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Onsite Stormwater Mitigation Design
for
12 Jellicoe Road
Manurewa

EQ Ref No. 97166
Date: 3rd September 2025

TABLE OF CONTENTS:

1. Introduction

EQ Engineers Consulting Ltd has been engaged by Shaun Fraser to undertake an onsite stormwater mitigation design for 12 Jellicoe Road, Manurewa, in support of the proposed carparking development within the subject site. It is to be lodged to Auckland Council as part of the Resource Consent Application.

2. Existing situation and proposed development

The subject site at 12 Jellicoe Road, Manurewa, is legally described as Lot 1 DP 138586, SEC 1 SO 489242. The western portion of the site is currently vacant, as shown in Kol Noun Surveyors Ltd's Topographical Plan (Drawing No.12-14-JELLICOE-TO, Appendix A).

It is proposed to construct new carparking area within the vacant section, as per LW Architecture Ltd's Site plan (Drawing No.24703/101/Rev.1, Appendix A).

3. Onsite stormwater mitigation

The subject site is not situated in the Stormwater Management Area Flow 2[1] (SMAF2). Onsite stormwater mitigation is required to mitigate the increased runoff due to the proposed development within the subject site, in accordance with the AUP OP requirements.

The proposed stormwater mitigation system will consist of the following components:

- Private stormwater network
- Reuse rain tanks for stormwater retention
- Detention tanks for stormwater detention

3.1 Private stormwater network

A private stormwater network will be installed for the proposed carparking development to convey all surface runoff to a series of underground tanks (for non-potable reuse), with an overflow to another series of underground tanks (for detention), prior to discharge to the stormwater connection that leads to the public stormwater reticulation network.

The proposed stormwater mitigation layout plan is shown in Drawing No.97166/RC.02, Appendix A.

[1] Refer to the Auckland Unitary Plan (AUP) – Operative in Part Version

3.2 Reuse rain tank for stormwater retention

The stormwater mitigation volume required for the proposed carparking development is approximately 83,200L, which includes at least 19,200L retention volume.

Two 10,000L reuse rain tanks are proposed to collect all runoff for non-potable reuse, with an overflow to another series of underground tanks for detention prior to discharge.

Two 10,000L APD StormLite tanks (1.2m diameter x 9.1m in length) are recommended for this application. All of the effective storage volume within this tank will be allocated for reuse. The tank details area shown in Drawing No.97166/TANK.01 (Appendix A), with supporting calculations appended in Appendix B.

A pump will be installed to supply non-potable water from the tank to outdoor taps for garden watering, with a clear label of “NOT FOR DRINKING”.

3.3 Detention tank for driveway runoff mitigation

Six 10,700L detention tanks are proposed for stormwater attenuation from the reuse tank overflow.

Six 10,700L APD StormLite tank (1.2m diameter x 9.7m in length) are recommended for this application, with a 25mm diameter orifice installed at the tank base for slow release over an extended period.

The tank details are shown in Drawing No.97166/TANK.01 (Appendix A), with supporting calculations appended in Appendix B.

3.4 Downstream Connection

A new stormwater connection is proposed to serve the proposed development. The invert level of this stormwater connection must be verified onsite prior to the installation of the private stormwater network and the rain tanks, to ensure the gravitational discharge can be achieved with a minimum pipe gradient of 1%.

4. Summary

The proposed stormwater mitigation system for 12 Jellicoe Road, Manurewa, has been designed in accordance with the AUP OP requirements.

A private stormwater network will be installed to convey all runoff from the proposed carparking area to two 10,000L APD StormLite tank for non-potable reuse, with an overflow to six 10,700L APD StormLite tanks for detention prior to discharge.

5. Limitations

The onsite stormwater mitigation design for 12 Jellicoe Road, Manurewa, expressed herein has been prepared solely for, and is furnished to our client, Shaun Fraser, on the express condition that it will only be used for the purpose for which it is intended. EQ Engineers Consulting Ltd accepts no liability whatsoever for inaccuracies in third party information used as part of this report. Any reliance by other parties on the information or opinions contained in this report shall, without prior review and agreement in writing by EQ Engineers Consulting Ltd, be at such parties' sole risk.

The conclusions and recommendations expressed herein should be read in conjunction with the remainder of this report and should not be referred to out of context with the remainder of this report. This report has been prepared based on the information provided to date, and therefore EQ Engineers Consulting Ltd requests the opportunity to revise and amend this report where any inaccuracies are found prior to construction.

If you require any clarification, please do not hesitate to contact me.

Yours Sincerely,

ENGINEERING NEW ZEALAND OFFICIAL MEMBER

William Li CMEngNZ, CPEng(NZ), IntPE(NZ), APEC Engineer

Senior Civil Engineer

Director of EQ Engineers Consulting Ltd

APPENDIX A

DRAWINGS

KOL NOUN SURVEYORS LTD
Ph (09) 274–6331
Fax (09) 274–6773
Mob (021) 188–7584
email: kol.noun@xtra.co.nz

TOPOGRAPHICAL PLAN OF LOT 1 DP 138586, LOT 1 DEEDS 445 AND SECTION 1 SO 489242 AT 12 & 14 JELLICOE ROAD, MANUREWA

SCALE: (A3) 1 : 500

REVISION

SURVEYED	K.N	30/05/24
DRAWN	K.N	06/06/24

DRAWING NUMBER
12–14–JELLICOE–TO

NOTES
1. LEVELS ARE IN TERM OF NZ VERTICAL DATUM 2016
2. CONTOURS ARE AT 0.50m INTERVALS

12 Jellicoe Road Manurewa Auckland 2102

LOT 1 DP 138586, SEC 1 SO 489242

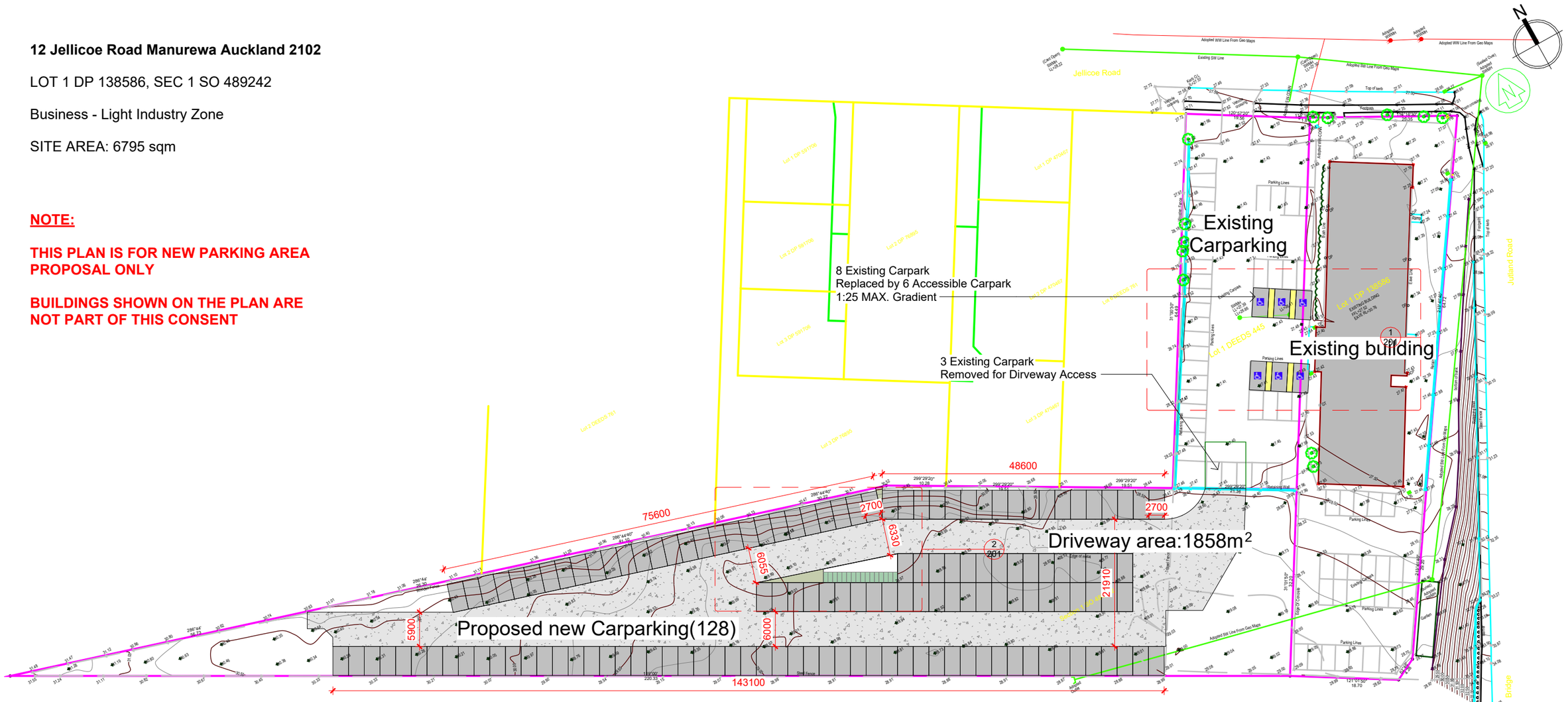
Business - Light Industry Zone

SITE AREA: 6795 sqm

NOTE:

THIS PLAN IS FOR NEW PARKING AREA PROPOSAL ONLY

BUILDINGS SHOWN ON THE PLAN ARE NOT PART OF THIS CONSENT



1 Site Plan
1 : 700

	Existing	Proposed
Carpark	68	195
Disability Carpark	0	6
Visitor bicycle parking	0	11
Long-term bicycle parking	0	5

Rev	Description	Date
Rev.1	BC Lodgement	Date 1

LW Architecture

Email: jcli@lwarchitecture.co.nz
Add: 13 William Pickering Drive, Rosedale
Ph:09-4759599 Mob:021-766855

Job Title
12 Jellicoe Road, Manurewa, Auckland, 2102

Drawing Title
Site Plan

Job no.	24703
Scale	1 : 700
Date	25/03/25
Drawn	Aiden
Checked	
Approved	L.L

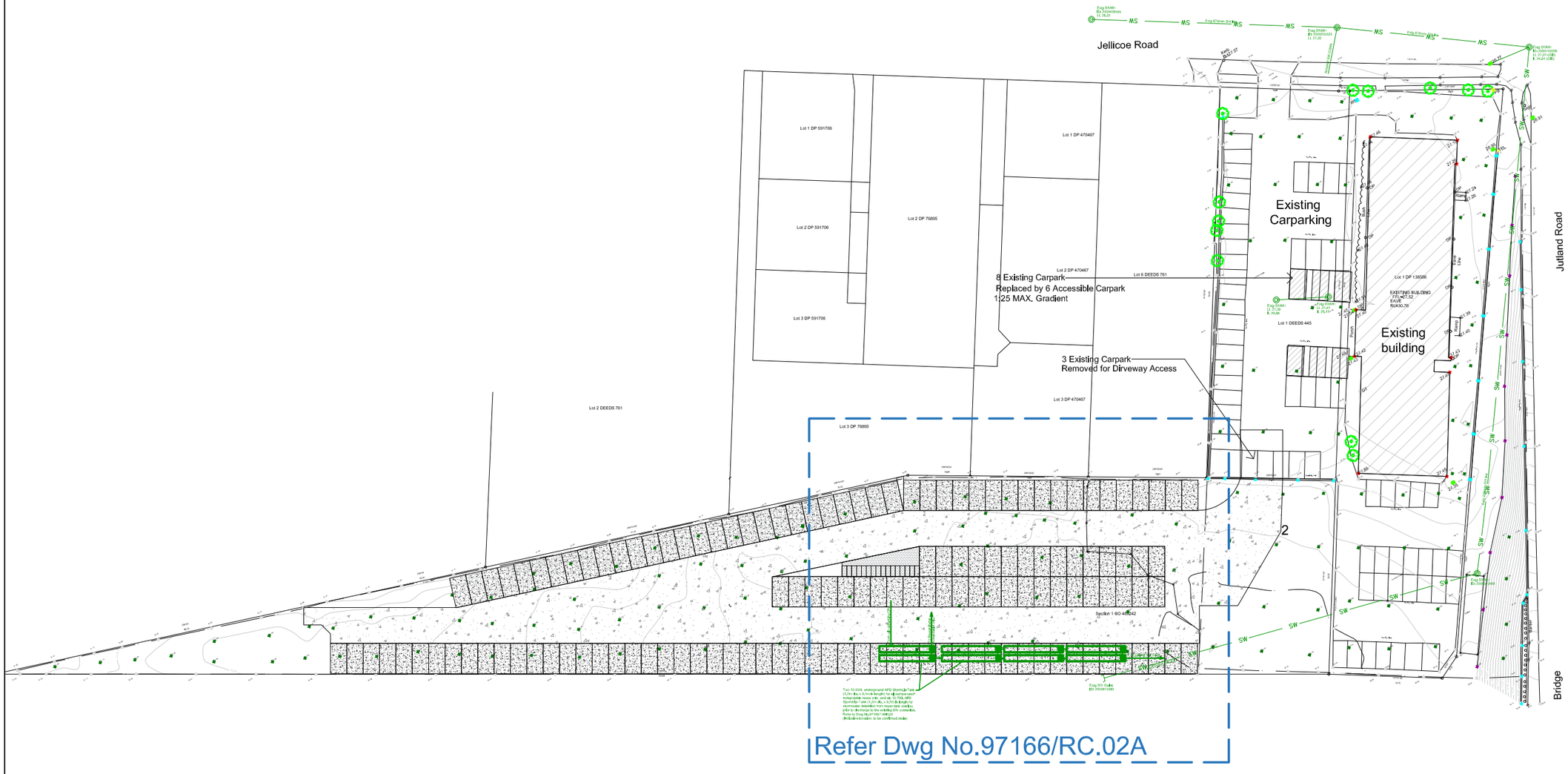
Sheet 101

Revision: Rev.1

P:\2024\24703 12 Jellicoe Rd, Manurewa\04.BIM\03.BC\24703_12 Jellicoe Rd_20250731_Site Plan ADD NOTE.rvt

NOTES:

1. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS, LEVELS AND ANGLES ON SITE PRIOR TO COMMENCING WORK. REFER FIGURED DIMENSIONS ONLY AND DO NOT SCALE. ANY DISCREPANCIES MUST BE REPORTED TO THE PROJECT MANAGER.
2. ALL DRAINAGE WORKS TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL CODE OF PRACTICE FOR LAND DEVELOPMENT AND SUBDIVISION
3. ALL BEDDING TO BE IN ACCORDANCE WITH AUCKLAND COUNCIL STORMWATER ENGINEERING STANDARD DETAILS SW01, SW02 & SW03.
4. ALL PUBLIC STORMWATER PIPES (UNLESS OTHERWISE STATED) SHOULD BE REINFORCED CONCRETE (RC) PIPES COMPLYING WITH AS/NZS 4058 OR AS/NZS 3725.
5. ALL PRIVATE STORMWATER PIPES (UNLESS OTHERWISE STATED) SHOULD BE 110MM UPVC COMPLYING WITH AS/NZS 1260 OR AS/NZS 1254 AND LAID AT GRADE TO SUIT (1% MINIMUM).
6. THE PROPOSED CAR PARKING AREA WILL HAVE TWO UNDERGROUND RAIN TANKS TO CAPTURE ALL SURFACE RUNOFF FOR NON-POTABLE REUSE, AND ANOTHER SIX UNDERGROUND DETENTION TANK FROM REUSE TANK OVERFLOW.
7. THE EXISTING STORMWATER CONNECTION INVERT LEVEL IS TO BE VERIFIED ONSITE PRIOR TO THE TANK INSTALLATION TO ENSURE THE GRAVITATIONAL DISCHARGE CAN BE ACHIEVED WITH A MINIMUM PIPE GRADIENT OF 1%.
8. OTHER TANKS WITH SIMILAR STORAGE VOLUME MAY BE ADOPTED. HOWEVER, THE ORIFICE SIZES NEED TO BE RE-ASSESSED AND CONFIRMED BY A QUALIFIED STORMWATER ENGINEER.
9. NON POTABLE WATER RETICULATION SHALL BE INSTALLED IN ACCORDANCE WITH G12/AS1 4.0, 4.1, 4.2 AND 4.3.
10. LILAC PIPES ARE TO BE INSTALLED FOR NON-POTABLE WATER SUPPLY FROM THE RAIN TANK SYSTEM, AS PER NZ BUILDING CODE G12/AS1/SECTION 4.
11. ALL TAPS THAT ARE CONNECTED TO THE NON-POTABLE SYSTEM SHOULD HAVE A CLEAR LABEL OF "NOT FOR DRINKING".



REV	DATE	AMENDMENT

FOR RESOURCE CONSENT

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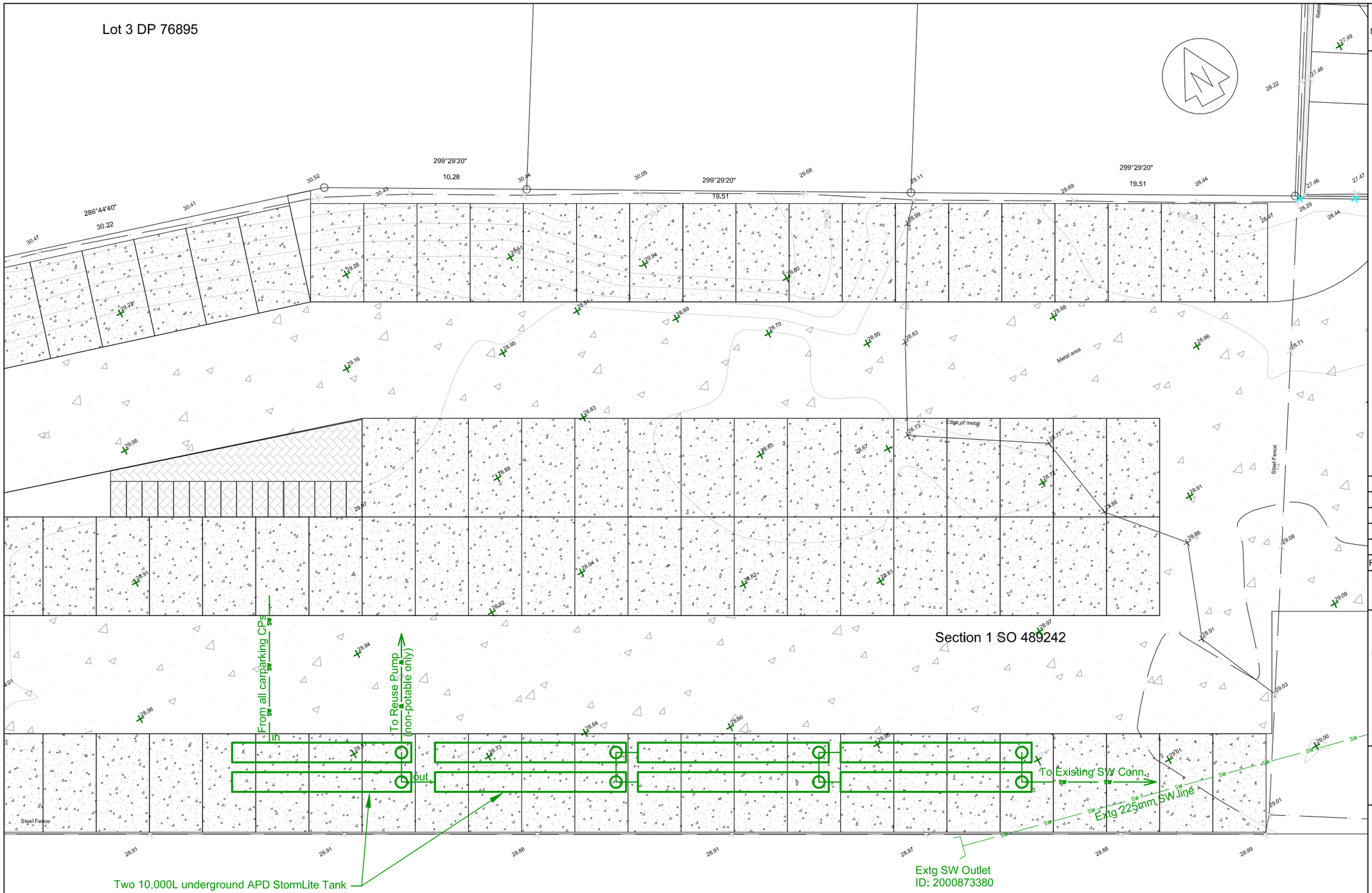
CLIENT
SHAUN FRASER

PROJECT
12 JELLICOE ROAD
MANUREWA

DRAWING TITLE
ONSITE STORMWATER MITIGATION LAYOUT PLAN

DWG NO.	REVISION
97166 / RC.02	
SCALE: 1 : 750 @ A3	DESIGNED: A.L.
ISSUED: 03 SEPT 2025	CHECKED: W.L.



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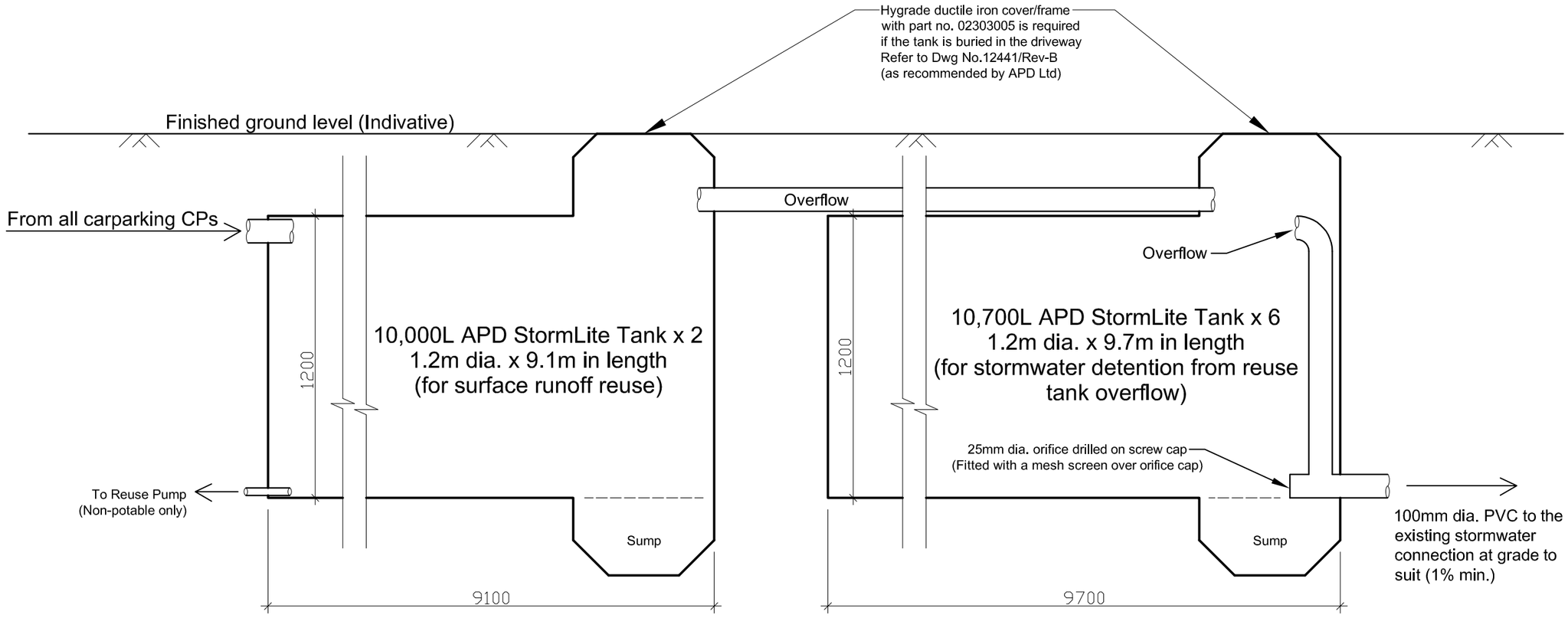
SHAUN FRASER

PROJECT
12 JELLICOE ROAD
MANUREWA

DRAWING TITLE
ONSITE STORMWATER MITIGATION LAYOUT PLAN (ZOOM IN VIEW A)

DWG NO.	REVISION
97166 / RC.02A	
SCALE: 1 : 200 @ A3	DESIGNED: A.L.
ISSUED: 03 SEPT 2025	CHECKED: W.L.



Rain Tank Details

Scale 1:20 @ A3

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PROJECT
12 JELLICOE ROAD
MANUREWA

DRAWING TITLE
RAIN TANK DETAILS

DWG NO.	REVISION
97166 / TANK.01	
SCALE: AS SHOWN	DESIGNED: A.L.
ISSUED: 03 SEPT 2025	CHECKED: W.L.

APPENDIX B

CALCULATIONS

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Project name **12 Jellicoe Road, Manurewa**
Reference **97166 Carpark**
Aim **Onsite stormwater mitigation**

1. Proposed site characteristics

Area of impervious area required mitigation	3840	m^2

2. Onsite stormwater mitigation - 95th percentile 24hr rainfall

Hydrology mitigation volume calculations (as per ARC TP108 worksheets)

	Pre	Post	
Rainfall depth	32.7	32.7	mm
New or redeveloped area	3840	3840	m^2
CN	74	98	
Ia (weighted), mm	5	0	
Time of Concentration, t_c	0.17	0.17	hrs
	10.0	10.0	minutes
Lag Time, t_p	6.7	6.7	minutes
Soil storage, S	89.24	5.18	mm
24hr rainfall depth, P_{24} (mm)	32.7	32.7	
c*	0.113	0.759	
q*			
Peak flow rate, q_p			
Runoff depth, Q_{24} (mm)	6.6	28.2	
Runoff volume, V_{24} (m^3)	25.2	108.4	m^3

Hydrology mitigation volume	83.2	m^3
Retention volume required	19.2	m^3
Detention volume required	64.0	m^3

3.Underground tanks selection

Reuse rain tank

1.2m dia. APD Tanks are selected

Tank diameter	1.2	m, dia.		
Tank length	9.1	m	x	2
Tank volume	10.0	m^3	x	2

All of the storage voluem is allocated for non-potable reuse.

Detention rain tank

1.2m dia. APD Tanks are selected

Tank diameter	1.2	m, dia.		
Tank length	9.7	m	x	6
Tank volume	10.7	m^3	x	6

All of the storage voluem is allocated for detention

Detention orifice sizing

Average Qp over 24 hour		0.124	L/s	
Maximum Qp allowed		0.25	L/s	
$H_{(Orifice\ Head)}$		1.20	m	
$Velocity_{max}$ (v_{max})	$0.62(2gH)^{1/2}$	3.01	m/s	
$A_{(Orifice)}$	Q_{max}/v_{max}	82.33	mm^2	
Orifice Diameter		10	mm	
Adopted Orifice Diameter		25	mm	(to reduce blockage)
Orifice level		0	m above tank base	