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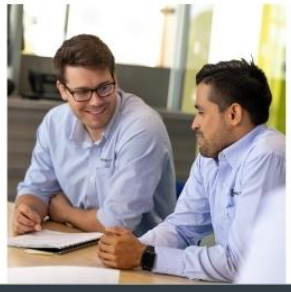

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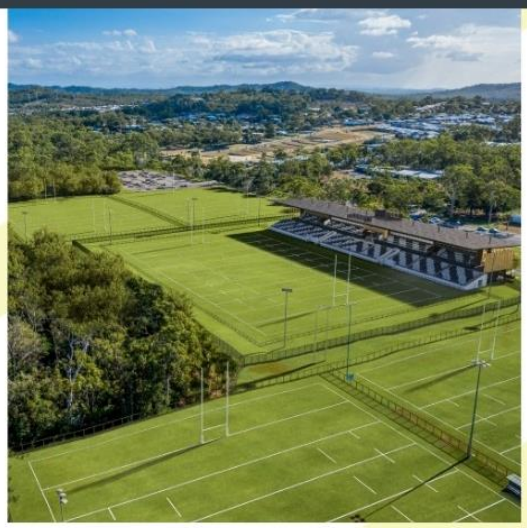

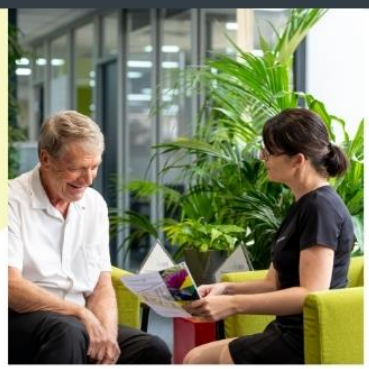

560 Chambers Flat Rd, Logan Reserve
Conceptual Stormwater Management Plan

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1. Introduction

CFR No.3 Pty Ltd (GDM Property) have engaged Burchills Engineering Solutions to prepare a Conceptual Stormwater Quality Management Plan (CSMP) to be considered part of a Development Application to Logan City Council for the establishment of a 57-lot extension of the adjacent Park Lane development (COM/60/2022). The proposed development is located across 560 Chambers Flat Road, Logan Reserve.

This report is to be read in conjunction with the associated *Flood Assessment - Regional Solution Chambers Flat Road* Technical Memorandum, prepared by Colliers, included in Appendix E.

1.1 Background

1.1.1 Regulatory Requirements and Technical Guidelines

The strategies proposed in this CSMP have been developed to address the requirements of the Logan City Council Plan, and have also been prepared in accordance with the following guidelines:

- SC6.2.5 Planning Scheme Policy – Infrastructure 2.4 Stormwater Infrastructure Documentation – Logan Planning Scheme 2015 v.8.1 (Logan City Council, 2015);
- State Planning Policy July 2017 (DSPIP, 2017);
- Queensland Urban Drainage Manual (QUDM) Fourth Edition (IPWEAQ, 2017);
- Australian Rainfall & Runoff: A Guide to Flood Estimation (Ball J, 2019);
- Australian Government – Bureau of Meteorology (Bureau of Meteorology, n.d.);
- MUSIC Modelling Guidelines (Water By Design, 2019);
- WSUD Technical Guidelines for South East Queensland – Version 1 (Healthy Waterways, BCC, MBWCP, 2006);
- Best Practice Erosion and Sediment Control (IECA, 2008); and
- Best Practice Erosion and Sediment Control Appendix B - Draft Document Revision December 2016 (IECA, 2016).

1.2 Purpose

The main objectives of this CSMP have been established from the criteria set out in the Logan Planning Scheme SC6.2.5 Planning Scheme Policy (Logan City Council, 2015) and are summarised as follows:

- Avoid the creation of nuisance flow or hazard problems;
- Protect the quality of surface and ground waters during construction and operation of new development;
- Maintain the natural hydraulic behaviour of catchments;
- Protect existing natural features and ecological processes;
- Integrate stormwater management infrastructure carefully in the urban and natural landscape; and
- Assess the proposed development design and ensure safety for end users with respect to flooding.

2. Site Details

2.1 Real Property Description

The site is legally described as Lot 4 RP97736. The corresponding street address is 560 Chambers Flat Road, Logan Reserve. The combined site is generally rectangular and occupies an area of approximately 4.934 ha.

The site to be developed is shown on the Master Plan prepared by Burchills Engineering Solutions (Drawing No. BE230558-SK01-C) which is included in Appendix A of this report. The location of the subject site is shown on Figure 2.1.

Figure 2.1 Site Locality Plan

2.2 Physical Description

Multiple dwellings, ancillary structures and greenhouses spread throughout; where the remaining ground coverage is predominantly crop and grassed areas, with some minor tree coverage in the Eastern-most portion of the site.

The site is bounded by the following existing land uses:

North: Proposed Subdivision (Under Construction);
South: Neighbouring Rural Property;
East: Neighbouring Rural Property; and
West: Chambers Flat Road.

2.3 Downstream Environment

The stormwater runoff is conveyed via overland flow to the existing roadside stormwater drainage in Chambers Flat Road to the west of the site which eventually discharges into the Logan River.

2.4 Rainfall

The mean annual rainfall for the site has been estimated at 970.9 mm from the data set obtained from the nearest Bureau of Meteorology (BOM) station number 040878 at the Waterford Alert, Queensland.

2.5 Proposed Development

The subject site is proposed to be reconfigured and developed from one (1) into fifty-seven (57) lots, along with a Drainage Reserve and Bioretention Basin. The proposed development layout is shown in Figure 2.2 and on the Master Plan prepared by Burchills Engineering Solutions (Drawing No. BE230588-SK01-C) which is included in Appendix A of this report. See also Appendix D which contains the full Concept Civil Engineering Plans.

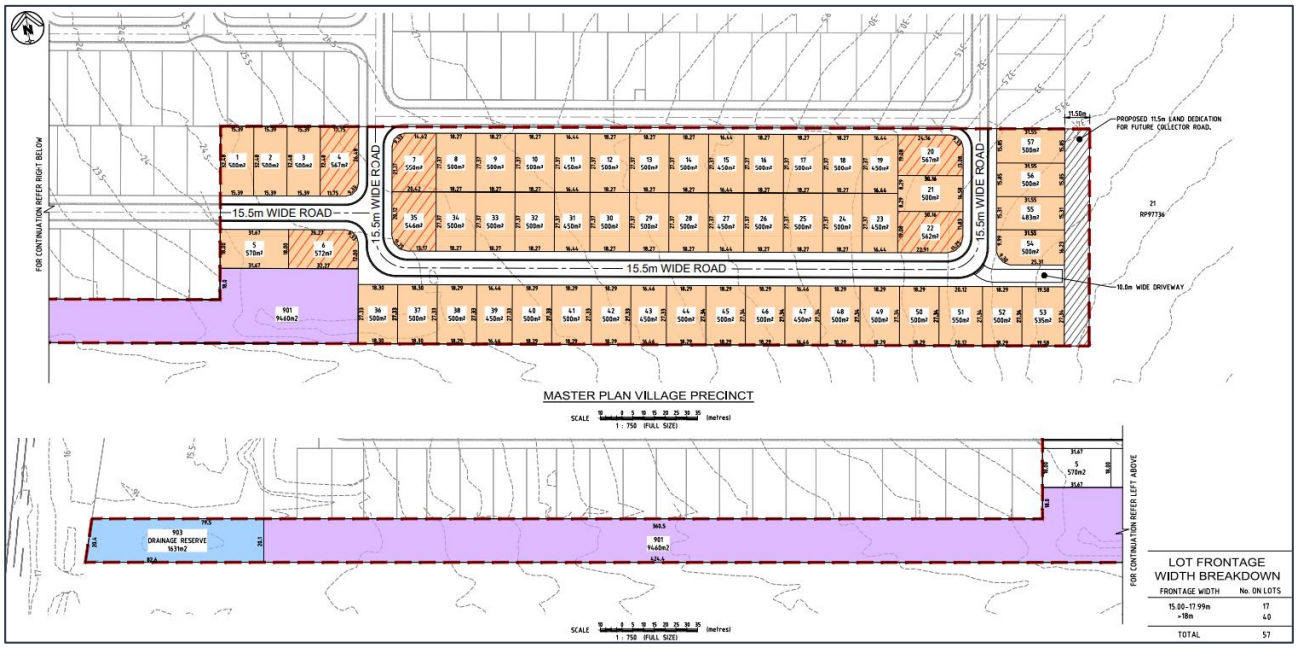


Figure 2.2 Proposed Development

3. Stormwater Quantity Assessment

3.1 Overview

The following section of this report outlines the measures required to meet the above mentioned objective in regard to stormwater quantity. In order to meet these objectives, it is necessary to ensure that post development discharge from the site will not create a worse situation for downstream property owners than that which existed prior to the development (i.e. non-worsening) (IPWEAQ, 2017).

The proposed development will increase the site imperviousness, resulting in increased peak flow rates. The Hydraulic modelling completed by Colliers detailed in the ***Flood Assessment – Regional Solution Chambers Flat Road (Document reference: 22-0502TM02-V1)***, demonstrates that the proposed regional detention strategy — which accounts for the subject site and adjoining areas south to 590-598 Chambers Flat Road — successfully maintains existing peak water levels external to the site. As a result, the proposed development meets the 'non-worsening' principle without requiring additional on-site detention.

3.2 Drainage Catchment Parameters

Drainage catchments have been delineated using site survey, aerial imagery and development plans in the post developed scenario. Pre and post development catchment parameters are summarised in Table 3.1. Catchment plans are provided in Appendix C.

Table 3.1 Catchment Parameters

Scenario	Catchment ID	Total Area (ha)	Impervious (%)
Pre-developed	A	4.929	8
	Ext 2	0.537	0
Post-developed	A	4.042	65

The imperviousness of the post-development catchment listed above, is in accordance with that adopted in the associated ***Flood Assessment – Regional Solution Chambers Flat Road***. A conservative fraction impervious of 80% was adopted for the site in Colliers' assessment which has demonstrated that the cumulative development of the study area would not have an adverse hydraulic impact on surrounding properties.

3.2.1 Conveyance of Flows

Important information about the conveyance of flows for the pre-development and post-development scenarios are included in Table 3.2 below.

Table 3.2 Conveyance of Flows

Subject	Description
Lawful Points of Discharge	One (1) Lawful Point of Discharge (LPD) is proposed for the developed site and is defined as the drainage reserve adjacent to Chambers Flat Road, along the site most western boundary.
Pre-Development	In the existing case, runoff from the site is conveyed via overland flow, where it is discharged within the existing waterway corridor adjacent to Chambers Flat Road.
Post-Development	In the developed case runoff is conveyed to the proposed bioretention basin via a pit and pipe system where it is released over the weir and across the bypass via overland flow to the proposed drainage reserve adjacent to Chambers Flat Road at a controlled rate.
External Flow Management	The site is subject to runoff from a 0.54ha external catchment to the east. In the post-development scenario, a grassed swale on the eastern site boundary is proposed to divert runoff from the external catchment. The proposed swale will tie in and discharge to the recently constructed drainage channel at the rear of the adjoining development to the north, which is also owned by the applicant of this development application. Refer to the catchment plans included in Appendix C for further information.

4. Stormwater Quality Assessment

4.1 Water Quality Objective (WQO)

In accordance with the Logan City Council City Plan, the total effect of permanent water quality control measures is to achieve reductions in the mean annual load generated by the development site at a minimum of:

- 90% for Gross Pollutants (>5mm);
- 80% for Total Suspended solids (TSS);
- 60% for Total Phosphorus (TP); and
- 45% for Total Nitrogen (TN).

This will ensure the environmental values of the downstream receiving waters are maintained and have been chosen as the WQO for the development.

4.2 Treatment Train

To ensure the above WQO's can be met at the site's LPD, a treatment train was proposed for the developed site and modelled using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software.

The conceptual parameters of the proposed bioretention basin are presented below, and further detail of the input parameters used within MUSIC are included in Appendix B. The location of the proposed treatment train elements is included in the Operational Control Plan within Appendix C.

Typical sections of a bioretention basin have been included in Figure 4.1 and Figure 4.2. The bioretention systems will be designed in accordance with the Water By Design Bioretention Technical Design Guidelines during the detailed design phase of the development (Water By Design, 2014).

Table 4.1 Proposed Bio-retention Basin Parameters

Parameter	Site Basin
Extended Detention Depth	0.3m
Filter Media Area	440m^2
Filter Media Depth	0.5m
Transition Layer	0.1m
Drainage Layer	0.15m

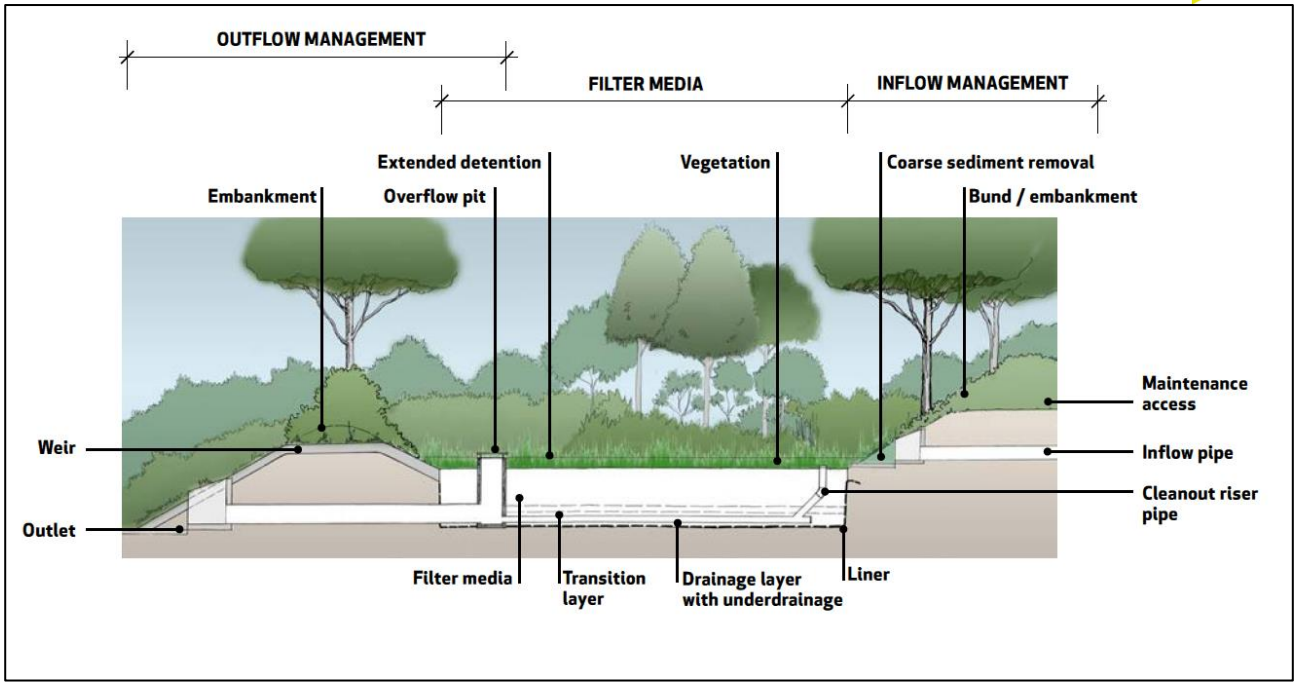


Figure 4.1 Typical Bioretention Basin (Water By Design, 2014)

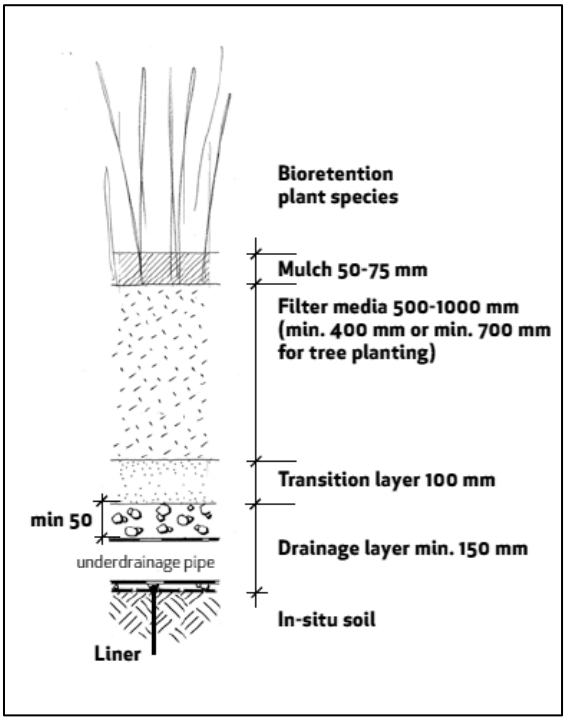


Figure 4.2 Typical Bioretention Drainage Profile (Water By Design, 2014)

4.3 MUSIC Results

Results of the MUSIC modelling for the treatment train effectiveness are summarised in Table 4.2. The results indicate the 80%, 60%, 45% and 90% reduction target for TSS, TP, TN and gross pollutants respectively are achieved for the rainfall data set simulated.

Table 4.2 Treatment Train Effectiveness

Pollutant	Inflows (kg/yr)	Outflows (kg/yr)	Reduction Achieved (%)	Water Quality Objective (%)
TSS	3730	737	80.2	80
TP	8.87	2.55	71.2	60
TN	66.5	32.7	50.8	45
GP	756	0	100	90

NOTE: All simulations have been run with pollutant export estimation set to “stochastic generation”.

A screen capture of the MUSIC model and treatment train effectiveness results are presented in Figure 4.3.

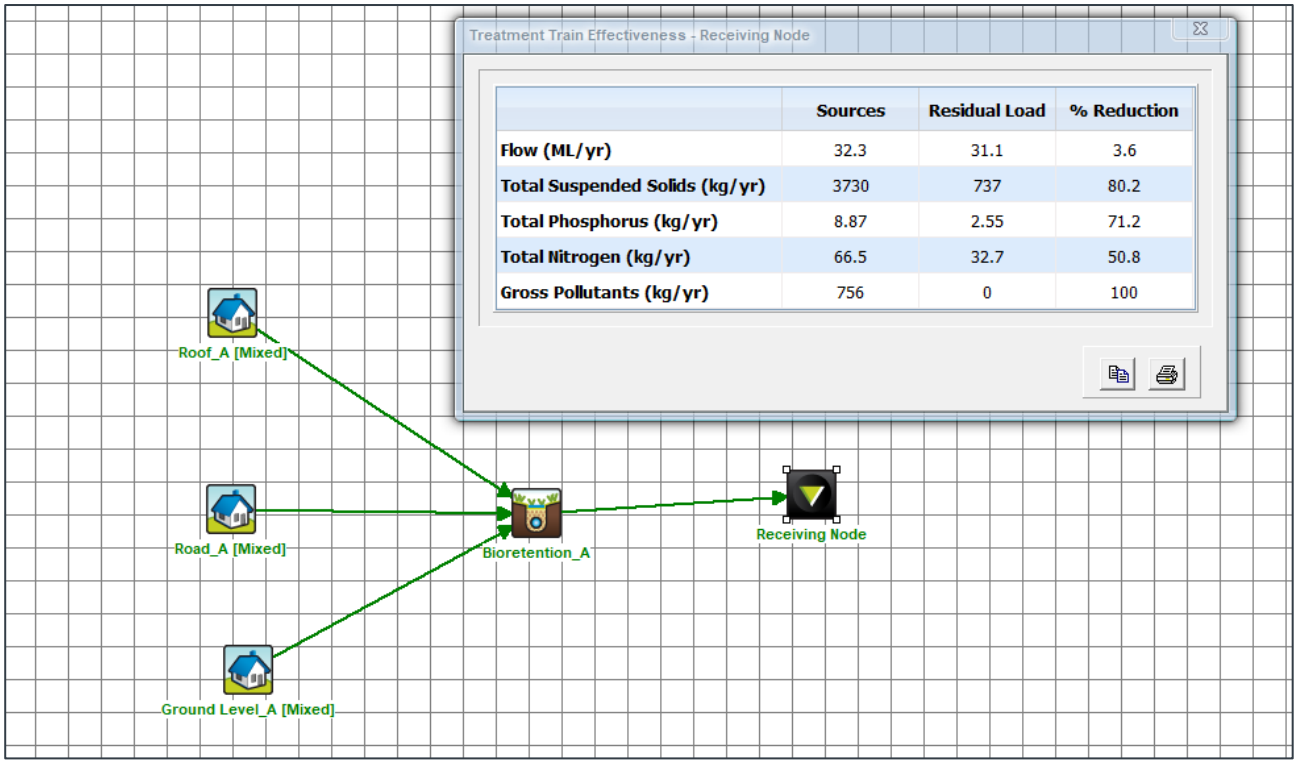


Figure 4.3 Treatment Train Layout & MUSIC Results

5. Erosion and Sediment Control

5.1 Best Management Practices

Stormwater runoff quality during the construction phase of this development shall be managed in accordance with Best Practice Erosion and Sediment Control (IECA, 2008), which is the current recognised construction industry best management practice (BMP) for erosion and sediment control.

Erosion and Sediment Control (ESC) plans are required to be implemented during the construction phase to minimise environmental harm to on-site stormwater treatment devices and downstream receiving waters.

It is important to note that the measures identified below are a generic approach to construction phase stormwater quality management. Erosion and sediment control is highly dependent on local site conditions and staging of the proposed earth disturbing activities. Therefore, further details of the erosion and sediment control systems and procedures will be provided for each development stage when more information is available regarding in-situ soils and development staging.

5.2 Erosion Hazard Assessment

As part of the IECA guidelines, an erosion hazard assessment is to be completed to identify low-risk and high-risk short-term land disturbances within a given region (IECA, 2008). This Erosion Hazard Assessment estimates a TASK number which triggers if a site should be treated as high or low risk in regard to erosion control measures. A trigger value for high-risk site of 200 will be adopted for future stage as recommended by IECA. High risk sites trigger further need for assessment.

Table 5.1 Erosion Hazard Assessment

Catchment ID	Area (m^2)	Duration of Disturbance (months)	Slope Factor	K Factor	TASK Number
Post A	49290	6	0.61	0.040	**7216.1**

From Table 5.1 the results show that the Post A Catchment requires high-risk ESC treatment. Given the development proposal is at a conceptual phase, further details of the erosion and sediment control systems and procedures will be provided at the detailed design stage.

5.3 Erosion Control Standard

The best practice erosion control measures for high-risk development as detailed in Best Practice Erosion and Sediment Control (IECA, 2008) include the following:

- All reasonable and practical steps to be taken to apply best practice erosion control measures to completed earthworks, or otherwise stabilise such works, prior to anticipated rainfall - including existing unstable, undisturbed, soil surfaces under the management or control of the building/construction works;
- Land clearing limited to maximum 4 weeks work;
- Disturbed soil surfaces stabilised with minimum 75% cover within 10 days of completion of works within any area of a work site;
- Staged construction and stabilisation of earth batters; and
- Soil stockpiles and unfinished earthworks are suitably stabilised (covered) if disturbance is expected to be suspended for a period exceeding 10 days.

5.4 Sediment Loss Estimate

The potential volume of sediment loss from the subject site has been estimated using the Revised Universal Soil Loss Equation (RUSLE).

RUSLE calculates annual soil loss rates based on:

$$A = R. K. LS. C .P$$

Where:

A = annual soil loss due to erosion (t/ha/yr)

R = rainfall erosivity factor

K = soil erodibility factor

LS = topographic factor derived from slope length and slope gradient

C = cover and management factor

P = erosion control practice factor

Table 5.2 Potential Sediment Loss (RUSLE)

Catch. ID	Area (ha)	Soil Type*	Slope Length (m)	Slope Grade (%)	Intensity $^{6}I_2$ (mm/hr)	R	K	LS	C	P	A (t/ha/yr)	Yield (m^3/yr)
Post A	4.929	Silt Loam	60	3	10.6	2453	0.04	0.057	1	1.3	7.3	27.6

*Note soil testing will need to be carried out to confirm soil type

Table 5.3 Sediment Control Standard (default) based on soil loss rate (IECA, 2008)

Area limit (m^2) [1]	Soil loss rate limit (t/ha/yr) [2]			Soil loss rate limit (t/ha/month) [3]		
	Type 1	Type 2	Type 3	Type 1	Type 2	Type 3
250	N/A	N/A	[4]	N/A	N/A	[4]
1000	N/A	N/A	All cases	N/A	N/A	All cases
2500	N/A	> 75	75	N/A	> 6.25	6.25
>2500	> 150	150	75	> 12.5	12.5	6.25

5.5 Sediment Pond Requirement

Sediment ponds are generally required during construction where:

- The disturbed area is greater than 10,000m^2 and the expected sediment loss is greater than 75 t/ha/yr;
- The disturbed soils are dispersive; and/or
- Where there is a need to control runoff suspended solids/turbidity.

As presented in Table 5.2, it is expected that the potential annual soil loss will not exceed 75 t/ha/yr for any of the catchments, and therefore a sediment pond is not required during construction.

5.6 Sediment Control Standard

Table B1 of the guidelines (IECA, 2018) provides a method for determining the sediment control standard for construction activities based on the estimated soil loss rate. Based on the size of the development, it is likely that Type 3 sediment controls are required for this site. A list of Type 3 and supplementary sediment control

techniques is provided in Table 5.4 below based on Table 4.5.3 and Table 4.5.4 of the guidelines (IECA, 2008). These control techniques provide a guide that is recommended to be used to minimise the downstream effect of sediments.

Table 5.4 Sediment Control Techniques

Techniques	Type 3	Supplementary
Sheet flow treatment	Buffer Zone Excavated Drop Inlet Protection Fabric Drop Inlet Protection Fabric Wrap Field Inlet Sediment Trap Filter Fence Modular Sediment Trap Straw Bale Barrier Sediment Fence	Grass Filter Strips Fibre Rolls Stiff Grass Barrier
Concentrated flow treatment	Coarse Sediment Trap Modular Sediment Trap U-Shaped Sediment Trap	Straw Bale Barrier Kerb Inlet Sediment Traps (on-grade and sag inlet traps, including Gully Bags) Check Dam Sediment Traps
De-watering sediment control	Filter Fence Grass Filter Bed Hydrocyclone Portable Sediment Tank Sediment Fence	Grass Filter bed
Instream sediment control	Modular Sediment Barrier Sediment Filter Cage	Straw Bale Barrier (short-term device only)
Other		Construction exits (Rock Pads, Wash Bays)

6. Conclusion

This Conceptual Stormwater Management Plan (CSMP) has been prepared for CFR No.3 Pty Ltd (GDM Property) for Development Application for Lot 4 on RP97736. This CSMP has referenced relevant guidelines relating to stormwater management to form the conceptual basis of the stormwater plan. The following conclusions have been made as a result of this assessment.

- The associated hydraulic modelling undertaken by Colliers as part of the *Flood Assessment - Regional Solution Chambers Flat Road* (Document reference: 22-0502TM02-V1) indicates that the proposed regional detention strategy, which includes the proposed developments over the subject site, south to 590-598 Chambers Flat Road, is capable of maintaining the existing peak water levels external to the site. Therefore, the proposed development achieves the principle of 'non-worsening' without the need for on-site detention.
- To achieve the Logan City Council's Water Quality Objectives, it is proposed to use a bioretention system with a filter area of 440m^2 to treat the site runoff.
- An Erosion Hazard Assessment has identified that the site is high-risk with regard to erosion potential. Sediment loss estimates have been used to determine that Type 3 sediment controls are required, given a yield of 27.6 m^3/year for the disturbed internal catchment. More detailed ESC controls and measures are to be designed and prepared in the detailed design phase of the project.

Appendix A – Proposed Plans of Development

Appendix B – MUSIC Input Parameters

Rainfall and Evapotranspiration

MUSIC modelling was based on 6-minute interval data obtained from the Bureau of Meteorology (BOM) for rainfall station 040715 Shailer Park, QLD, as summarised in Table D.6-1.

Table D.6-1 Meteorological and Rainfall Runoff Data Reporting Table

Input	Data Used in Modelling
Rainfall station	040715
Time step	6 minute
Modelling period	1/01/1990 to 31/12/1999 (10 years)
Mean annual rainfall (mm)	1119
Rainfall runoff parameters	Urban
Pollutant export parameters	Urban

Catchment Parameters

Based on the proposed land uses within the development, the site has been modelled as urban land use as detailed in Table D.6-2. The site has been divided into roof, ground and road source nodes as per the architectural drawings included in Appendix A.

Table D.6-2 Land Use Parameters

Catchment ID	Land Use	Total Impervious (%)
Roof	Urban	100
Ground	Urban	20
Road	Urban	60

The MUSIC catchment plan with full breakdown of rood, ground and road areas is presented in Appendix D. The pollutant loads and runoff parameters for each source node have been based on the data from the Water by Design MUSIC Modelling Guidelines (2010), as summarised in Table D.6-3 and Table D.6-4.

Table D.6-3 Rainfall Runoff Parameters

Parameter	All Nodes
Landuse	Urban
Rainfall threshold (mm)	1
Soil storage capacity (mm)	500
Initial storage (% capacity)	10
Field capacity (mm)	200
Infiltration capacity coefficient a	211
Infiltration capacity coefficient b	5
Initial depth (mm)	50
Daily recharge rate (%)	28
Daily baseflow rate (%)	27
Daily seepage rate (%)	0

Table D.6-4 Pollutant Load Parameters

Urban Residential	Total Suspended Solids (log mg/L)		Total Phosphorous (log mg/L)		Total Nitrogen (log mg/L)	
	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
Storm Flow Concentration	1.30(1) 2.43(2) 2.16(3)	0.38	-0.89(1) -0.30(2) -0.39(3)	0.34	0.37	0.34
Base Flow Concentration	0(1) 0.78(2,3)	0(1) 0.39(2,3)	0(1) -0.60(2,3)	0(1) 0.50(2,3)	0(1) 0.32(2,3)	0(1) 0.30(2,3)

NOTE: (1) values applied to 'Roof' areas

(2) Values applied to 'Carpark' areas

(3) Values applied to 'Ground' areas

Treatment Node Parameters

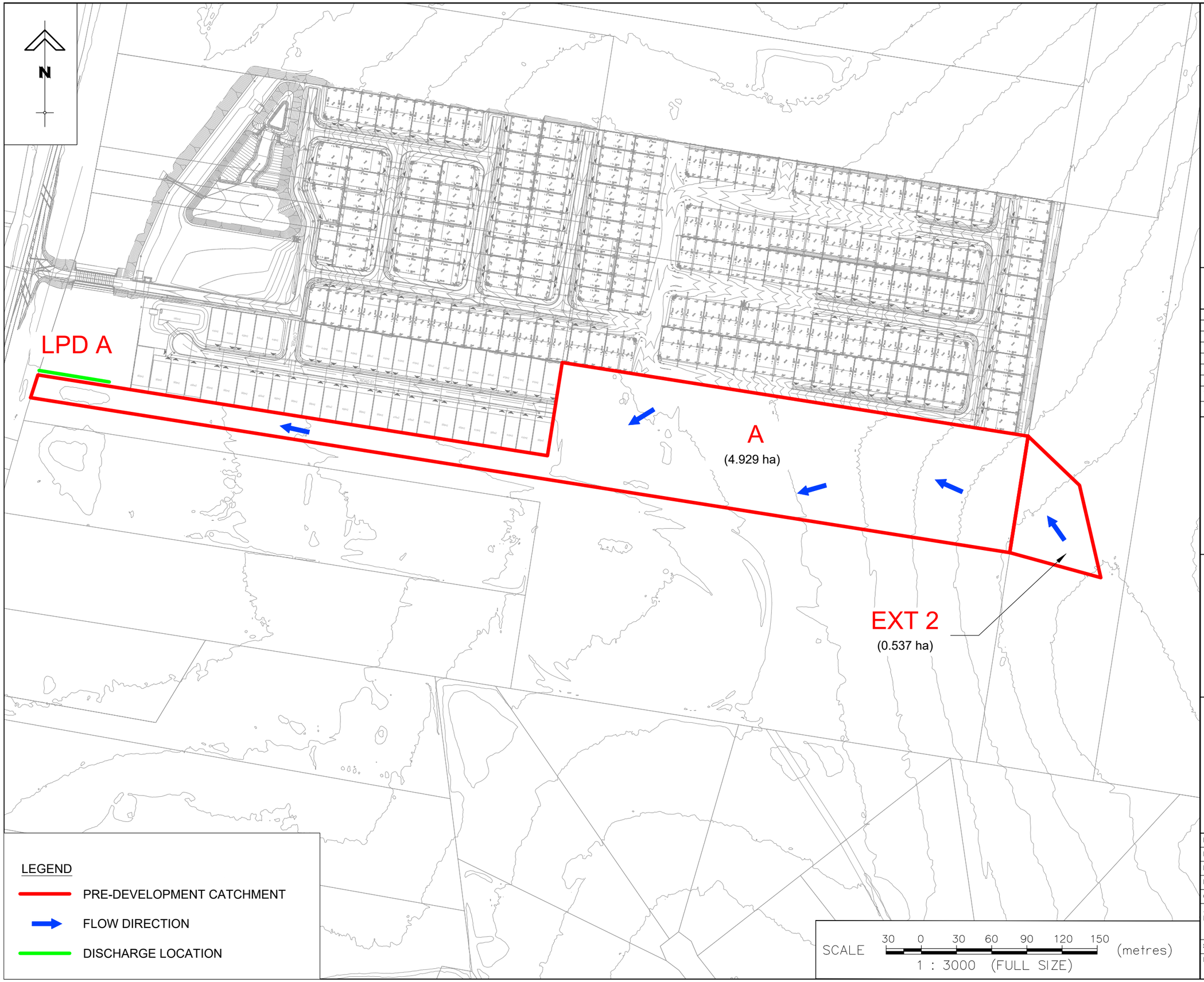
The following sections describe the modelling parameters applied to MUSIC for each of the treatment nodes included as part of the water quality assessment.

Bioretention System

Table D.6-5 Bioretention Parameters

Parameter	Site
Has the filter area been calculated appropriately (Y / N / N/A)	Y
Extended detention depth (m)	0.3
Filter area (m^2)	440m^2
Unlined filter media perimeter (m)	0.01
Saturated hydraulic conductivity (mm/hour)	200
Filter depth (m)	0.5
TN content of filter media (mg/kg)	400
Orthophosphate content of filter media (mg/kg)	30
Is the base lined (Y/N)	Yes
Effectiveness of plant TN removal (effective/ineffective/unvegetated)	Effective
Overflow weir width (m)	44
Exfiltration rate (mm/hr)	0.00
If an exfiltration rate has been used, have node water balance losses been used in calculation of treatment train effectiveness (Y / N / N/A)	N/A
If exfiltration rate has been used, is the exfiltration rate justified (Y / N / N/A)	N/A
Underdrain present (Y/N)	Yes
Submerged zone with carbon present?	No
Depth of submerged zone (m)	N/A
Confirmation that K and C* remain default	Yes

Appendix C – Burchills Engineering Solutions Conceptual Stormwater Management Drawings



560 CHAMBERS FLAT ROAD, LOGAN RESERVE

FOR

GDM Property

ORIGINAL SCALE BEFORE REDUCTION

A3 0 10 20 30 40mm.

VER.	DESCRIPTION	APPR.	DATE
A	ORIGINAL ISSUE	LF	09.04.25

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ABN 76 166 942 365

DRAWING TITLE :

PRE-DEVELOPMENT CATCHMENT PLAN

DEVEL. APPLIC. No. :	DATE : 09.04.25
PROJECT LEADER :	
DESIGNER : Joshua	
DRAFTSPERSON : Tuyen Kim	
CHECKED :	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
RPEQ No. :	
SCALE : AS SHOWN	DATUM : FULL SIZE : A3
PROJECT No.: BE230588	DRAWING No. : N200 VERSION: A

560 CHAMBERS FLAT ROAD, LOGAN RESERVE

FOR

GDM Property

ORIGINAL SCALE BEFORE REDUCTION

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VER.	DESCRIPTION	APPR.	DATE
A	ORIGINAL ISSUE	LF	09.04.25

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COOTE BURCHILLS ENGINEERING PTY LTD
ABN 76 166 942 365

DRAWING TITLE :

POST-DEVELOPMENT CATCHMENT PLAN

LPD A

A
(4.042 ha)

BYPASS AREA
(0.887 ha)

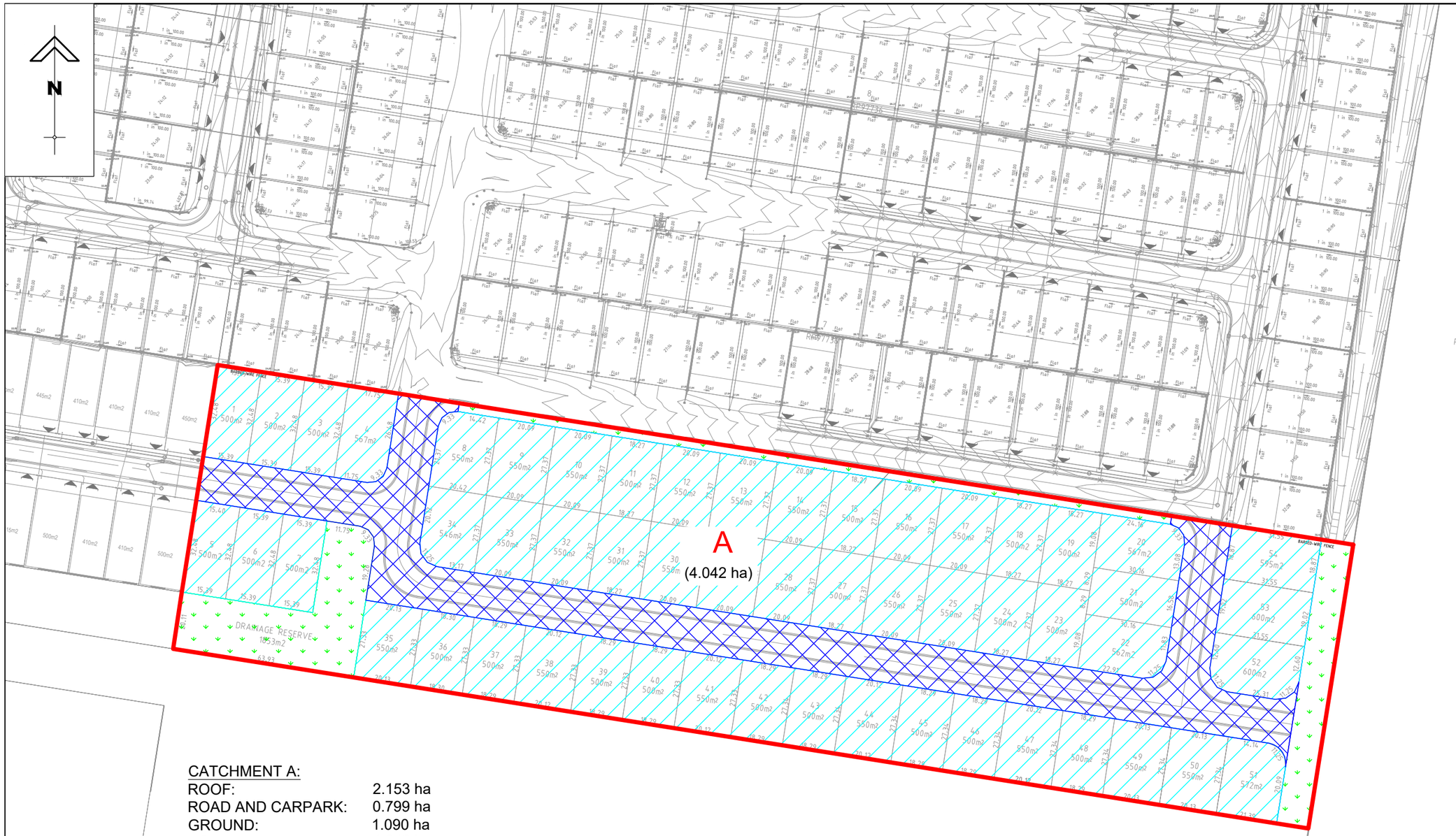
EXT 2
(0.537 ha)

LEGEND

- POST-DEVELOPMENT CATCHMENT
- FLOW DIRECTION
- DISCHARGE LOCATION

SCALE 30 0 30 60 90 120 150 (metres)
1 : 3000 (FULL SIZE)

DEVEL. APPLIC. No. :		DATE : 09.04.25
PROJECT LEADER :		
DESIGNER : Joshua		
DRAFTSPERSON : Tuyen Kim		
CHECKED :		
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365 RPEQ No. :		
SCALE : AS SHOWN	DATUM :	FULL SIZE : A3
PROJECT No.: BE230588	DRAWING No. : N201	VERSION: A

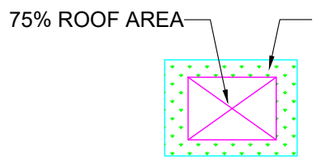


CATCHMENT A:

ROOF:	2.153 ha
ROAD AND CARPARK:	0.799 ha
GROUND:	1.090 ha
TOTAL AREA:	4.042 ha

LEGEND

- MUSIC CATCHMENT
- LOT
- ROAD AND CARPARK
- GROUND



TYPICAL LOT

SCALE 15 0 15 30 45 60 75 (metres)

1 : 1500 (FULL SIZE)

560 CHAMBERS FLAT ROAD, LOGAN RESERVE

FOR

GDM Property

ORIGINAL SCALE BEFORE REDUCTION

A3 0 10 20 30 40mm.

VER.	DESCRIPTION	APPR.	DATE
A	ORIGINAL ISSUE	LF	09.04.25

REVISIONS

BURCHILLS ENGINEERING SOLUTIONS

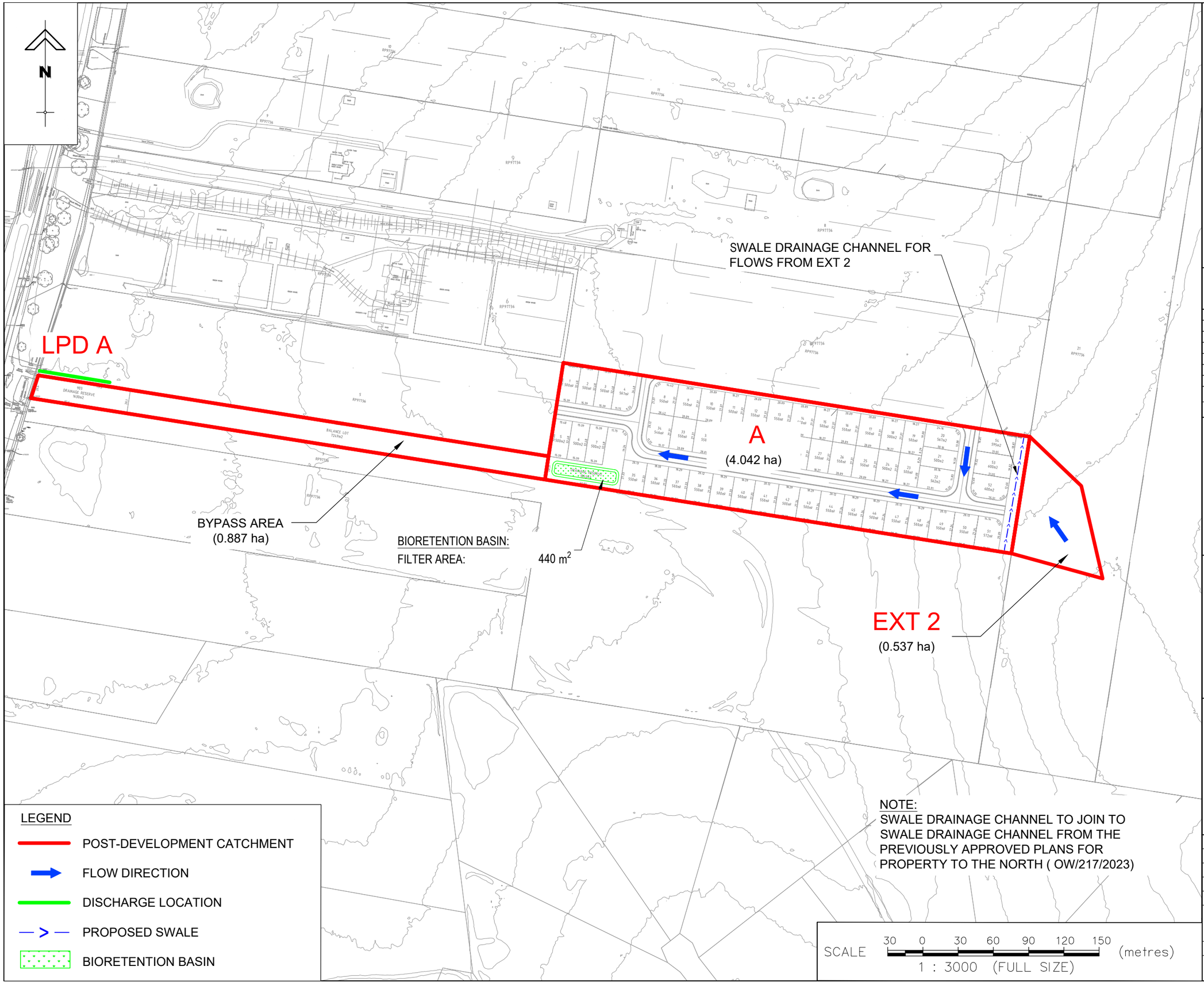
GOLD COAST | BRISBANE | TOOWOOMBA
IPSWICH | MORETONBAY
PHONE: +61 7 5509 6400
FAX: +61 7 5509 6411
EMAIL: ADMIN@BURCHILLS.COM.AU
COOTE BURCHILLS ENGINEERING PTY LTD
ABN 76 166 942 365

DRAWING TITLE :

MUSIC CATCHMENT PLAN

DEVEL. APPLIC. No. :	DATE : 09.04.25
PROJECT LEADER :	
DESIGNER : Joshua	
DRAFTSPERSON : Tuyen Kim	
CHECKED :	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
RPEQ No. :	

SCALE : AS SHOWN	DATUM :	FULL SIZE : A3
PROJECT No.: BE230588	DRAWING No. : N202	VERSION: A



560 CHAMBERS FLAT ROAD, LOGAN RESERVE

FOR

GDM Property

ORIGINAL SCALE BEFORE REDUCTION

A3 0 10 20 30 40mm.

VER.	DESCRIPTION	APPR.	DATE
A	ORIGINAL ISSUE	LF	09.04.25

REVISIONS

BURCHILLS ENGINEERING SOLUTIONS

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EMAIL: ADMIN@BURCHILLS.COM.AU
COOTE BURCHILLS ENGINEERING PTY LTD
ABN 76 166 942 365

DRAWING TITLE :

OPERATIONAL CONTROL PLAN

DEVEL. APPLIC. No. :	DATE : 09.04.25
PROJECT LEADER :	
DESIGNER : Joshua	
DRAFTSPERSON : Tuyen Kim	
CHECKED :	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365 RPEQ No. :	

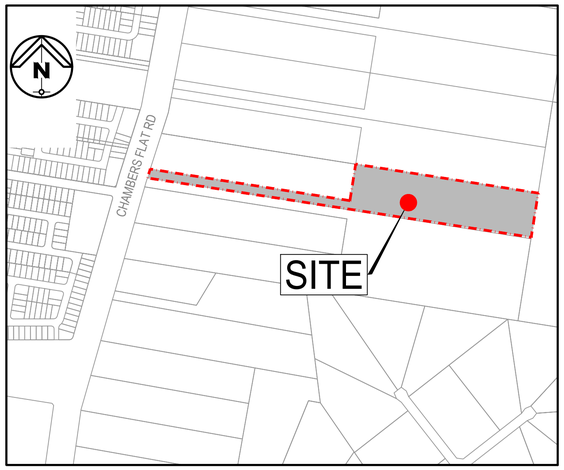
SCALE : AS SHOWN	DATUM :	FULL SIZE : A3
PROJECT No.: BE230588	DRAWING No. : N400	VERSION: A

Appendix D – Burchills Engineering Solutions Civil Drawings

PROPOSED SUBDIVISION DEVELOPMENT
AT 560 CHAMBERS FLAT RD, LOGAN RESERVE
QUEENSLAND

PRELIMINARY CIVIL ENGINEERING DESIGN

CONTRACT BE230588



LOCALITY PLAN

N.T.S.

DRAWING INDEX	
DWG No.	TITLE
C000	COVER SHEET AND DRAWING SCHEDULE
C100	PRELIMINARY TYPICAL CROSS SECTION, NOTES AND DETAILS
C200	PRELIMINARY EARTHWORKS LAYOUT PLAN
C210	PRELIMINARY EARTHWORKS SECTIONS SHEET 1
C211	PRELIMINARY EARTHWORKS SECTIONS SHEET 2
C300	PRELIMINARY ROADWORKS & DRAINAGE LAYOUT PLAN
C310	PRELIMINARY BASIN LAYOUT PLAN
C311	PRELIMINARY BASIN DETAILS
C400	PRELIMINARY SEWER & WATER LAYOUT PLAN
C500	PRELIMINARY FUTURE COLLECTOR ROAD PLAN & TYPICAL DETAIL
C510	PRELIMINARY FUTURE COLLECTOR ROAD LONGITUDINAL SECTION
C520	PRELIMINARY FUTURE COLLECTOR ROAD CROSS SECTIONS
C800	PRELIMINARY VEHICLE CHECKING LAYOUT PLAN

NOTE:

CONCEPT DESIGNS ARE BASED ON SITE SURVEY
DATA PROVIDED BY LANDPARTNERS.

PREPARED FOR

GDM PROPERTY

PREPARED BY

BURCHILLS ENGINEERING SOLUTIONS

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IPSWICH | MORETON BAY
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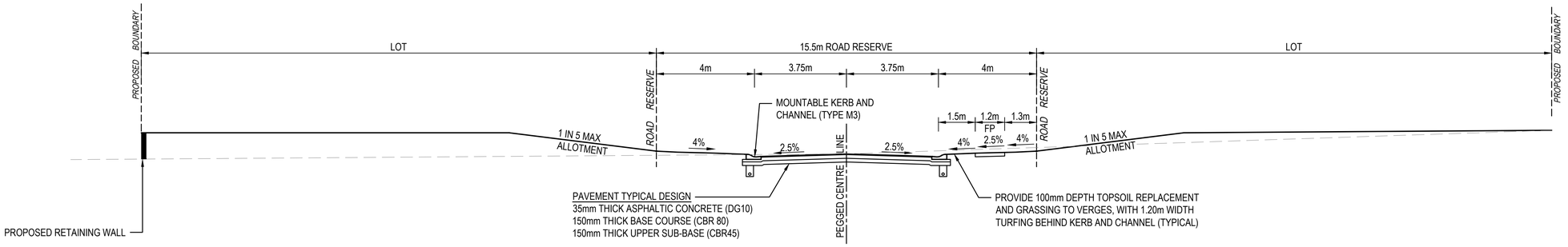
FAX: +61 7 5509 6411
EMAIL: ADMIN@BURCHILLS.COM.AU
COOTE BURCHILLS ENGINEERING PTY LTD
ABN 76 166 942 365

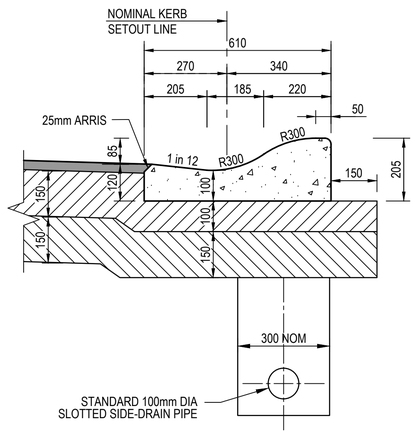
DATE : 23-04-25

PROJECT No.:	DRAWING No. :	VERSION:
BE230588	C000	A



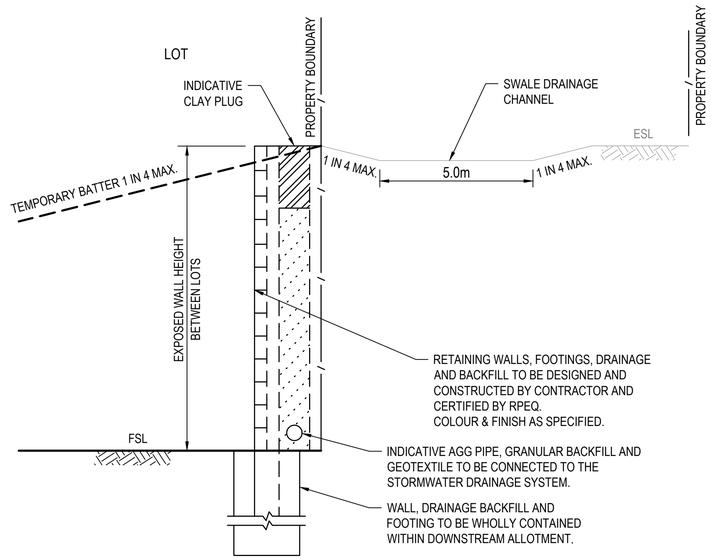
ROADS 01-02 TYPICAL CROSS SECTION
7.5m K-K ACCESS STREET

SCALE 1 0 1 2 3 4 5 (metres)
1 : 100 (FULL SIZE)



MOUNTABLE KERB AND CHANNEL TYPE M3

SCALE 0.1 0 0.1 0.2 0.3 0.4 0.5 (metres)
1 : 10 (FULL SIZE)



FUTURE RETAINING WALL CONFIGURATION BETWEEN LOT & SWALE DRAINAGE

SCALE 1 0 1 2 3 4 5 (metres)
1 : 100 (FULL SIZE)

PAVEMENT AND KERB NOTES:

1. BATTER SLOPES AND PAVEMENT CROSSFALLS SHOWN ON THIS DRAWING ARE TYPICAL ONLY. FOR VARIATION FROM THE STANDARD PROFILES REFER RELEVANT ROADWORKS DRAWINGS.
2. PAVEMENT DEPTHS SHOWN ON THIS DRAWING ARE PRELIMINARY DESIGN DEPTHS ONLY AND MAY BE VARIED ONCE SUBGRADE TESTS ARE TAKEN. TURNOUTS ARE TO BE PAVED WITH THE SAME MATERIAL AND COMPACTED TO THE SAME STANDARD AS THE ROAD ADJACENT.
3. KERB AND CHANNEL, MEDIAN KERB AND OTHER EDGE SECTIONS SHALL BE CONCRETE CLASS S25, AND THE MIX DESIGNED SPECIFICALLY FOR EXTRUSION.
4. REFER IPWEAQ STD DWG RSD-200 FOR TYPICAL KERB DETAILS AND NOTES.
5. FOR DETAILS OF SIDE-DRAIN CONSTRUCTION REFER IPWEAQ STD DWGS RSD-801 AND RSD-802.
6. 1.2m WIDE REINFORCED CONCRETE FOOTPATH INCLUDING KERB RAMPS AND JOINTING TO BE CONSTRUCTED IN ACCORDANCE WITH IPWEAQ STD DWGS PCD-101, PCD-201 AND PCD-205.

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
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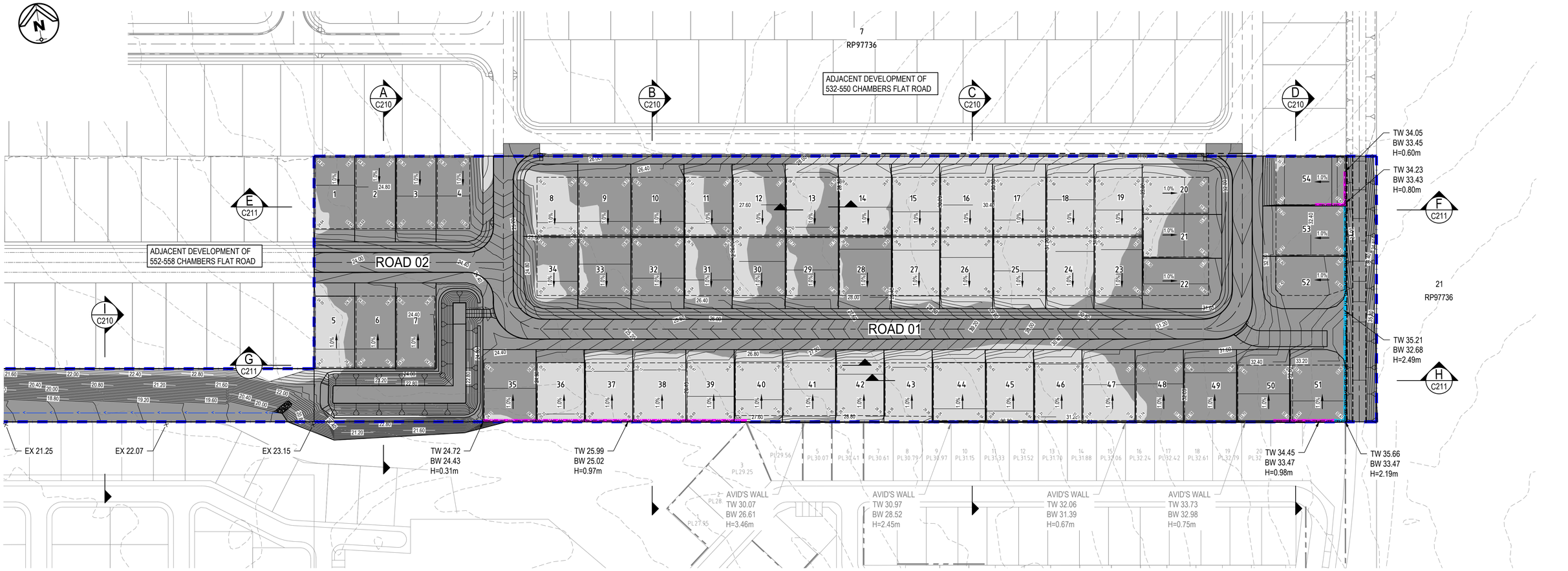
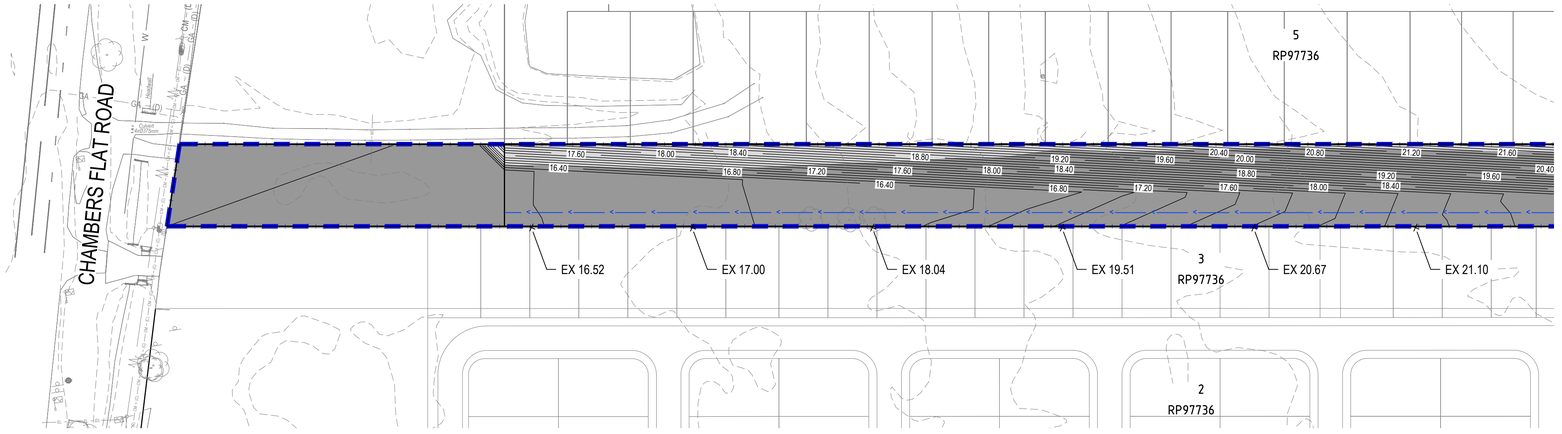
Phone: +61 7 5509 6400
Fax: +61 7 5509 6411
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :
PRELIMINARY TYPICAL CROSS SECTION, NOTES AND DETAILS

DEVEL. APPLIC. No. :			DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS		DESIGNER : TG	
DRAFTSPERSON : TN		CHECKED : FRASER LUCAS	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365			
RPEQ:			
SCALE :	DATUM : AHD		FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C100		VERSION: A





BULK EARTHWORKS SUMMARY

STRUCTURAL FILLING

AREA	NETT SOLID FILL	incl. COMPACTION FACTOR (0.85)
OVERALL FILLING		
(ALLOTMENTS AND BATTERS	9,115 cu.m.	
TOTAL FILL REQUIRED	9,115 cu.m.	10,724 cu.m.

EXCAVATION

AREA	NETT CUT	
OVERALL EXCAVATION	32,181 cu.m.	
(INCLUDING BASEMENT EXCAVATION)		
TOTAL CUT	32,181 cu.m.	

SUMMARY:
TOTAL MATERIAL ON LEADS (NETT CUT) = 21,457 cu.m.
i.e. 32,181cu.m. - 10,724cu.m. = 21,457 cu.m.
EXCESS MATERIAL TO BE SPOIL OFF SITE (NETT CUT)

LEGEND

- DEVELOPMENT BOUNDARY
- 15.0 DESIGN SURFACE CONTOURS
- EXISTING LOT BOUNDARY
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING SEWER
- EXISTING ROAD CONTROL LINE
- EXISTING KERB
- AVID'S WALL
- 15.0 DESIGN SURFACE CONTOURS
- PROPOSED ROAD CONTROL LINE
- PROPOSED MOUNTABLE KERB AND CHANNEL (TYPE M3)
- PROPOSED RETAINING WALL (0.6m-1.5m)
- PROPOSED RETAINING WALL (1.5m-3.0m)
- EARTHWORKS AREA OF FILL
- EARTHWORKS AREA OF CUT

PRELIMINARY

PRELIMINARY EARTHWORKS LAYOUT PLAN

SCALE 10 0 5 10 15 20 25 30 35 (metres)
1 : 750 (FULL SIZE)

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
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Phone: +61 7 5509 6400
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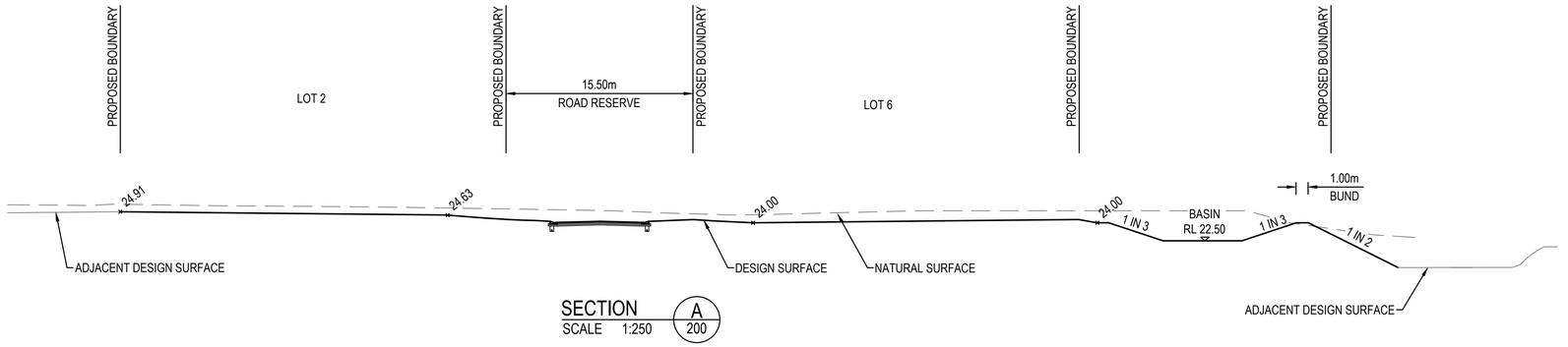
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

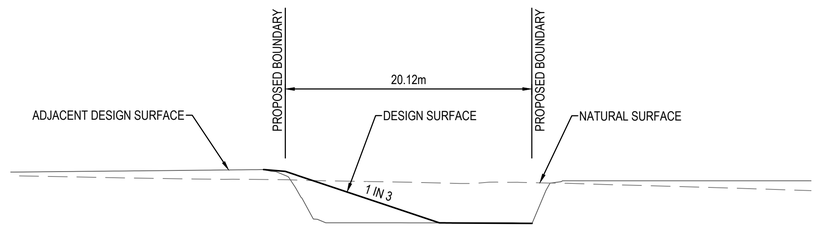
PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :
PRELIMINARY
EARTHWORKS LAYOUT
PLAN

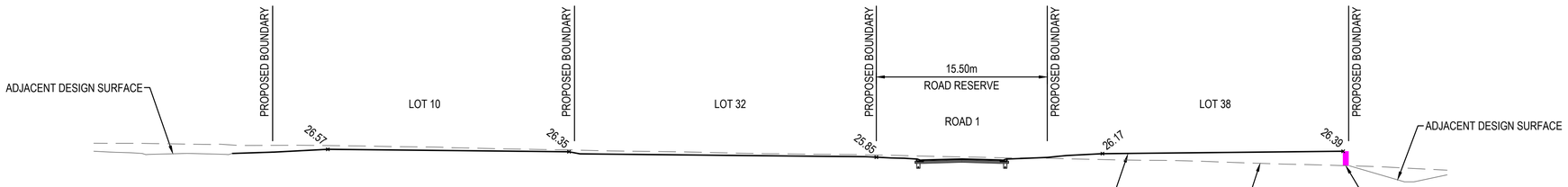
DEVEL. APPLIC. No. :	DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
RPEQ:	
SCALE :	DATUM : AHD / FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C200 / VERSION: A



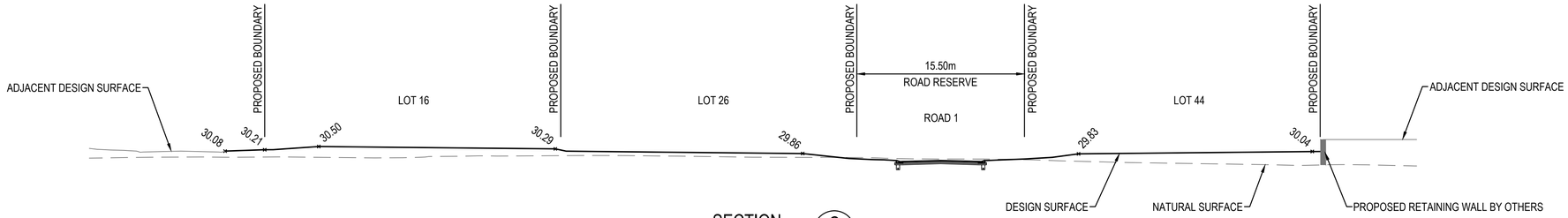
SECTION A
SCALE 1:250 200



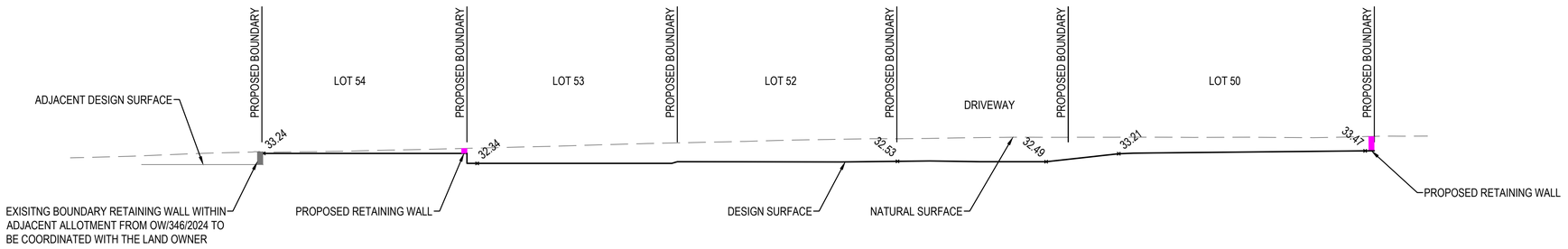
SECTION I
SCALE 1:250 200



SECTION B
SCALE 1:250 200



SECTION C
SCALE 1:250 200



SECTION D
SCALE 1:250 200

SCALE 5 0 5 10 (metres)
1 : 250 (FULL SIZE)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
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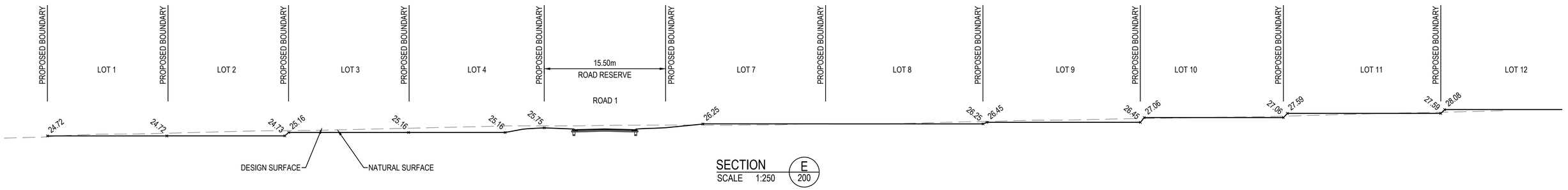
Fax: +61 7 5509 6411
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

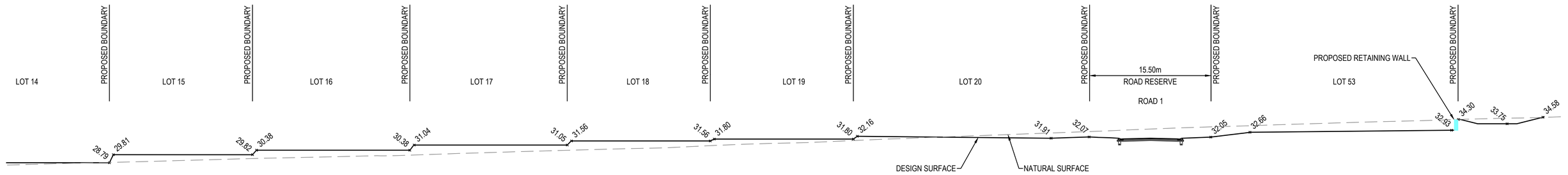
PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :
PRELIMINARY EARTHWORKS
SECTIONS SHEET 1

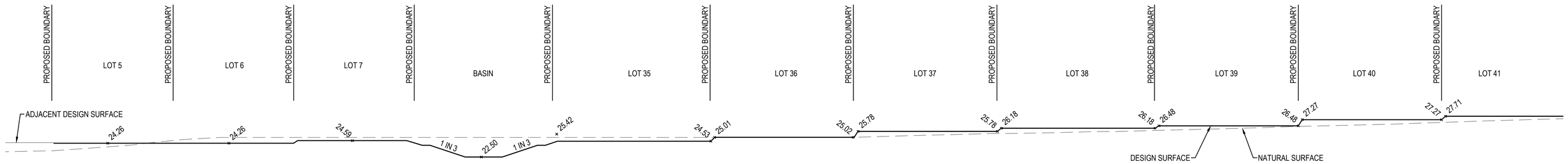
DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG	
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
RPEQ:		
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C210	VERSION: A



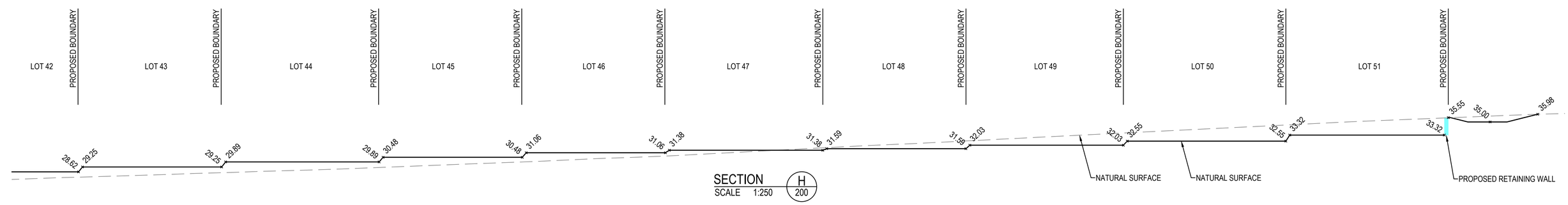
SECTION E
SCALE 1:250 200



SECTION F
SCALE 1:250 200



SECTION G
SCALE 1:250 200



SECTION H
SCALE 1:250 200

SCALE 5 0 5 10 (metres)
1 : 250 (FULL SIZE)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
Gold Coast I Brisbane I Toowoomba
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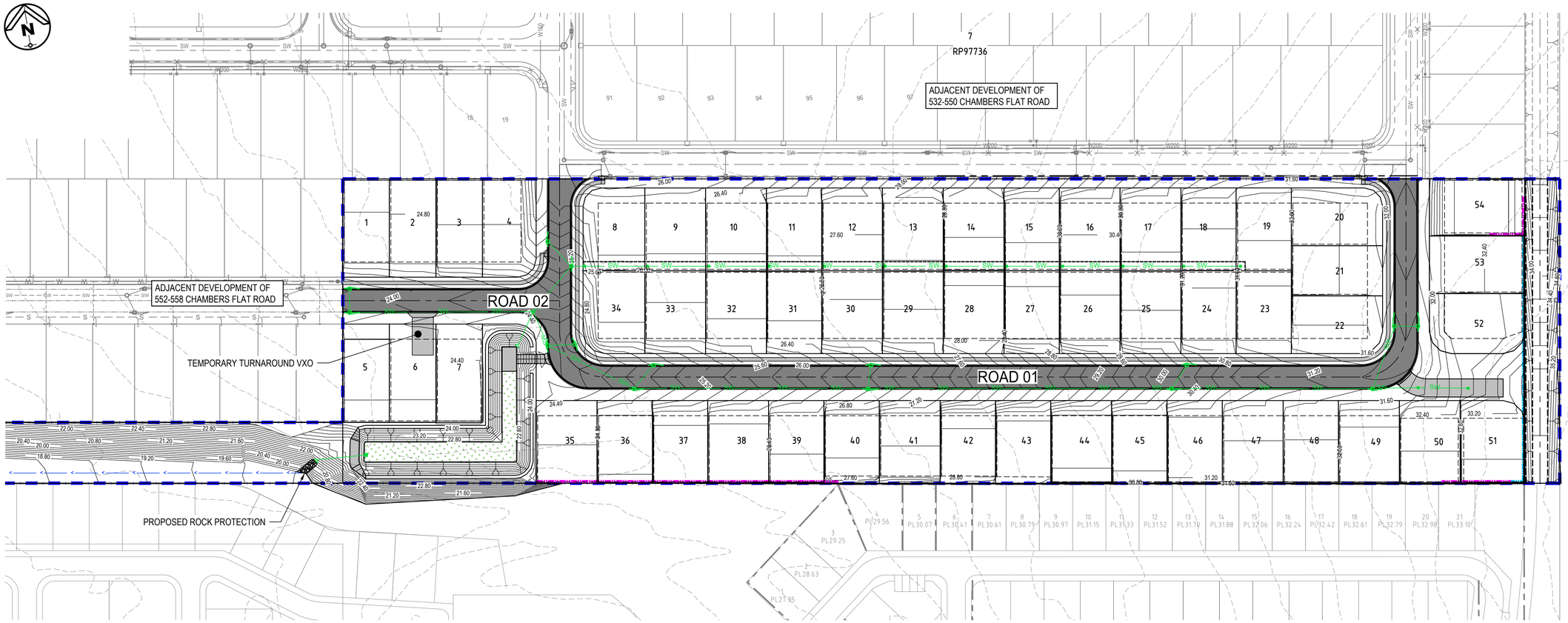
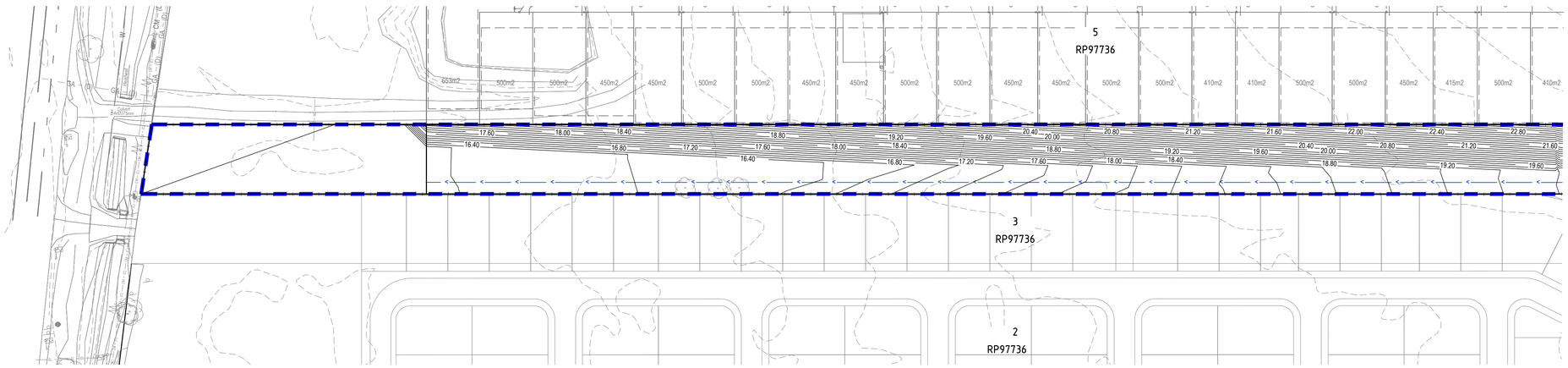
Fax: +61 7 5509 6411
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :
PRELIMINARY EARTHWORKS
SECTIONS SHEET 2

DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS		DESIGNER : TG
DRAFTSPERSON : TN		CHECKED : FRASER LUCAS
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
RPEQ:		
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C211	VERSION: A





LEGEND

- DEVELOPMENT BOUNDARY
- 15.0 DESIGN SURFACE CONTOURS
- EXISTING LOT BOUNDARY
- SW EXISTING STORMWATER
- W EXISTING WATER
- S EXISTING SEWER
- EXISTING ROAD CONTROL LINE
- EXISTING KERB
- 15.0 DESIGN SURFACE CONTOURS
- PROPOSED ROAD CONTROL LINE
- PROPOSED MOUNTABLE KERB AND CHANNEL (TYPE M3)
- PROPOSED BOULDER RETAINING WALL (1.5m MAX)
- PROPOSED SLEEPER RETAINING WALL (1.5m MAX)
- SW PROPOSED STORMWATER
- GULLY PIT / MANHOLE STORMWATER
- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT

PRELIMINARY ROADWORKS & DRAINAGE LAYOUT PLAN

SCALE 10 0 5 10 15 20 25 30 35 (metres)
1 : 750 (FULL SIZE)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

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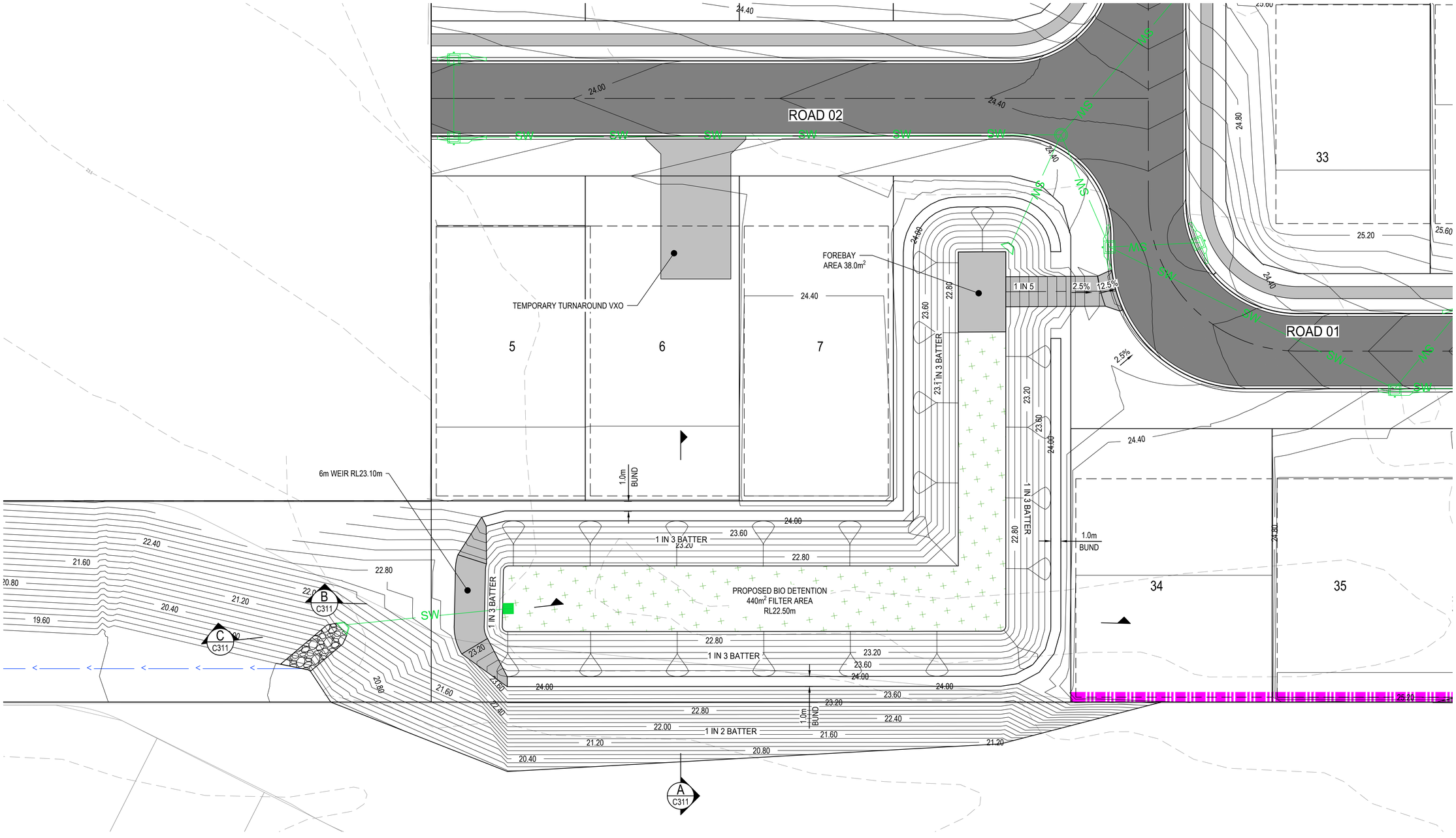
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :
PRELIMINARY ROADWORKS
& DRAINAGE LAYOUT PLAN

DEVEL. APPLIC. No. :	DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
RPEQ:	
SCALE :	DATUM : AHD / FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C300 / VERSION: A



PRELIMINARY BASIN LAYOUT PLAN

SCALE 2 0 2 4 6 8 10 (metres)
1 : 200 (FULL SIZE)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

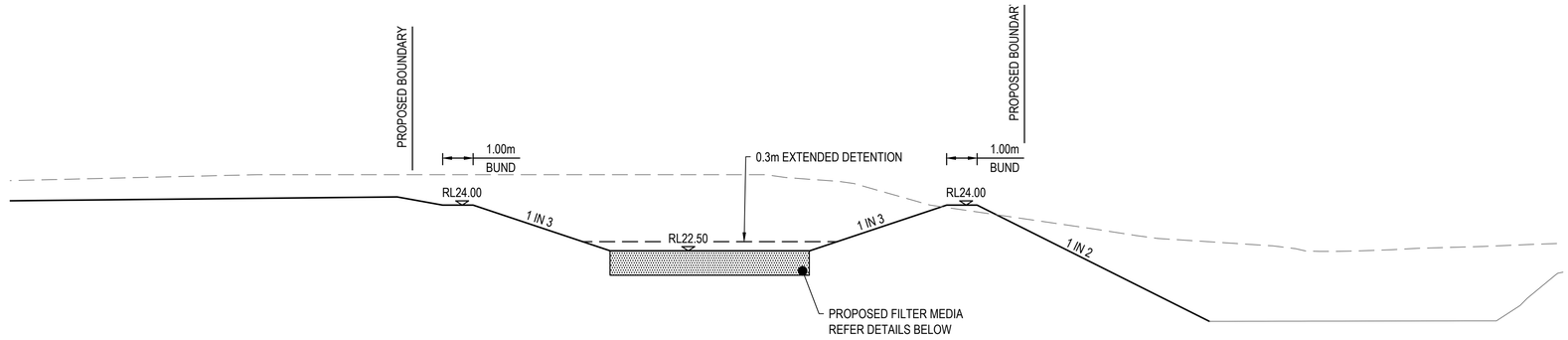
VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
Gold Coast I Brisbane I Toowoomba
Ipswich I Moreton Bay
Phone: +61 7 5509 6400
Fax: +61 7 5509 6411
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

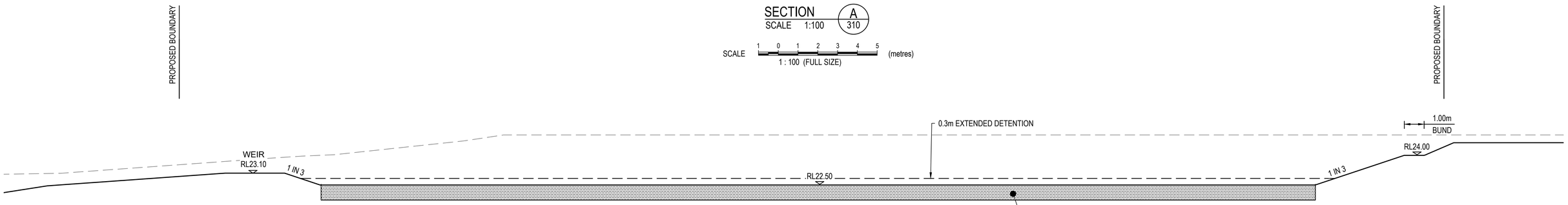
DRAWING TITLE :
PRELIMINARY BASIN LAYOUT PLAN

DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG	
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
RPEQ:		
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C310	VERSION: A



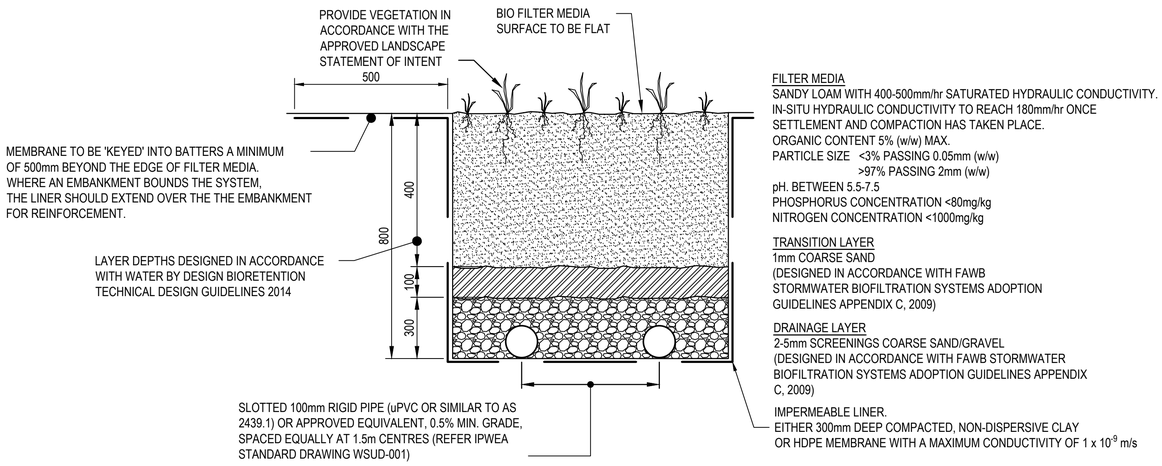
SECTION A
SCALE 1:100
310

SCALE 1 0 1 2 3 4 5 (metres)
1 : 100 (FULL SIZE)



SECTION B
SCALE 1:100
310

SCALE 1 0 1 2 3 4 5 (metres)
1 : 100 (FULL SIZE)



TYPICAL BIO-RETENTION MEDIA CROSS SECTION

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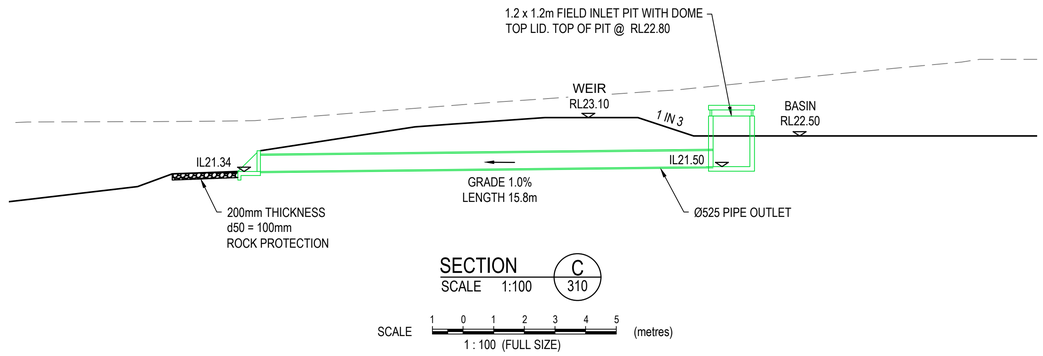

SECTION C
SCALE 1:100
310

SCALE 1 0 1 2 3 4 5 (metres)
1 : 100 (FULL SIZE)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
Gold Coast I Brisbane I Toowoomba
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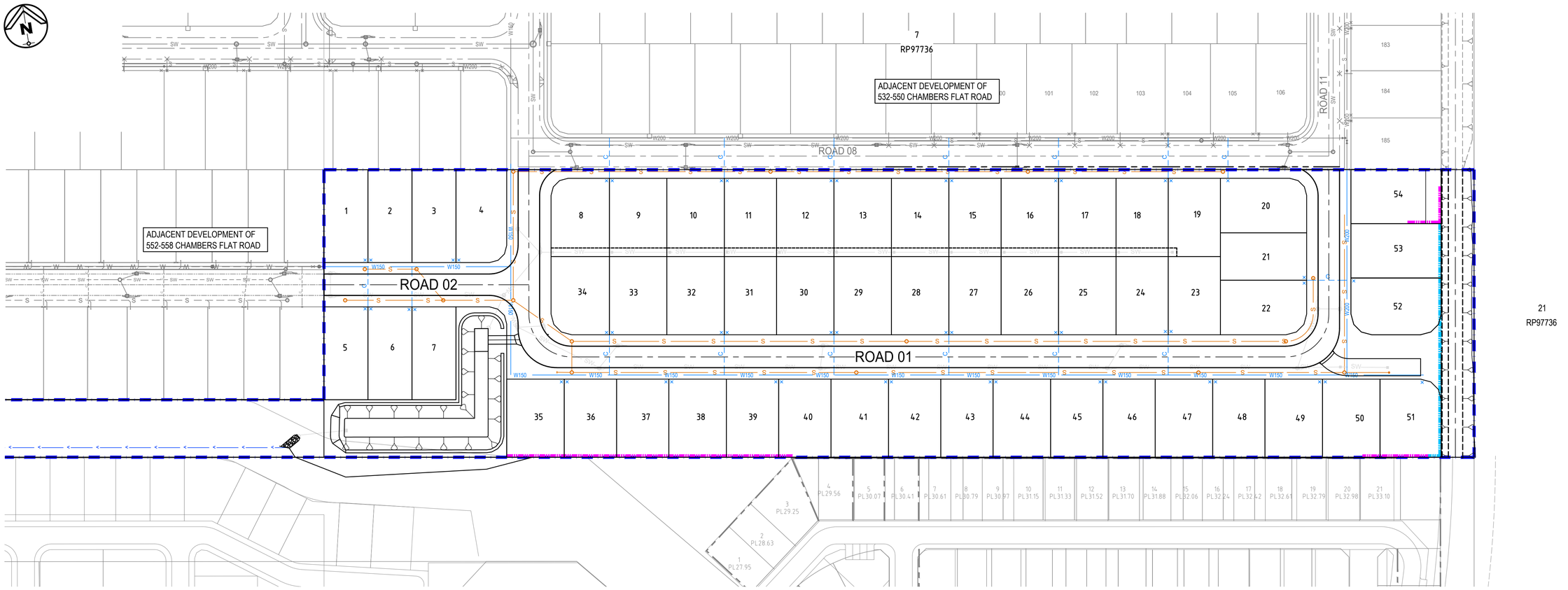
Phone: +61 7 5509 6400
Fax: +61 7 5509 6411
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :
PRELIMINARY BASIN DETAILS

DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG	
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
RPEQ:		
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C311	VERSION: A



PRELIMINARY SEWER & WATER LAYOUT PLAN

SCALE 10 0 5 10 15 20 25 30 35 (metres)
1 : 750 (FULL SIZE)

LEGEND

- DEVELOPMENT BOUNDARY
- EXISTING LOT BOUNDARY
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING SEWER
- EXISTING ROAD CONTROL LINE
- EXISTING KERB
- PROPOSED ROAD CONTROL LINE
- PROPOSED MOUNTABLE KERB AND CHANNEL (TYPE M3)
- PROPOSED BOULDER RETAINING WALL (1.5m MAX)
- PROPOSED SLEEPER RETAINING WALL (1.5m MAX)
- PROPOSED DN150 PVC-M WATER RETICULATION
- PROPOSED DN200 PVC-M WATER RETICULATION
- HYDRANT / VALVE
- WATER SERVICE LOCATION
- PROPOSED SEWER AND MANHOLE
- PROPOSED STORMWATER
- GULLY PIT / MANHOLE STORMWATER

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

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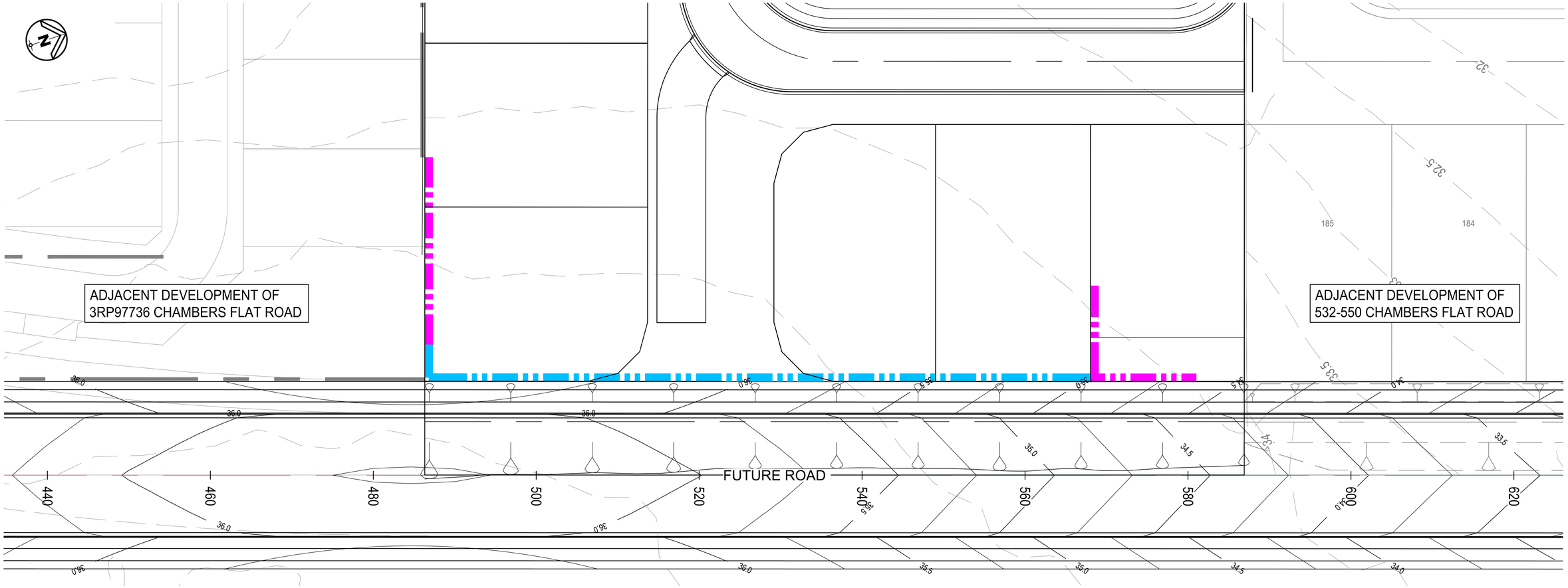
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

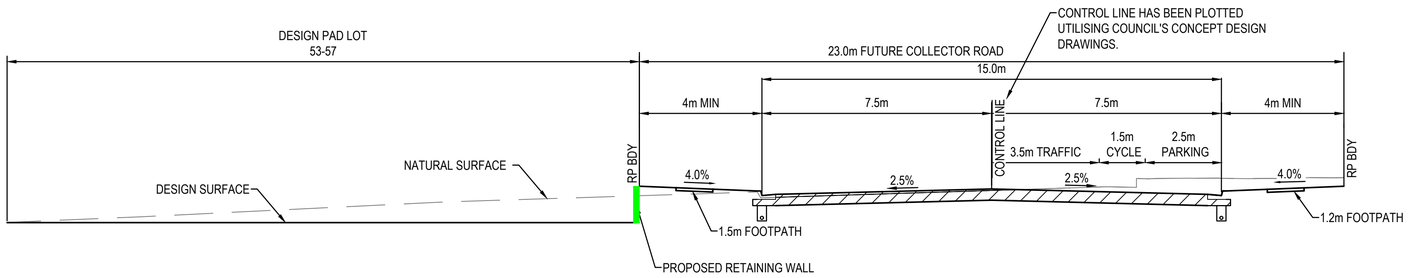
DRAWING TITLE :
PRELIMINARY SEWER &
WATER LAYOUT PLAN

DEVEL. APPLIC. No. :	DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
RPEQ:	
SCALE :	DATUM : AHD / FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C400 / VERSION: A



PRELIMINARY FUTURE COLLECTOR ROAD PLAN & TYPICAL DETAIL

SCALE 10 0 5 10 15 20 25 30 35 (metres)
1 : 750 (FULL SIZE)



FUTURE COLLECTOR TYPICAL SECTION

SCALE 1 0 1 2 3 4 5 (metres)
1 : 100 (FULL SIZE)

NOTE:

NOTE: DESIGN SURFACE HAS BEEN PLOTTED AT THE CONTROL LINE USING OVERLAY OF COUNCIL'S EXISTING CONCEPT DESIGN. BURCHILLS DOES NOT TAKE ANY OWNERSHIP OR RESPONSIBILITY, AS THE PURPOSE OF THIS DRAWING IS TO DEPICT FUTURE LEVEL INTERFACE OF THIS ROAD WITH THE PROPOSED DEVELOPMENT.

LEGEND

- PROPOSED ROAD CONTROL LINE
- PROPOSED MOUNTABLE KERB AND CHANNEL (TYPE M3)
- PROPOSED SLEEPER WALL (0.6m-1.5m)
- PROPOSED SLEEPER WALL (1.5m-3.0m)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

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A	ISSUE FOR INFORMATION	23.04.25

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Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

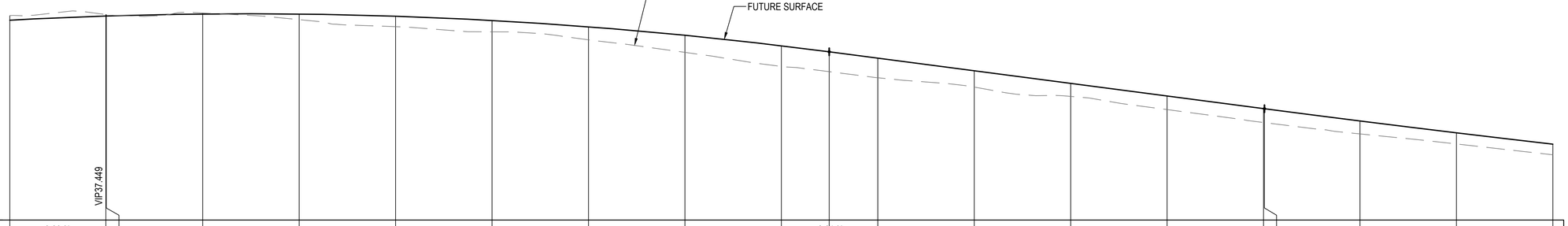
DRAWING TITLE :
PRELIMINARY FUTURE COLLECTOR ROAD PLAN & TYPICAL DETAIL

DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG	
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
RPEQ:		
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C500	VERSION: A

7
RP97736

4
RP97736

3
RP97736



DATUM R.L. 32.00

GRADE		3.89 %											-2.61 %											
LENGTH							VC 150.0						23.05 K										VC 100.0	
																							94.49 K	
HORIZONTAL ALIMNT																								
ARC LENGTHS													TAN 600.000											
CUT/FILL	-0.094	-0.030	-0.029	-0.020	0.115	0.216	0.235	0.270	0.354	0.428	0.412	0.406	0.338	0.270	0.282	0.288	0.288	0.268	0.230	0.220				
DESIGN CENTRELINE	36.144	36.229	36.229	36.271	36.269	36.225	36.136	36.005	35.830	35.612	35.487	35.355	35.094	34.832	34.571	34.310	34.307	34.053	33.807	33.572				
NATURAL SURFACE	36.237	36.259	36.258	36.290	36.154	36.008	35.901	35.735	35.476	35.184	35.075	34.949	34.756	34.563	34.289	34.022	34.019	33.785	33.577	33.352				
CHAINAGE	460.000	469.960	470.000	480.000	490.000	500.000	510.000	520.000	530.000	540.000	544.960	550.000	560.000	570.000	580.000	590.000	590.094	600.000	610.000	620.000				

FUTURE COLLECTOR ROAD LONGITUDINAL SECTION

SCALES
2.5 0 2.5 5 7.5 10 12.5 — 1 : 250 HORIZ.
0.5 0 0.5 1.0 1.5 2.0 2.5 — 1 : 50 VERT. (FULL SIZE)
(metres)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
Gold Coast I Brisbane I Toowoomba
Ipswich I Moreton Bay
Phone: +61 7 5509 6400
Fax: +61 7 5509 6411
Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

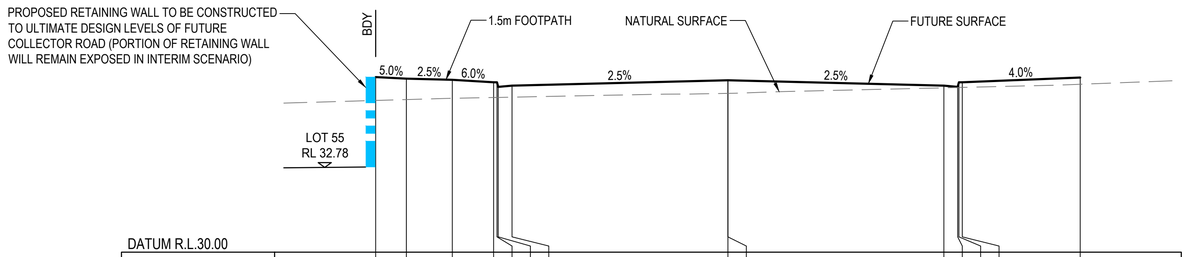
DRAWING TITLE :
PRELIMINARY FUTURE
COLLECTOR ROAD LONGITUDINAL
SECTION

DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG	
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS	

APPROVED FOR AND ON BEHALF OF
BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365

RPEQ:

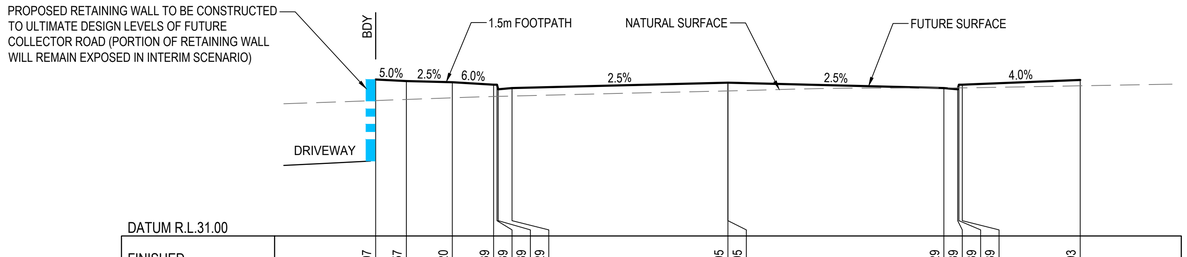
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C510	VERSION: A



DATUM R.L.30.00

FINISHED SURFACE LEVEL	35.714	35.664	35.626	35.545	35.545	35.395	35.435	35.612	35.612	35.435	35.395	35.545	35.545	35.699
EXISTING SURFACE LEVEL	34.952	34.981	35.022	35.048	35.050	35.051	35.060	35.184	35.184	35.364	35.375	35.376	35.378	35.481
OFFSET FROM CONTROL LINE	-11.500	-10.500	-9.000	-7.650	-7.540	-7.500	-7.050	0.000	0.000	7.050	7.500	7.540	7.650	11.500

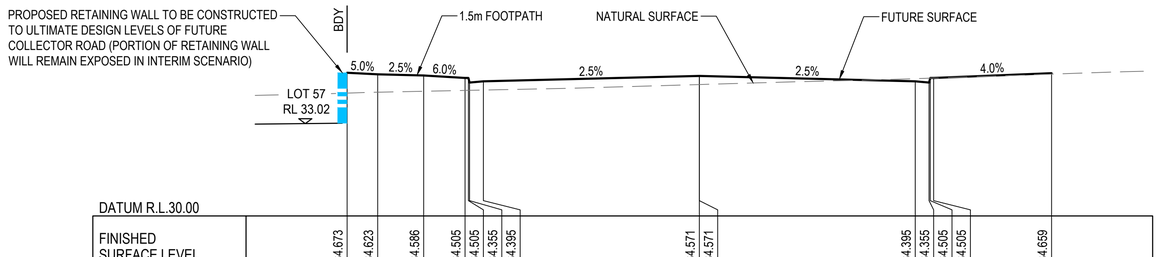
CH 540.000



DATUM R.L.31.00

FINISHED SURFACE LEVEL	36.107	36.057	36.020	35.939	35.939	35.789	35.829	36.005	36.005	35.829	35.789	35.939	35.939	36.093
EXISTING SURFACE LEVEL	35.420	35.456	35.509	35.553	35.556	35.557	35.568	35.735	35.735	35.833	35.834	35.834	35.835	35.992
OFFSET FROM CONTROL LINE	-11.500	-10.500	-9.000	-7.650	-7.540	-7.500	-7.050	0.000	0.000	7.050	7.500	7.540	7.650	11.500

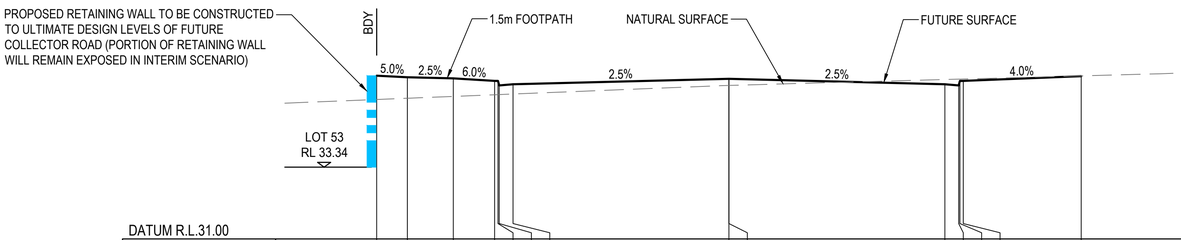
CH 520.000



DATUM R.L.30.00

FINISHED SURFACE LEVEL	34.673	34.623	34.586	34.505	34.505	34.355	34.395	34.571	34.571	34.395	34.395	34.505	34.505	34.659
EXISTING SURFACE LEVEL	34.009	34.040	34.070	34.097	34.099	34.100	34.109	34.289	34.289	34.482	34.497	34.498	34.502	34.630
OFFSET FROM CONTROL LINE	-11.500	-10.500	-9.000	-7.650	-7.540	-7.500	-7.050	0.000	0.000	7.050	7.500	7.540	7.650	11.500

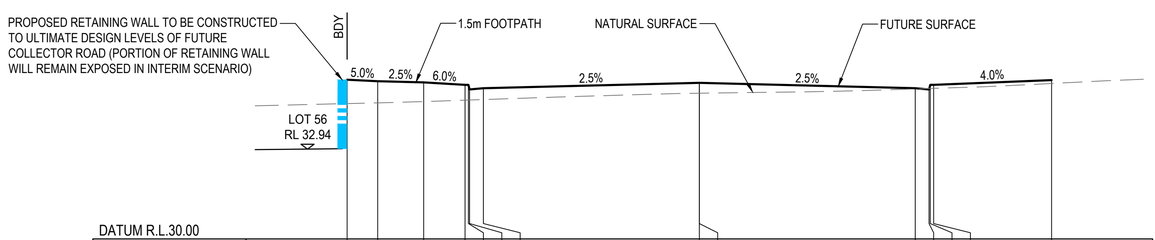
CH 580.000



DATUM R.L.31.00

FINISHED SURFACE LEVEL	36.327	36.277	36.239	36.158	36.158	36.008	36.048	36.225	36.225	36.048	36.008	36.158	36.158	36.312
EXISTING SURFACE LEVEL	35.550	35.590	35.651	35.705	35.709	35.711	35.729	36.008	36.008	36.202	36.214	36.215	36.218	36.321
OFFSET FROM CONTROL LINE	-11.500	-10.500	-9.000	-7.650	-7.540	-7.500	-7.050	0.000	0.000	7.050	7.500	7.540	7.650	11.500

CH 500.000



DATUM R.L.30.00

FINISHED SURFACE LEVEL	35.196	35.146	35.109	35.028	35.028	34.878	34.918	35.094	35.094	34.918	34.878	35.028	35.028	35.182
EXISTING SURFACE LEVEL	34.416	34.440	34.483	34.527	34.531	34.532	34.547	34.756	34.756	34.895	34.909	34.910	34.914	35.072
OFFSET FROM CONTROL LINE	-11.500	-10.500	-9.000	-7.650	-7.540	-7.500	-7.050	0.000	0.000	7.050	7.500	7.540	7.650	11.500

CH 560.000

SCALE 1 0 1 2 3 4 5 (metres)

1 : 100 (FULL SIZE)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE

LOT 4 RP97736; 560 CHAMBERS FLAT ROAD

FOR

GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

BURCHILLS ENGINEERING SOLUTIONS
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Ipswich I Moreton Bay
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Email: admin@burchills.com.au
Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

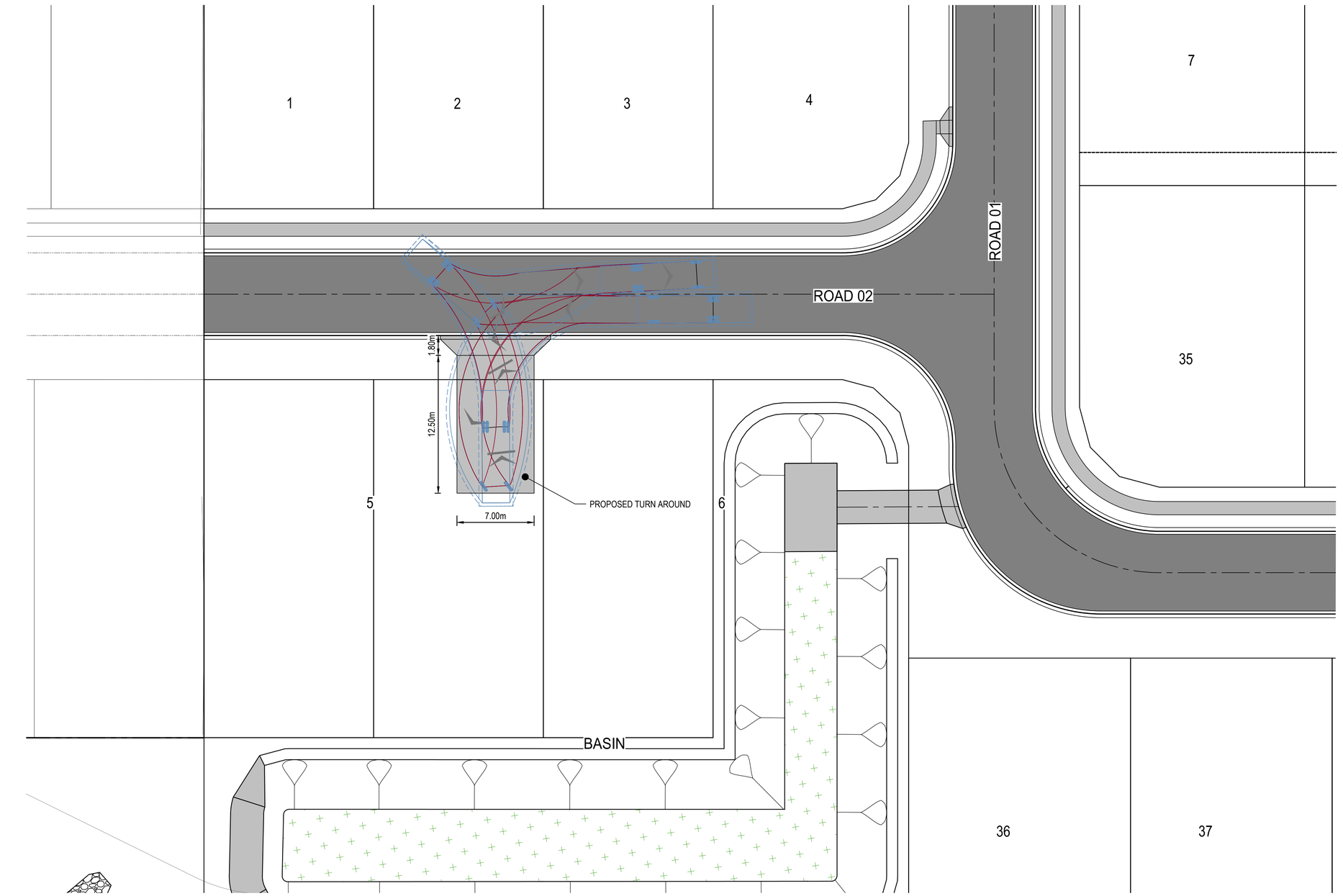
PROJECT:

560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :

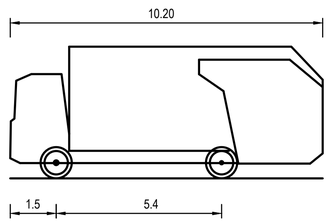
PRELIMINARY FUTURE
COLLECTOR ROAD CROSS
SECTIONS

DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG	
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
RPEQ:		
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C520	VERSION: A



LEGEND

- WHEEL PATH
- VEHICLE BODY ENVELOPE
- 0.3m OVERHANG



WCV (10.2 m)

OVERALL LENGTH	10.200m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.483m
TRACK WIDTH	2.500m
LOCK-TO-LOCK TIME	6.00s
KERB TO KERB TURNING RADIUS	12.500m

PRELIMINARY VEHICLE CHECKING LAYOUT PLAN

SCALE 2 0 2 4 6 8 10 (metres)
1 : 200 (FULL SIZE)

PRELIMINARY

CHAMBERS FLAT ROAD LOGAN RESERVE
LOT 4 RP97736; 560 CHAMBERS FLAT ROAD
FOR
GDM PROPERTY

A1 ORIGINAL SIZE BEFORE REDUCTION

VER.	DESCRIPTION	DATE
A	ISSUE FOR INFORMATION	23.04.25

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Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

PROJECT:
560 CHAMBER FLAT ROAD
PRELIMINARY CIVIL
ENGINEERING DESIGN

DRAWING TITLE :
PRELIMINARY VEHICLE
CHECKING LAYOUT PLAN

DEVEL. APPLIC. No. :		DATE : 23.04.2025
PROJECT LEADER : FRASER LUCAS	DESIGNER : TG	
DRAFTSPERSON : TN	CHECKED : FRASER LUCAS	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
RPEQ:		
SCALE :	DATUM : AHD	FULL SIZE : A1
PROJECT No.: BE230588	DRAWING No. : C800	VERSION: A

Appendix E – Colliers Flood Assessment Technical Memorandum

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PO Box 1344, Buddina Qld 4575

Main: +61 7 3532 1300
colliers.com .au

Technical Memo

To:	Nathan Taylor - AVID; Geoff McWilliam - GDM Properties
From:	Kelly McKendry - Technical Director - Water & Environment
Project Name:	Flood Assessment - Regional Solution Chambers Flat Road
Date:	14 April 2024
Our Reference:	22-0502TM02-V1

1. Overview

The following provide documentation of the preliminary investigation into the feasibility of providing a regional detention and flooding solution for the sites located from 590-598 Chambers Flat Road through to 560 Chambers Flat Road and including 62-65 Noffke Court. This document is specifically prepared to support the development application over 560 Chambers Flat Road, Logan Reserve being for a 55 lot subdivision and an extension of the adjacent Park Lane Development (Council Ref: COM/60/25022).

A comprehensive flood modelling exercise was undertaken for the development application associated with the proposed LLC community over 562-578 Chambers Flat Road and 62-65 Noffke Court for the AVID Property Group and is under assessment with Council. This assessment is documented in the 'Flood and Stormwater Management Plan – Noffke Court, Logan Reserve' (ref: 22-0502-FSMP-V5, Version 5, 21 March 2025, prepared by Colliers). This development proposed the routing of flows from the external catchments through two constructed channels to a flood storage area at the western side of the development adjacent to Chambers Flat Road (Figure 1). This solution provides a stand-alone solution which achieves the requirements of non-worsening of flood characteristics downstream.

The downstream development from 560 through to 540 Chambers Flat Road have also undertaken standalone flood assessments and proposed on-site measures to ensure the requirements of the planning scheme are met on development of the sites.

With the potential to develop 590-598 Chambers Flat Road, the property upstream of 562-578 Chambers Flat Road, arose the opportunity to investigate a consolidated regional solution to flood management and consolidate layouts to remove the southern drainage channel proposed as part of the Noffke Court LLC

application was identified (Figure 2). It was also identified that the alignment of the northern drainage channel could be shifted to within the access handle of the 560 Chambers Flat Road site (Figure 2).

This document provides the outcomes of the preliminary modelling associated with this regional flood solution.

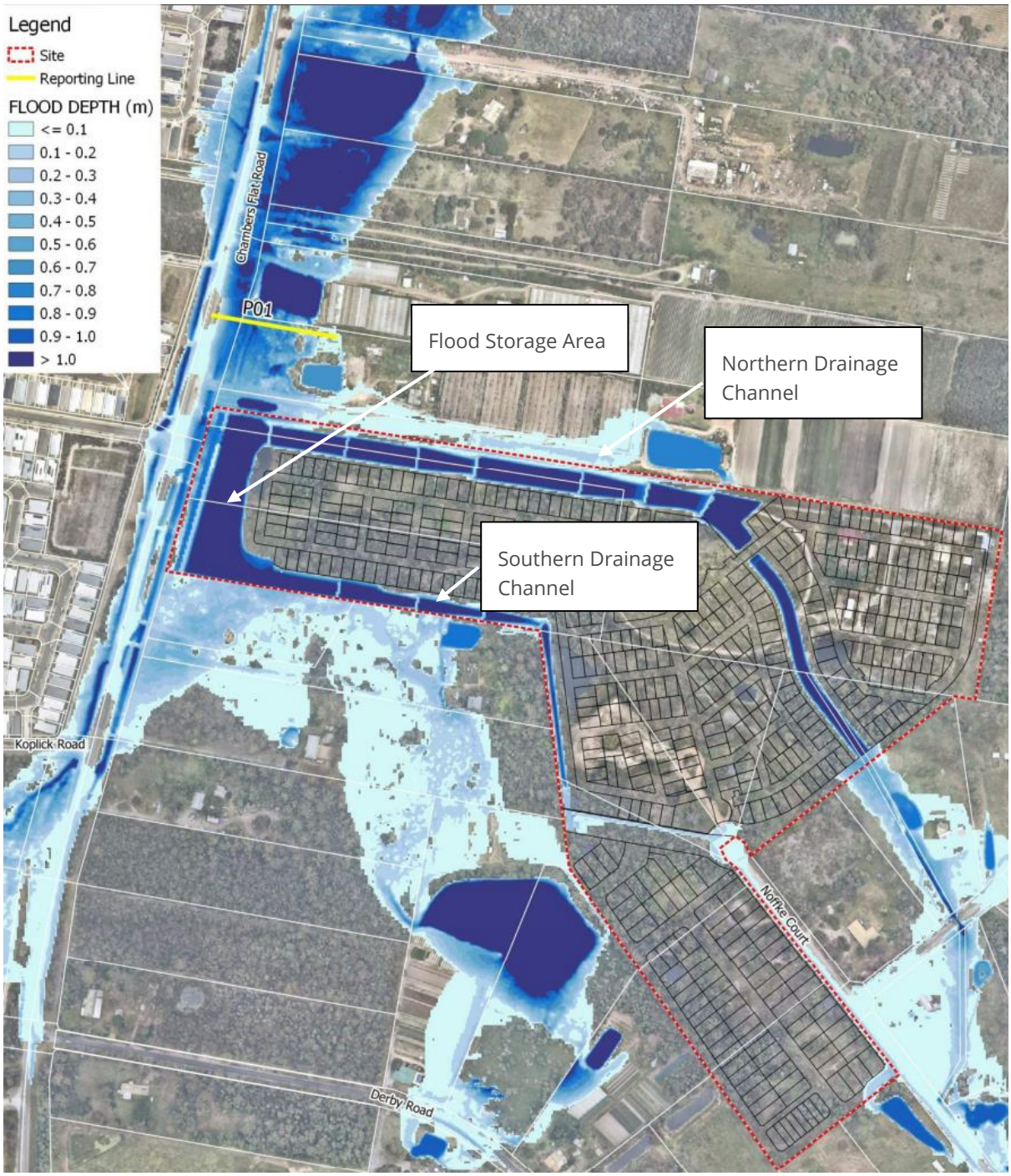

FIGURE 1: PROPOSED DRAINAGE SCHEME – LLC NOFFKE COURT (SOURCE: FSMP – NOFFKE COURT, 22-0502FSMP01_V5)

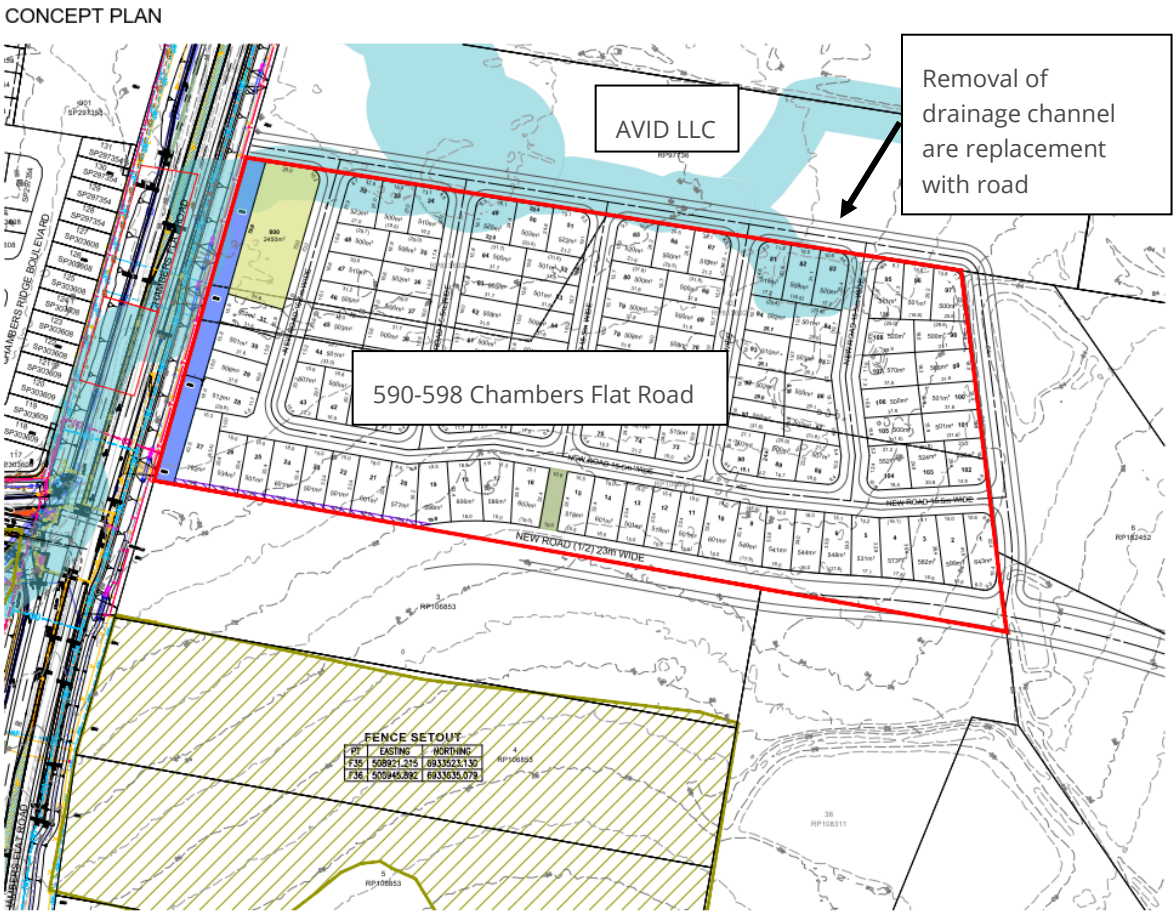

FIGURE 2: 590-598 CFR CONCEPT PLAN - FOR ILLUSTRATIVE PURPOSES ONLY.

2. Assessment

In order to assess the feasibility of providing a consolidated flood management solution across the sites from 598 to 560 Chambers Flat Road the hydrologic model and TUFLOW model developed for the AVID LLC assessment was appropriately modified to reflect the additional development sites and to alter the LLC layout to enable the consolidation. For model set up and assumptions refer to the 'Flood and Stormwater Management Plan – Noffke Court' prepared for the Avid LLC.

The following modifications were made to the hydrologic and TUFLOW models

Hydrologic Model

1. No modifications to the pre-development hydrologic model
2. Modified catchment delineation in the developed case model (Figure 3) to include the potential development over 590-598 Chambers Flat Road (denoted Catchment A41)
3. Increase impervious fraction to reflect development with no onsite detention over 590-598, 560 and 522-558 Chambers Flat Road.

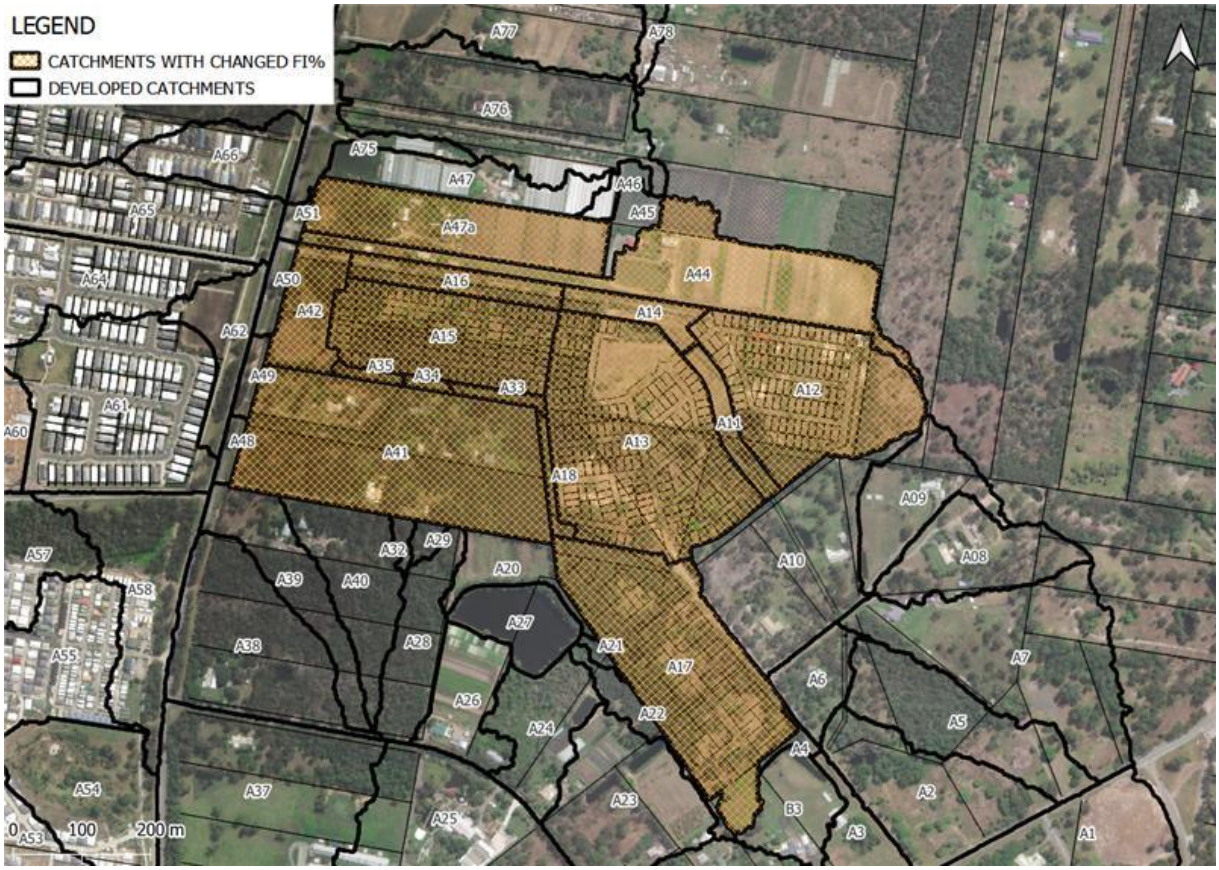

FIGURE 3: MODIFIED DEVELOPED CASE HYDROLOGY

TUFLOW MODEL

1. No modifications to the predevelopment model
2. The proposed design DEM incorporated to represent 590-598 Chambers Flat Road (Figure 4)
3. Northern Drainage Channel moved north into access handle on 560 Chambers Flat Road and LLC Fill pad extended north. (Figure 4)
4. Drainage channel cut along the frontage of Chambers Flat Road to allow external catchment to route around the development (Figure 4)
5. Controlling bund at the northern boundary of LLC development removed by zshape (Figure 4)
6. Proposed temporary access/pedestrian path with approved culverts included from Chambers Flat Road to the development at 552-554 Chambers Flat Road. (Figures 5 and 6). The design DEM was incorporated to represent the ground surface.
7. The proposed design DEM incorporated to represent 560 and 552-558 Chambers Flat Road (Figure 4)

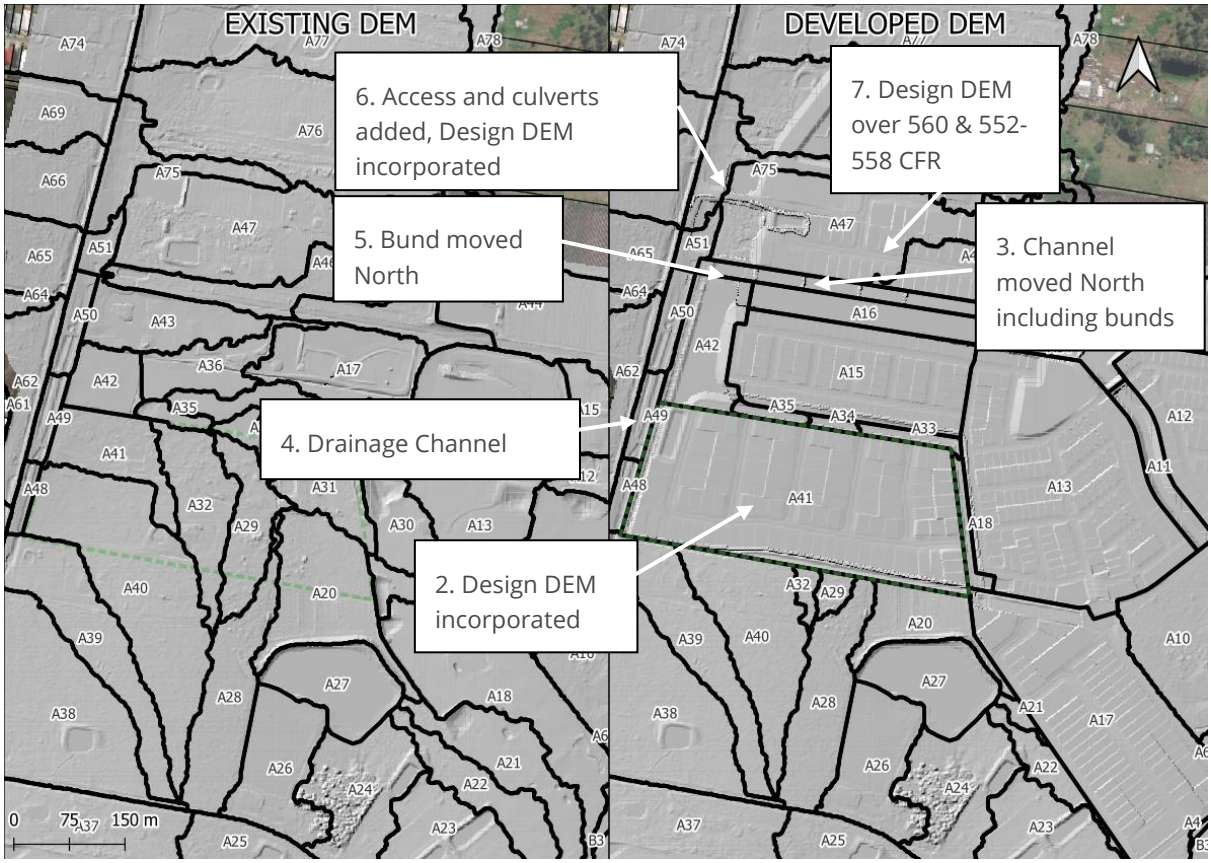

FIGURE 4: DEM CHANGES

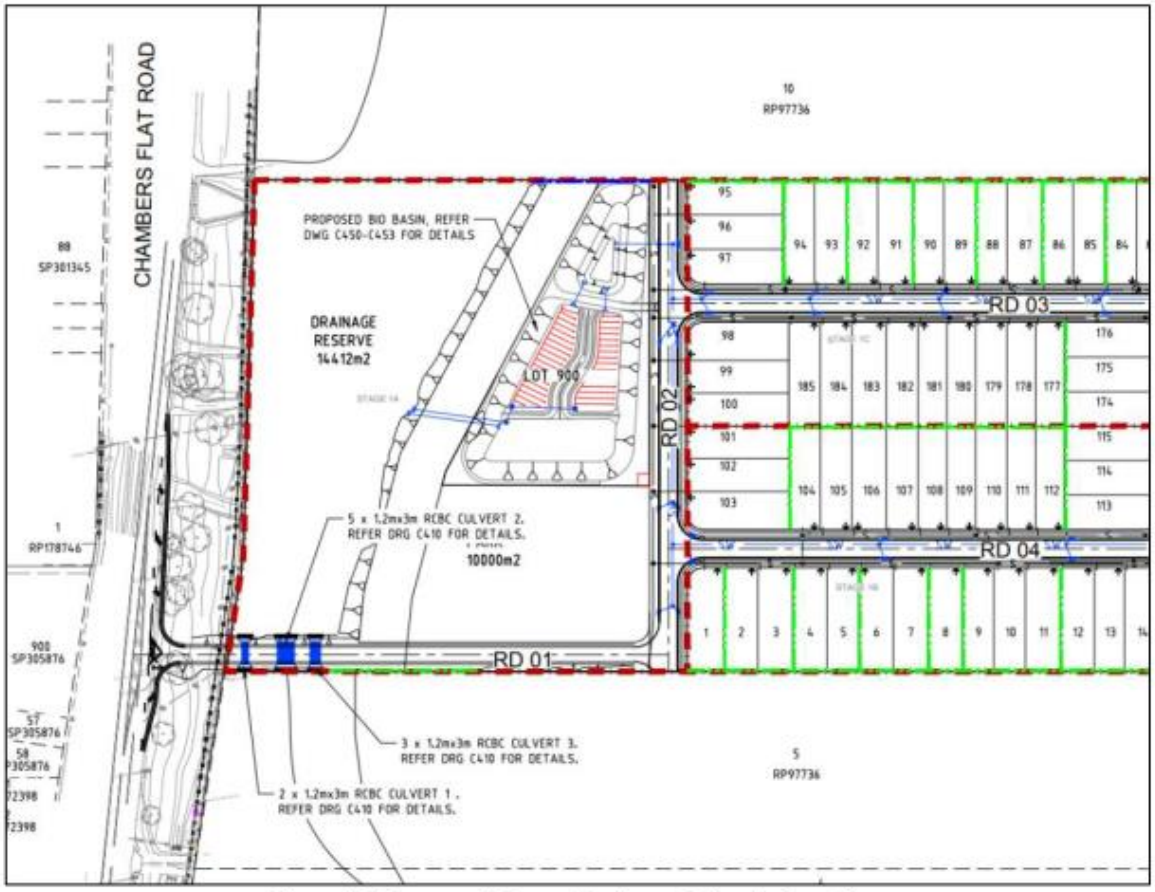

Figure 1.3 Proposed Cross Drainage Culverts Location

FIGURE 5: ACCESS AND CULVERTS AT 542-544 CHAMBERS FLAT ROAD (SOURCE: BE210264-RP-HIA-00)

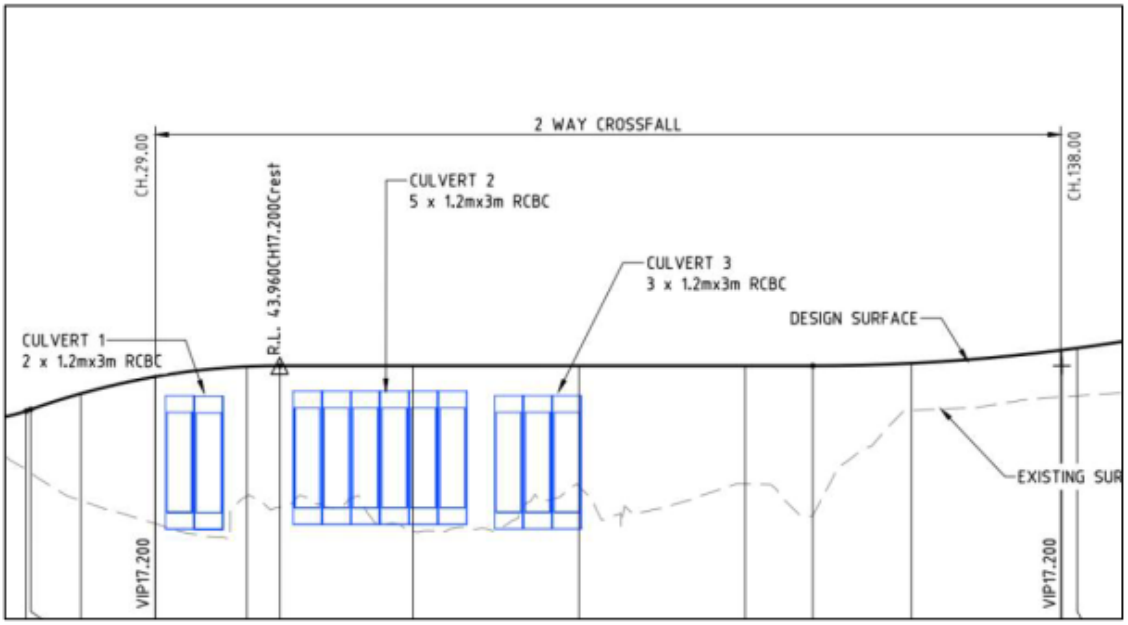

Figure 1.4 Proposed Cross Drainage Culverts Cross Section

FIGURE 6: SECTION ACCESS AND CULVERTS AT 542-544 CHAMBERS FLAT ROAD (SOURCE: BE210264-RP-HIA-00)

Some proposed details were not available at this stage for the assessment. To progress the assessment the following assumptions and changes were made in the TUFLOW model to represent the proposed development layouts:

590-598 Chambers Flat Road

- Flow through the site is proposed by pipe. As details were not available for the pipe design the flow entering the site from the south has been conveyed via road to the northwestern corner of the site. Z-shape modifiers were applied along the roads to prevent flow into lots.
- A drainage channel was added to the southern side of the development to convey external flows to the west and along the Chambers Flat Road boundary, and to the north. Details of this channel have been assumed to allow conveyance of the flows. Z-shape modifiers were applied to represent the channel.

552-554 Chambers Flat Road

- Details of the ground surface through the drainage reserve along Chambers Flat Road were not available. 2017 LiDAR was used to represent the drainage reserve.

It is noted that there may be some variation between the assumptions and the actual details. These will be included when available for further design analysis.

The updated TUFLOW model was run for events upto and including the PMF and the existing and proposed depths, velocity and hazard, and the afflux mapping between the predevelopment (E04) and the modified ultimate development case (P47_NN_20) are provided in Attachment A.

The modelling indicates that for larger events, the 10% AEP to the 1% AEP the impacts are contained to the assessment area, with non-worsening downstream. For the smaller events (63% and 0.5EY there are minor increases downstream of the assessment area up to 12mm. It is envisaged that these increases can be reduced through the design process with inclusion of all pipe and topography details are incorporated.

3. Conclusion

It can be seen that for all events the modelling indicates that, with some refinement, it is likely that a scenario could be developed which results in a compliant outcome of non-worsening of peak water levels downstream of the culvert and access track servicing 542-544 Chambers Flat Road (denoted on the maps as P01) as a combined regional flood solution.

This assessment supports the development of 560 Chambers Flat Road without the requirement for on-site detention if developed in conjunction with the proposed regional solution of flood management reported.

4. Disclaimer

This report is prepared by Colliers Engineering & Design for exclusive use by its client only. No responsibility is accepted for the use of or reliance upon this report in whole or in part by any third party.

The sole purpose of this report and the associated services performed by Colliers Engineering & Design is to display information in accordance with the scope of services set out in the contract/quotation between Colliers Engineering & Design and its client. The scope of works and services were defined by the requests of the client, by the time and budgetary constraints imposed by the client, and by the availability of access to site/s and information.

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This report has been compiled at the level of detail specified in the report and no responsibility is accepted for interpretations made at more detailed levels than so indicated.

Attachments

Attachment A Results Mapping

Attachments

Attachment A Results Mapping

LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

DATE:	14/04/2025	0 50 100 150 200 m	CONSULTANT: Colliers
CREATED BY:	M. Ferguson	PAGE SIZE: A3 SCALE: 1:3,735	
REVISION:	A	COORDINATE SYSTEM: GDA 94 / MGA ZONE 56	N
STATUS:	ISSUE		
PROJECT TITLE:	FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD	PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE:	FLOOD DEPTH MAP EXISTING 63% AEP	FIGURE NO: E04_63%_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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CREATED BY: M. Ferguson			
REVISION: A	PAGE SIZE: A3 SCALE: 1:3,735		
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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD DEPTH MAP EXISTING 0.5 EY		FIGURE NO: E04_0.5EY_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE:	FLOOD DEPTH MAP EXISTING 0.2 EY	FIGURE NO: E04_0.2EY_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD DEPTH MAP EXISTING 10% AEP		FIGURE NO: E04_10%_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
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- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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LEGEND

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- <= 0.1
- 0.1 - 0.2
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Chambers Flat Road

P01

560 CFR

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Derby Road

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FIGURE TITLE: FLOOD DEPTH MAP EXISTING 1% AEP		FIGURE NO: E04_1%_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
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- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD DEPTH MAP EXISTING PMF		FIGURE NO: E04_PMF_D	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD VELOCITY MAP EXISTING 63% AEP		FIGURE NO: E04_63%_V	

LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD VELOCITY MAP EXISTING 0.5 EY		FIGURE NO: E04_0.5EY_V	

LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD VELOCITY MAP EXISTING 0.2 EY		FIGURE NO: E04_0.2EY_V	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD VELOCITY MAP EXISTING 10% AEP		FIGURE NO: E04_10%_V	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD VELOCITY MAP EXISTING 2% AEP		FIGURE NO: E04_2%_V	

LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD VELOCITY MAP EXISTING 1% AEP		FIGURE NO: E04_1%_V	

LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD — PROJECT NO: 22-0502

CLIENT: AVID Property Group

FIGURE TITLE: FLOOD VELOCITY MAP EXISTING PMF — FIGURE NO: E04_PMF_V

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LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP EXISTING 63% AEP		FIGURE NO: E04_63%_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD HAZARD MAP EXISTING 0.5 EY		FIGURE NO: E04_0.5EY_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD HAZARD MAP EXISTING 0.2 EY		FIGURE NO: E04_0.2EY_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD HAZARD MAP EXISTING 10% AEP		FIGURE NO: E04_10%_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD HAZARD MAP EXISTING 2% AEP		FIGURE NO: E04_2%_Z0	

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LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
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Chambers Flat Road

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FIGURE TITLE: FLOOD HAZARD MAP EXISTING 1% AEP		FIGURE NO: E04_1%_Z0	

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LEGEND

FLOOD HAZARD

- <= 0.4
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PROJECT TITLE:	FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD	PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE:	FLOOD HAZARD MAP EXISTING PMF	FIGURE NO: E04_PMF_Z0	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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DATE: 14/04/2025 CREATED BY: M. Ferguson REVISION: A STATUS: ISSUE	0 50 100 150 200 m PAGE SIZE: A3 SCALE: 1:3,735 COORDINATE SYSTEM: GDA 94 / MGA ZONE 56	N	CONSULTANT: Colliers
PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD	PROJECT NO: 22-0502		CLIENT: AVID Property Group
FIGURE TITLE: FLOOD DEPTH MAP DEVELOPED 63% AEP	FIGURE NO: P47_NN_20_63%_D		

LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD DEPTH MAP DEVELOPED 0.5 EY		FIGURE NO: P47_NN_20_0.5EY_D	

LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD DEPTH MAP DEVELOPED 0.2 EY		FIGURE NO: P47_NN_20_0.2EY_D	

LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD DEPTH MAP DEVELOPED 10% AEP		FIGURE NO: P47_NN_20_10%_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD DEPTH MAP DEVELOPED 2% AEP		FIGURE NO: P47_NN_20_2%_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD DEPTH MAP DEVELOPED 1% AEP		FIGURE NO: P47_NN_20_1%_D	

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LEGEND

FLOOD DEPTH (m)

- <= 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- > 1.0

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD DEPTH MAP DEVELOPED PMF		FIGURE NO: P47_NN_20_PMF_D	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD VELOCITY MAP DEVELOPED 63% AEP		FIGURE NO: P47_NN_20_63%_V	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD VELOCITY MAP DEVELOPED 0.5 EY		FIGURE NO: P47_NN_20_0.5EY_V	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD VELOCITY MAP DEVELOPED 0.2 EY		FIGURE NO: P47_NN_20_0.2EY_V	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

DATE: 14/04/2025	0 50 100 150 200 m	N	CONSULTANT: Colliers
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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD VELOCITY MAP DEVELOPED 10% AEP		FIGURE NO: P47_NN_20_10%_V	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD VELOCITY MAP DEVELOPED 2% AEP		FIGURE NO: P47_NN_20_2%_V	

LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

DATE: 14/04/2025	0 50 100 150 200 m	N	CONSULTANT: Colliers
CREATED BY: M. Ferguson			
REVISION: A	PAGE SIZE: A3 SCALE: 1:3,735		
STATUS: ISSUE	COORDINATE SYSTEM: GDA 94 / MGA ZONE 56		
PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD VELOCITY MAP DEVELOPED 1% AEP		FIGURE NO: P47_NN_20_1%_V	

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LEGEND

FLOOD VELOCITY (m/s)

- 0-0.5
- 0.5-1
- 1-2
- 2-3
- 3-4
- 4-5
- > 5

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

DATE:	14/04/2025	0 50 100 150 200 m	CONSULTANT: Colliers
CREATED BY:	M. Ferguson	PAGE SIZE: A3 SCALE: 1:3,735	
REVISION:	A	COORDINATE SYSTEM: GDA 94 / MGA ZONE 56	N
STATUS:	ISSUE		

PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD — PROJECT NO: 22-0502

CLIENT: AVID Property Group

FIGURE TITLE: FLOOD VELOCITY MAP DEVELOPED PMF — FIGURE NO: P47_NN_20_PMF_V

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LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP DEVELOPED 63% AEP		FIGURE NO: P47_NN_20_63%_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP DEVELOPED 0.5 EY		FIGURE NO: P47_NN_20_0.5EY_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

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560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP DEVELOPED 0.2 EY		FIGURE NO: P47_NN_20_0.2EY_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP DEVELOPED 10% AEP		FIGURE NO: P47_NN_20_10%_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP DEVELOPED 2% AEP		FIGURE NO: P47_NN_20_2%_Z0	

LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP DEVELOPED 1% AEP		FIGURE NO: P47_NN_20_1%_Z0	

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LEGEND

FLOOD HAZARD

- <= 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- > 0.8

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD HAZARD MAP DEVELOPED PMF		FIGURE NO: P47_NN_20_PMF_Z0	

LEGEND

FLOOD AFFLUX

- <-0.3
- -0.3 to -0.2
- -0.2 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- >0.3
- Was Wet now Dry
- Was Dry now Wet

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD AFFLUX MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 63% AEP		FIGURE NO: P47_NN_20-E04_63%_dD	

LEGEND

FLOOD AFFLUX

- <-0.3
- -0.3 to -0.2
- -0.2 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- >0.3
- Was Wet now Dry
- Was Dry now Wet

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD AFFLUX MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 0.5 EY		FIGURE NO: P47_NN_20-E04_0.5EY_dD	

LEGEND

FLOOD AFFLUX

- <-0.3
- -0.3 to -0.2
- -0.2 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- >0.3
- Was Wet now Dry
- Was Dry now Wet

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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PROJECT TITLE: FLOOD ASSESSMENT - REGIONAL SOLUTION CHAMBERS FLAT ROAD		PROJECT NO: 22-0502	CLIENT: AVID Property Group
FIGURE TITLE: FLOOD AFFLUX MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 0.2 EY		FIGURE NO: P47_NN_20-E04_0.2EY_dD	

LEGEND

FLOOD AFFLUX

- <-0.3
- -0.3 to -0.2
- -0.2 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- >0.3
- Was Wet now Dry
- Was Dry now Wet

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD AFFLUX MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 10% AEP		FIGURE NO: P47_NN_20-E04_10%_dD	

LEGEND

FLOOD AFFLUX

- <-0.3
- -0.3 to -0.2
- -0.2 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- >0.3
- Was Wet now Dry
- Was Dry now Wet

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FIGURE TITLE: FLOOD AFFLUX MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 2% AEP		FIGURE NO: P47_NN_20-E04_2%_dD	

LEGEND

FLOOD AFFLUX

- <-0.3
- -0.3 to -0.2
- -0.2 to -0.1
- -0.1 to -0.05
- -0.05 to -0.01
- -0.01 to 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- >0.3
- Was Wet now Dry
- Was Dry now Wet

Chambers Flat Road

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FIGURE TITLE: FLOOD AFFLUX MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 1% AEP		FIGURE NO: P47_NN_20-E04_1%_dD	

LEGEND

CHANGE IN VELOCITY (m/s)

- <-3
- -3.0 to -2.0
- -2.0 to -1.0
- -1.0 to -0.5
- -0.5 to -0.25
- -0.25 to 0.2
- 0.2 to 0.5
- 0.5 to 1.0
- 1.5 to 2.0
- 2.0 to 3.0
- >3
- Was Wet now Dry
- Was Dry now Wet

Chambers Flat Road

P01

560 CFR

Koplick Road

Noffke Court

Derby Road

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FIGURE TITLE: FLOOD CHANGE IN VELOCITY MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 63% AEP		FIGURE NO: P47_NN_20-E04_63%_dV	

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LEGEND

CHANGE IN VELOCITY (m/s)

- <-3
- -3.0 to -2.0
- -2.0 to -1.0
- -1.0 to -0.5
- -0.5 to -0.25
- -0.25 to 0.2
- 0.2 to 0.5
- 0.5 to 1.0
- 1.5 to 2.0
- 2.0 to 3.0
- >3
- Was Wet now Dry
- Was Dry now Wet

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LEGEND

CHANGE IN VELOCITY (m/s)

- <-3
- -3.0 to -2.0
- -2.0 to -1.0
- -1.0 to -0.5
- -0.5 to -0.25
- -0.25 to 0.2
- 0.2 to 0.5
- 0.5 to 1.0
- 1.5 to 2.0
- 2.0 to 3.0
- >3
- Was Wet now Dry
- Was Dry now Wet

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FIGURE TITLE: FLOOD CHANGE IN VELOCITY MAP DEVELOPED (P47_NN_20) VS EXISTING (E04) 0.2 EY		FIGURE NO: P47_NN_20-E04_0.2EY_dV	

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CHANGE IN VELOCITY (m/s)

- <-3
- -3.0 to -2.0
- -2.0 to -1.0
- -1.0 to -0.5
- -0.5 to -0.25
- -0.25 to 0.2
- 0.2 to 0.5
- 0.5 to 1.0
- 1.5 to 2.0
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- -1.0 to -0.5
- -0.5 to -0.25
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- -0.5 to -0.25
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- 0.5 to 1.0
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