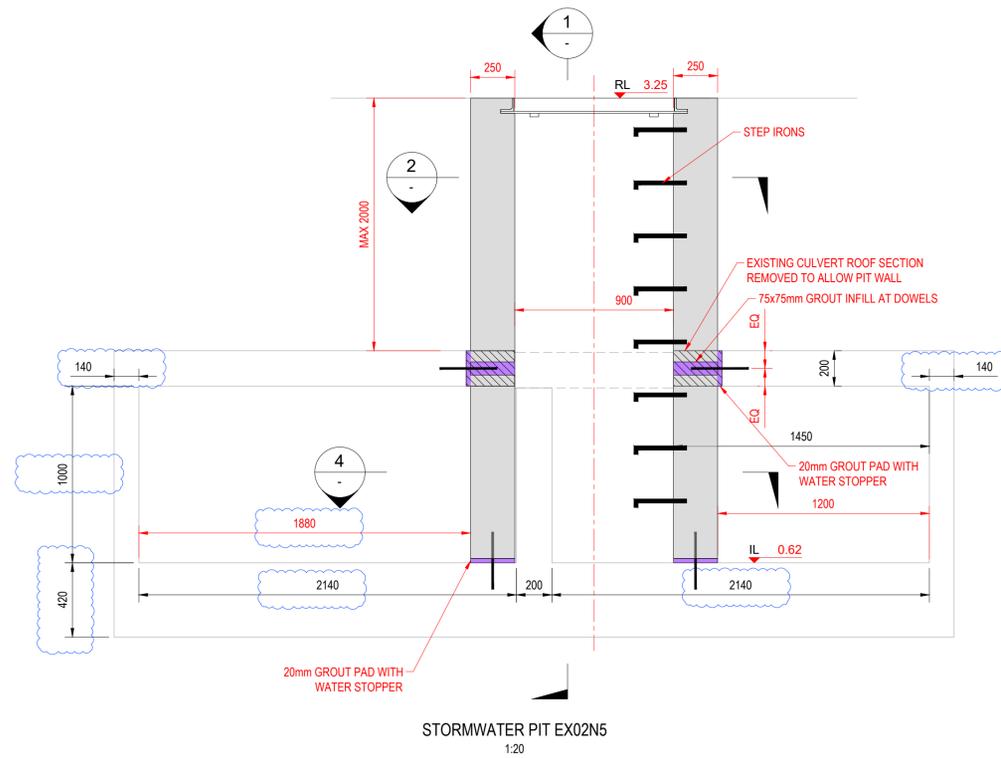
- MOTT MACDONALD DRAWINGS:
703100695-MMD-01-XX-DR-C-3001 DRAINAGE LAYOUT PLAN
703100695-MMD-01-XX-DR-C-3011 AND 3012 DRAINAGE AND KERB SCHEDULES
703100695-MMD-01-XX-DR-C-3034 AND 3036 DRAINAGE DETAILS

SAFETY IN DESIGN RISK TABLE

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1. N/A

DESIGN DEVELOPMENT TABLE

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1. N/A



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Title
**TYNE ACFS BUMBORAH POINT
TERMINAL REDEVELOPMENT
DRAINAGE DETAILS
SHEET 5**

Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A1	Status	Rev	Security
1:20	PRE	P1	STD
Drawing Number			
703100695-MMD-01-XX-DR-C-3035			

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1			WORK IN PROGRESS		

NOTES

- GENERAL**
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 - FOR DRAINAGE AND KERB SCHEDULES REFER TO DRAWINGS 703100695-MMD-01-XX-DR-C-3011 AND 3012.
 - FOR DRAINAGE STRUCTURAL NOTES REFER TO DRAWING 703100695-MMD-01-XX-DR-C-3034.
- STEP IRONS**
- PITS DEEPER THAN 600 MM MUST BE FITTED WITH INDIVIDUAL-RUNG LADDERS
 - INDIVIDUAL-RUNG LADDERS MUST BE LOCATED:
 - DIRECTLY BELOW THE OPENING OF THE COVER.
 - DESIRABLY ON A WALL WITHOUT PIPE OPENINGS.
 - DESIRABLY ON ONE OF THE LONG SIDES OF THE PIT.
 - INDIVIDUAL-RUNG LADDERS MUST COMPLY WITH AS1657.
 - INDIVIDUAL-RUNG LADDERS MUST HAVE SHARP EDGES ROUNDED AND BE HOT DIP GALVANISED AFTER FABRICATION.
 - PROPRIETARY PLASTIC ENCAPSULATED INDIVIDUAL-RUNG LADDERS (OR APPROVED EQUIVALENT) MAY BE USED.
 - INDIVIDUAL-RUNG LADDERS MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
 - ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

REFERENCES

- MOTT MACDONALD DRAWINGS: 703100695-MMD-01-XX-DR-C-3001 DRAINAGE LAYOUT PLAN 703100695-MMD-01-XX-DR-C-3011 AND 3012 DRAINAGE AND KERB SCHEDULES 703100695-MMD-01-XX-DR-C-3034 AND 3035 DRAINAGE DETAILS

SAFETY IN DESIGN RISK TABLE

⚠️ SID: 1 SAFETY IN DESIGN RISK ITEM. REFER TO THE NUMBER IN THE SAFETY IN DESIGN RISK TABLE FOR SPECIFIC DETAILS.

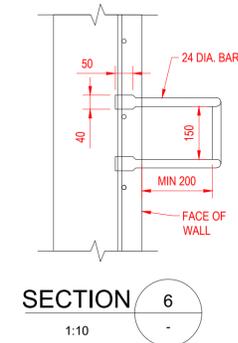
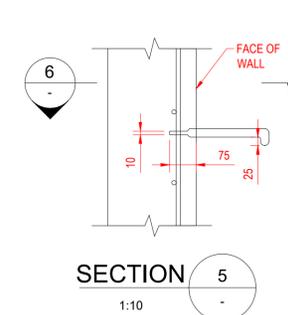
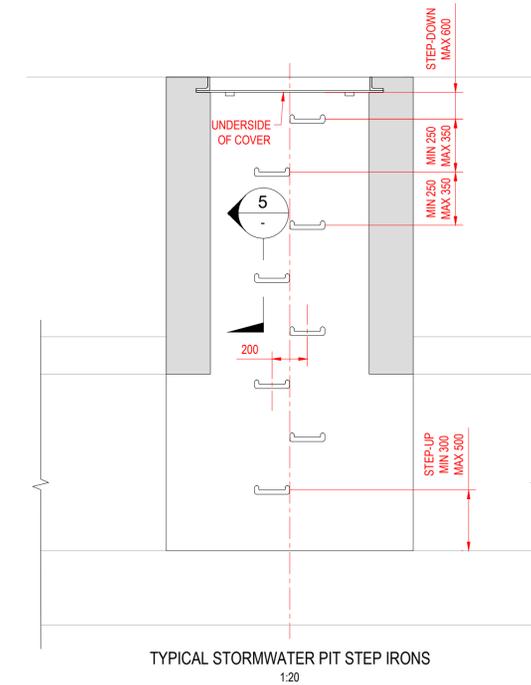
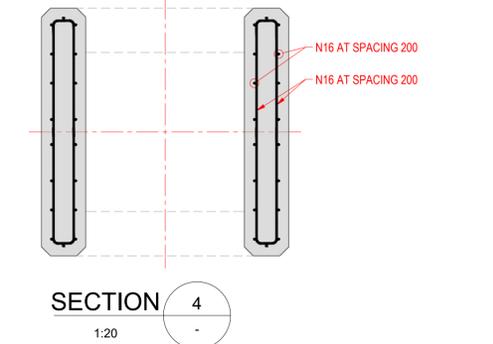
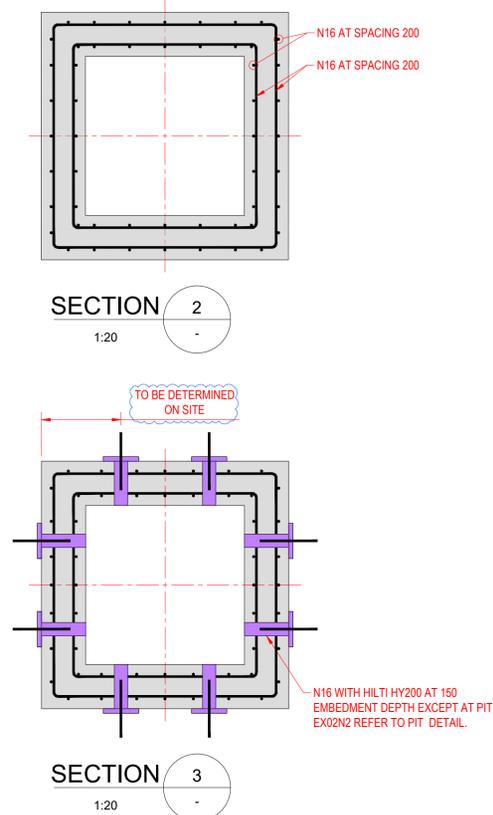
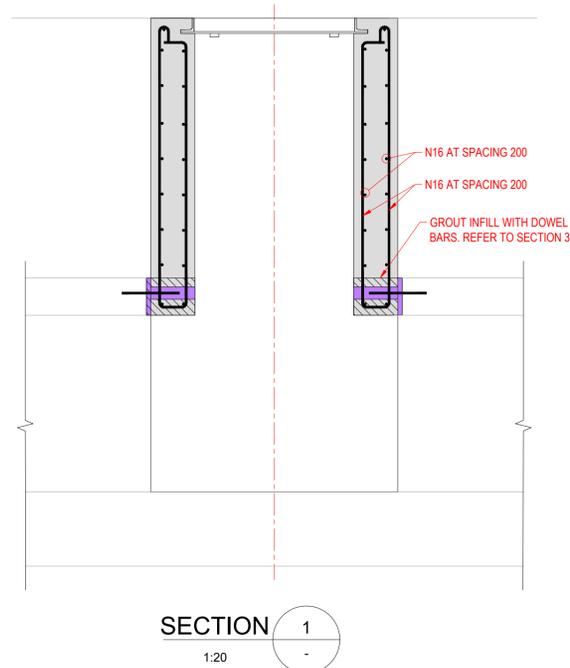
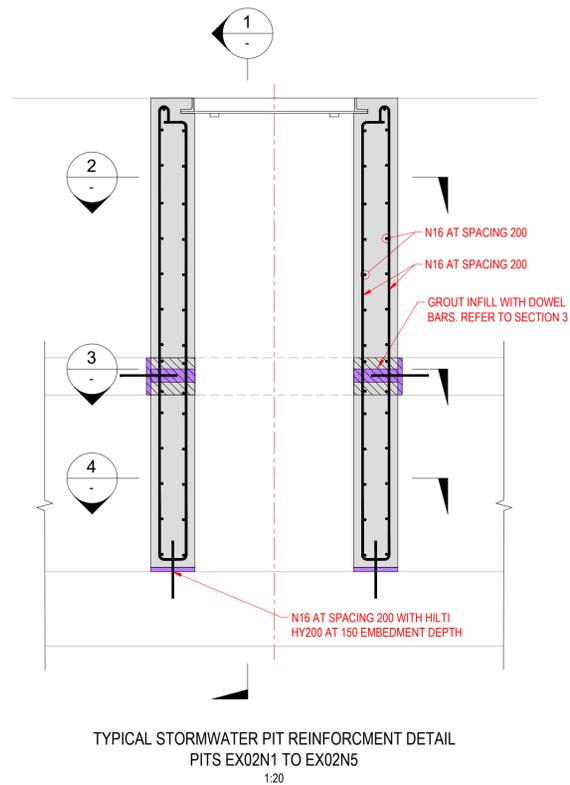
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- N/A

DESIGN DEVELOPMENT TABLE

⚠️ DD: 1 DESIGN DEVELOPMENT NOTE. REFER TO THE NUMBER IN THE DESIGN DEVELOPMENT TABLE FOR SPECIFIC DETAILS.

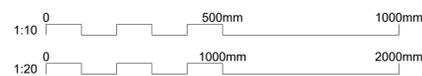
- CONTRACTOR TO CONFIRM DOWEL LOCATIONS INTO CULVERT ROOF WITH THE PRINCIPAL.



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Rev	Date	Drawn	Description	Ch'k'd	App'd
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DRAINAGE DETAILS
SHEET 6

Designed		Eng check	
Drawn		Coordination	
Dwg check		Approved	
Scale at A1	Status	Rev	Security
VARIABLES	PRE	P1	STD
Drawing Number			
703100695-MMD-01-XX-DR-C-3036			