

Newcastle Legal and Conveyancing



Drainage Assessment - Event Parking Area.

50 Peter Brock Drive, Eastern Creek,
NSW

ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



P2108122JR02V01

April 2021

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All enquiries regarding this project are to be directed to the Project Manager.

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1 Introduction

1.1 Overview

Martens & Associates Pty Ltd (MA) have prepared this assessment report in response to a request for further information as articulated in item 7 (7.2 - 7.5) of the Department of Planning & Environment's letter dated 22 December 2020 (the **RFI**). We understand that the request is made in response to an application to modify a consent DA S29/3/97 (the **Consent**) over the Eastern Creek Karts site, known as Lot 4 in DP 1079897 (the **Site**).

1.2 Investigation Aims

The investigation aims to undertake the following in respect of the Event Parking Area, which is located in the south east portion of the Site:

1. Provision of a drainage system design to ensure safe and appropriate management and disposal stormwater without negative impacts on neighbouring allotments.
2. Provision of water quality and water quantity management systems and design in accordance with Blacktown City Council's guidelines.
3. Inclusion of stormwater conveyance elements within the drainage system to appropriately manage overland flow from upslope catchment areas to a downstream point of discharge without negative impacts on neighbouring allotments.

1.3 Investigation Scope

The investigation scope included the following:

1. Event Parking Area drainage system design including:
 - a) Drainage system network layout design.
 - b) Water quality assessment utilising modelling (using the MUSIC model) for the site to determine required stormwater treatment train.
 - c) Onsite stormwater detention (OSD) design in accordance with the Blacktown City Council (BCC) requirements.

2. Upslope catchment conveyance system design including:

- a) Hydrological modelling (RAFTS engine within the DRAINS software) for site upslope catchment area to determine 1% annual exceedance probability (AEP) and probable maximum flood (PMF) event peak flow rates.
- b) Hydraulic modelling (TUFLOW) for the collection and conveyance of upslope catchment flows are under pre and post Event Parking Area construction conditions (**pre filling** and **post filling** conditions) with appropriate blockage factors.
- c) Preparation of relevant overland flow maps and commentary on flood characteristics.

2 Concept Civil and Drainage Plans

2.1 Overview

Concept civil engineering plans have been prepared to supplement the proposed site drainage works. The planset is provided in Attachment D and includes:

1. Earthworks plans, including:
 - a. Concept grading and design levels.
 - b. Anticipated earthworks cut / fill.
 - c. Carpark cross-sectional details.
2. Drainage plans, including:
 - a. Location of carpark and upstream trunk drainage.
 - b. OSD basin, bioretention basin and "Eastern Swale" configuration.
 - c. Drainage longitudinal sections.
 - d. OSD results.
 - e. MUSIC model layout and results.
3. Carpark plans, including:
 - a. Indicative carpark layout.
 - b. Swept paths of HRV and B99 with trailer design vehicles.

2.2 Eastern Swale

The following is noted in respect of the proposed Eastern Swale design:

1. The swale catchment consists only of the carpark fill batter to the west and does not receive any upstream flows. In doing so, only very small quantities of water are contained and passed through the swale.
2. The swale has maximum internal batter slopes at 1 in 3 and a top width of 1 m.

3. The capacity of the swale has been sized to convey the 1% AEP flow.

Swale details and calculations are provided in Attachment D drawing PS01-E202.

2.3 Carpark Design

The following is noted in respect of the proposed carpark design:

1. Carpark layout and grades are in accordance with AS2890.1:2004 and AS2890.2:2018, with car and trailer details derived from 'RMS NSW Boat Ramp Facility Guidelines' which are appropriate for the proposed car and Kart trailer usage for the site.
2. Swept Path analyses demonstrate appropriate manoeuvrability for a design B99 vehicle with trailer and also a standard HRV.
3. Carpark runoff is captured by pit and pipes and directed to the bioretention basin for treatment, and then to the OSD for detention prior to release.

3 Event Parking Area Water Quality

3.1 Water Quality Objectives

The stormwater runoff treatment objectives for pollutant reductions are provided in BCC's WSUD developer handbook (2020). The following water quality objectives are therefore to be achieved by the development when comparing the developed site with and without integration of water quality treatment measures:

1. 90% reduction in total gross pollutants (GP).
2. 85% reduction in total suspended solids (TSS).
3. 65% reduction in total phosphorus (TP).
4. 45% reduction in total nitrogen (TN).
5. 90% reduction in total hydrocarbons.

3.2 Water Modelling Methodology

3.2.1 Overview

The Model for Urban Stormwater Improvement Conceptualisation (*MUSIC*, Version 6.3), developed by the CRC for Catchment Hydrology, was used to evaluate treatment train effectiveness (TTE) and post development pollutant generation from the site.

Modelling has been undertaken in accordance with BCC's guidelines for the developed site and water quality treatment devices included within the model.

The MUSIC model layout is provided in MA planset P2108122PS01 drawing PS01-E700.

3.2.2 Approach

To achieve the adopted objectives, an iterative approach was used for post development modelling to determine appropriate types, sizes and locations of stormwater treatment devices.

The following modelling scenarios were considered:

1. Post development (untreated) – the developed site without any water quality improvement devices included.

2. Post development (treated) – the developed site with water quality improvement devices included to achieve stormwater quality objectives.

3.2.3 Model Parameters and Climate Data

Parameters were input based on the information provided in BCC's WSUD developer handbook (2020). Rainfall climate data was sourced from BCC's MUSIC-link.

3.2.4 Catchment Area

The MUSIC model considers all land where changes to the surface finish are proposed. Refer to MA planset P2108122PS01 drawing PS01-E700 for catchment plans.

3.3 Concept Treatment Train

The stormwater treatment strategy for the site aims to provide an end of line control to satisfy treatment objectives.

A bioretention basin is proposed for the site, providing tertiary treatment removing pollutants via filtration, adsorption and biological uptake. Refer to MA planset P2108122PS01 drawing PS01-E100 for the basin location and drawing PS01-E201 for basin details.

3.4 Water Quality Results

MUSIC modelling results showing the efficacy of the treatment train for the site are provided in Table 1.

Table 1: MUSIC water quality assessment result.

Parameter	Source Load (kg/year)	Residual Load (kg/year)	Reduction (%)
Total Suspended Solids	1090	124	89
Total Phosphorus	1.75	0.51	71
Total Nitrogen	12.9	5.6	57
Gross Pollutants	153	2	99

The results demonstrate that the required pollutant reduction targets are achieved. Proposed water quality controls are able to reduce the developed site pollutant loads to the treatment targets specified by BCC.

4 Event Parking Area Stormwater Quantity Assessment

4.1 Water Quantity Objectives

Site stormwater quantity performance objectives are provided within BCC's Engineering Guide for Development. Objectives include:

1. Limiting site discharge during the 50% AEP storm to a maximum of 40 L/s/ha.
2. Limiting site discharge during the 1% AEP storm to a maximum of 190 L/s/ha.
3. Providing a minimum volume of onsite detention (OSD) for the 50% AEP storm of 300 m³/ha.
4. Providing a minimum volume of onsite detention (OSD) for the 1% AEP storm of 455 m³/ha.

4.2 OSD Modelling Methodology

BCC's Onsite Stormwater Detention Deemed to Comply Tool was used for the site. The tool requires certain site inputs and design elements and calculates the required OSD volume and the size of the outlets.

4.3 Water Quantity Results

OSD storage has been designed in accordance with BCCs deemed to comply spreadsheet tool. The site requires approximately 240 m³ for the 50% AEP storm and 365 m³ for the 1% AEP storm. Refer to Attachment C - MA planset P2108122PS01 drawing PS01-E100 for the basin location and drawing PS01-E200 for basin details.

5 Upslope Catchment Conveyance System

5.1 Overview

Overland flow hydrology and hydraulics from the upstream catchment have been analysed under pre-filling and post filling (with the proposed civil and drainage design) conditions. The DRAINS software package was used with the RAFTS hydrological engine to assess the 1% AEP flood and PMF peak flows. The TUFLOW hydraulic model was used to determine overland flow characteristics.

5.2 Catchment Characteristics

The upstream catchment area to the site is primarily bushland. This area generally drains towards the north with an average slope of approximately 5%. Topography and catchment plan of the upslope area is presented in Attachment A, Map 01 and Map 02.

Catchment delineation was developed using LIDAR data provided by Land and Property Information NSW (LPI 2011) and site survey (Attachment C) provided by Usher & Company (2021). The pre filling catchment included all upslope areas that discharge into the site. The post filling catchment is based on the area upslope of the Event Parking Area fill, which is increased slightly due to the inclusion of upslope parking area access road batters.

5.3 Hydrology

Key modelling inputs and results for upslope catchment are summarised in Table 2 and Table 3.

Table 2: Details of catchments used in DRAINS modelling.

Catchment	Area (ha)	Catchment Slope (%)	Impervious (%) ¹	PERN Roughness Coefficient ²
Pre filling	2.19	5	100	0.08
Post filling	2.38	5	100	0.08

Notes

1. Adopted based on catchment aerals obtained from Nearmap (2011 and 2021).
2. Adopted based on the XP-RAFTS User Manual (1996).

Table 3: Peak 1% AEP and PMF flow rates for critical duration storms.

Flood Event	Peak Catchment Flow Rates (m ³ /s)	
	Pre Filling	Post Filling
1% AEP	0.45	0.48
PMF	3.03	3.25

5.4 Hydraulic Modelling

TUFLOW model construction consisted of:

1. 1.0 m topographic grids for pre-filling and post filling scenarios utilising site survey, surrounding area LIDAR data, and post filling Event Parking Area design surface.
2. The hydraulic model domain was defined from 30 m upslope of the site to the drainage basin downstream of the site.
3. Site inflow hydrographs were conservatively taken to be concentrated at the low point along the southern site boundary, thus underestimating the extent of overland flow through the site under pre-fill conditions.
4. Inflow boundary conditions based on the critical duration hydrographs from DRAINS for upstream catchment discharging to the site.
5. Manning's n roughness coefficients were assumed to be 0.08 for bushland, 0.025 for smooth bare earth and 0.035 for grassed area.
6. Pipe and culvert blockages of 25% for 1% AEP flood and 50% for PMF have been determined based on the assessment procedure in Australian Rainfall and Runoff 2019.

5.5 Upslope Catchment Area Conveyance System Results

Flood mapping is provided in Attachment B maps FL01 to FL04. The following is noted:

1. Prior to the filling, 1% AEP flood water generally flowed across the site from south to north and along the swale at the boundary with Lot 15 and 16, DP1122038 (refer to Map FL01). Some overland flow would have entered along the southern site boundary based on site contours, although this would have concentrated within the depression within the site.

2. Under the filled conditions with the proposed drainage and civil works, the 1% AEP flow through the site remains generally towards the north (refer to Map FL02).
3. There is no material detrimental off-site impact on the 1 % AEP overland flow associated with the filling and proposed drainage and civil works (refer to Map FL03). There are generally reductions in water levels in properties to the north of the site.
4. In respect of the PMF, with the filling and proposed drainage and civil works in place, the PMF is adequately conveyed through the site, and does not impact on or flow to properties to the east (refer to Map FL04).

6

Response to DPIE RFI

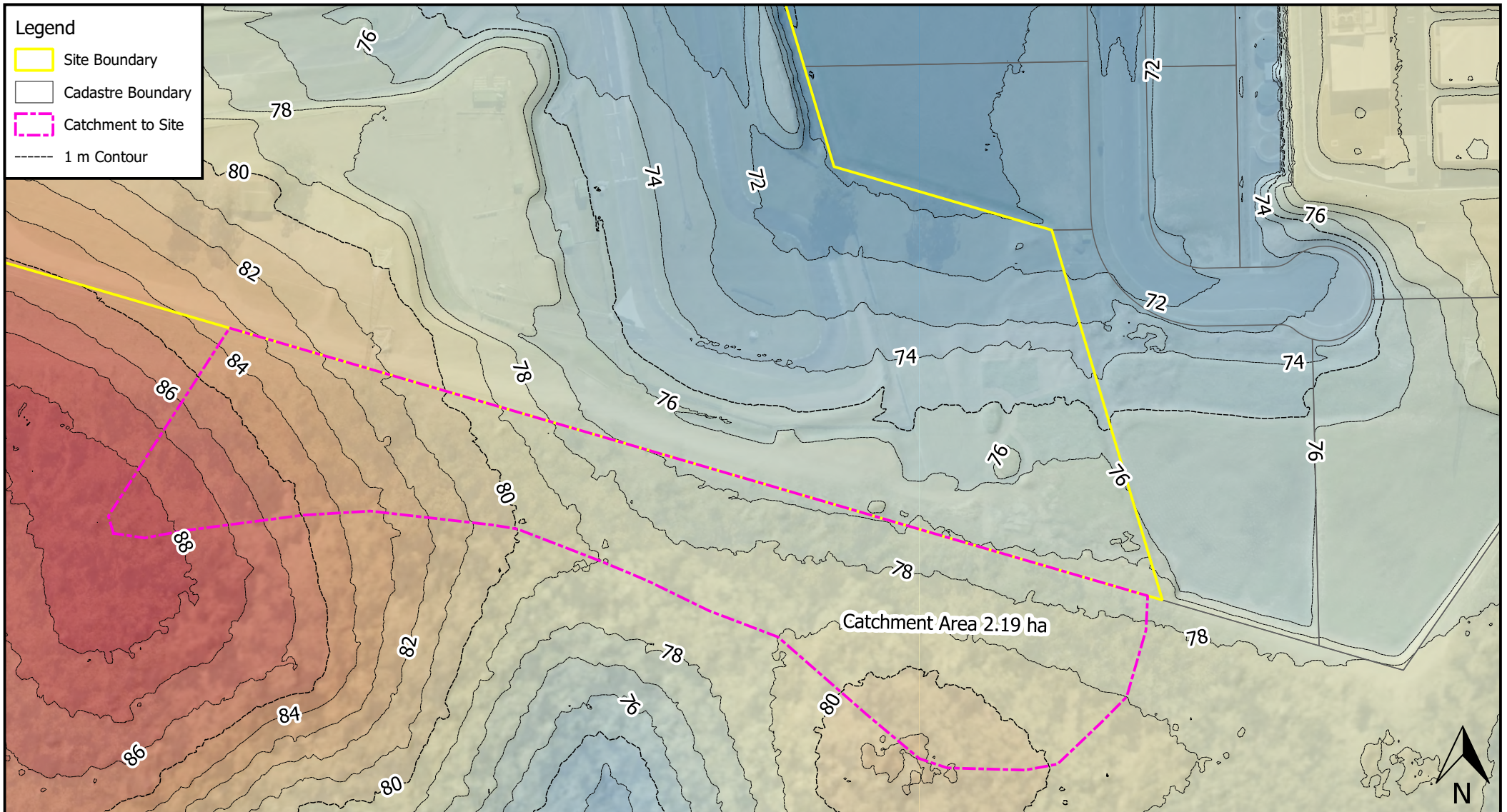
Table 4 summarises issues 7.2 to 7.5 raised in the DPIE in RFI dated 22 December 2020 as well our response to those issues. We consider that the revised drainage design with associated civil works address the issues raised.

Table 4: Response to DPIE RFI.

RFI Issue	Response / Comment
7.2 Eastern Swale <i>Submissions appear to show the eastern side batter of the fill work is graded directly to the existing level on the common boundary and/or very overgrown, impacting on its runoff carrying capacity. In this regard, please provide hydrologic calculations for the 100 year average recurrence interval (ARI) stormflow to the swale on the common boundary with No. 10 Raceway Place to ensure safe disposal with event parking overland drainage systems directed to the west. Provide channel calculations to indicate design flow velocity, depth and width at the most conservative chainage. Provide 500 mm freeboard between the design flow water level and existing surface level on the common boundary.</i> <i>Design a swale at appropriate scale showing how the swale design matches with existing levels. Levels and batter grades for the existing and post-development case must be shown. Where a swale is proposed to be traversed by a design vehicle (which may be a commercial service vehicle or an Endeavour Energy designated vehicle), provide a longitudinal section through the traverse and using an appropriate guideline such as AS 2890.2 :2002 Section 3.3.3 show how the design vehicle avoids scraping.</i>	The catchment area to the swale has been reduced and does not form a key element of the design as upslope flows are conveyed within the central drainage line through the site. Flow calculations are detailed in plan PS01-E202 (refer also to section 2.2). Freeboard is in accordance with BCC requirements for minor drainage systems. Detailed levels for the swale are provided in the civil plans.
7.3 Box Culvert <i>Provide hydrologic and hydraulic analyses and calculations for the Blacktown City-required 20 year ARI capacity of the box culvert. The drainage design must include from upstream areas to the point where the culvert or pipe design disposes to the receiving system with details of pit and headwall design and scour protection.</i> <i>In addition, provide major system 100 year ARI overland flow path to the same extent as the culvert after application of a suitable pipe blockage factor. Identify the location of the major system overland flow path giving consideration to risk of scour and sediment transport adjacent Kart track run-off areas which is likely sand, and apply an appropriate scour free surface. Identify vehicle crossing locations and assess for avoidance of scraping similar to the example above.</i>	The overland flow conveyance system has been designed in accordance with BCCs guidelines and accommodates the 1% AEP flow with appropriate blockage assumptions. We note that an overland flow path has been provided over the culvert and is included in the civil plans.

RFI Issue	Response / Comment
7.4 On-Site Detention <i>Given that gravel or bitumen sealing impacts on the previously existing impervious fraction at the subject site, impacts of increased runoff should be managed using a suitable on-site detention system designed in accordance with the Council-designated detention rate of 455 m³ per hectare or other suitable method acceptable to Council. The design of the system to be prepared by the Engineer for further consideration.</i>	OSD has been provided for the Event Parking Area in accordance with BCC's required rate of 455 m³/ha by following BCC's deemed to comply spreadsheet. Refer to Section 4 for further details.
7.5 Water Quality <i>Having regard to changes in surface finish, a water quality treatment system is to be designed by the Engineer in accordance with Council's MUSIC water quality conceptualisation model and submitted for further consideration.</i>	A water quality system is included within the design of the drainage system for Event Parking Area in accordance with BCC's MUSIC guidelines to treat the pollution generated from the changes in surface finished proposed by the development. Refer to Section 2 for further details.

7 **Attachment A: Catchment Maps**



0 20 40 60 80 100 m

1:2000 @ A4

Viewport Catchment

Digital Elevation Model based on LIDAR data by NSW Spatial Services (2011). Aerial photograph from Nearmap (2011).

Map Title / Figure:

Catchment - Pre Filling

Map 01

50 Peter Brock Drive, Eastern Creek NSW

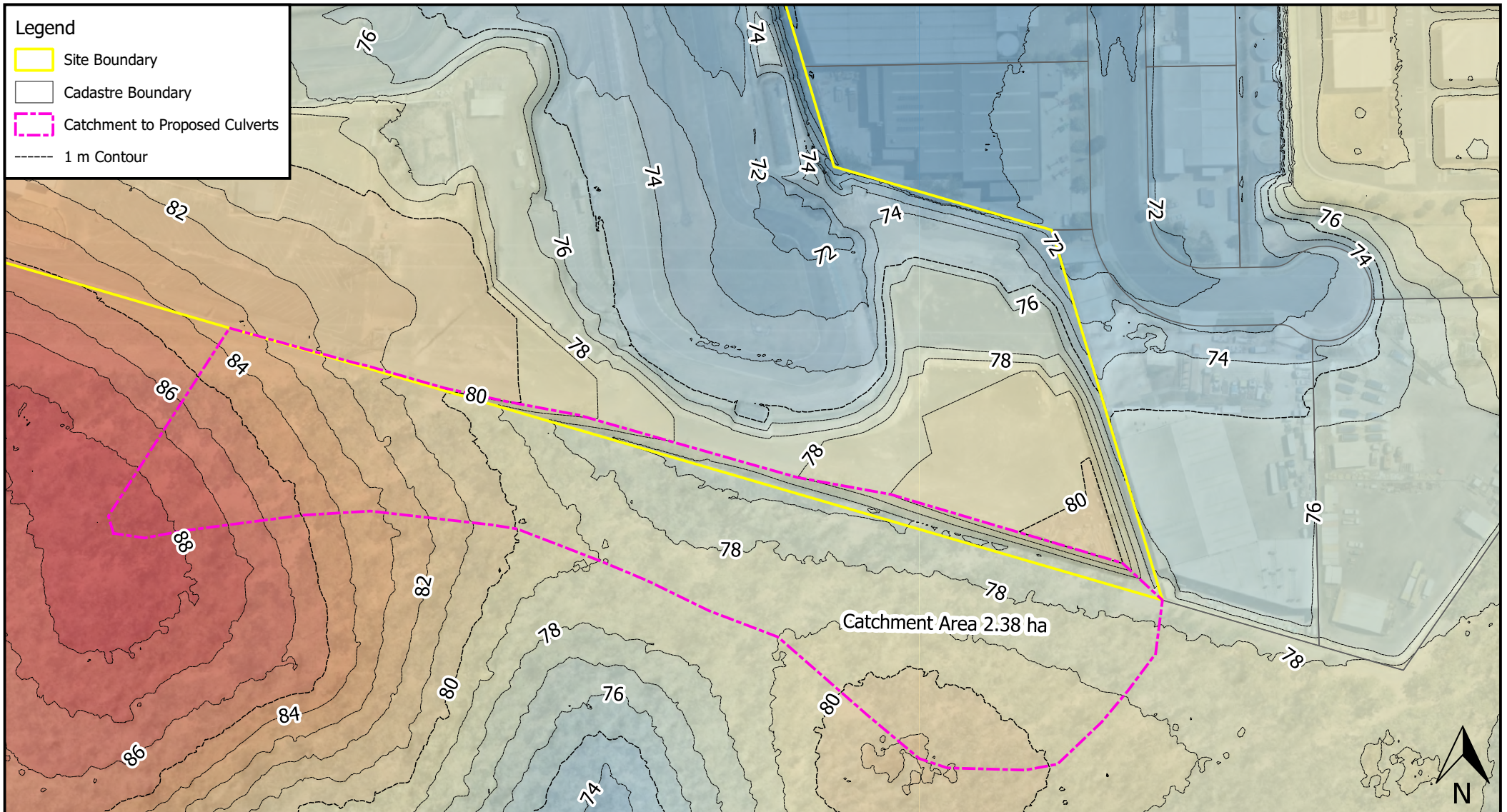
Event Carpark Works

Flooding Assessment

Newcastle Legal and Conveyancing

16/04/2021

Map
Site
Project
Sub-Project
Client
Date



0 20 40 60 80 100 m

1:2000 @ A4

Viewport Catchment

Digital Elevation Model based on LIDAR data by NSW Spatial Services (2011), survey by Usher & Company (2021) and MA earthwork design. Aerial photograph from Nearmap (2021).

Map Title / Figure:

Catchment - Post Filling

Map 02

50 Peter Brock Drive, Eastern Creek NSW

Event Carpark Works

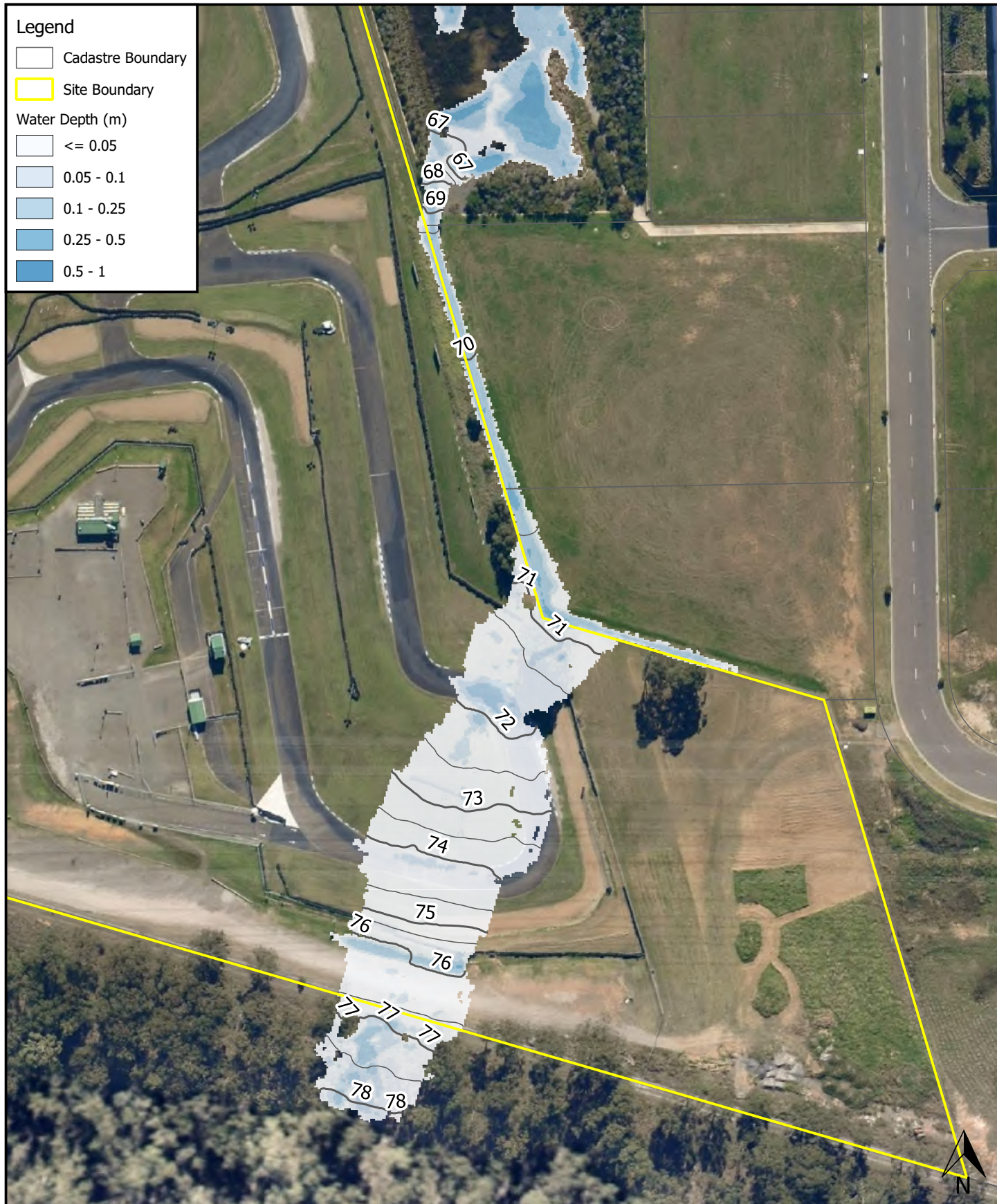
Flooding Assessment

Newcastle Legal and Conveyancing

16/04/2021

Map
Site
Project
Sub-Project
Client
Date

8 **Attachment B - Flooding Maps**



0 10 20 30 40 50 m

1:1500 @ A4

Viewport Flooding

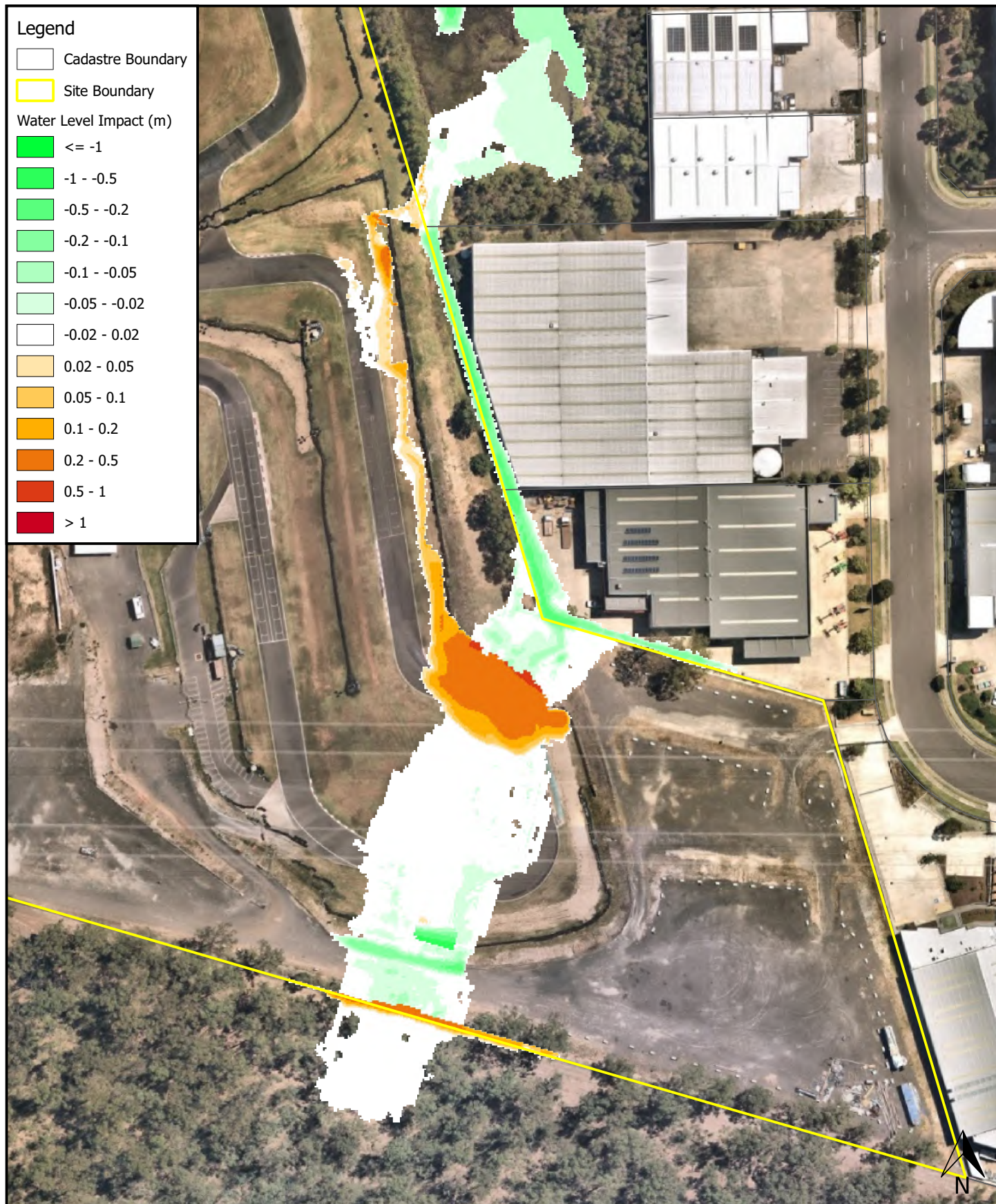
Aerial photograph from Nearmap (2011). Cadastral boundary from NSW Spatial Services (2021).



1:1500 @ A4

Viewport Flooding

Aerial photograph from Nearmap (2021). Cadastral boundary from NSW Spatial Services (2021).



0 10 20 30 40 50 m

1:1500 @ A4

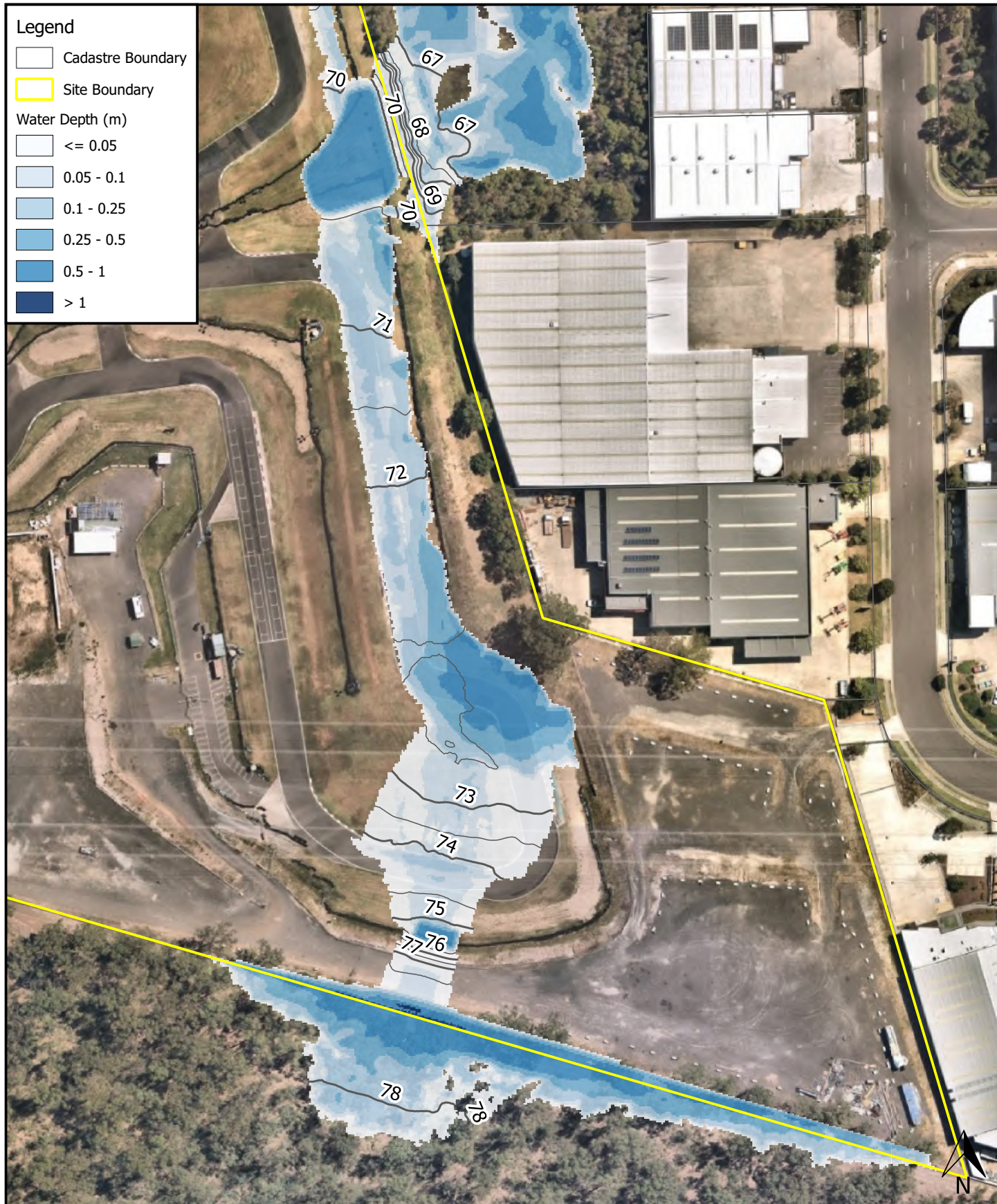
Viewport Flooding

Aerial photograph from Nearmap (2021). Cadastral boundary from NSW Spatial Services (2021).

1% AEP Water Level Impact (m)

FL03
50 Peter Brock Drive, Eastern Creek NSW
Event Carpark Works
Flooding Assessment
Newcastle Legal and Conveyancing
16/04/2021

Map
Site
Project
Sub-Project
Client
Date



0 10 20 30 40 50 m

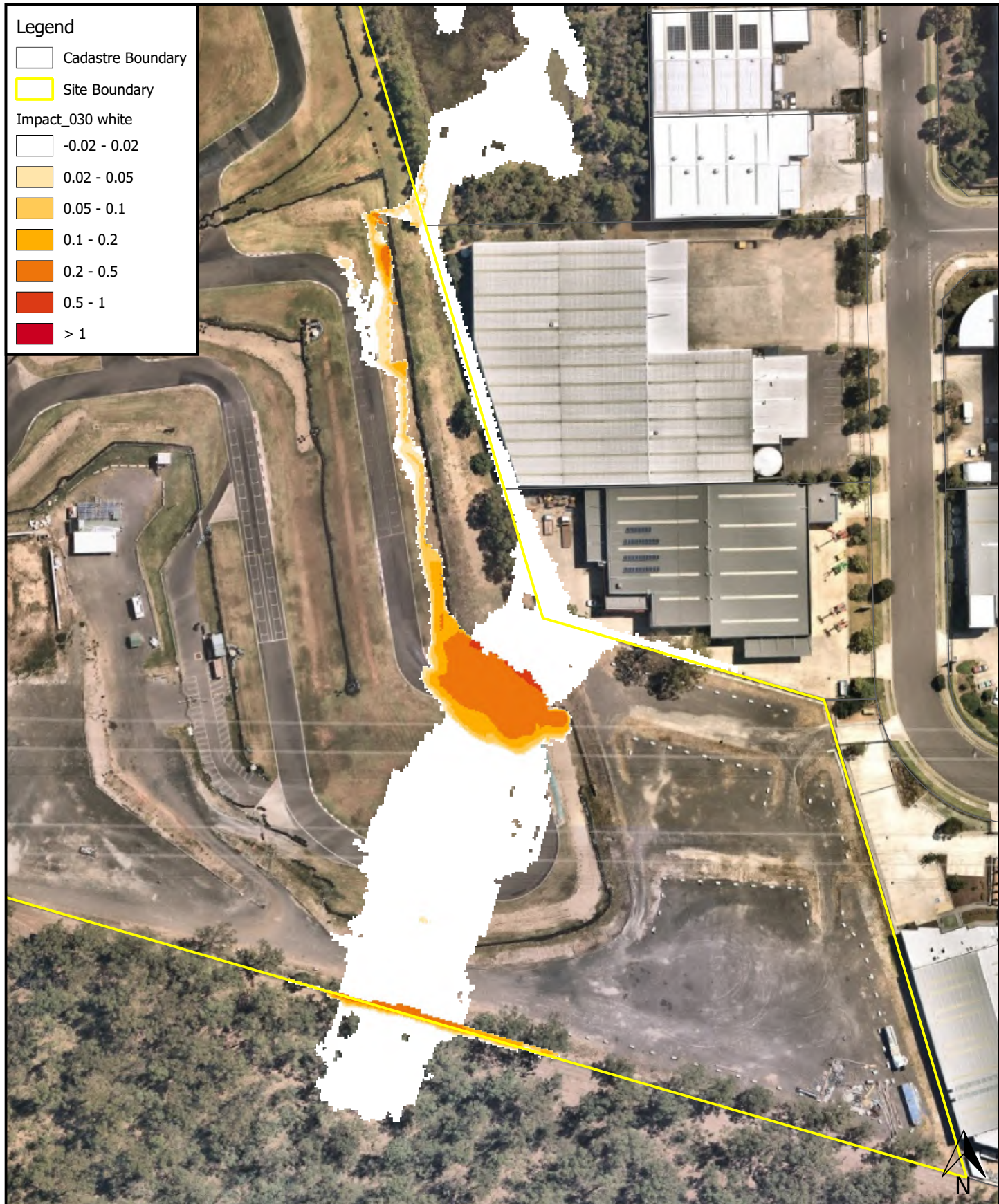
Map Title / Figure:

PMF Water Level (mAHD) and Depth (m) - Post Filling

1:1500 @ A4

Viewport Flooding

Aerial photograph from Nearmap (2021). Cadastral boundary from NSW Spatial Services (2021).



0 10 20 30 40 50 m

1:1500 @ A4

Viewport Flooding

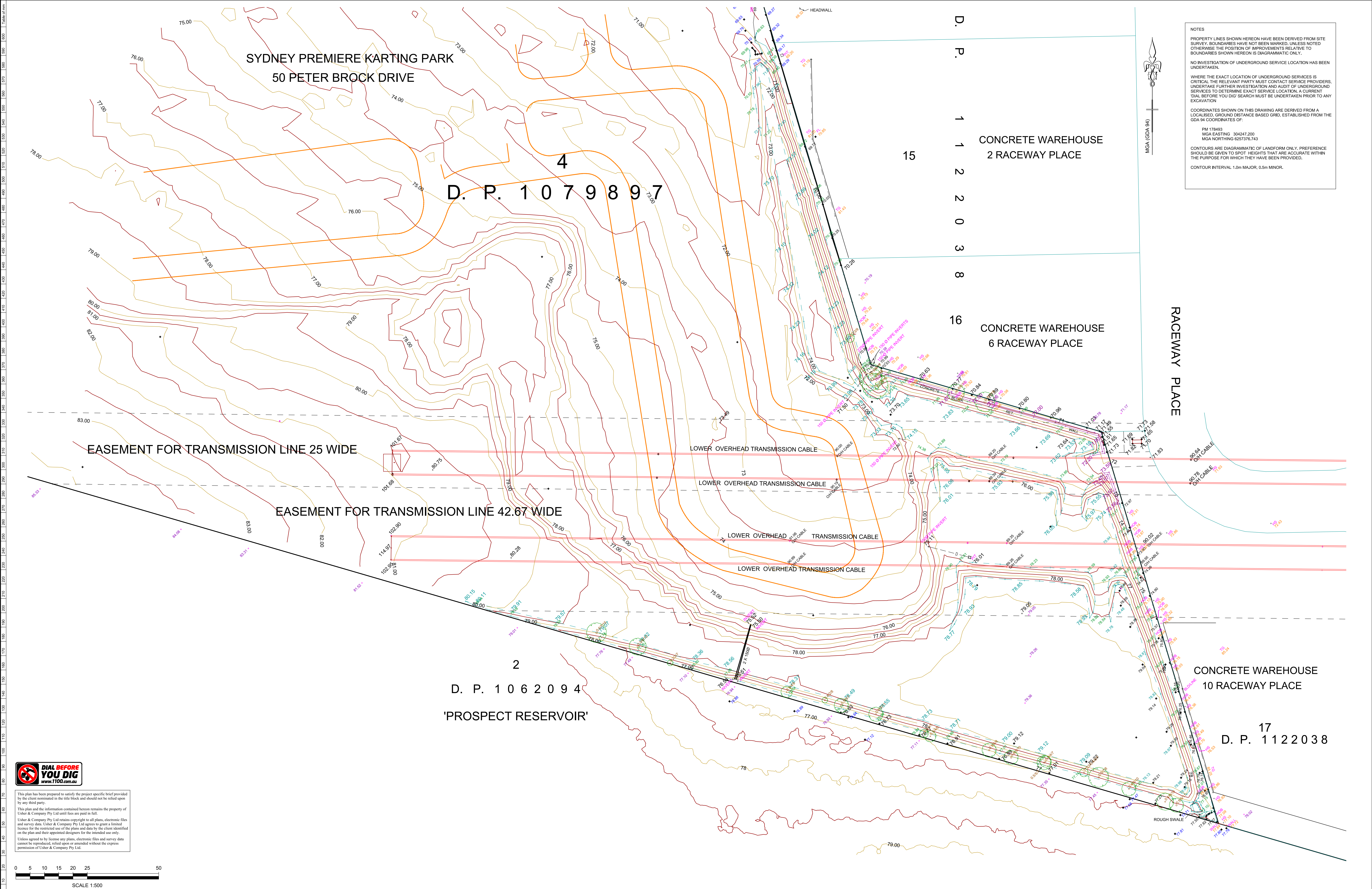
Aerial photograph from Nearmap (2021). Cadastral boundary from NSW Spatial Services (2021).

1% AEP Water Level Impact (m)

FL05
50 Peter Brock Drive, Eastern Creek NSW
Event Carpark Works
Flooding Assessment
Newcastle Legal and Conveyancing
16/04/2021

Map
Site
Project
Sub-Project
Client
Date

9 **Attachment C: Survey**



NOTES

PROPERTY LINES SHOWN HEREON HAVE BEEN DERIVED FROM SITE SURVEY. BOUNDARIES HAVE NOT BEEN MARKED, UNLESS NOTED OTHERWISE THE POSITION OF IMPROVEMENTS RELATIVE TO BOUNDARIES SHOWN HEREON IS DIAGRAMMATIC ONLY.

NO INVESTIGATION OF UNDERGROUND SERVICE LOCATION HAS BEEN UNDERTAKEN.

WHERE THE EXACT LOCATION OF UNDERGROUND SERVICES IS CRITICAL, THE RELEVANT PARTY MUST CONTACT SERVICE PROVIDERS, UNDERTAKE FURTHER INVESTIGATION AND AUDIT OF UNDERGROUND SERVICES TO DETERMINE EXACT SERVICE LOCATION. A CURRENT 'DIAL BEFORE YOU DIG' SEARCH MUST BE UNDERTAKEN PRIOR TO ANY EXCAVATION.

COORDINATES SHOWN ON THIS DRAWING ARE DERIVED FROM A LOCALISED, GROUND DISTANCE BASED GRID, ESTABLISHED FROM THE GDA 94 COORDINATES OF:

PM 178493
MGA EASTING 304247.200
MGA NORTHING 6257376.743

CONTOURS ARE DIAGRAMMATIC OF LANDFORM ONLY. PREFERENCE SHOULD BE GIVEN TO SPOT HEIGHTS THAT ARE ACCURATE WITHIN THE PURPOSE FOR WHICH THEY HAVE BEEN PROVIDED.

CONTOUR INTERVAL 1.0m MAJOR, 0.5m MINOR.



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SCALE 1:500

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Email: admin@ushersurvey.com.au

APPROVED

Amendments

ISSUE	DATE	DETAILS
INITIAL	03-03-2021	ISSUED FOR ENGINEERING AND PLANNING INVESTIGATION
1	10-03-2021	ADDITIONAL GROUND SURVEY LEVEL INFORMATION ADDED

PLAN:

SHOWING DETAIL AND SELECTED LEVELS
AT SYDNEY PREMIERE KART PARK
BEING LOT 4 IN DP 1079897

LGA:

BLACKTOWN

SUBURB:

EASTERN CREEK

ORIGIN:

PM 178493
RL 72.552 AHD
CLASS B, ORDER 2
SCIMS 24-02-2021

REDUCTION RATIO:

1:500

DATUM:

AHD

DATE OF SURVEY:

22-02-2021

SURVEYED BY:

MB SC

DRAWN BY:

AJB

CLIENT:

Martens & Associates Pty Ltd

PLAN REFERENCE:

6334

B1

ISSUE:

1

10 **Attachment D: Concept Civil Work Plans**

PROJECT:EVENT CARPARK WORKS

PLANSET:CONCEPT ENGINEERING WORK

CLIENT:NEWCASTLE LEGAL AND CONVEYANCING



LOCALITY PLAN
NOT TO SCALE

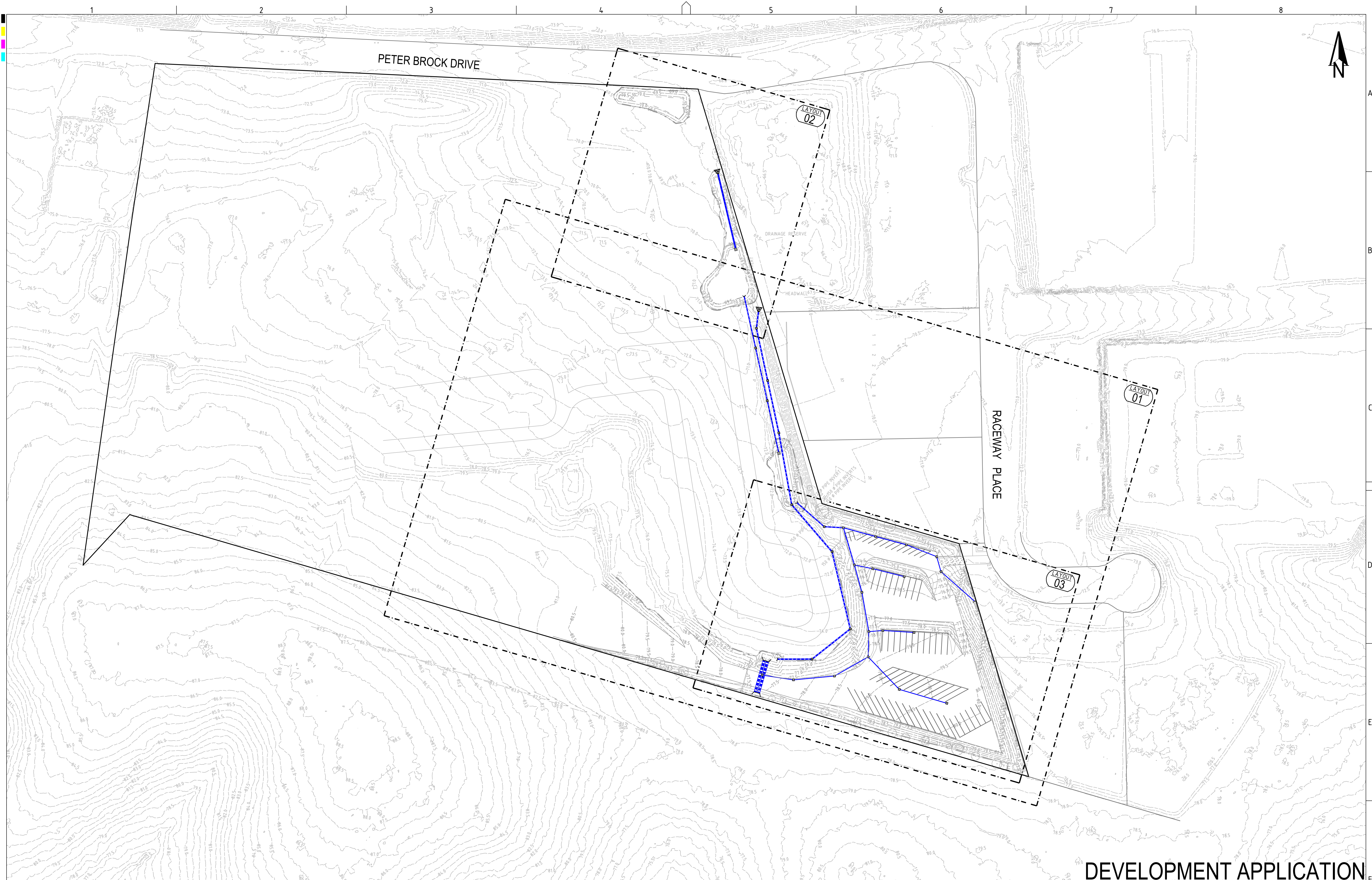
LGA: BLACKTOWN CITY COUNCIL

50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766
LOT 4 DP 1079897

DRAWING LIST		
DWG NO.	REV	DWG TITLE
GENERAL		
PS01-A000	A	COVER SHEET
PS01-A050	A	DEVELOPMENT OVERVIEW PLAN
EARTHWORKS		
PS01-C100	A	EARTHWORKS GRADING PLAN
PS01-C600	A	EARTHWORKS SITE SECTIONS - SHEET 1
PS01-C601	A	EARTHWORKS SITE SECTIONS - SHEET 2
DRAINAGE		
PS01-E100	A	DRAINAGE PLAN
PS01-E200	A	DRAINAGE DETAILS - SHEET 1
PS01-E201	A	DRAINAGE DETAILS - SHEET 2
PS01-E202	A	DRAINAGE DETAILS - SHEET 3
PS01-E300	A	LONGITUDINAL SECTION - SHEET 1
PS01-E301	A	LONGITUDINAL SECTION - SHEET 2
PS01-E302	A	LONGITUDINAL SECTION - SHEET 3
PS01-E600	A	ON SITE DETENTION CATCHMENT PLAN - MODELS & RESULTS
PS01-E700	A	WATER QUALITY CATCHMENT PLAN - MODELS & RESULTS
FINAL CIVIL WORKS		
PS01-G300	A	CARPARK LAYOUT PLAN
PS01-GZ00	A	CARPARK SWEEP PATH PLAN - SHEET 1 - B99 VEHICLE & TRAILER CIRCULATION
PS01-GZ01	A	CARPARK SWEEP PATH PLAN - SHEET 2 - B99 VEHICLE & TRAILER PARKING
PS01-GZ02	A	CARPARK SWEEP PATH PLAN - SHEET 3 - HRV CIRCULATION

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	 Consulting Engineers Environment Water Geotechnical Civil Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: www.martens.com.au	DRAWING TITLE COVER SHEET	
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM		N/A	N/A	GH	NEWCASTLE LEGAL AND CONVEYANCING			
								DISCLAIMER & COPYRIGHT		PROJECT NAME/PLANSET TITLE				
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										50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897				
A1 / A3 LANDSCAPE [A1L_C_v02.0.01]														



DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	martens & Associates Pty Ltd Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: www.martens.com.au	Consulting Engineers	DRAWING TITLE						
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM	A1 (A3) 1:1,000 (1:2,000) METRES	MGA	mAHD	GH	NEWCASTLE LEGAL AND CONVEYANCING		DEVELOPMENT OVERVIEW PLAN							
											PROJECT NAME/PLANSET TITLE									
											EVENT CARPARK WORKS									
											CONCEPT ENGINEERING WORKS									
											50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766									
											LOT 4 DP 1079897									
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PRINTED: ----- (ASP SUMMIT)													PROJECT NO. P2108122				PLANSET NO. PS01	RELEASE NO. R02	DRAWING NO. PS01-A050	REVISION A
A1 / A3 LANDSCAPE [A1L_C_v02.0.0]													DRAWING ID: P2108122-PS01-R02-A050							



INSET - LAYOUT 2

KEY

EXISTING CONTOURS	---
PROPOSED CONTOURS	---
EARTHWORKS HINGE	---
INTERFACE	---
EDGE OF BATTER	---
LIMIT OF WORKS	---
SITE BOUNDARY	---

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE
0 5 10 15 20 25 30 35 40 45 50
A1 (A3) 1:500 (1:1,000) METRES

GRID
MGA
DATUM
mAHD
PROJECT MANAGER
GH
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PROJECT NAME/PLANSET TITLE
EVENT CARPARK WORKS
CONCEPT ENGINEERING WORKS
50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766
LOT 4 DP 1079897

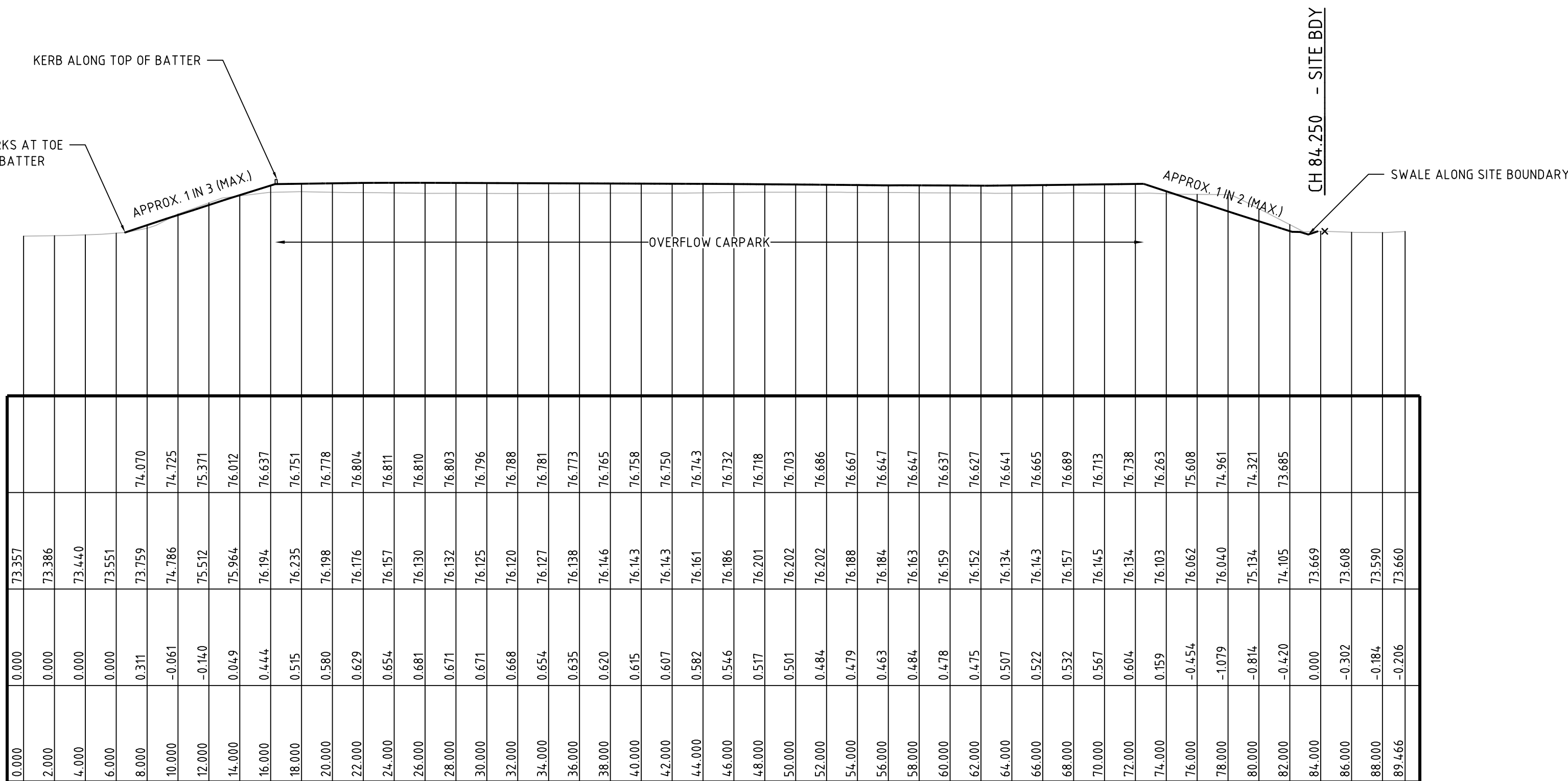
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DRAWING TITLE
EARTHWORKS GRADING PLAN
PROJECT NO.
P2108122
PLANSET NO.
PS01
RELEASE NO.
R02
DRAWING NO.
PS01-C100
REVISION
A

DEVELOPMENT APPLICATION

DATUM RL 63.000

DESIGN SURFACE LEVELS
EXISTING SURFACE LEVELS
CUT / FILL DEPTH
CHAINAGE

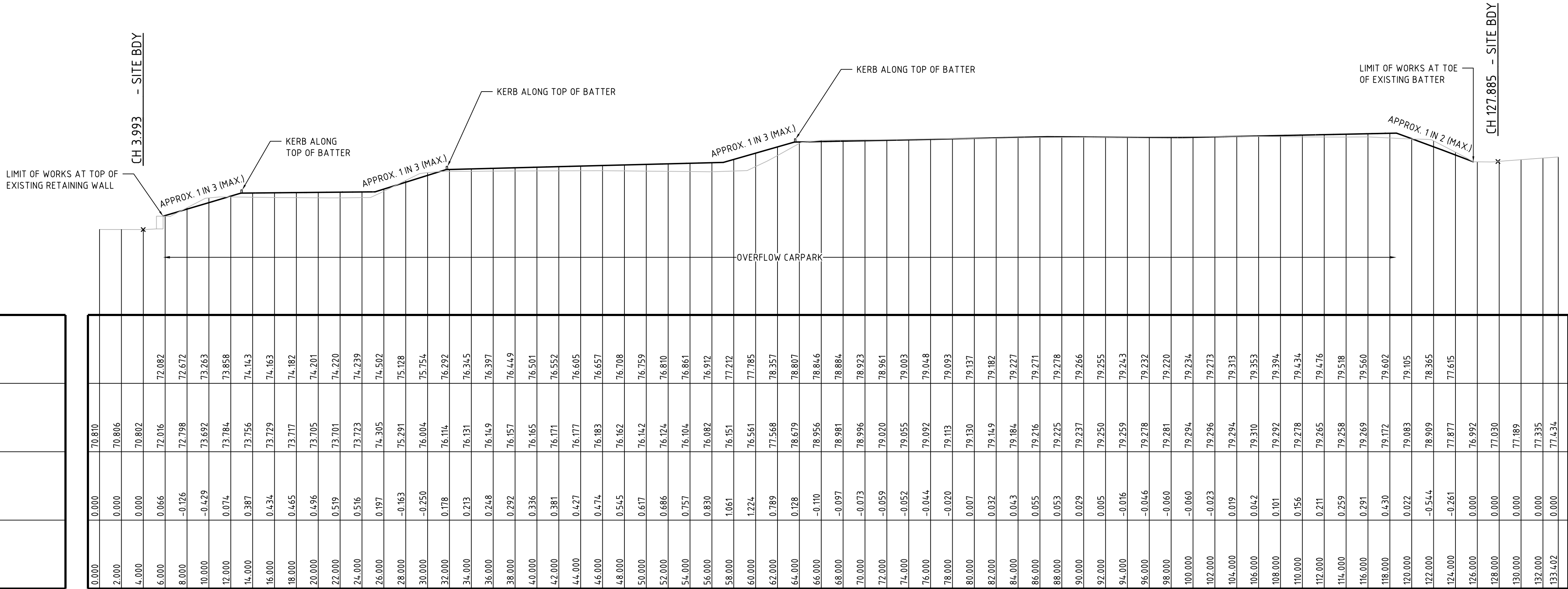


SECTION B

SCALE: HORIZONTAL - 1:250
VERTICAL - 1:250

DATUM RL 63.000

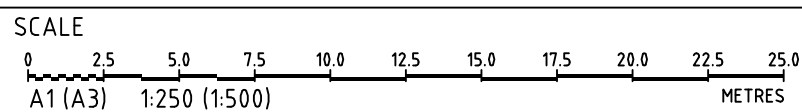
DESIGN SURFACE LEVELS
EXISTING SURFACE LEVELS
CUT / FILL DEPTH
CHAINAGE



SECTION A

SCALE: HORIZONTAL - 1:250
VERTICAL - 1:250

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPROV
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM



GRID	DATUM	PROJECT MANAGER	CLIENT
MGA	mAHD	GH	NEWCASTLE LEGAL AND CONVEYANCING
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PROJECT NAME/PLANSET TITLE			
EVENT CARPARK WORKS			
CONCEPT ENGINEERING WORKS			
50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766			
LOT 4 DP 1079897			

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DRAWING TITLE

EARTHWORKS SITE SECTIONS
SHEET 1

PROJECT NO.

PLANSET NO.

RELEASE NO.

DRAWING NO.

REVISION

P2108122

PS01

R02

PS01-C600

A

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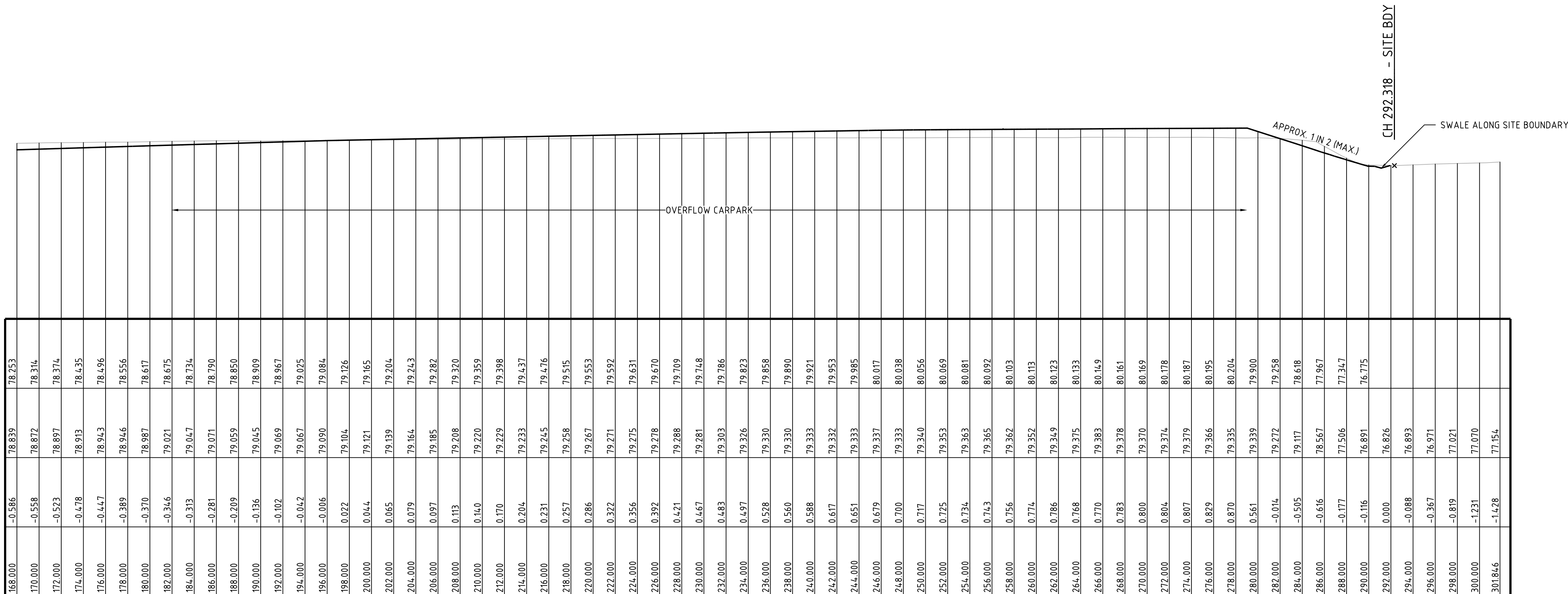
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DEVELOPMENT APPLICATION

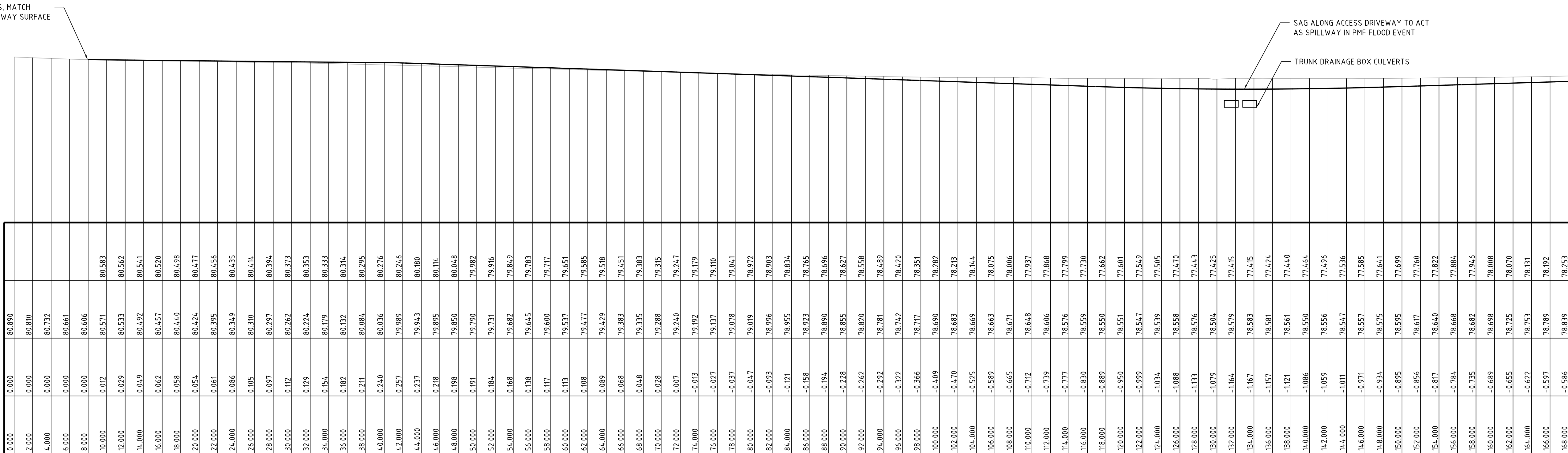
DATUM RL 63.000
DESIGN SURFACE LEVELS
EXISTING SURFACE LEVELS
CUT / FILL DEPTH
CHAINAGE



SECTION C

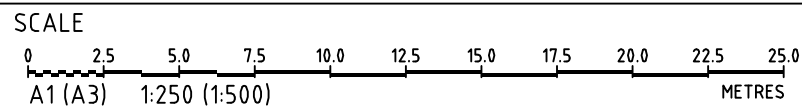
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VERTICAL - 1:250

DATUM RL 63.000
DESIGN SURFACE LEVELS
EXISTING SURFACE LEVELS
CUT / FILL DEPTH
CHAINAGE



SECTION C

SCALE: HORIZONTAL - 1:250
VERTICAL - 1:250

[illegible]

GRID	DATUM	PROJECT MANAGER	CLIENT
MGA	mAHd	GH	NEWCASTLE LEGAL AND CONVEYANCING
DISCLAIMER & COPYRIGHT			PROJECT NAME/PLANSET TITLE
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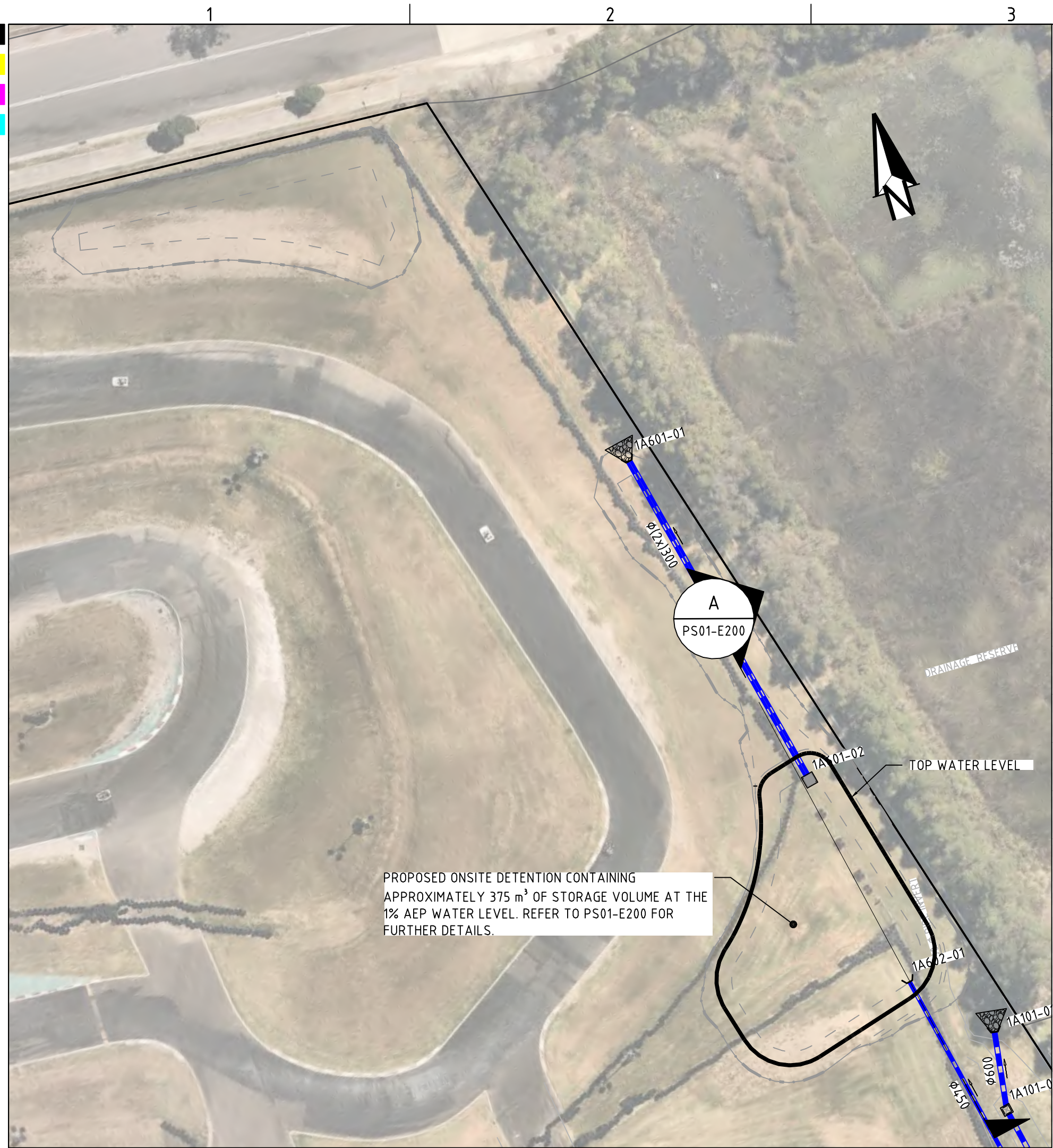
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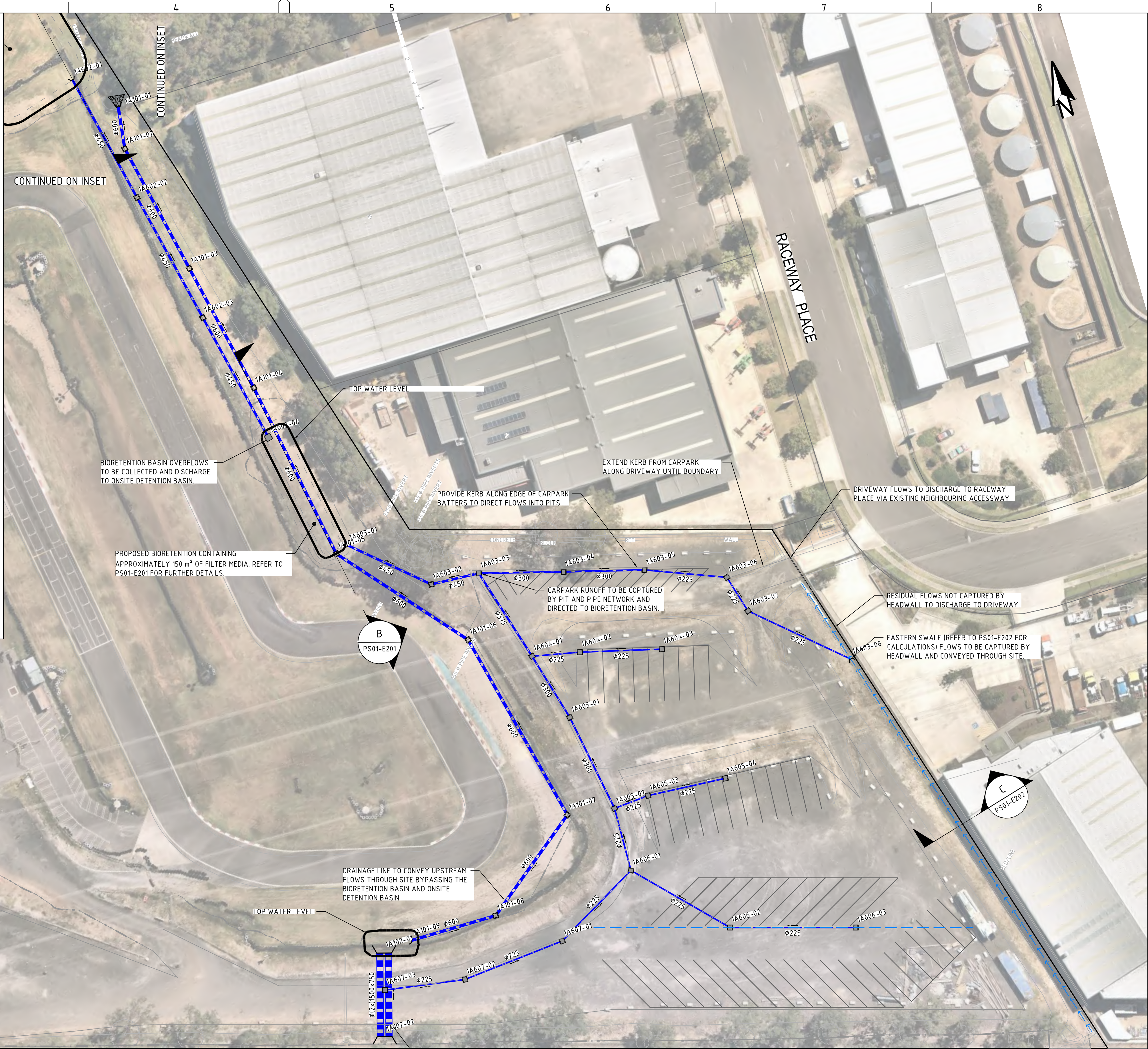
DRAWING TITLE				
EARTHWORKS SITE SECTIONS				
SHEET 2				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-C601	A

DEVELOPMENT APPLICATION



INSET - LAYOUT 2

SCALE 1:500



KEY

FINAL SURFACE CONTOURS

72.0

STORMWATER PIPELINE

72.0

SURFACE INLET PIT

72.0

JUNCTION PIT

72.0

HEADWALL

72.0

FLOW DIRECTION

72.0

SWALE INVERT

72.0

SITE BOUNDARY

72.0

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE
0 5 10 15 20 25 30 35 40 45 50
A1 (A3) 1:500 (1:1,000) METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GH
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EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS
50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897

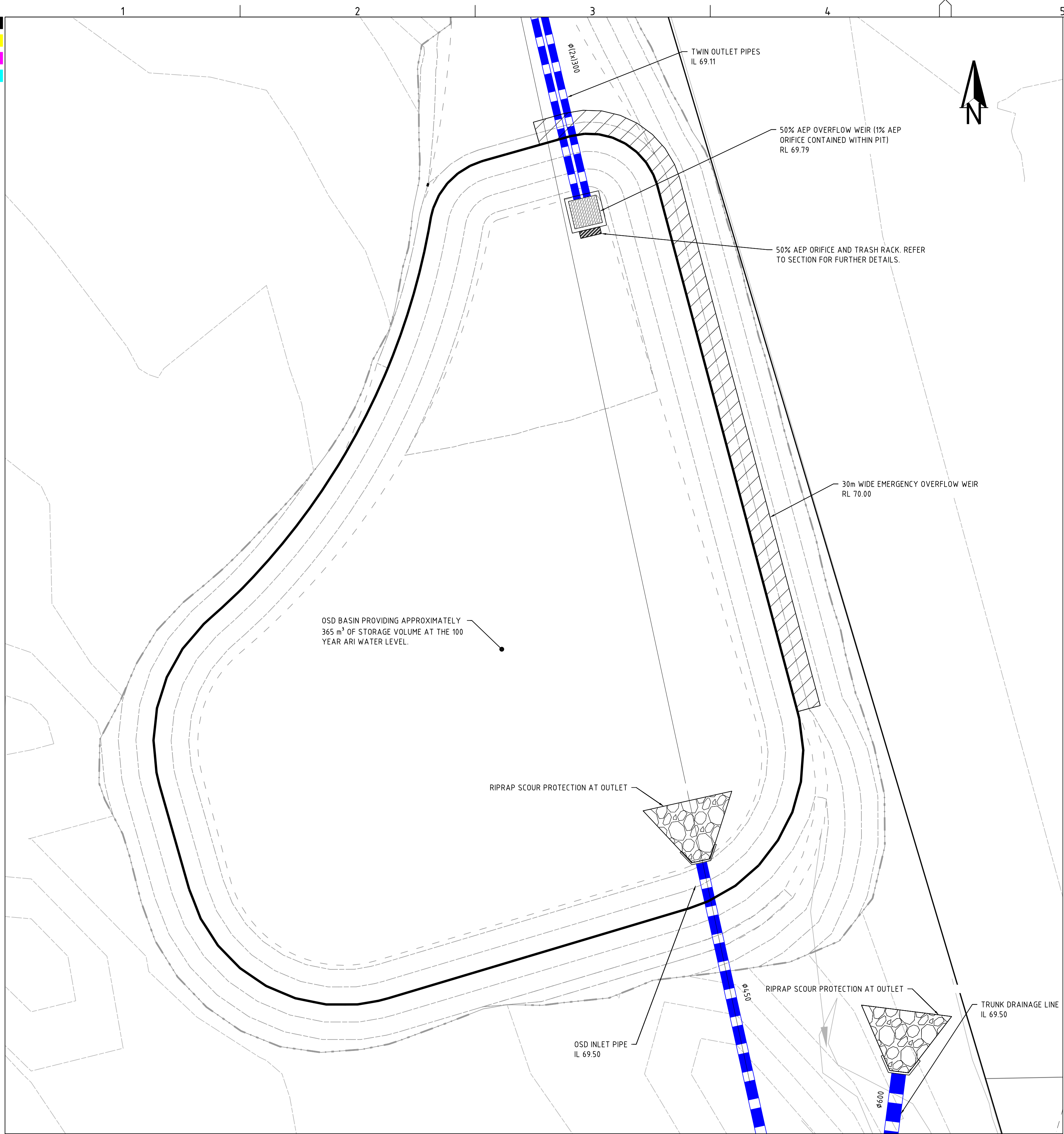
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DRAWING TITLE				
DRAINAGE PLAN				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-E100	A

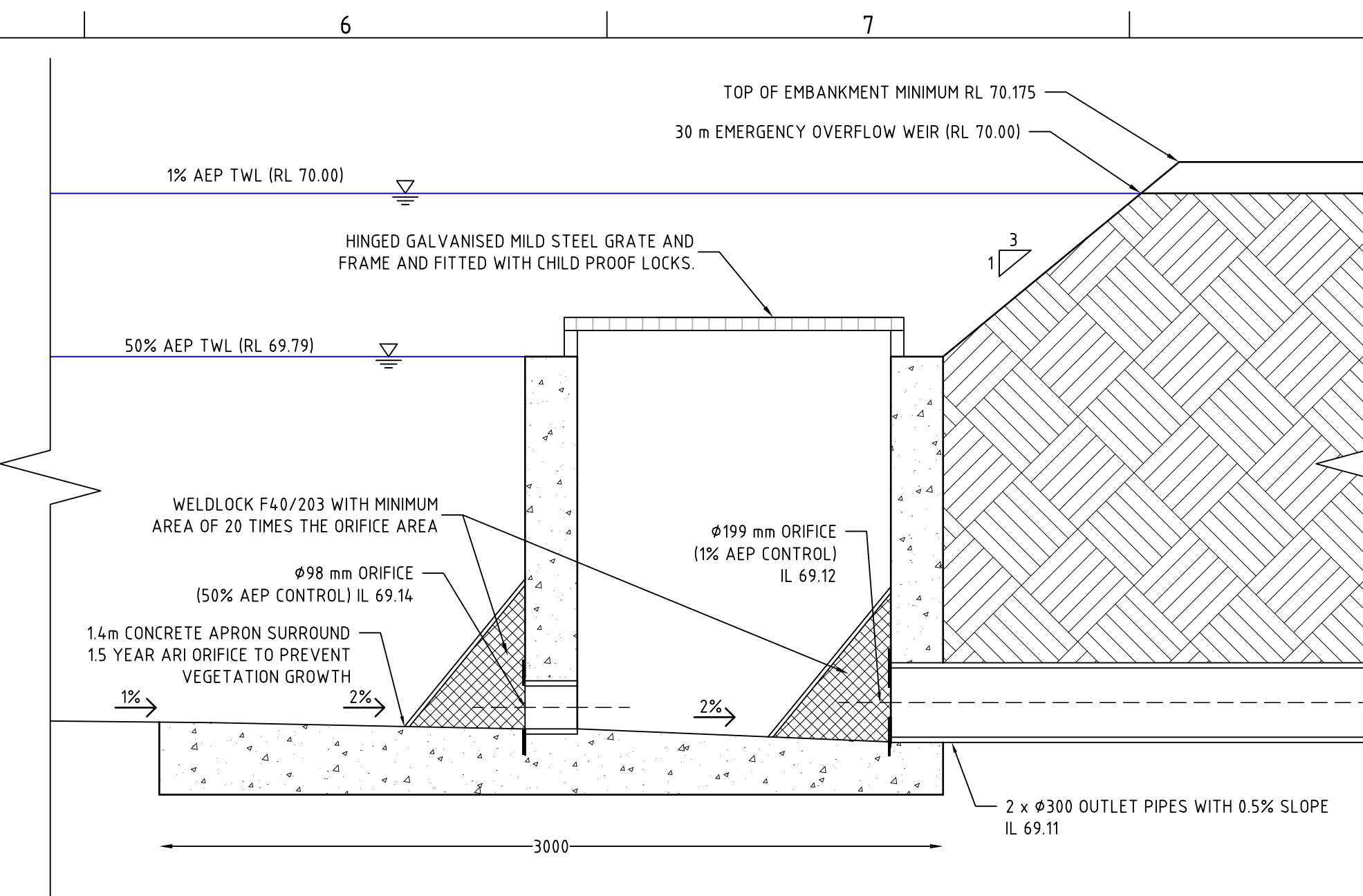
DEVELOPMENT APPLICATION

PRINTED: 22/12/2020 10:00:00

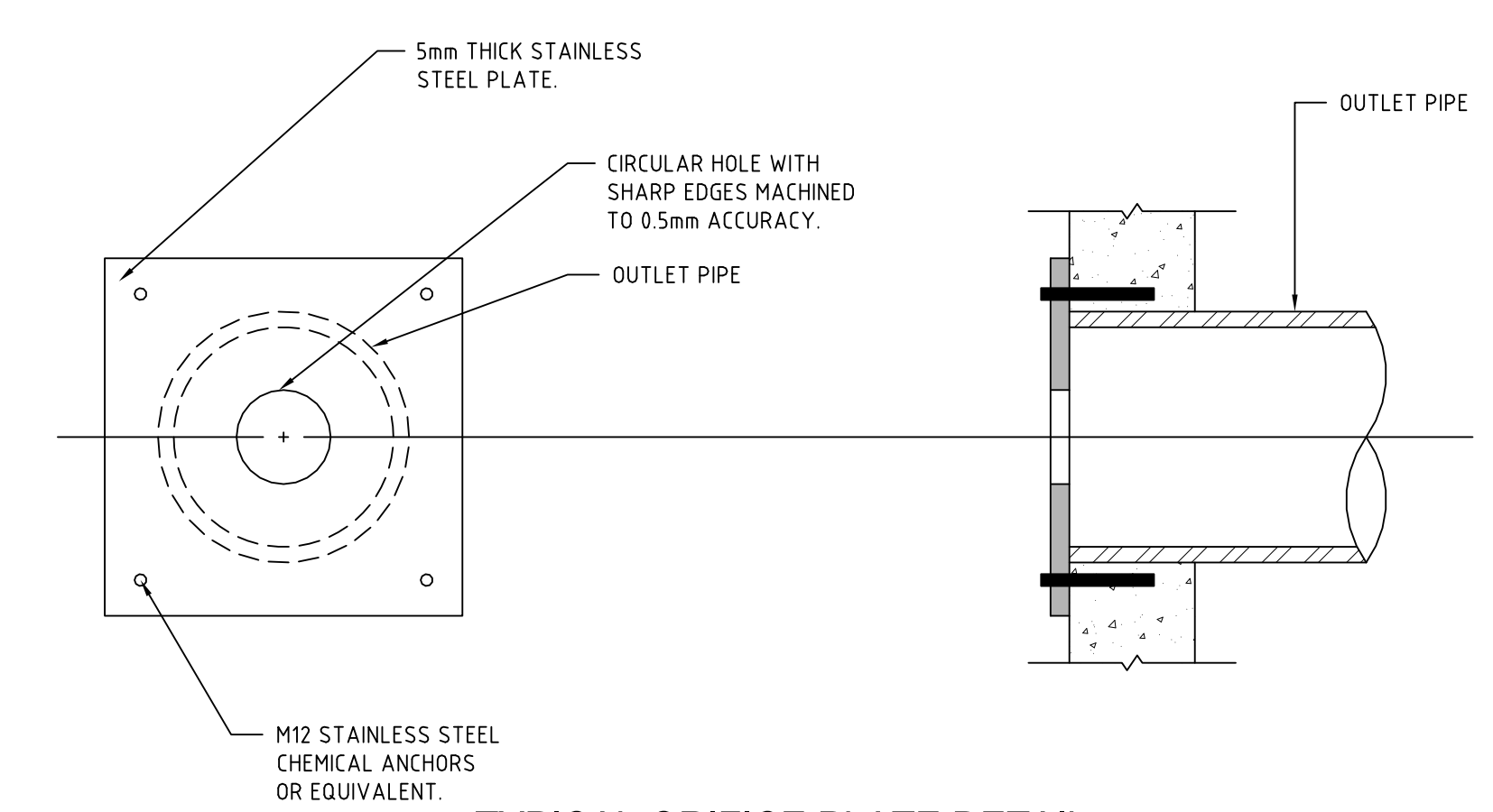
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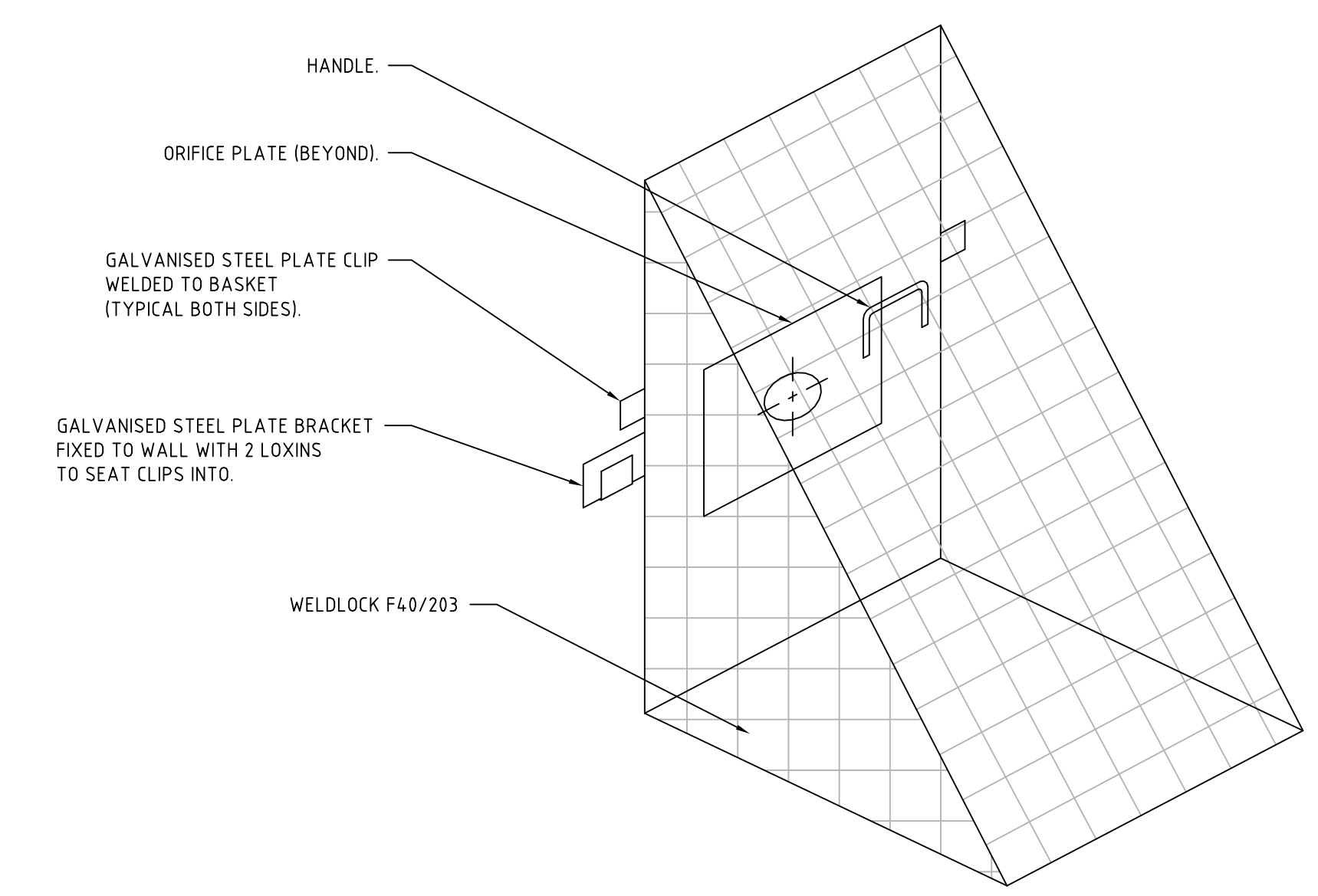
ONSITE DETENTION PLAN
SCALE 1:100



OSD OUTLET STRUCTURE
NOT TO SCALE



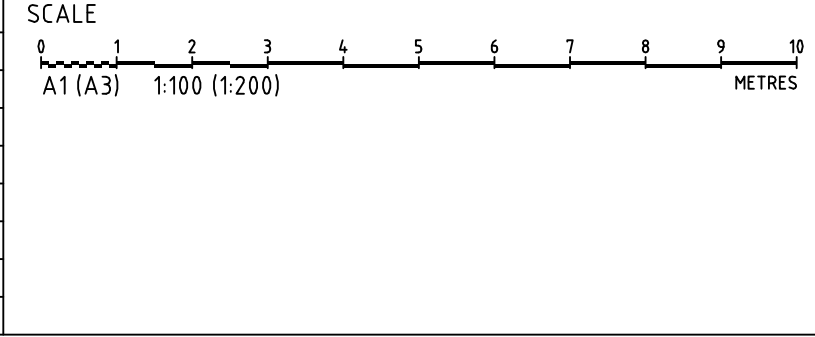
TYPICAL ORIFICE PLATE DETAIL
NOT TO SCALE



TRASH SCREEN DETAILS
NOT TO SCALE

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM



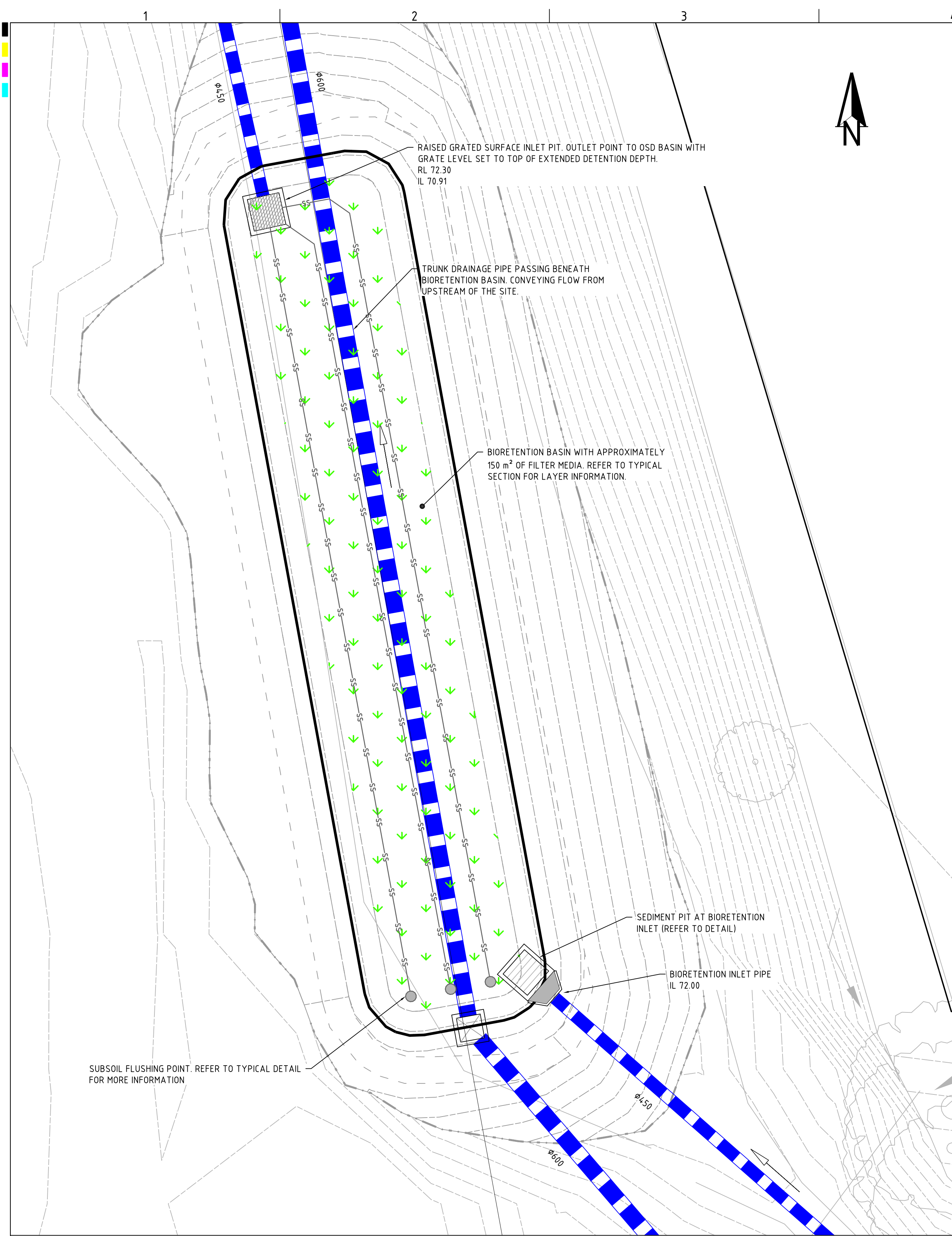
GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GH
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CLIENT	PROJECT NAME/PLANSET TITLE
NEWCASTLE LEGAL AND CONVEYANCING	EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS
50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897	

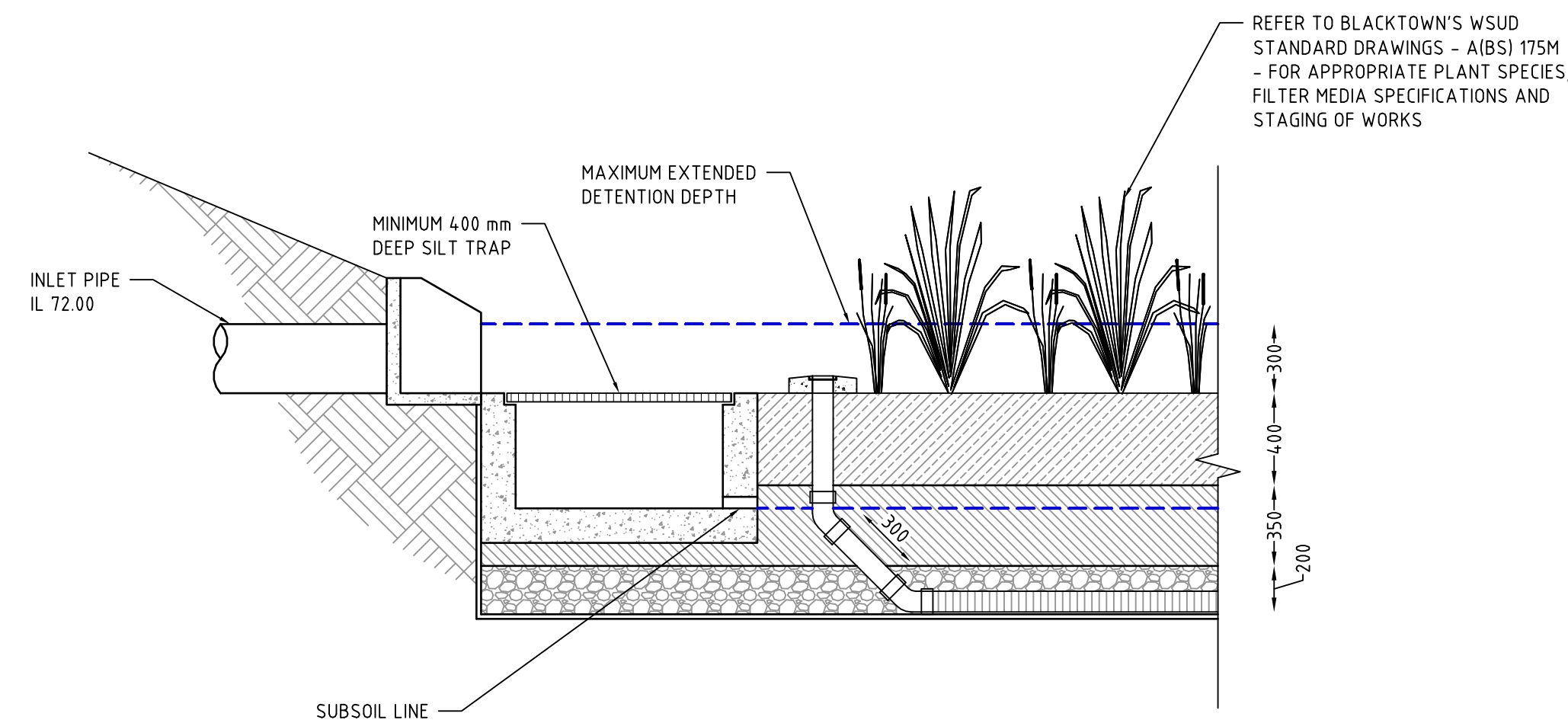
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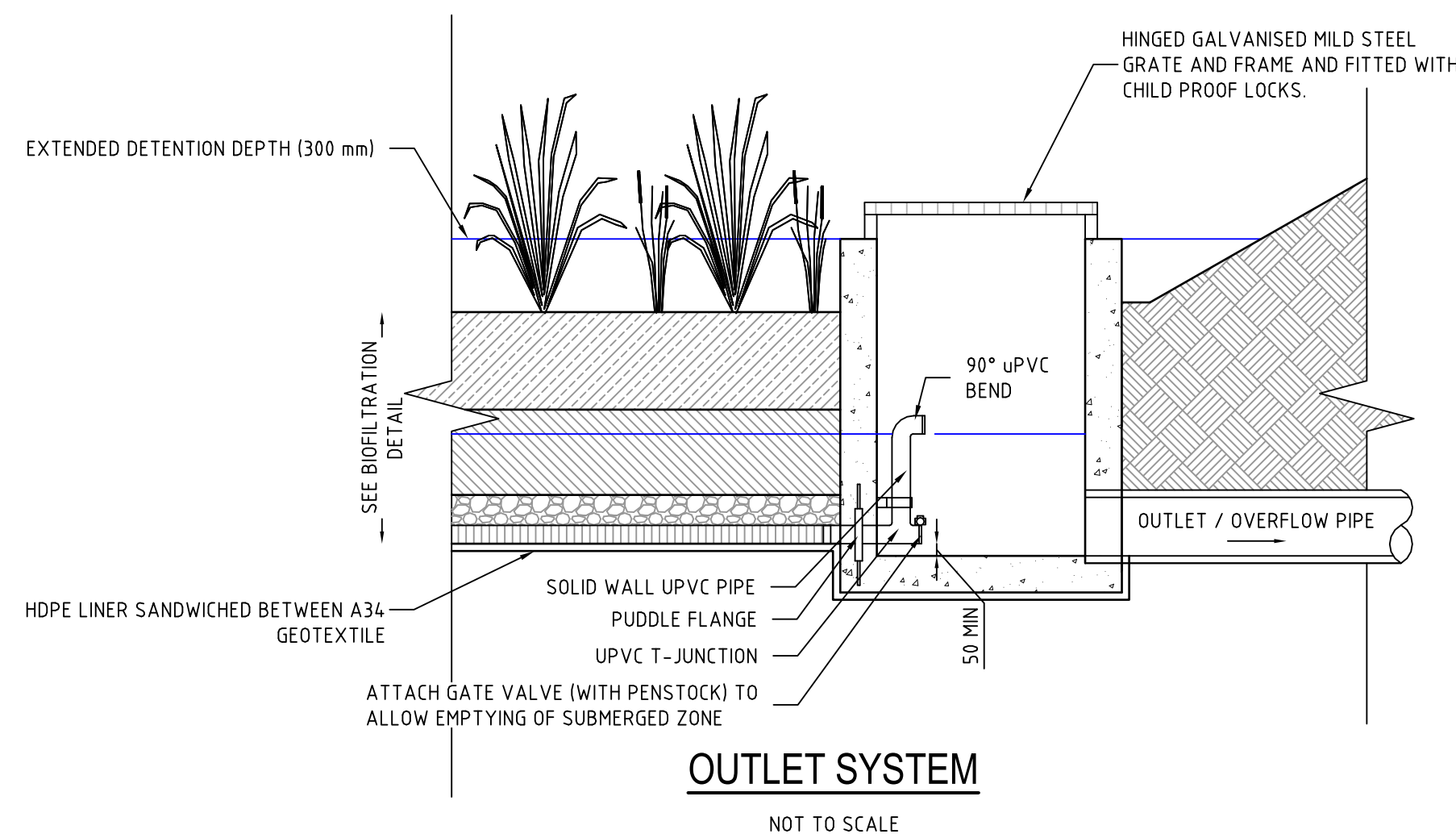
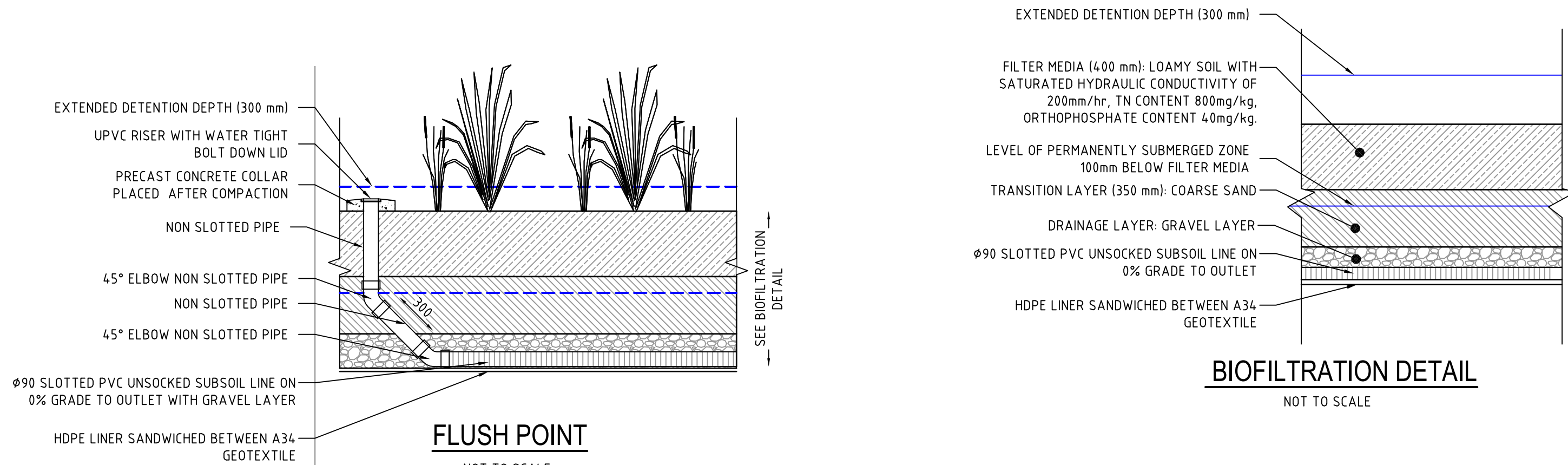
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DRAINAGE DETAILS SHEET 1				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-E200	A



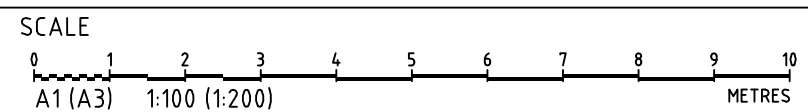
BIORETENTION BASIN PLAN
SCALE 1:100



TYPICAL BIORETENTION BASIN PROFILE AND SEDIMENT PIT DETAIL
NOT TO SCALE



REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM



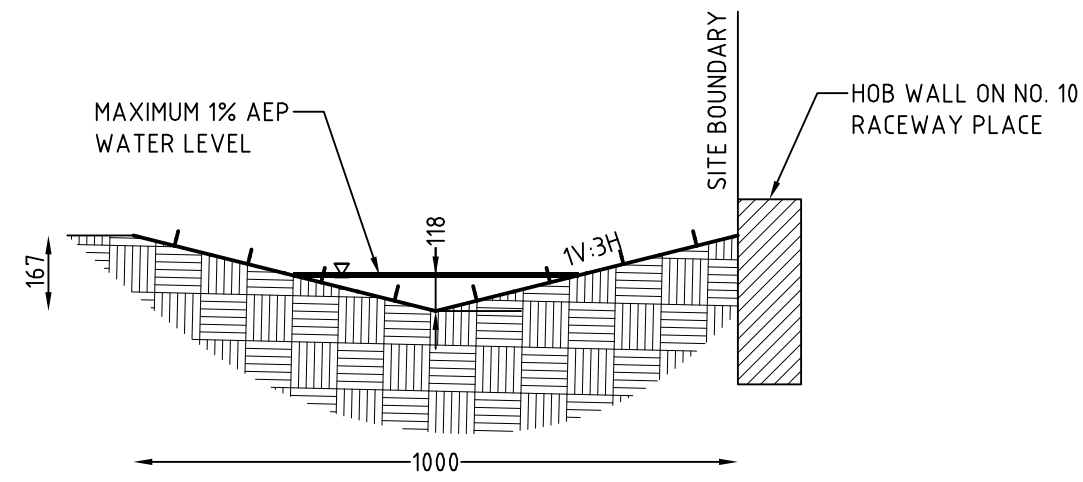
GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GH
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CLIENT	PROJECT NAME/PLANSET TITLE
NEWCASTLE LEGAL AND CONVEYANCING	EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS 50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897

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DRAWING TITLE				
DRAINAGE DETAILS SHEET 2				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-E201	A

DEVELOPMENT APPLICATION



EASTERN SWALE - TYPICAL SECTION
NOT TO SCALE

Open Channel Flow Worksheet - Trapezoidal Form

Method based on Mannings equation
Method SI-01 Revised 4.10.2010



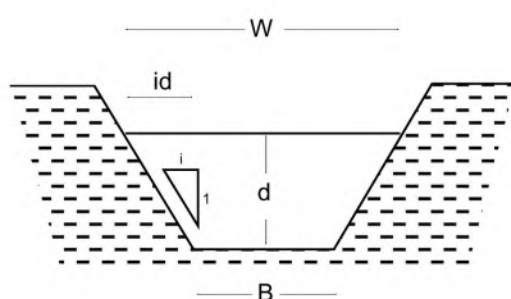
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PROJECT DETAILS

Project: 50 Peter Brock Drive, Eastern Creek
Author: AVG Reviewed: GH Ref. No.: P2108122 Date Created: 19/03/2021

STEP 1 : ENTER CHANNEL DATA

FACTOR	Enter Data	Unit
s - Bed Grade	0.070	m/m
Batter grade 1 in	3.000	(i)
B - Base Width	0.000	m
d - Water Depth	0.118	m
n - roughness	0.032	-
Q _d - Design Flow	0.050	m ³ /s



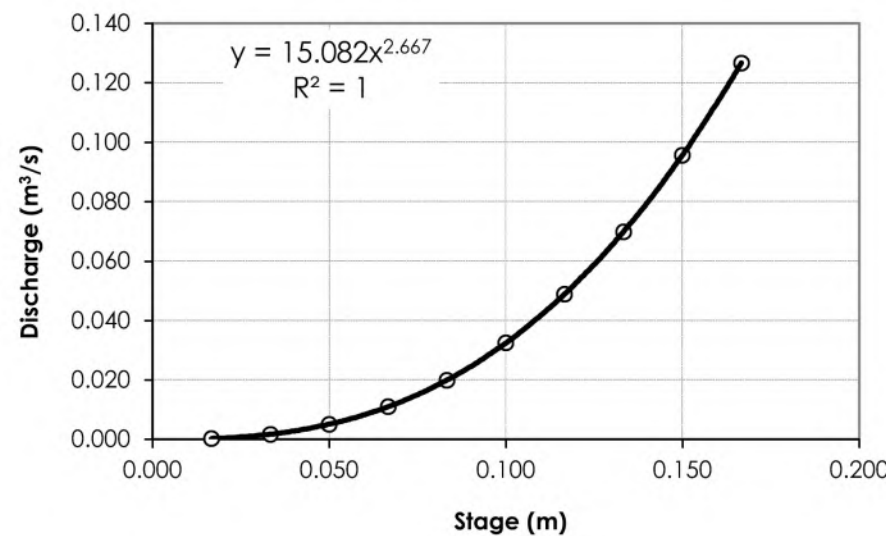
STEP 2 : CALCULATE AND SOLVE DATA

FACTOR	Calculated	Unit	
W - Top Flow Width	0.710	m	= (B + 2id)
A - Channel Area	0.042	m ²	= (Bd + id ²)
P - Wetted Perimeter	0.748	m	= B + 2(d ² + id ²) ^{0.5}
R - Hydraulic Radius	0.056	m	= (A/P)
V - Velocity	1.211	m/s	
Q _d - Calculated Flow	0.051	m ³ /s	
Q Difference	0.001	m ³ /s	
VD Product	0.143	m ² /s	SAFE

STEP 3 : FLOW RATING TABLE

FACTOR	Enter Data	Unit
Maximum Height	0.167	m

Stage (m)	R (m)	V (m/s)	Q (m ³)
0.017	0.008	0.327	0.000
0.033	0.016	0.520	0.002
0.050	0.024	0.681	0.005
0.067	0.032	0.826	0.011
0.083	0.040	0.958	0.020
0.100	0.047	1.082	0.032
0.117	0.055	1.199	0.049
0.133	0.063	1.311	0.070
0.150	0.071	1.418	0.096
0.167	0.079	1.521	0.127



EASTERN SWALE CALCULATION

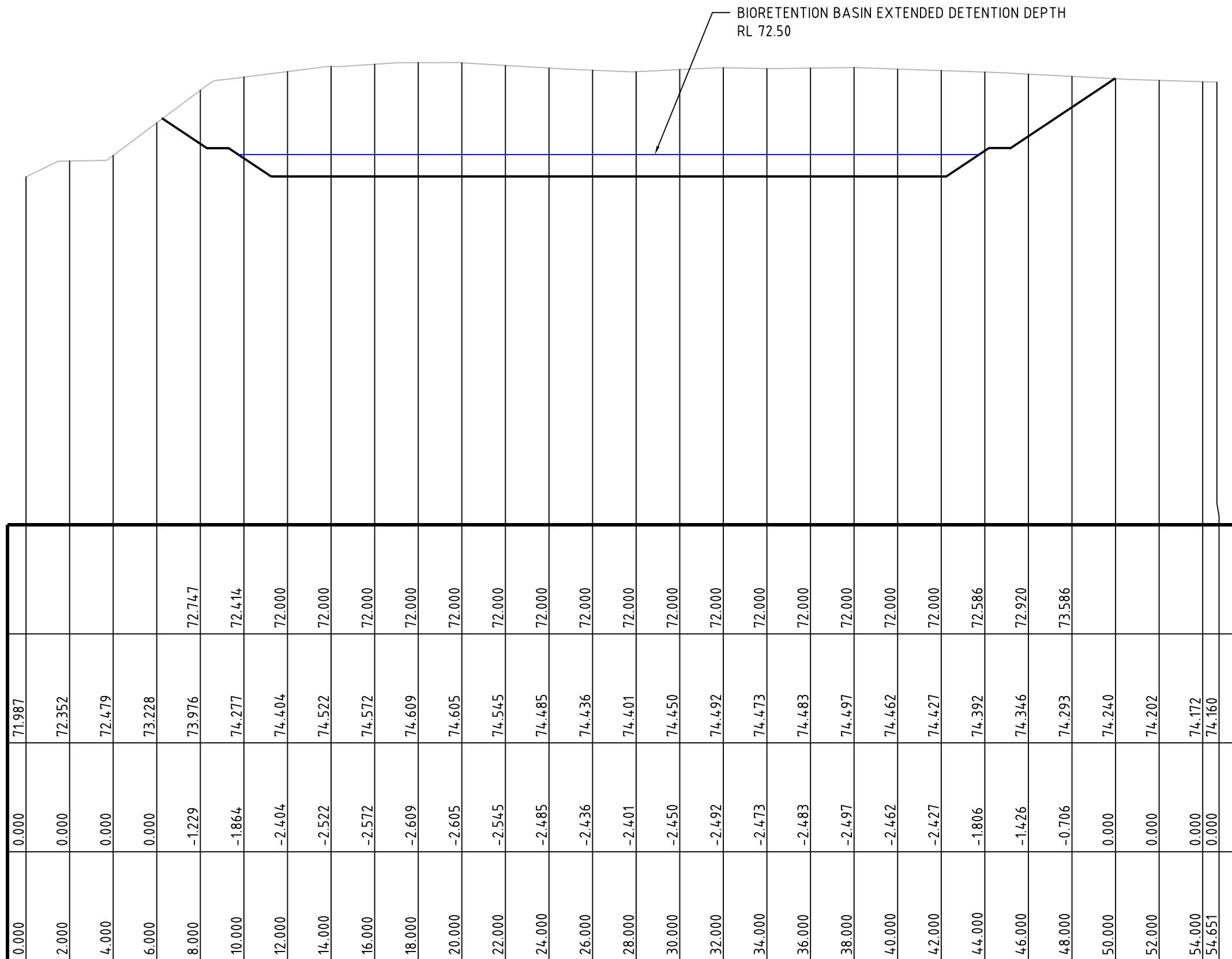
DATUM RL 64.000

DESIGN SURFACE
LEVELS

EXISTING SURFACE
LEVELS

CUT / FILL DEPTH

CHAINAGE



SECTION B (BIORETENTION)

SCALE: HORIZONTAL - 1:200
VERTICAL - 1:100

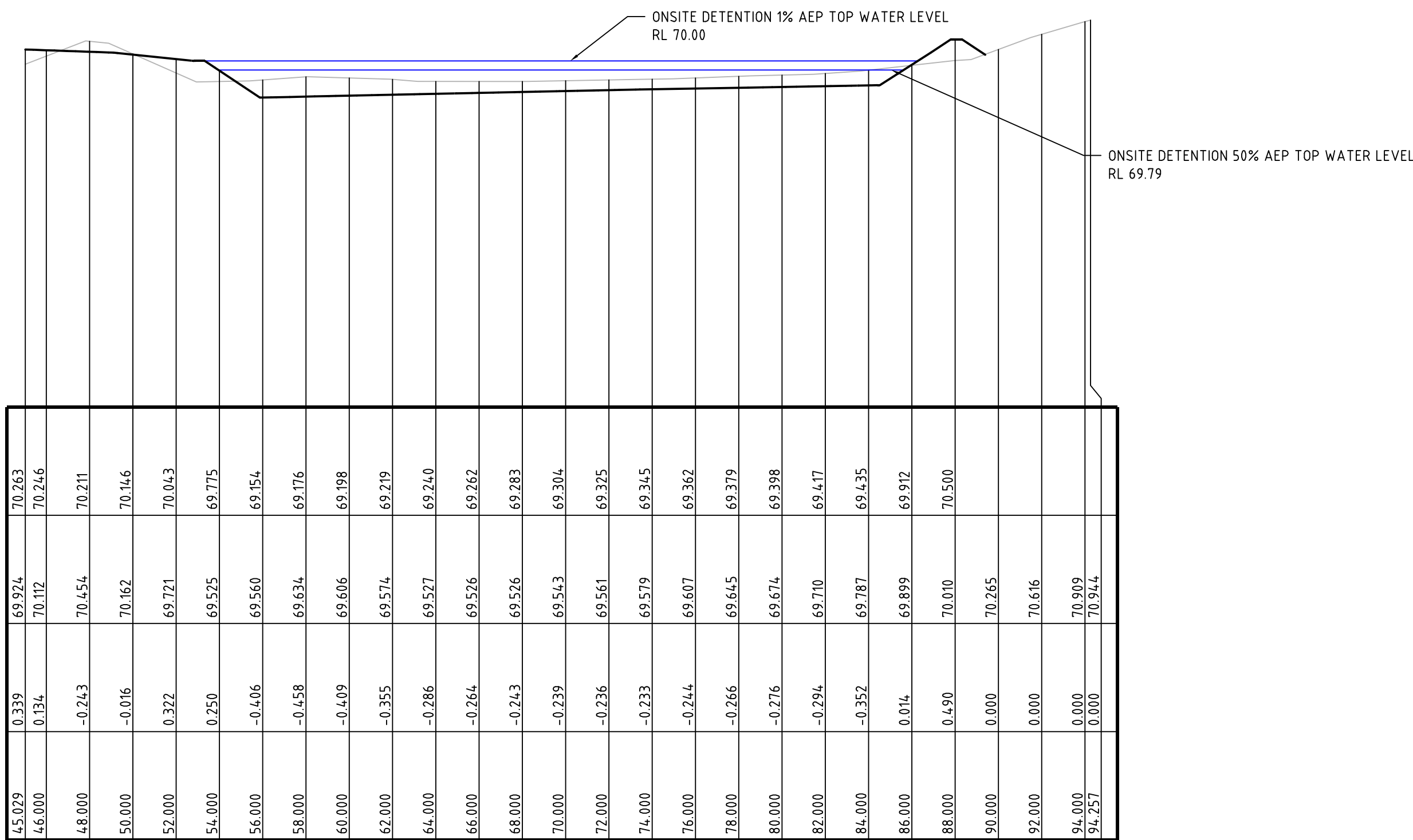
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DESIGN SURFACE
LEVELS

EXISTING SURFACE
LEVELS

CUT / FILL DEPTH

CHAINAGE

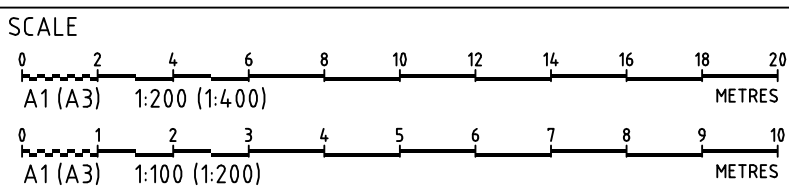


SECTION A (OSD)

SCALE: HORIZONTAL - 1:200
VERTICAL - 1:100

DEVELOPMENT APPLICATION

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPROVD
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GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GH

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CLIENT	PROJECT NAME/PLANSET TITLE
NEWCASTLE LEGAL AND CONVEYANCING	EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS
	50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897

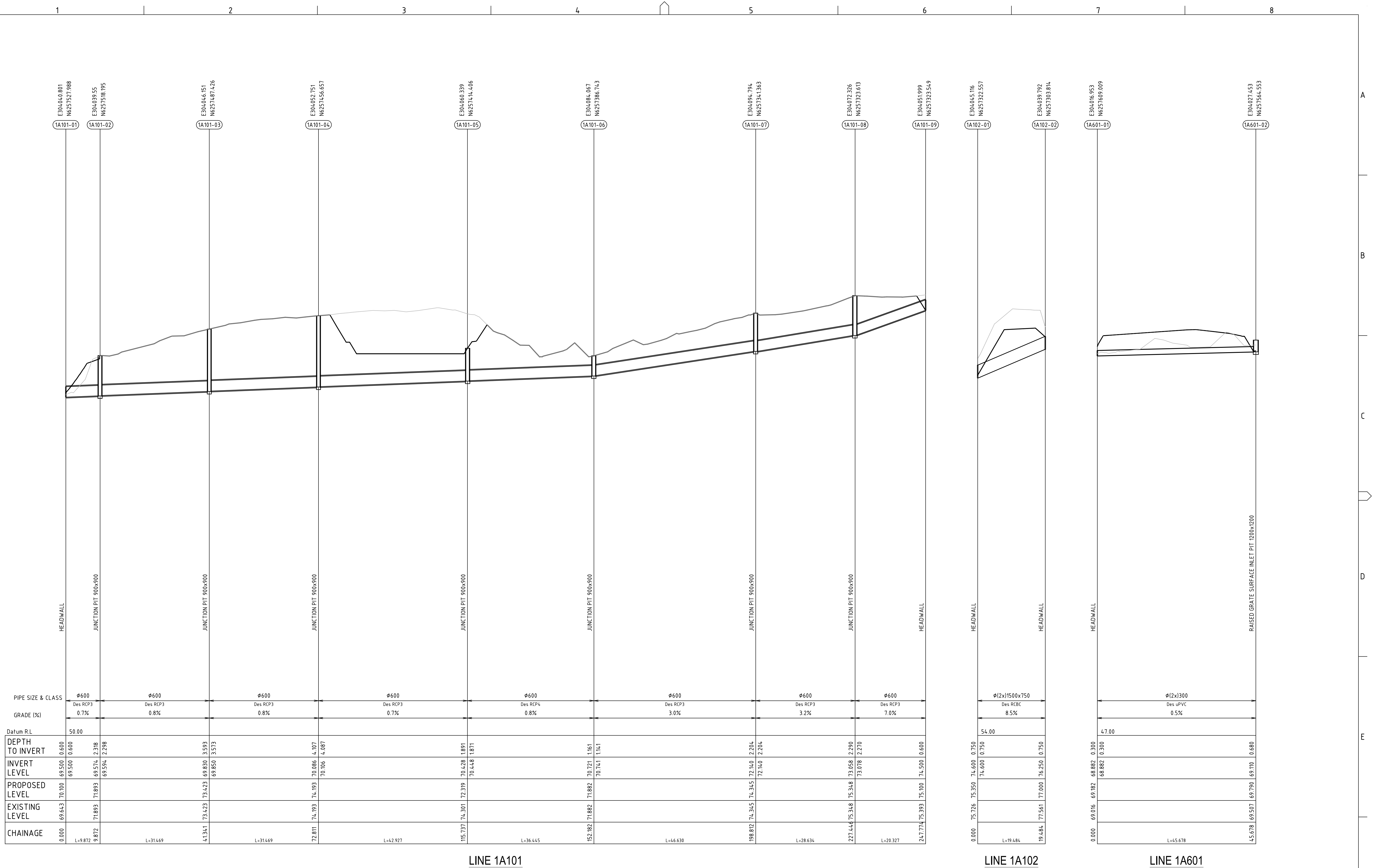


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DRAWING TITLE				
DRAINAGE DETAILS SHEET 3				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-E202	A

DRAWING ID: P2108122-PS01-R02-E202



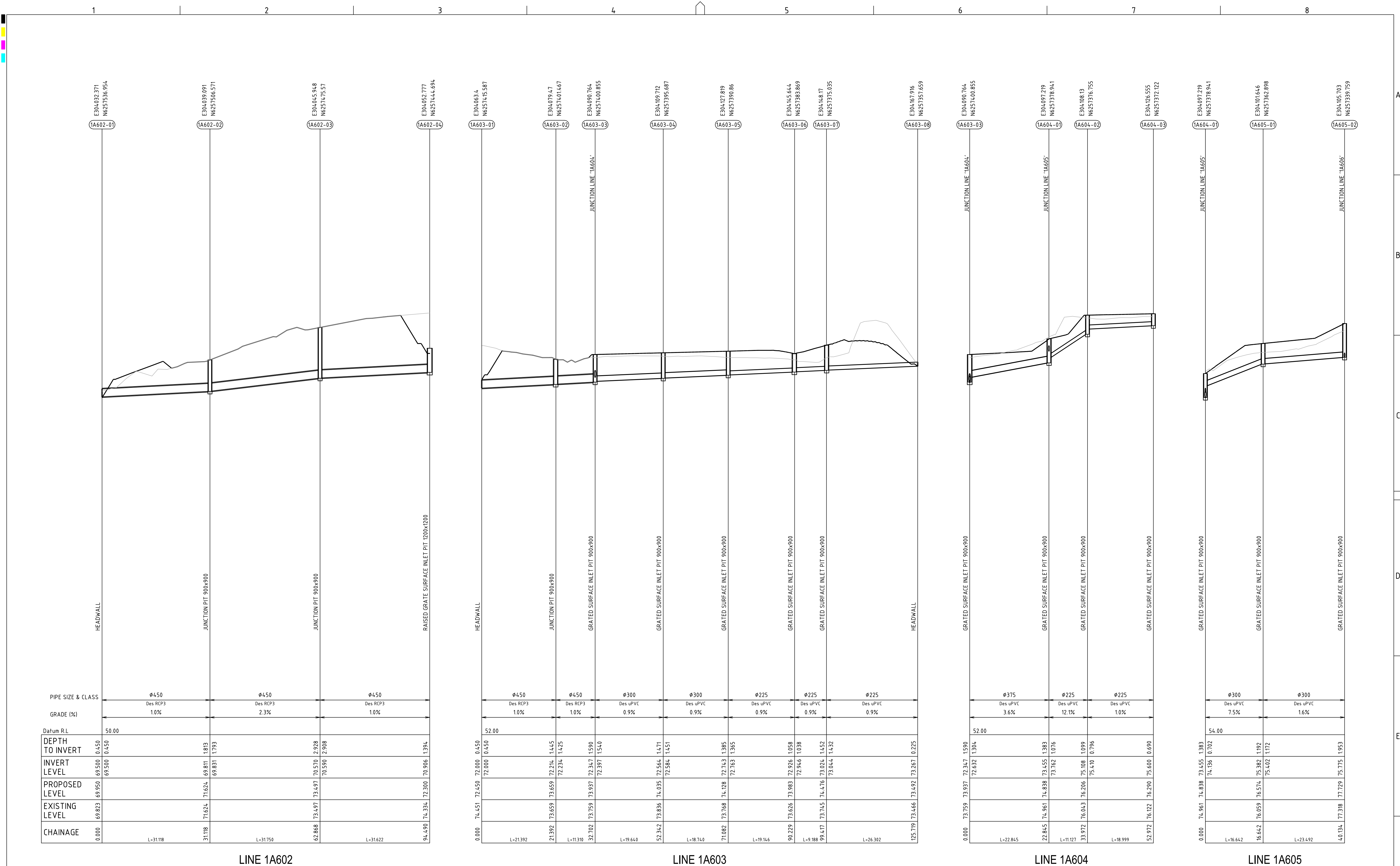
DEVELOPMENT APPLICATION

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A1 / A3 LANDSCAPE (A1LC_v02.0.01)

DRAWING ID: P2108122-PS01-R02-E300



REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE
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A1 (A3) 1:500 (1:1,000) METRES
0 1 2 3 4 5 6 7 8 9 10
A1 (A3) 1:100 (1:200) METRES

GRID	DATUM	PROJECT MANAGER	CLIENT
MGA	mAHD	GH	NEWCASTLE LEGAL AND CONVEYANCING

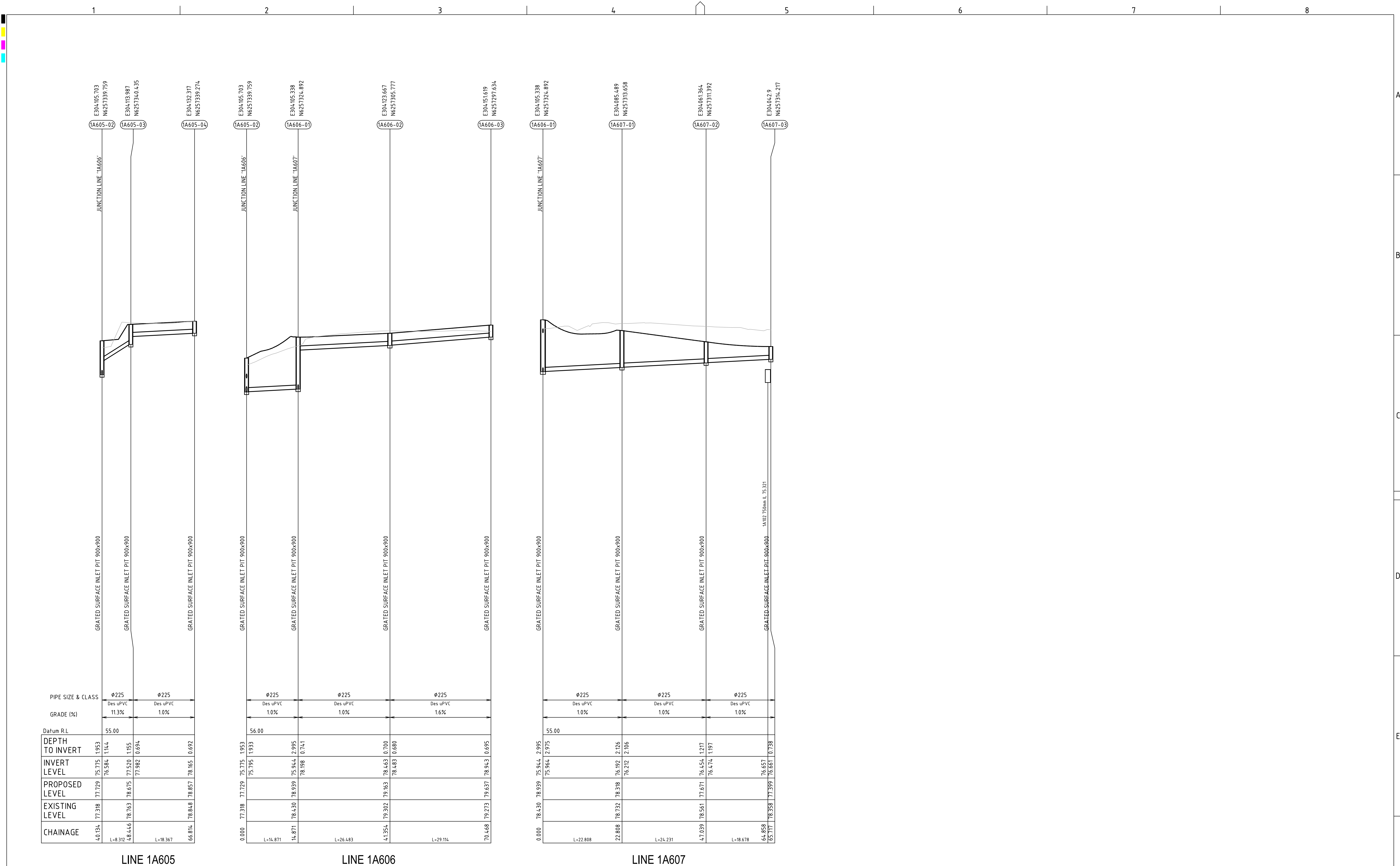
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PROJECT NAME/PLANSET TITLE	PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS 50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897	P2108122	PS01	R02	PS01-E301	A

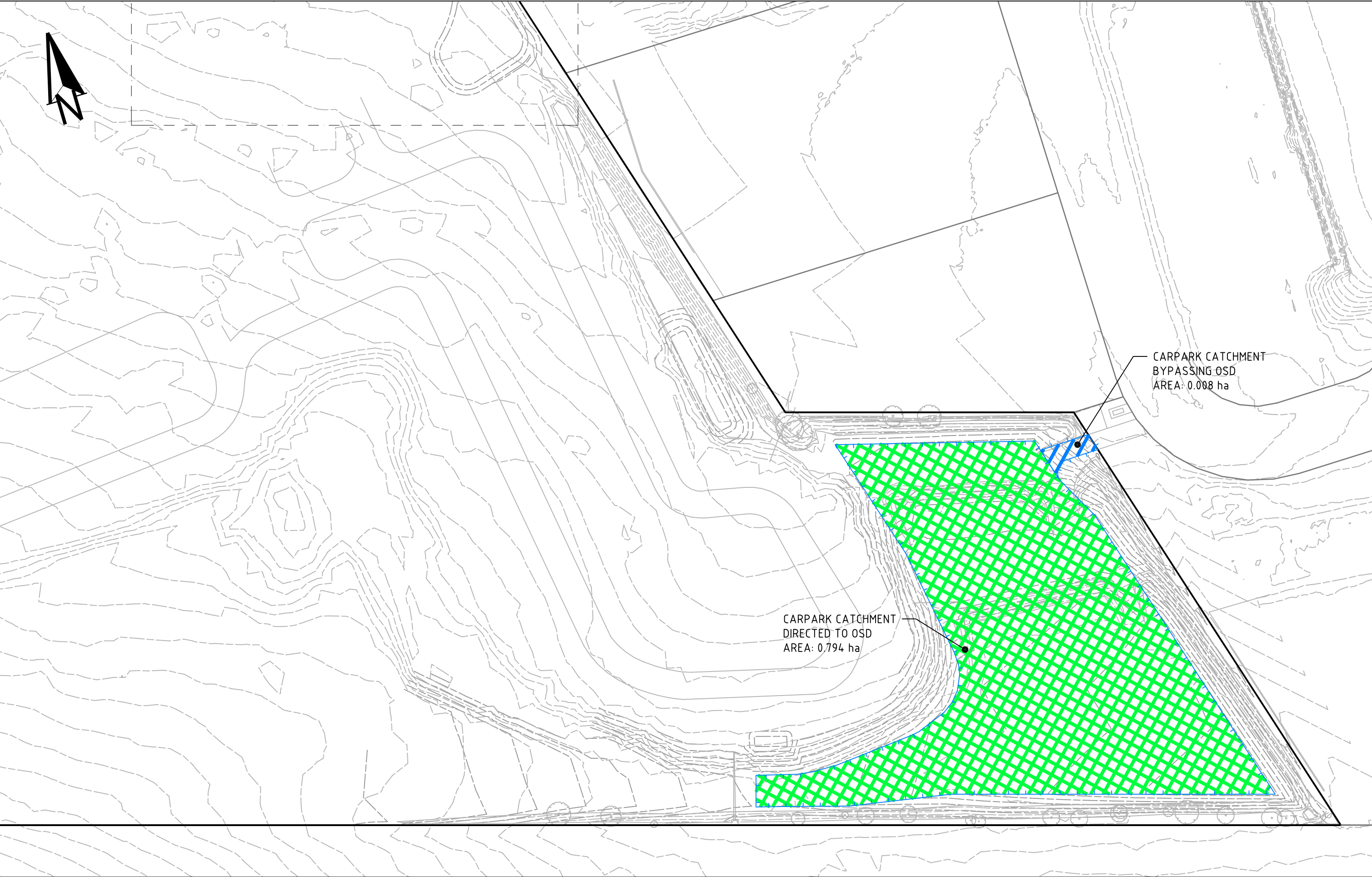
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DRAWING TITLE	PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
LONGITUDINAL SECTION SHEET 2	P2108122	PS01	R02	PS01-E301	A

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Geotechnical
Civil



REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD	SCALE	GRID	DATUM	PROJECT MANAGER	CLIENT	martens & Associates Pty Ltd Consulting Engineers Environment Water Geotechnical Civil Suite 201, 20 George St, Hornsby, NSW 2077 Australia Phone: (02) 9476 9999 Fax: (02) 9476 8767 Email: mail@martens.com.au Internet: www.martens.com.au	DRAWING TITLE			
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM	5 10 15 20 25 30 35 40 45 50 A1 (A3) 1:500 (1:1,000) METRES 1 2 3 4 5 6 7 8 9 10 A1 (A3) 1:100 (1:200) METRES	MGA	mAHD	GH	NEWCASTLE LEGAL AND CONVEYANCING		PROJECT NAME/PLANSET TITLE	LONGITUDINAL SECTION SHEET 3		
								DISCLAIMER & COPYRIGHT This plan must not be used for construction unless signed as approved by principal certifying authority. All measurements in millimetres unless otherwise specified. This drawing must not be reproduced in whole or part without prior written consent of Martens & Associates Pty Ltd. (C) Copyright Martens & Associates Pty Ltd		EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS 50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897			PROJECT NO. PLANSET NO. RELEASE NO. DRAWING NO. REVISION P2108122 PS01 R02 PS01-E302 A			
A1 / A3 LANDSCAPE [A1L_C_v02.0.0]												DRAWING ID: P2108122-PS01-R02-E302				



OSD CATCHMENT PLAN (POST-DEVELOPMENT)
SCALE 1:1000

Project Details:

Project Title

50 Peter Brock Drive, Eastern Creek

Address

Peter Brock Drive

Reference Number

P2108122

General Site Data:

Site Area (m²)

8020 m²

Area Draining to OSD (m²) (Max Bypass 15%)

7940 m²

OSD Location

Above Ground

OSD Discharge Location

Channel or Swale

The preliminary storage requirements below the 50% AEP Weir is 240.6m³ & the storage below the 1% AEP weir is 364.31m³. This requirement will differ if there is a drowned orifice.

Filter Cartridges:

Will filter cartridges be used to manage water quality?

No

Discharge Location Data:

③ RL of 50% AEP Orifice Centreline

69.190 m

Number of 50% AEP Orifices

2

⑥ RL of 1% AEP Orifice Centreline

69.220 m

Number of 1% AEP Orifices

2

Is the 1% AEP Water Surface Level in the Channel Known or Assumed

Use an Assumed WSL

② Invert of channel/swale at the point of discharge

66.500

⑩ Top of channel/swale bank at the point of discharge

68

OSD Data:

① Average RL of the base of the OSD Storage Area

69.29

③ Length of Emergency Overflow Weir (m)

30.000

③ RL of Emergency Overflow Weir

70.000

The 50% AEP storage volume is 240.60m³. What is the 50% AEP WSL?

69.790

BLACKTOWN CITY COUNCIL OSD SPREADSHEET INPUTS

Site:	
Address	Peter Brock Drive
Site Area	8020 m ²
Site Area NOT Draining to OSD	80 m ²
Bypass	1%
Reduced Levels (AHD):	
① RL at top Weir	70.175
① Average RL of the base of the OSD Storage Area	69.290
③ RL of Emergency Overflow Weir	70.000
RL of 50% AEP Overflow Weir	69.790
③ RL of 50% AEP Orifice Center Line	69.190
⑥ RL of 1% AEP Orifice Center Line	69.220
② RL of Invert of Channel as point of discharge	66.500
⑩ RL of Channel Bank at point of discharge	68.000
Minimum RL of Garage Floor	70.175
Minimum RL of Habitable Floor	70.275
OSD Volume:	
Required Storage BELOW the 50% AEP Overflow Weir	240.600
Required Storage BELOW Emergency Overflow Weir	364.310
Discharge Details:	
Using Filter Cartridges to manage Water Quality	No
Discharge Location	Channel/Swale With an Assumed WSL
Length of Emergency Overflow Weir	30.000
Maximum 50% AEP Site Discharge	31.600
Maximum 50% AEP Orifice Discharge	31.600
Maximum 1% AEP Site Discharge	147.900
Maximum 1% AEP Orifice Discharge	147.900
Orifice Details:	
Number of 50% AEP Orifices	2.000
Number of 1% AEP Orifices	2.000
50% AEP Orifice Diameter (mm)	38.000
1% AEP Orifice Diameter (mm)	193.000

BLACKTOWN CITY COUNCIL OSD SPREADSHEET OUTPUTS

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE

0 10 20 30 40 50 60 70 80 90 100

A1 (A3) 1:1,000 (1:2,000) METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GH
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CLIENT	NEWCASTLE LEGAL AND CONVEYANCING
PROJECT NAME/PLANSET TITLE	EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS
50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897	

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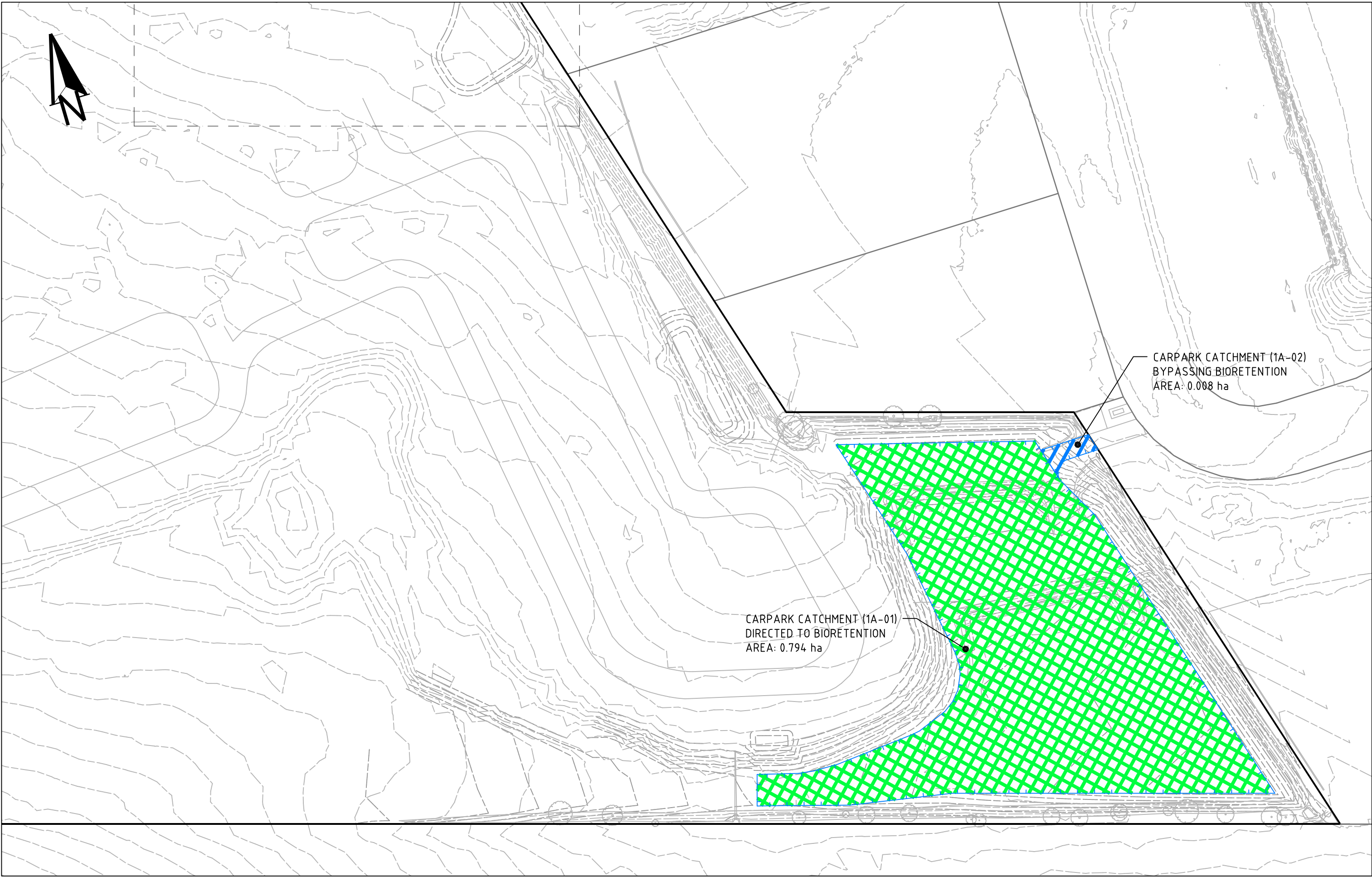
DRAWING TITLE				
ON SITE DETENTION CATCHMENT PLAN MODELS & RESULTS				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-E600	A

DEVELOPMENT APPLICATION

A1 / A3 LANDSCAPE (A1LC_v02.0.01)

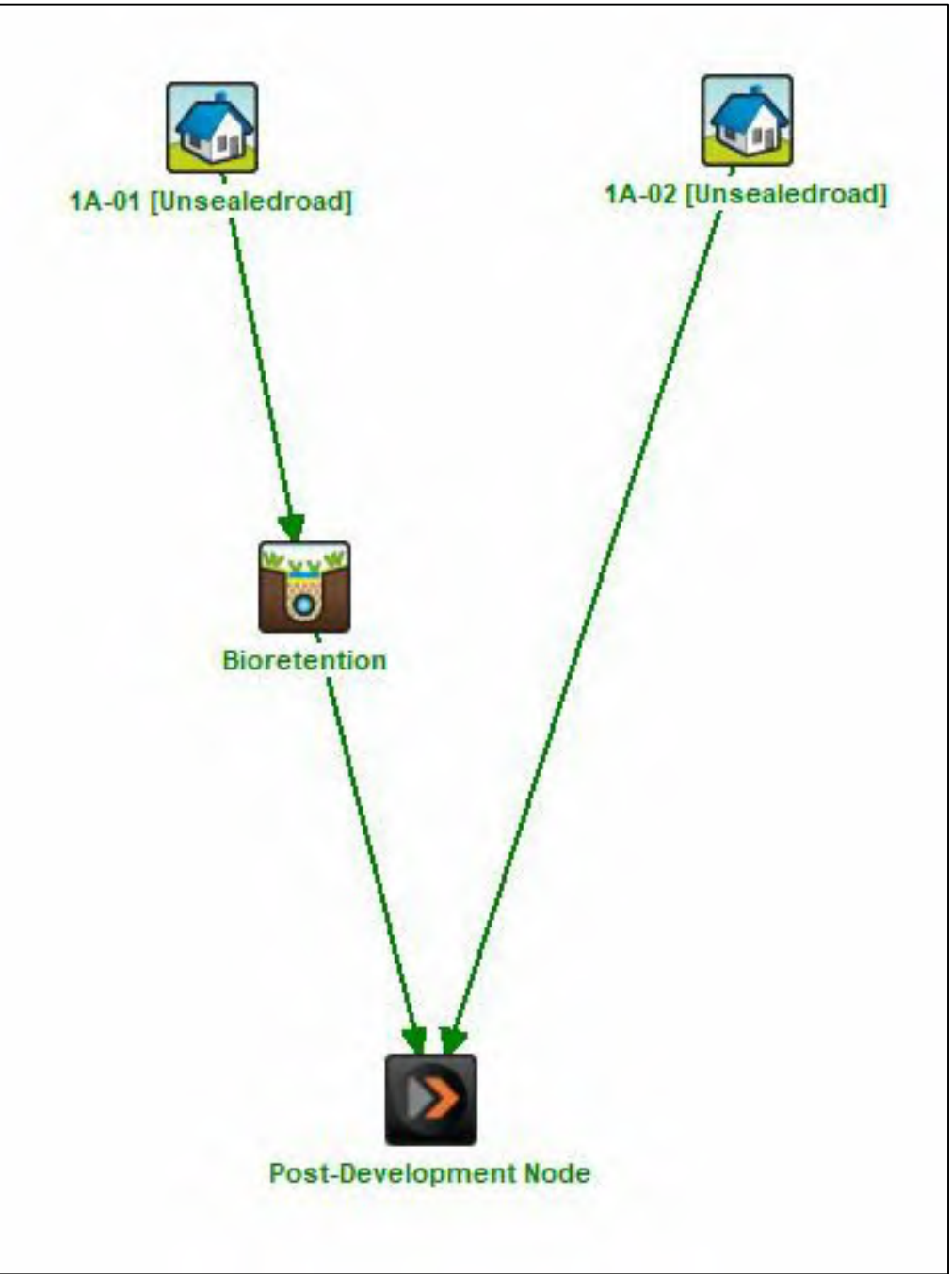
DRAWING ID: P2108122-PS01-R02-E600

0 10 20 30 40 50 60 70 80 90 100



WATER QUALITY CATCHMENT PLAN

SCALE 1:1000



MUSIC MODEL LAYOUT (P2108122MUS01V01)

Treatment Train Effectiveness - Post-Development Node			
	Sources	Residual Load	% Reduction
Flow (ML/yr)	5.86	5.36	8.6
Total Suspended Solids (kg/yr)	1090	124	88.6
Total Phosphorus (kg/yr)	1.75	0.506	71.1
Total Nitrogen (kg/yr)	12.9	5.55	57
Gross Pollutants (kg/yr)	153	1.52	99

TARGET	COMPLIES
85%	Y
65%	Y
45%	Y
90%	Y

MUSIC MODEL RESULTS (P2108122MUS01V01)

DEVELOPMENT APPLICATION

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A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE
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A1 (A3) 1:1,000 (1:2,000) METRES

GRID	DATUM	PROJECT MANAGER
MGA	mAHD	GH
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CLIENT	PROJECT NAME/PLANSET TITLE
NEWCASTLE LEGAL AND CONVEYANCING	EVENT CARPARK WORKS CONCEPT ENGINEERING WORKS 50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766 LOT 4 DP 1079897



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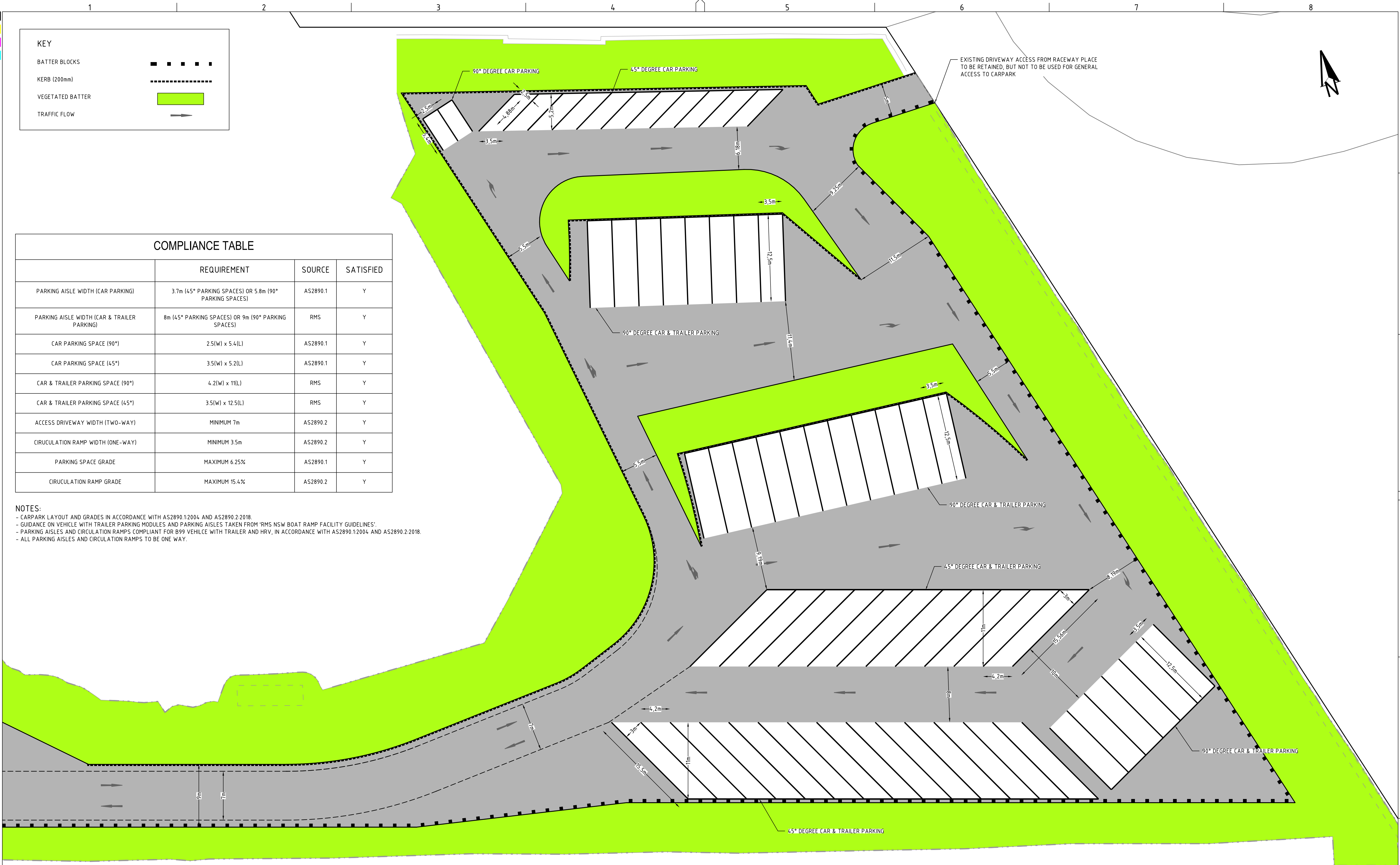
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DRAWING TITLE				
WATER QUALITY CATCHMENT PLAN MODELS & RESULTS				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-E700	A

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A1 / A3 LANDSCAPE (A1L_C_v02.0.01)

DRAWING ID: P2108122-PS01-R02-E700 0 10 20 30 40 50 60 70 80 90 100



KEY

BATTER BLOCKS

KERB (200mm)

VEGETATED BATTER

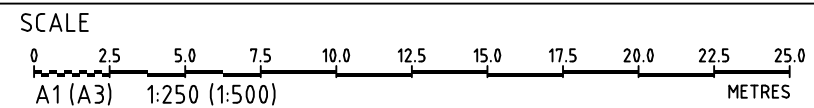
TRAFFIC FLOW

COMPLIANCE TABLE			
	REQUIREMENT	SOURCE	SATISFIED
PARKING AISLE WIDTH (CAR PARKING)	3.7m (45° PARKING SPACES) OR 5.8m (90° PARKING SPACES)	AS2890.1	Y
PARKING AISLE WIDTH (CAR & TRAILER PARKING)	8m (45° PARKING SPACES) OR 9m (90° PARKING SPACES)	RMS	Y
CAR PARKING SPACE (90°)	2.5(W) x 5.4(L)	AS2890.1	Y
CAR PARKING SPACE (45°)	3.5(W) x 5.2(L)	AS2890.1	Y
CAR & TRAILER PARKING SPACE (90°)	4.2(W) x 11(L)	RMS	Y
CAR & TRAILER PARKING SPACE (45°)	3.5(W) x 12.5(L)	RMS	Y
ACCESS DRIVEWAY WIDTH (TWO-WAY)	MINIMUM 7m	AS2890.2	Y
CIRCULATION RAMP WIDTH (ONE-WAY)	MINIMUM 3.5m	AS2890.2	Y
PARKING SPACE GRADE	MAXIMUM 6.25%	AS2890.1	Y
CIRCULATION RAMP GRADE	MAXIMUM 15.4%	AS2890.2	Y

NOTES:

- CARPARK LAYOUT AND GRADES IN ACCORDANCE WITH AS2890.1:2004 AND AS2890.2:2018.
- GUIDANCE ON VEHICLE WITH TRAILER PARKING MODULES AND PARKING AISLES TAKEN FROM 'RMS NSW BOAT RAMP FACILITY GUIDELINES'.
- PARKING AISLES AND CIRCULATION RAMPS COMPLIANT FOR B99 VEHICLE WITH TRAILER AND HRV, IN ACCORDANCE WITH AS2890.1:2004 AND AS2890.2:2018.
- ALL PARKING AISLES AND CIRCULATION RAMPS TO BE ONE WAY.

REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
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GRID

MGA

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EVENT CARPARK WORKS

CONCEPT ENGINEERING WORKS

50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766

LOT 4 DP 1079897

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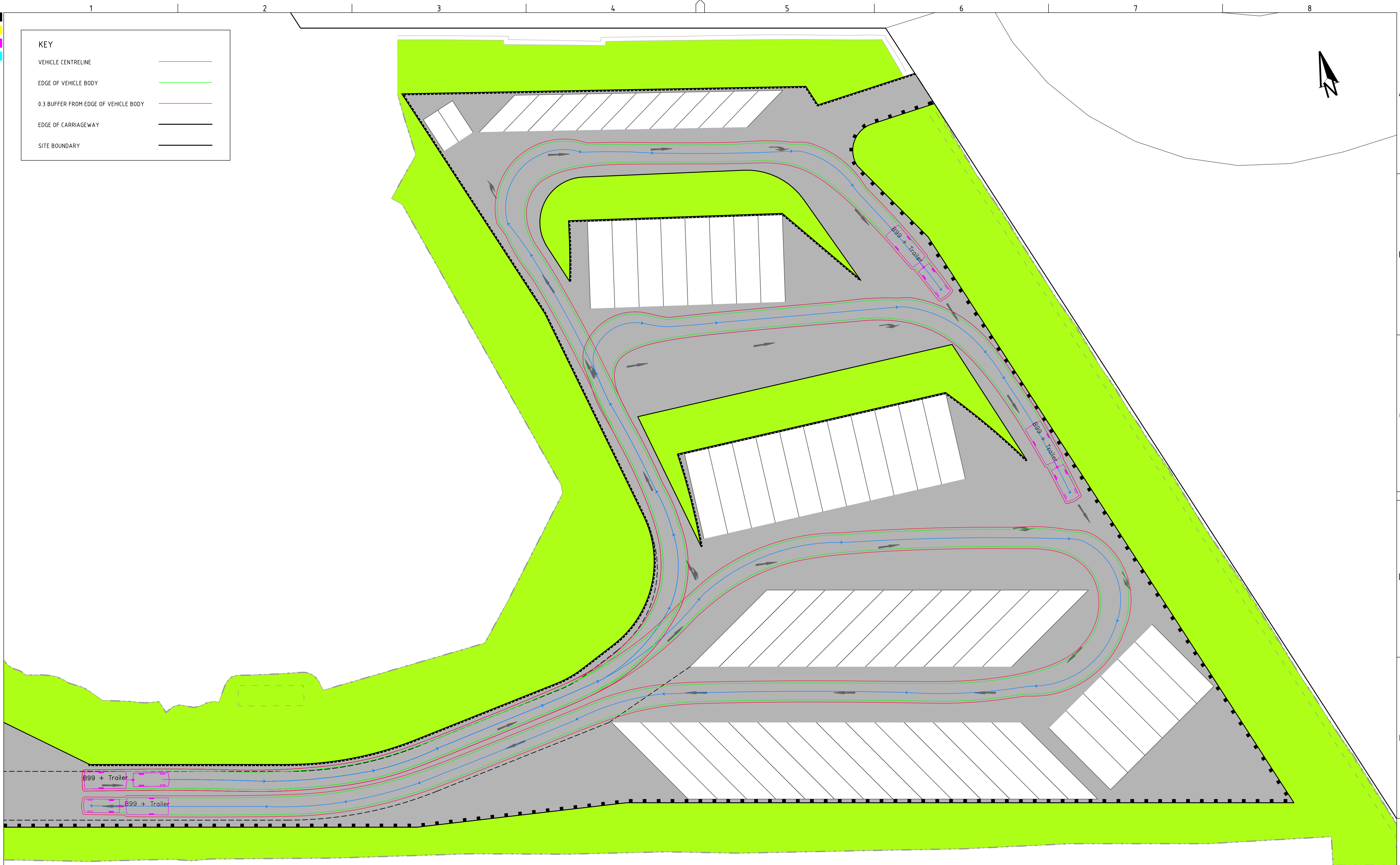
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DRAWING TITLE				
CARPARK LAYOUT PLAN				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-G300	A

DEVELOPMENT APPLICATION



REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE
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A1 (A3) 1:250 (1:500) METRES

GRID
MGA
DATUM
mAHD
PROJECT MANAGER
GH

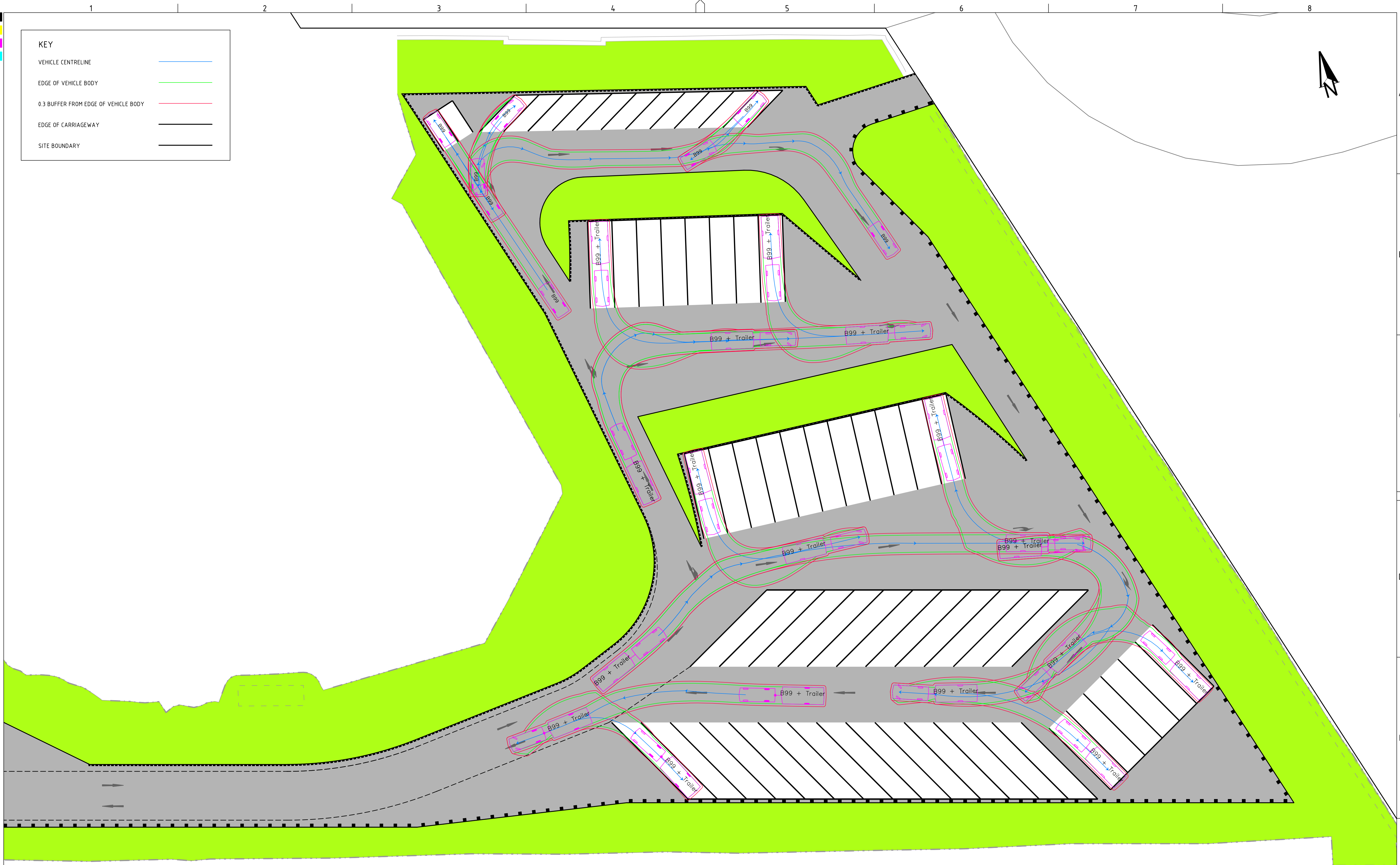
CLIENT
NEWCASTLE LEGAL AND CONVEYANCING
PROJECT NAME/PLANSET TITLE
EVENT CARPARK WORKS
CONCEPT ENGINEERING WORKS
50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766
LOT 4 DP 1079897

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DRAWING TITLE				
CARPARK SWEEP PATH PLAN SHEET 1 B99 VEHICLE & TRAILER CIRCULATION				
PROJECT NO. P2108122	PLANSET NO. PS01	RELEASE NO. R02	DRAWING NO. PS01-GZ00	REVISION A

DEVELOPMENT APPLICATION

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FILE: A1 / A3 LANDSCAPE (A1L_C_v02.0.01)



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A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE
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A1 (A3) 1:250 (1:500) METRES

GRID	DATUM	PROJECT MANAGER	CLIENT
MGA	mAHD	GH	NEWCASTLE LEGAL AND CONVEYANCING
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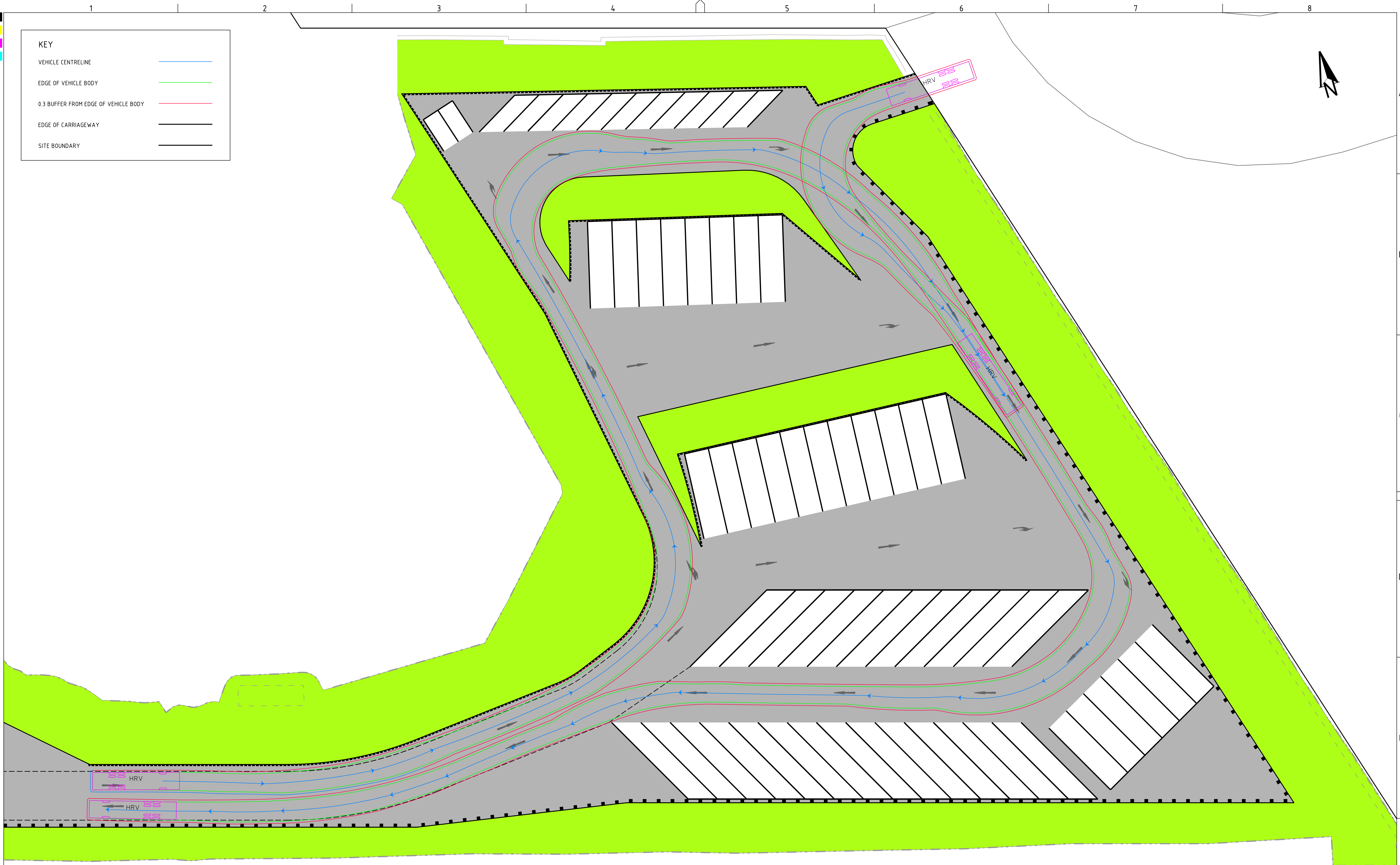
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DRAWING TITLE				
CARPARK SWEEP PATH PLAN SHEET 2 B99 VEHICLE & TRAILER PARKING				
PROJECT NO. P2108122	PLANSET NO. PS01	RELEASE NO. R02	DRAWING NO. PS01-GZ01	REVISION A

PRINTED: 29/03/2021 10:00:00 AM
USER: JAVIER



REV	DESCRIPTION	DATE	DRAWN	DESIGNED	CHECKED	APPRVD
A	DPIE RFI 22.12.2020	29/03/2021	JS	AW/AVG	GH	DM

SCALE

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A1 (A3) 1:250 (1:500) METRES

GRID

MGA

DATUM

mAHD

PROJECT MANAGER

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PROJECT NAME/PLANSET TITLE

EVENT CARPARK WORKS

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50 PETER BROCK DRIVE, EASTERN CREEK, NSW 2766

LOT 4 DP 1079897

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DRAWING TITLE				
CARPARK SWEEP PATH PLAN				
SHEET 3				
HRV CIRCULATION				
PROJECT NO.	PLANSET NO.	RELEASE NO.	DRAWING NO.	REVISION
P2108122	PS01	R02	PS01-GZ02	A

DRAWING ID: P2108122-PS01-R02-GZ02

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