



Infrastructure Report

Taha Auto Limited
395 Fitzgerald Road
Drury

September 2025

Document Control

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0	For RC Application	15.04.25
1	For RC Application – S92 EW update	11.07.25
2	For RC Application – S92 Plans Update	07.08.25
3	S92 Revision to WW details	1.09.25

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1. Introduction

This report has been prepared in support of a resource consent application to permit the use of car storage and vehicle dismantling yard at 395 Fitzgerald Road, Drury. The proposed development involves the removal of an existing house and glasshouse and the construction of two 2000m² dismantling and storage buildings. Bulk earthworks will be required to create an aggregate storage yard over the remainder of the site.

Herein we will address matters in relation to earthworks, flooding and stormwater discharge quantity and quality control to show the proposal can proceed whilst avoiding significant effects on or offsite.

2. Site Identification

Address	395 Fitzgerald Road, Drury
Legal Description	Lot 3 DP 194356
Zone	Business - Light Industry Zone and Future Urban Zone
Property Area	27,679m ²

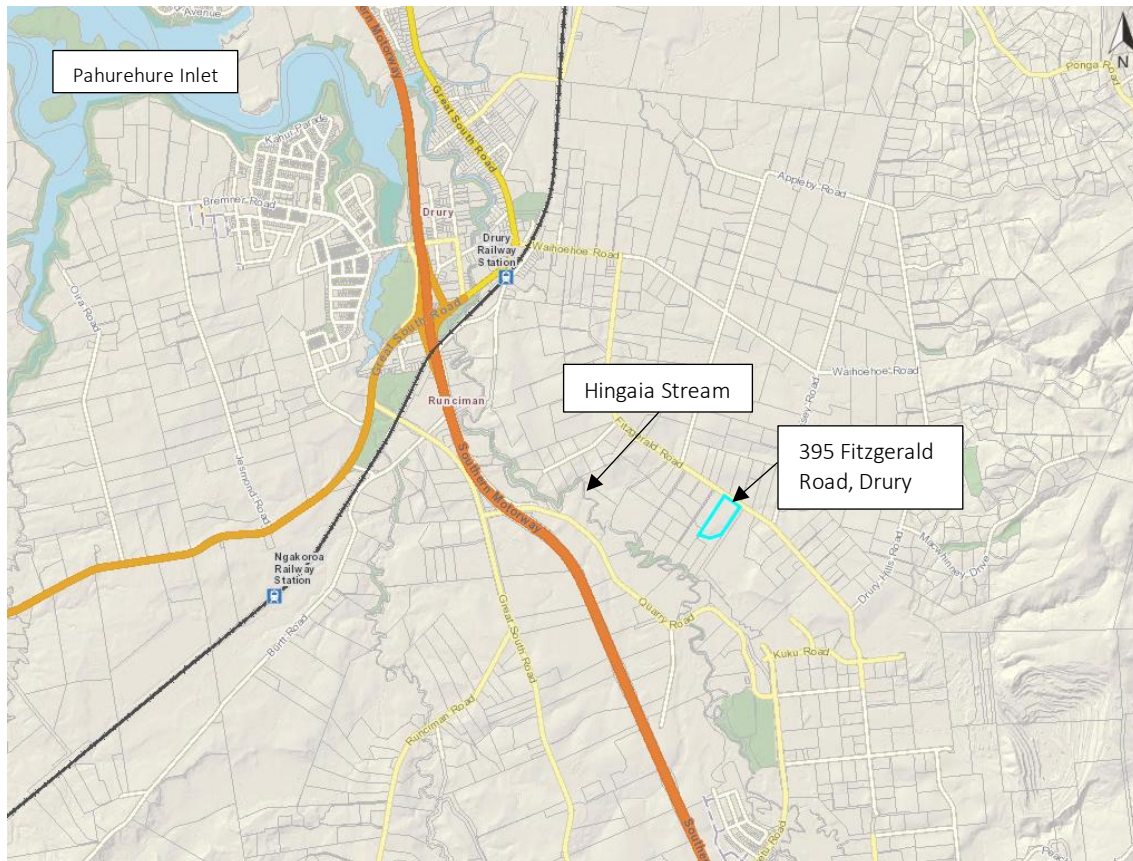


Figure 1 Locality Plan (Source: Auckland Council Geomaps)

3. Site description

The site is in a rural area on the south side of Fitzgerald Road. The property is irregular in shape and is generally flat. Buildings on site include a residence in the middle of the site and a greenhouse to the southwest of the site.

The property relies on roof water and utilises on site wastewater disposal



Figure 2: Site Layout (Source: Google Earth)

4. Catchment Setting and Receiving Environment

The site lies within the Hingaia Stream catchment. Runoff from the western half of the site discharges to a tributary of the Hingaia Stream. Flows from the eastern half discharge to a roadside swale and then into an overland flowpath in the property in the south (411 Fitzgerald) before reaching the Hingaia Stream tributary. The tributary connects with the Hingaia Stream which flows to the Pahurehure Inlet/Manukau Harbour approximately 16 km northwest of the site.

The northern corner and southern boundary of the site is shown to be affected by the 100 year ARI flood plain. A minor overland flowpath is shown to be generated within the sites “eastern catchment” (See Figure 3 below).



Figure 3: Floodplain and Overland Flow Path (Source: Auckland Council Geomaps)

5. Earthworks

Bulk earthworks will be carried out over an area of 26,255m² requiring 14,605m³ of cut and 8,823m³ of fill resulting in 23,248m³ of disturbance. Retaining in cut and fill will be required on the north and south boundaries to a maximum height of 2.5m. Two sediment retention ponds (SRP) will be constructed in accordance with GD05 to provide sediment control during bulk earthworks.

Dirty water diversion bunds will be established to ensure any runoff generated during earthworks is directed to the correct SRP. Cut & fill operations may require these bunds to be temporarily removed, however, they will be re-established at the end of each day or when the site is not being earthworked.

Chemical treatment of the SRPs is proposed. We request conditions that require provision of a chemical treatment management plan (ChTMP) ahead of earthworks commencing, and implementation of that plan throughout the earthworks phase of the development.

Silt fences will be established along down gradient site boundaries to manage dirty water during construction of the SRPs, and once dirty water diversion bunds have been established to direct runoff to an SRP, the silt fences will remain in place to manage the small areas where runoff cannot be directed to an SRP. Catchment areas managed by silt fences alone, have been detailed on the ESCP.

6. Stormwater Drainage System

6.1. Existing Stormwater Management System

The existing house discharges roof water to reuse tanks and tank overflow is to the ground. The greenhouse discharges roof water to the ground.

6.2. Proposed Stormwater Management System

Stormwater Quantity Management

To mitigate the effect of increased runoff from the aggregate yard and buildings we have designed an attenuation system to limit peak flows to the predevelopment situation. The 2, 10 and 100 year storm events as well as SMAF stream erosion protection criteria will be addressed. This will be achieved by building a bund around the platform to capture rainfall and release it at a controlled rate via a pipe outlet and weir arrangement. Details of the containment and discharge control devices are included in appendix 1.

Stormwater Quality Management

The main risk to stormwater quality from the site activities is total suspended sediment and to a lesser degree metals and hydrocarbons. Stormwater treatment will be provided by swale treatment and sedimentation during extended detention within the ponding areas. Calculations are provided in appendix 2 to demonstrate the swales meet the treatment residence time requirement to remove greater than 75% total suspended solids. The swale and extended detention is considered to be the best practicable option in this situation.

7. Flooding and Overland Flow

Auckland Council "Geomaps" shows the rear of the site adjoining the stream is inundated during a 100 year storm event approximately to RL16. The proposed new rear building level is RL18.5 and minimum yard level RL17. Filling will occur within the floodplain to extend the usable yard, however, given the massive extent of the floodplain any displacement effects are expected to be insignificant. Figure 4 below gives an appreciation of the scale.

There is a small amount of flood water ponding in the front yard that appears to be generated by onsite runoff as indicated by the minor overland flowpath. This ponding area will be retained and enlarged to cater for the additional runoff generated by the creation of impervious surfaces.

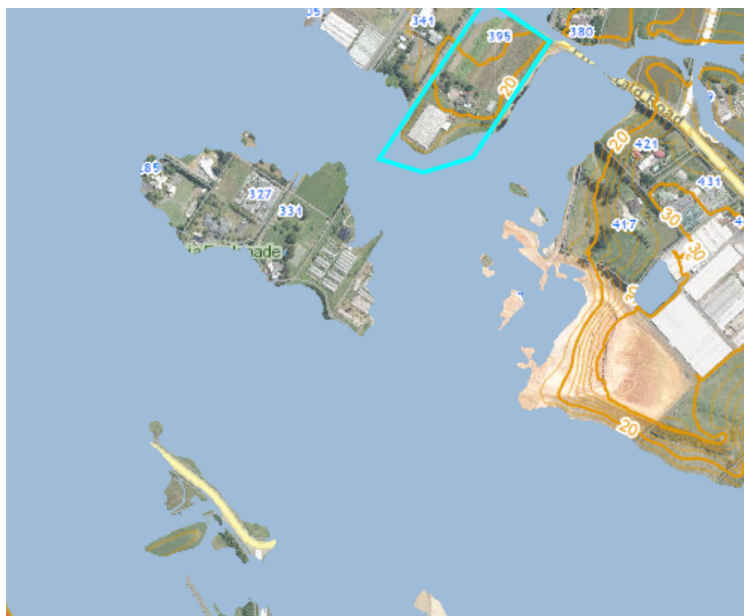


Figure 4: 100yr floodplain extent

8. Water Supply and Wastewater Disposal

Water will be provided by roof water collection into reuse tanks. Wastewater will be treated on site with a Hynds Lifestyle aerated treatment device followed by UV sterilisation to provide tertiary level treatment. Appendix 3 contains calculations for the wastewater generation and disposal field sizing. The anticipated staffing for the dismantling operation is 5 but we have future proofed the design conservatively sized the field to allow for 15 day staff at 40L/day (TP58 allowance). We have allowed for a conservative loading of 3L/m²/day into the clayey silts – silty clay soils in accordance with TP58 requirements.

9. Conclusion

In conclusion it is considered that with the correct implementation and maintenance of the proposed best practicable option engineering controls that the proposed activities at 395 Fitzgerald Road can be carried out with minimal environmental effects.

10. Limitations

This report has been prepared for the sole benefit of our client, Taha Auto Limited, and Auckland Council for review purposes and shall not be relied upon or used out of context by any other person without permission from the Taha Auto Limited and Babington and Associates (2004) Limited.

Appendix 1: Site Layout and Drainage Plans

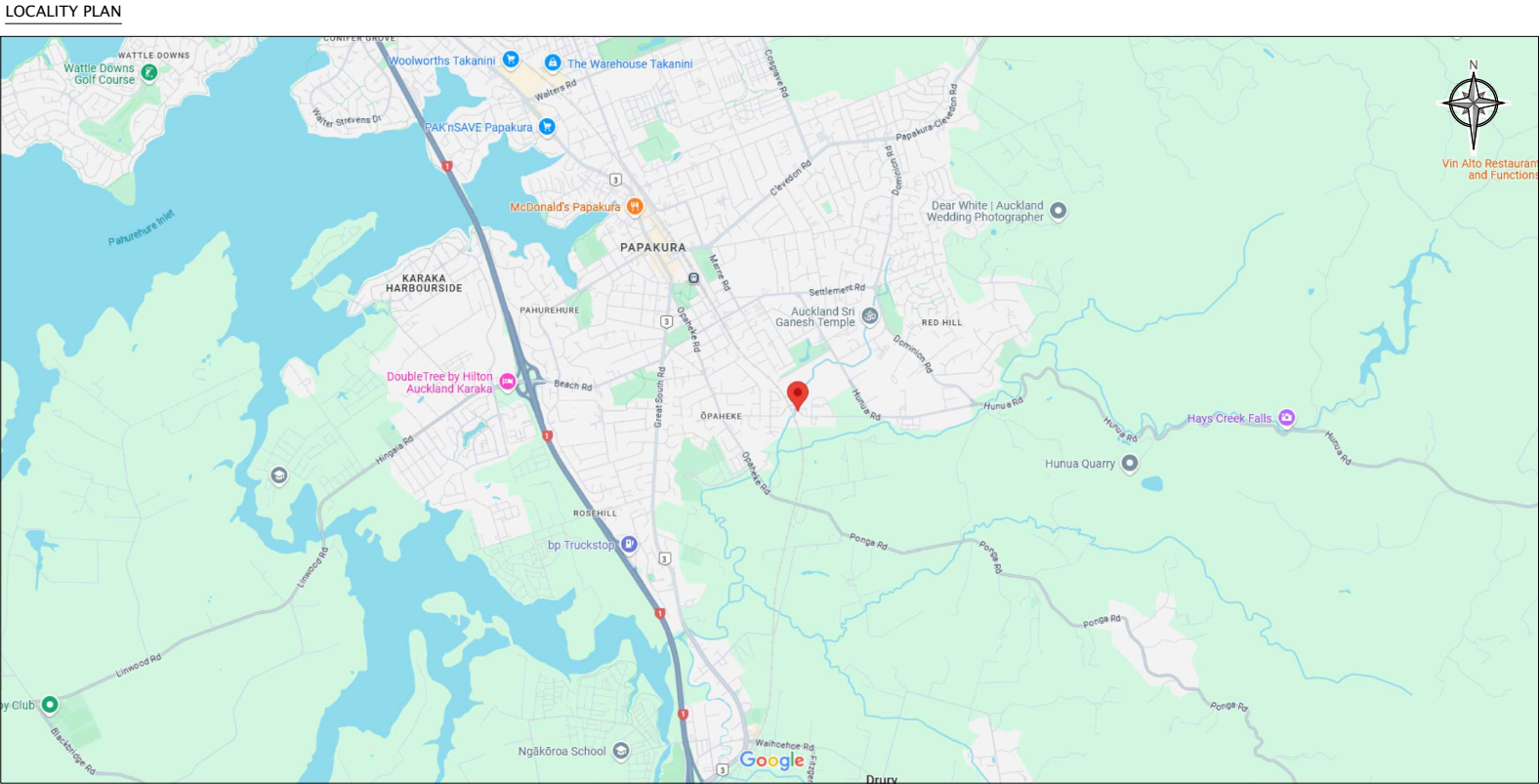
395 FITZGERALD ROAD, DRURY, AUCKLAND

STATUS RESOURCE CONSENT

DATE FEB 2025

INFRASTRUCTURE DRAWINGS

DRAWING No	SHEET NAME	REVISION
C000	COVER SHEET	D
C100	SITE LAYOUT PLAN	DELETED
C200	PROPOSED CIVIL ENGINEERING PLAN OVERALL PLAN	C
C201	PROPOSED CIVIL ENGINEERING PLAN – SHEET 1	D
C202	PROPOSED CIVIL ENGINEERING PLAN – SHEET 2	C
C210	CUT AND FILL PLAN AND ESC PLAN	C
C221	PROPOSED EARTHWORKS CROSS SECTIONS – PART 1	B
C222	PROPOSED EARTHWORKS CROSS SECTIONS – PART 2	B
C420	PROPOSED STORMWATER LONGITUDINAL SECTIONS	A

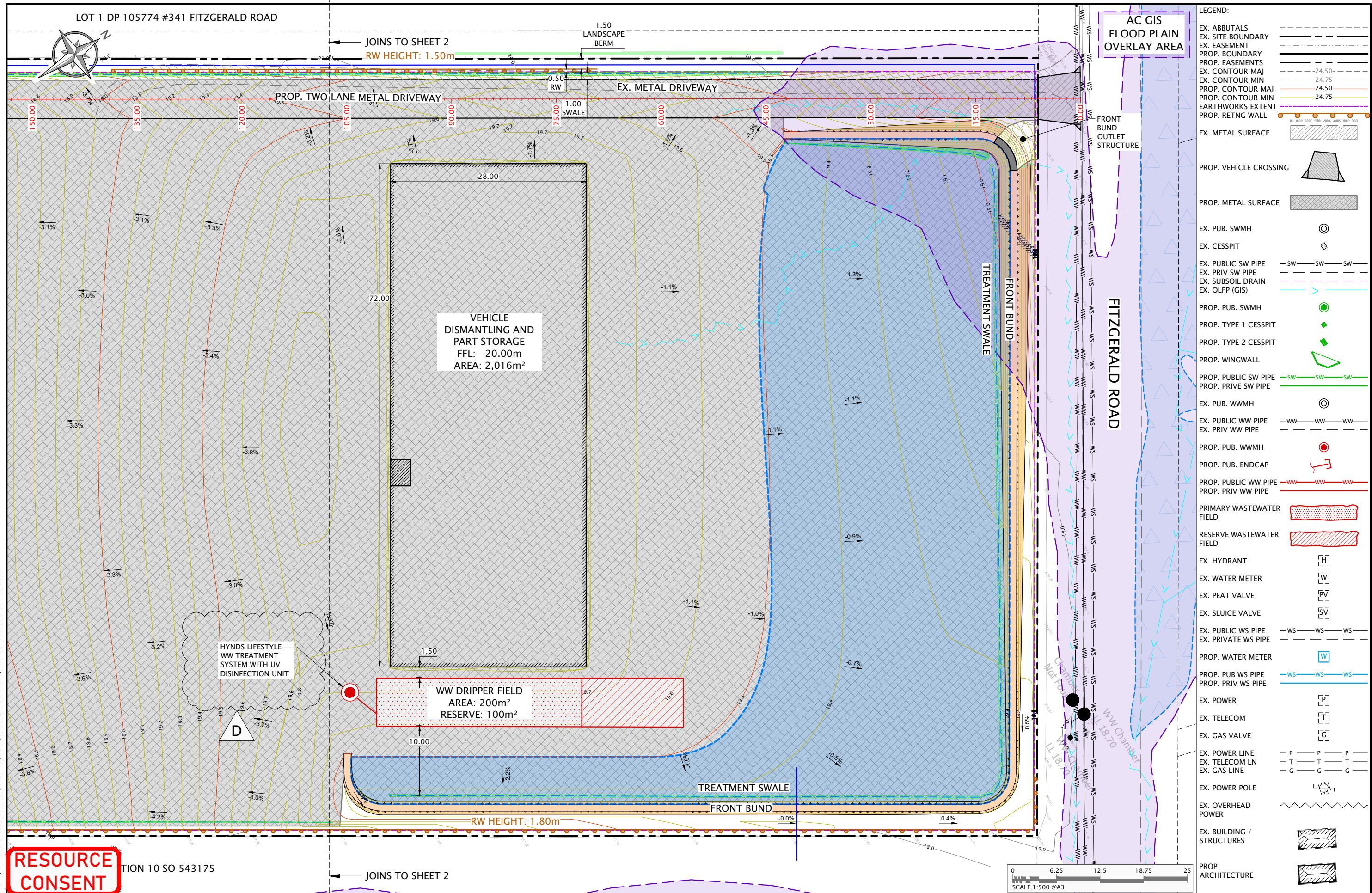


RESOURCE
CONSENT

REV	REVISION DETAILS	DATE	BY	CLIENT:	PROJECT / ADDRESS:	DRAWING TITLE:	DESIGNED BY:	CHECKED BY:	DRAWN BY:
A	INITIAL ISSUE	18/09/24	JDT	TAHA AUTO LIMITED	395 FITZGERALD ROAD, DRURY, AUCKLAND	COVER SHEET	MT	LH	JDT
B	UPDATED REVISIONS	08/07/25	JDT				MT	ORIGIN:	18 SEPTEMBER 2024
C	UPDATED REVISIONS	16/07/25	JDT				PROJECT NUMBER: 395 FITZGERALD RD		
D	UPDATED REVISIONS	01/09/25	JDT				SCALE (@A3): N/A	DRAWING NO. C000	REVISION: D



FILE LOCATION: Y:\03 ITA\395 FITZGERALD ROAD, DRURY\CAD\WORKING FOLDER\395 FITZGERALD RD-D.DWG



REV	REVISION DETAILS	DATE	BY
A	INITIAL ISSUE	18/09/24	JDT
B	UPDATED VARIOUS	08/07/25	JDT
C	UPDATED VARIOUS	16/07/25	JDT
D	UPDATED WASTEWATER	01/09/25	JDT

TAHA
AUTO
LIMITED

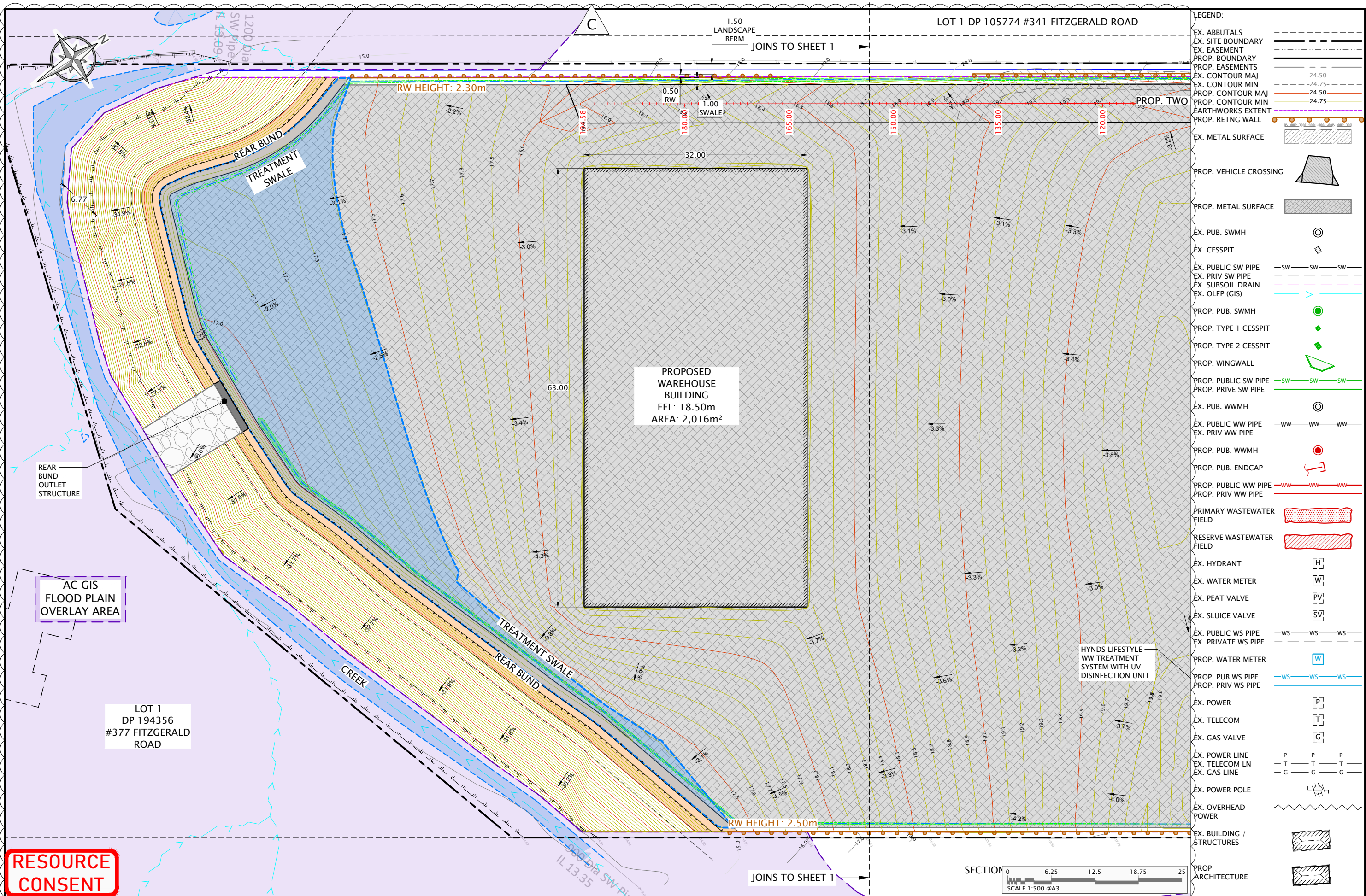
PROJECT / ADDRESS:
395 FITZGERALD ROAD, DRURY,
AUCKLAND

DRAWING TITLE:
PROPOSED CIVIL ENGINEERING
PLANT - SHEET 1

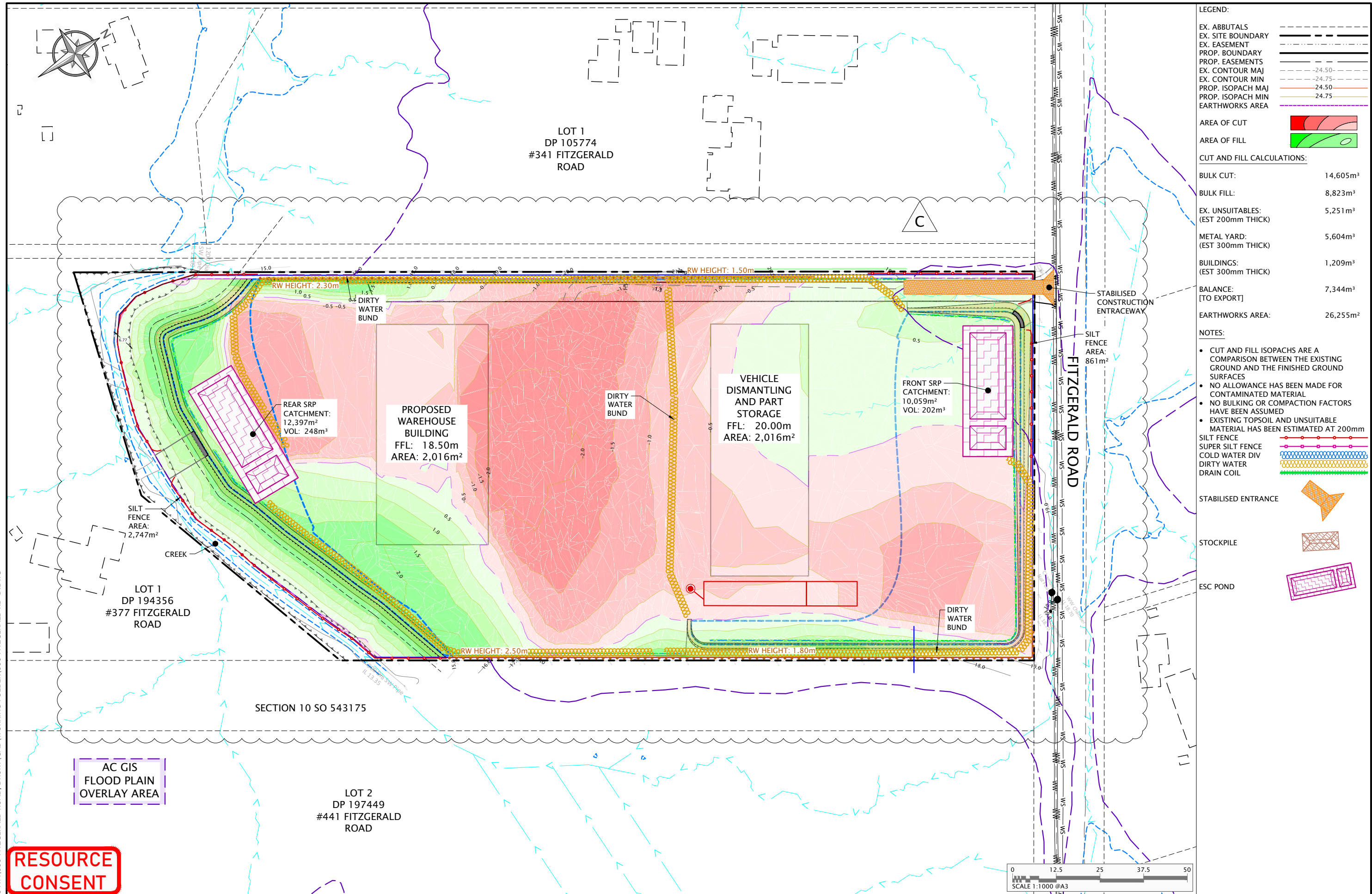
Babingtons
CIVIL AND ENVIRONMENTAL CONSULTANTS

DESIGNED BY: MT	CHECKED BY: LH	DRAWN BY: JDT
APPROVED BY: MT	ORIGIN: 18 SEPTEMBER 2024	
PROJECT NUMBER: 395 FITZGERALD RD		
SCALE (@A3): 1:500	DRAWING NO. C201	REVISION: D

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FILE LOCATION: Y:\03 ITA\395 FITZGERALD ROAD, DRURY\CAD WORKING FOLDER\395 FITZGERALD RD-D.DWG



LEGEND:

EX. ABUTTALS
EX. SITE BOUNDARY
EX. EASEMENT
PROP. BOUNDARY
PROP. EASEMENTS
EX. CONTOUR MAJ
EX. CONTOUR MIN
PROP. ISOPACH MAJ
PROP. ISOPACH MIN
EARTHWORKS AREA

AREA OF CUT
AREA OF FILL

CUT AND FILL CALCULATIONS:

BULK CUT:	14,605m ³
BULK FILL:	8,823m ³
EX. UNSUITABLES: (EST 200mm THICK)	5,251m ³
METAL YARD: (EST 300mm THICK)	5,604m ³
BUILDINGS: (EST 300mm THICK)	1,209m ³
BALANCE: [TO EXPORT]	7,344m ³
EARTHWORKS AREA:	26,255m ²

NOTES:

- CUT AND FILL ISOPACHS ARE A COMPARISON BETWEEN THE EXISTING GROUND AND THE FINISHED GROUND SURFACES
- NO ALLOWANCE HAS BEEN MADE FOR CONTAMINATED MATERIAL
- NO BULKING OR COMPACTION FACTORS HAVE BEEN ASSUMED
- EXISTING TOPSOIL AND UNSUITABLE MATERIAL HAS BEEN ESTIMATED AT 200mm

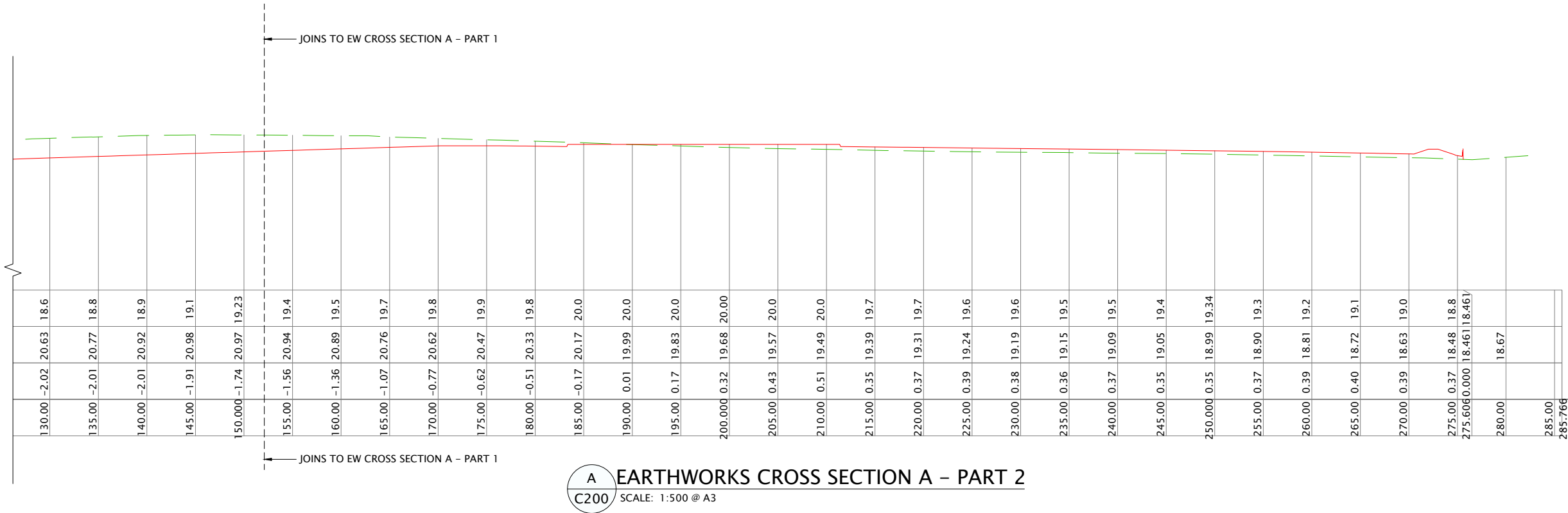
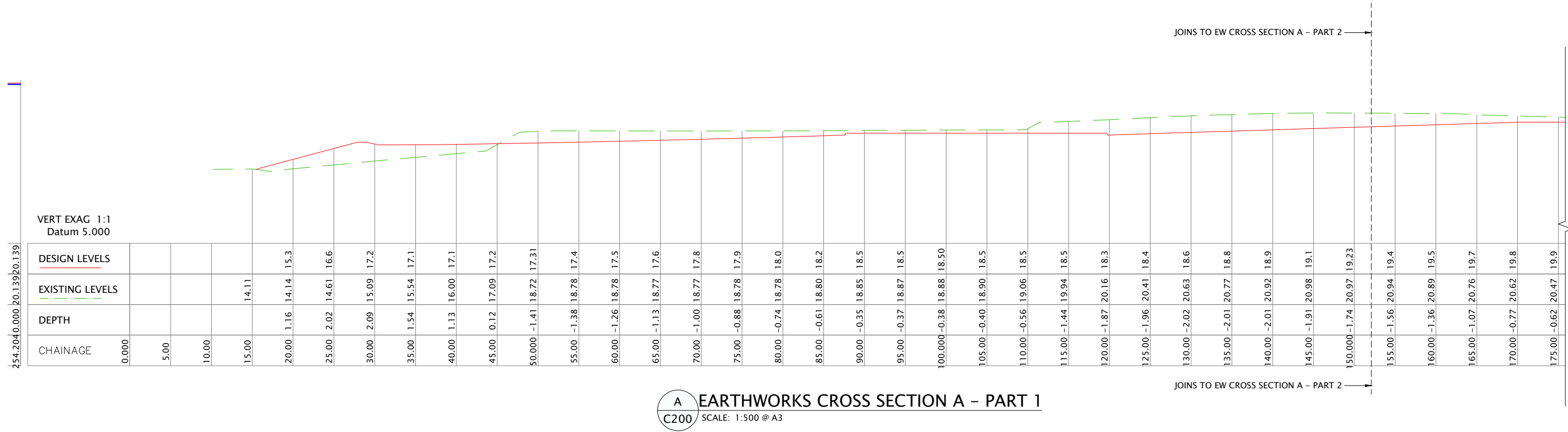
SILT FENCE
SUPER SILT FENCE
COLD WATER DIV
DIRTY WATER
DRAIN COIL

STABILISED ENTRANCE
STOCKPILE
ESC POND

**RESOURCE
CONSENT**

REV	REVISION DETAILS	DATE	BY	CLIENT: TAHA AUTO LIMITED	PROJECT / ADDRESS: 395 FITZGERALD ROAD, DRURY, AUCKLAND	DRAWING TITLE: CUT AND FILL AND EROSION AND SEDIMENT CONTROL PLAN	 Babingtons CIVIL AND ENVIRONMENTAL CONSULTANTS	DESIGNED BY: MT	CHECKED BY: LH	DRAWN BY: JDT	
A	INITIAL ISSUE	18/09/24	JDT					APPROVED BY: MT	ORIGIN: 18 SEPTEMBER 2024		
B	UPDATED ESCP LAYOUT	08/07/25	JDT					PROJECT NUMBER: 395 FITZGERALD RD			
C	UPDATED VARIOUS	16/07/25	JDT					SCALE (@A3): 1:1000		DRAWING NO. C210	REVISION: C

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RESOURCE
CONSENT

REV	REVISION DETAILS	DATE	BY
A	INITIAL ISSUE	18/09/24	JDT
B	UPDATED VARIOUS	16/07/25	JDT

CLIENT:	TAHA AUTO LIMITED
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PROJECT / ADDRESS:	395 FITZGERALD ROAD, DRURY, AUCKLAND
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DRAWING TITLE:	PROPOSED EARTHWORKS CROSS SECTIONS - PART 1
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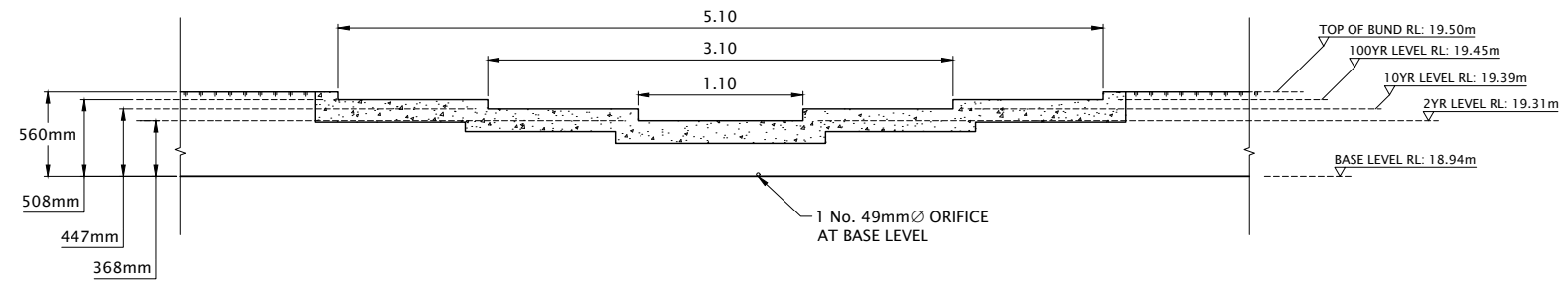


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APPROVED BY: MT	ORIGIN: 18 SEPTEMBER 2024	
PROJECT NUMBER: 395 FITZGERALD RD		
SCALE (@A3): AS SHOWN	DRAWING NO. C221	REVISION: B

B **EARTHWORKS CROSS SECTION B**
C200 SCALE: 1:500 @ A3

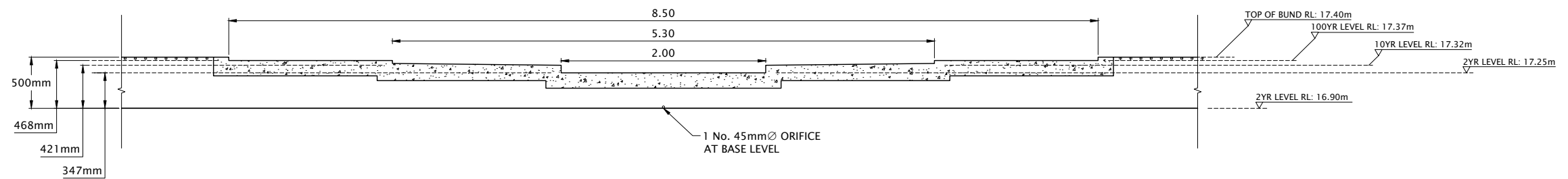
PRINTED ON: 16/10/2023

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FRONT BUND OUTLET STRUCTURE DETAIL

SCALE: 1:50 @ A3



REAR BUND OUTLET STRUCTURE DETAIL

SCALE: 1:50 @ A3

RESOURCE
CONSENT

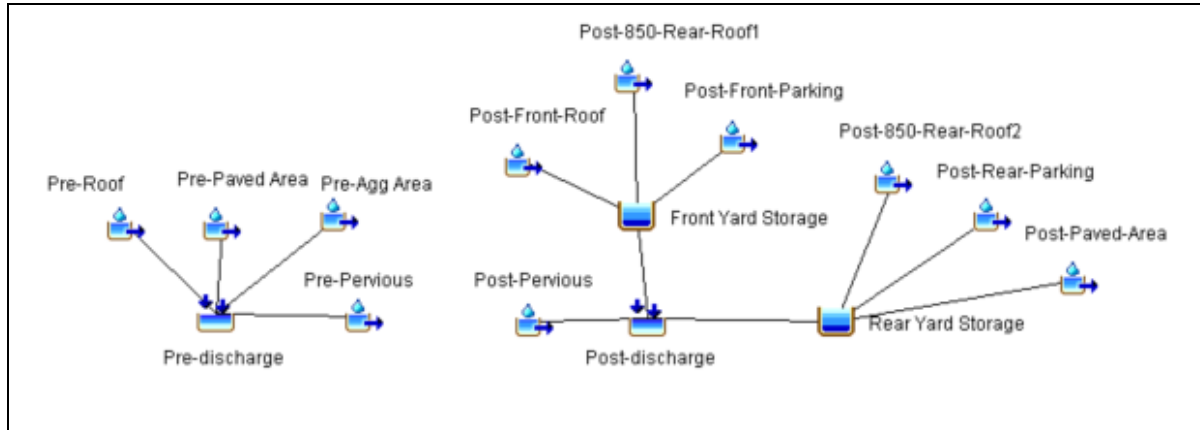
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A	INITIAL ISSUE	18/09/24	JDT	TAHA AUTO LIMITED	395 FITZGERALD ROAD, DRURY, AUCKLAND	PROPOSED STORMWATER DETAILS	MT	LH	JDT
							APPROVED BY:	ORIGIN:	
							MT	18 SEPTEMBER 2024	
							PROJECT NUMBER:		
							395 FITZGERALD RD		
							SCALE (@A3):	DRAWING NO.	REVISION:
							AS SHOWN	C420	A



Appendix 2: Stormwater Calculations

HEC HMS MODEL

Modelling was carried out using HEC HMS to determine the required detention volumes to maintain the existing 2, 10 and 100-year peak flows.



Inputs:

- Rainfall depth (mm)

SMAF1	34
2 year ARI + CC (15.1%)	59.85
10 year ARI + CC (17%)	132.21
100 year ARI + CC (18.1%)	224.39

NB: Rainfall figures are taken from TP108 with the appropriate adjustment for climate change.

- Runoff Curve (CN)

Pervious Area	74
Aggregate Area	89
Roof & Conc. Paved	98

- Outflow structures and trial and error used to determine outlet structure dimensions and detention volumes
- Coefficient for Outlet Orifice = 0.62
- Coefficient for Spillway = 1.48
- Time of concentration (TP108 method) = 0.17hr

- Outlet Structure

	Front Yard		Rear Yard	
		Depth, m (above the base)		Depth, m (above the base)
SMAF Orifice	49mm dia	0	45mm dia	0
	Spillway Length, m	Depth, m (above the base)	Spillway Length, m	Depth, m (above the base)
2 year ARI + CC	1.1	0.3684	2.0	0.3471
10 year ARI + CC	2.0	0.4465	3.3	0.4213
100 year ARI + CC	2.0	0.5084	3.2	0.4675

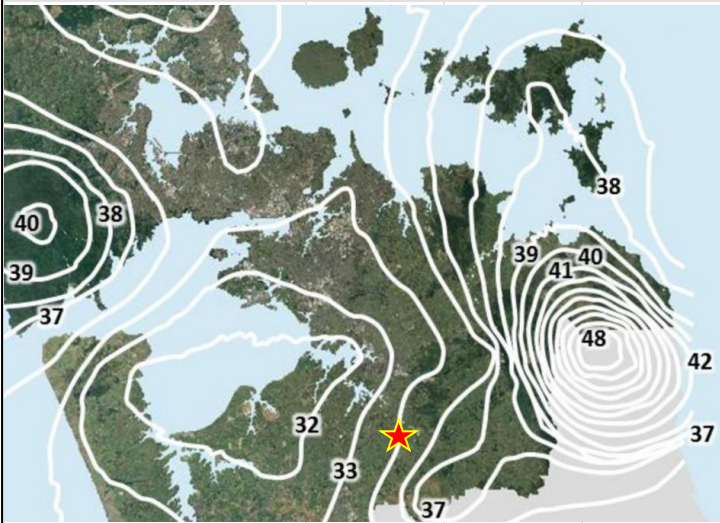
Top water level - Front Yard Storage = 0.5527m above the base

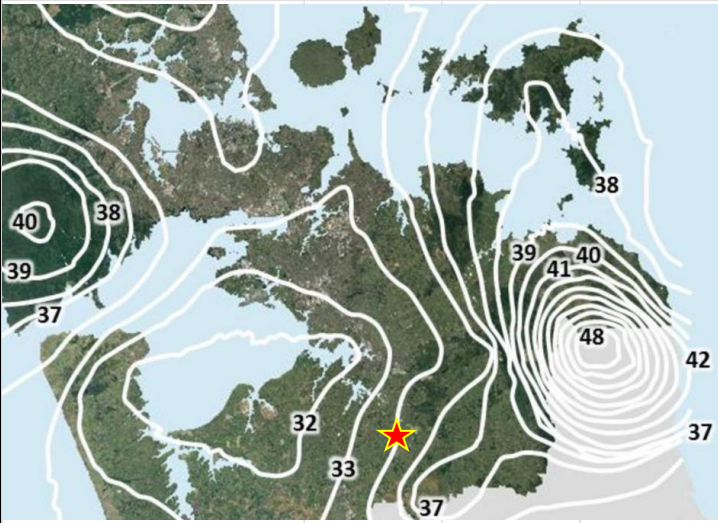
Rear Yard Storage = 0.4999m above the base

Results

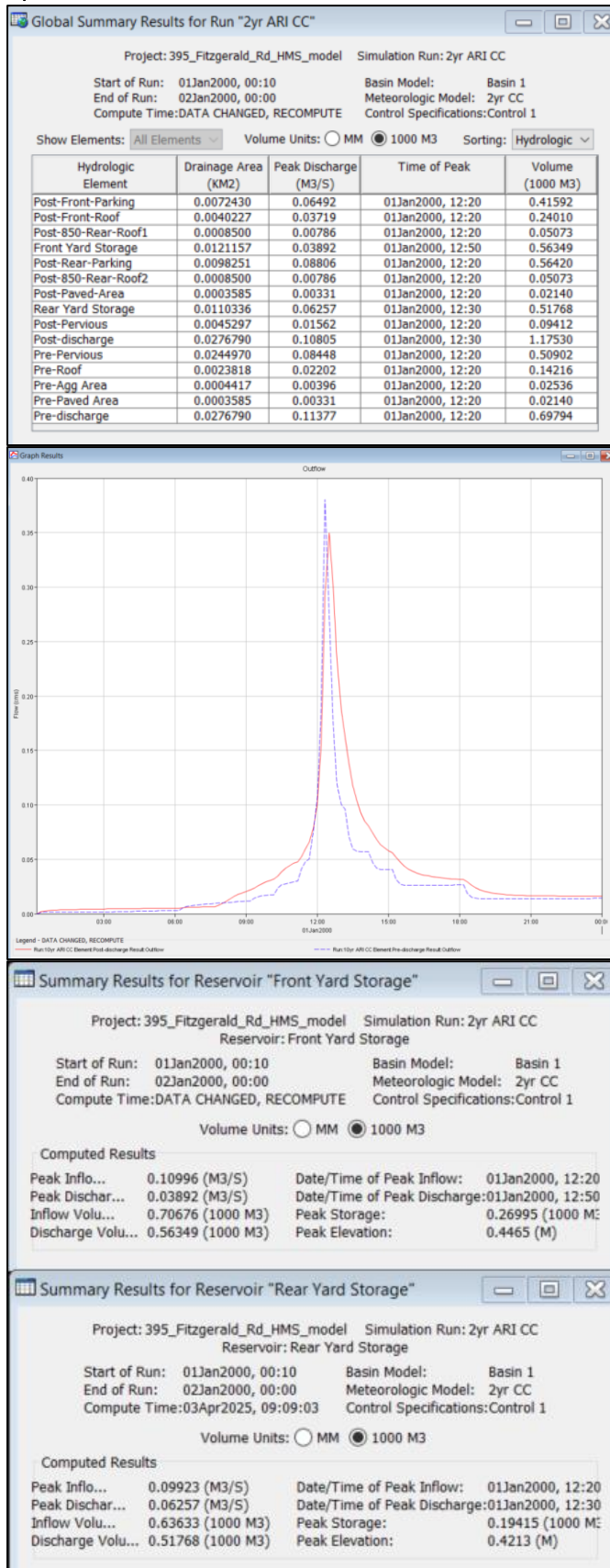
	Pre-Development Peak Flow (L/s)	Post-Development Peak Flow (L/s)	Front Yard Required Attenuation Volume (m ³)	Rear Yard Required Attenuation Volume (m ³)
SMAF (Ret/Detention)	-	-	138.14	111.62
2 year ARI + CC	113.77	108.05	131.81	82.53
10 year ARI + CC	380.55	349.87	129.24	59.55
100 year ARI + CC	772.61	664.94	143.87	46.48
		Total volume	573.06	300.18

SMAF Calculation

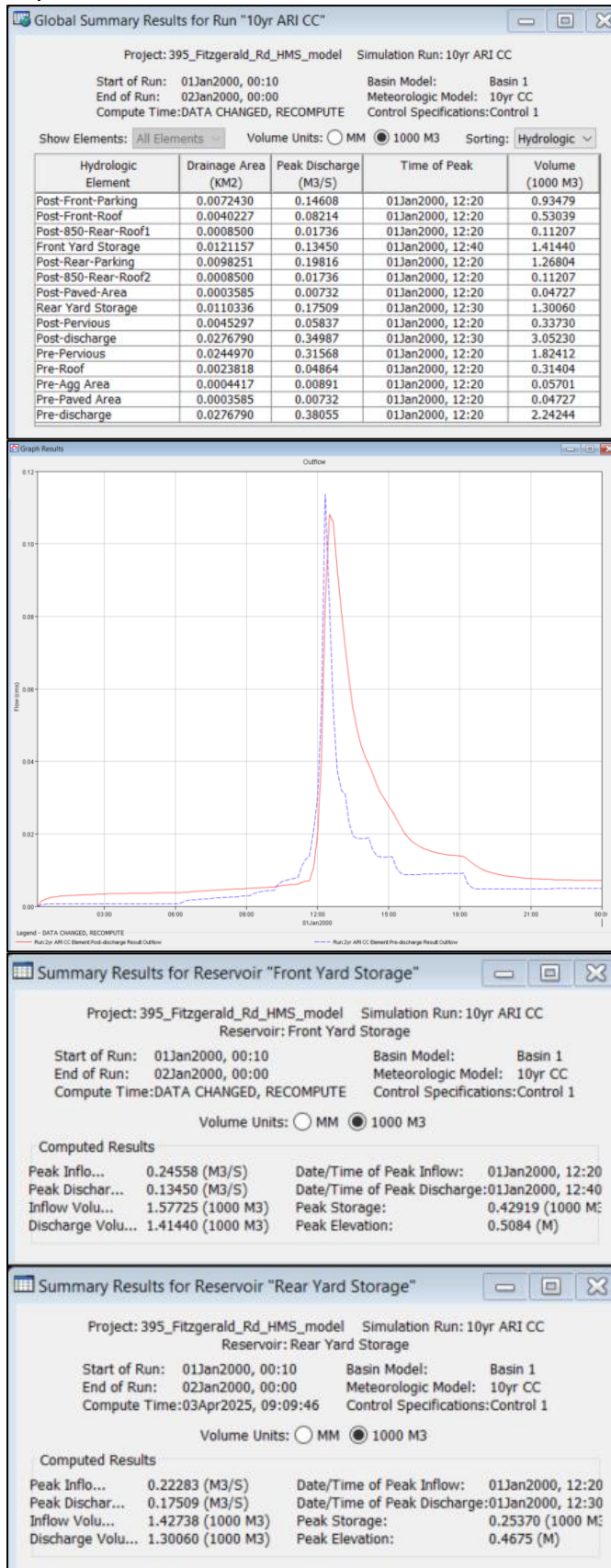
SMA Flow 1 Analysis - Front Yard and Roof			
SMA Flow 1 rainfall depth		34 mm	
			
Catchment	Existing	Proposed	Gravel Paving
SCS Curve Number	81.97	92.62	+ Roof
Initial Abstraction, Ia	5	0	mm
Catchment Storage, S	55.85	20.24	mm
24hr rainfall depth, P24	34	34	mm
c*	0.177	0.456	
Runoff Depth, Q24	9.911	21.313	mm
	Retention	Detention	
	5.0	6.40	mm
Retention calculation for front yard and roof			
SMA Flow 1			
Detention Volume:			
Impervious area	12115.7	m ²	
Detention runoff depth	5.00	mm	
Detention volume	60.58	m ³	
Detention calculation for front yard roof			
SMA Flow 1			
Detention Volume:			
Impervious area	12115.7	m ²	
Detention runoff depth	6.40	mm	
Detention volume	77.56	m ³	
Total Ret/Detention volume	138.14	m ³	
SMAF Detention Orifice Sizing			
$: Q_i = 0.62A(2gh_i)^{0.5}$			
Orifice Sizing			
Vol to be stored and released over 24 hrs	138.14		m ³
Q design (Peak Flow)	0.003198		m ³ /s
	3.198		l/s
h (Orifice Head)	0.3584		m
Orifice diameter, m	0.049	49.0	mm
Orifice flow	0.003100	Ok	m ³ /s

SMA Flow 1 Analysis - Rear Yard and Roof			
SMA Flow 1 rainfall depth		34 mm	
			
Catchment	Existing	Proposed	Gravel Paving
SCS Curve Number	78.27	89.99	+ conc. Paved
Initial Abstraction, Ia	5	0	mm
Catchment Storage, S	70.54	28.27	mm
24hr rainfall depth, P24	34	34	mm
c*	0.145	0.376	
Runoff Depth, Q24	8.449	18.565	mm
	Retention	Detention	
	5.0	5.12	mm
Retention calculation for rear yard			
SMA Flow 1			
Detention Volume:			
Impervious area	11033.6	m ²	
Detention runoff depth	5.00	mm	
Detention volume	55.17	m ³	
Detention calculation for rear yard			
SMA Flow 1			
Detention Volume:			
Impervious area	11033.6	m ²	
Detention runoff depth	5.12	mm	
Detention volume	56.45	m ³	
Total Ret/Detention volume	111.62	m ³	
SMAF Detention Orifice Sizing			
: $Q_i = 0.62A(2gh_i)^{0.5}$			
Orifice Sizing			
Vol to be stored and released over 24 hrs	111.62		m ³
Q design (Peak Flow)	0.002584		m ³ /s
	2.584		l/s
h (Orifice Head)	0.3471		m
Orifice diameter, m	0.045	45.0	mm
Orifice flow	0.002573	Ok	m ³ /s

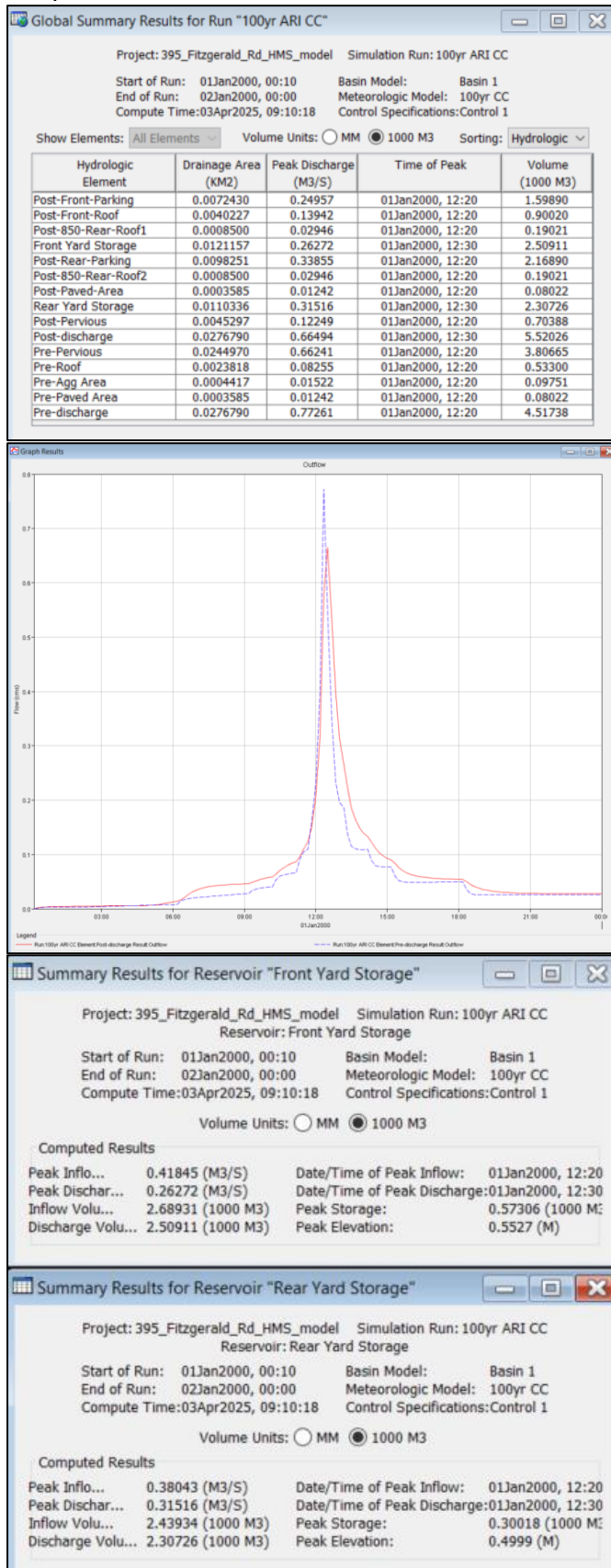
2yr CC Model Result



10yr CC Model Result



100yr CC Model Result



Peak flow for treatment swale

Impervious area	ha	1.2116
Pervious area	ha	0
Total area	ha	1.2116
Impervious SCS curve number		98
Hydrological soil group		Group C
Pervious SCS curve number		74
2 yr 24-hour rainfall depth	mm	59.85
Reticulation design rainfall depth	mm	132.2
Water Quality Storm (WQS) rainfall depth (2yr/3)	mm	19.95
WQS peak rainfall rate from TP108 (10-minute duration)	mm/hr	13.5
Reticulation design rainfall rate (e.g. 5yr, 10yr)	mm/hr	89.2
<u>Impervious surfaces</u>		
Storage S	mm	5.2
Runoff/Rainfall at peak of rainfall		0.88
Peak runoff rate (WQS)	m ³ /s	0.0400
Peak runoff rate (Reticulation design storm)	m ³ /s	0.2988
<u>Pervious surfaces</u>		
Storage S	mm	89.2
Runoff/Rainfall at peak of rainfall		0.10
Peak runoff rate (WQS)	m ³ /s	0.0000
Peak runoff rate (Reticulation design storm)	m ³ /s	0.0000
<u>Combined flow for Water Quality Storm</u>		
Peak runoff from surfaces	m ³ /s	0.0400
Peak outflow from catchment (allowing for lag)	m ³ /s	0.0356
<u>Combined flow for reticulation design storm</u>		
Peak runoff from surfaces	m ³ /s	0.2988
Peak outflow from catchment (allowing for lag)	m ³ /s	0.2659

Water Quality Flow			Reticulation Design (e.g. 5yr,10yr)		
Flow rate Q	m³/s	0.036	Q	m³/s	0.266
Channel slope S	m/m	0.01	d	m	0.29
Depth d	m	0.15	n		0.057
Sideslope Z=1/?		1	T	m	1.502
Manning's n for 150mm grass		0.127	A	m²	0.352
Base width b=Qn/d¹.67.S⁰.5-Zd	m	0.92	V	m/s	0.763
Is b < 2m ? (required for grassed swales)		OK	V < 1.5m/s ?		OK
Width at water level T=b+2dZ	m	1.222			
Cross-sectional area A=bd+Zd²	m²	0.161			
Velocity V=Q/A	m/s	0.221			
Is velocity V < 0.8m/s ?		OK			

To meet TP10 stormwater treatment specification:

Required Swale Length	m	119.60
Swale Length Provided	m	264.00
Travel time t (should be >9 mins)	minutes	19.87

Swale Dimensions (m)

Top width = 1.50

Depth = 0.29

Bottom width = 0.92

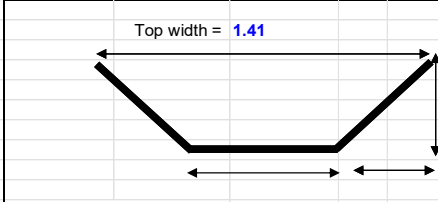
e = 0.87

Swale Calculations - Rear Yard

Peak flow

Impervious area	ha	1.1034
Pervious area	ha	0
Total area	ha	1.1034
Impervious SCS curve number		98
Hydrological soil group		Group C
Pervious SCS curve number		74
2 yr 24-hour rainfall depth	mm	59.85
Reticulation design rainfall depth	mm	132.2
Water Quality Storm (WQS) rainfall depth (2yr/3)	mm	19.95
WQS peak rainfall rate from TP108 (10-minute duration)	mm/hr	13.5
Reticulation design rainfall rate (e.g. 5yr, 10yr)	mm/hr	89.2
Impervious surfaces		
Storage S	mm	5.2
Runoff/Rainfall at peak of rainfall		0.88
Peak runoff rate (WQS)	m ³ /s	0.0364
Peak runoff rate (Reticulation design storm)	m ³ /s	0.2721
Pervious surfaces		
Storage S	mm	89.2
Runoff/Rainfall at peak of rainfall		0.10
Peak runoff rate (WQS)	m ³ /s	0.0000
Peak runoff rate (Reticulation design storm)	m ³ /s	0.0000
Combined flow for Water Quality Storm		
Peak runoff from surfaces	m ³ /s	0.0364
Peak outflow from catchment (allowing for lag)	m ³ /s	0.0324
Combined flow for reticulation design storm		
Peak runoff from surfaces	m ³ /s	0.2721
Peak outflow from catchment (allowing for lag)	m ³ /s	0.2422

Swale – 150mm Grass Length

Water Quality Flow			Reticulation Design (e.g. 5yr,10yr)		
Flow rate Q	m ³ /s	0.032	Q	m ³ /s	0.242
Channel slope S	m/m	0.01			
Depth d	m	0.15	d	m	0.29
Sideslope Z=1/?		1			
Manning's n for 150mm grass		0.127	n		0.057
Base width b=Qn/d ^{1.48} S ^{0.5} Z ^{0.5}	m	0.83			
Is b < 2m ? (required for grassed swales)		OK			
Width at water level T=b+2dZ	m	1.126	T	m	1.406
Cross-sectional area A=bd+Zd ²	m ²	0.146	A	m ²	0.324
Velocity V=Q/A	m/s	0.221	V	m/s	0.763
Is velocity V < 0.8m/s ?		OK	V < 1.5m/s ?		OK
To meet TP10 stormwater treatment specification:			Swale Dimensions (m)		
Required Swale Length	m	119.60			
Swale Length Provided	m	250.00			
Travel time t (should be >9 mins)	minutes	18.81			
			OK		

OK
Adjust depth until "OK".
This excludes freeboard allowance for settling, construction tolerances, etc.

Appendix 3: Onsite Wastewater Calculations

SECTION 1 - DAILY FLOW DESIGN				Site Area				27679
NO. BEDROOMS =	0			Consent Required if Lot area/discharge is <1.5				46 OK
NO. DAY STAFF =	15							
DAILY USAGE PER PERSON =	40							
DAILY FLOW, Q =	600	litres/day						
SECTION 2 - IRRIGATION FIELD SIZING DESIGN								
APPLICATION RATE =	3	mm/day or litres/m ²						
DISCHARGE RATE =	3.6	litres/hour						
DISPOSAL AREA REQUIRED =	200	m ²						
AREA FOR IRRIGATION FIELD =	200	m ²	Okay					
DRIPLINE SPACING =	1	m	(1m unless by special design)					
TOTAL LENGTH OF DRIPLINE =	200	m						
TOTAL FLOW RATE =	6	m ³ /hour	21.6 l/s		100 l/m			