

## **Appendix I: Concept Stormwater Management Plan**

Prepared by Ensilon Pty Ltd



## CONCEPT STORMWATER MANAGEMENT PLAN

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**Proposed Childcare & Education Centre  
AELC Development 2 Pty Ltd  
ATF AELC Developments 2 Unit Trust  
Lot 3, 92 Chambers Flat Road, Waterford West  
Lot 3 on GTP101608**

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Prepared for:

**AELC Development 2 Pty Ltd  
ATF AELC Developments 2 Unit Trust**

Approved by:

**Mr Tristan Nelson  
Director  
Cozens Regan Group Pty Ltd  
RPEQ: 15735**

Original:


**February 2026**

Proposed Childcare & Education Centre  
AELC Development 2 Pty Ltd  
ATF AELC Developments 2 Unit Trust  
Lot 3, 92 Chambers Flat Road, Waterford West

<b>DOCUMENT CONTROL RECORD</b>
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**Report Details**

**Client:** AELC Development 2 Pty Ltd  
ATF AELC Developments 2 Unit Trust  
**Document Name:** Concept Stormwater Management Plan  
**Site Address:** Lot 3, 92 Chambers Flat Road, Waterford West  
Lot 3 on GTP101608  
**Job Number:** 250654  
**File Name:** 250654\_SWMP\_A

Issue	Rev	Approved	Date	Distributed to:	Qty.
Preliminary	A		20/02/2026	AELC Development 2 Pty Ltd ATF AELC Developments 2 Unit Trust	1

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## Table of Contents

EXECUTIVE SUMMARY .....	4
1.0 INTRODUCTION.....	5
2.0 THE SITE .....	5
2.1 SITE LOCATION .....	5
2.2 SITE DESCRIPTION .....	6
2.3 DESCRIPTION OF DEVELOPMENT .....	6
3.0 STORMWATER QUALITY ASSESSMENT.....	6
4.0 STORMWATER QUANTITY .....	6
4.1 LAWFUL POINT OF DISCHARGE.....	6
4.2 OBJECTIVES .....	7
4.3 DETERMINATION OF AN INCREASE IN PEAK STORMWATER DISCHARGE .....	7
4.4 ON SITE DETENTION.....	9
5.0 QUALIFICATIONS .....	10
REFERENCES.....	11
Appendix A.....	12
Appendix B.....	13
Appendix C.....	14
Appendix D.....	15
Appendix E.....	16

## **EXECUTIVE SUMMARY**

This report examines and evaluates options for Stormwater Quantity and Quality Management during the operational phase for the Proposed Child Care Centre Development at 92 Chambers Flat Road, Waterford West

The strategies proposed in this report will provide short and long term community benefits with an Environmentally Sensitive Design emphasis.

### **Stormwater Quantity Management**

The stormwater quantity management objectives have been met by providing on site detention and ensuring that sites discharge is safely discharged via piped drainage into the existing piped drainage system within Chambers Flat Road at the frontage of the site.

### **Stormwater Quality Management**

In accordance with Logan Planning Scheme Policy 5 – Infrastructure, the Developer is opting to pay a monetary contribution to Council in lieu of providing the on site quality treatment requirements.

**Proposed Childcare & Education Centre**  
**AELC Development 2 Pty Ltd**  
**ATF AELC Developments 2 Unit Trust**  
**Lot 3, 92 Chambers Flat Road, Waterford West**

## 1.0 INTRODUCTION

Cozens Regan Group Pty Ltd has been commissioned by AELC Development 2 Pty Ltd ATF AELC Developments 2 Unit Trust to prepare a Site Based Stormwater Management Plan for the Proposed Childcare Centre Development at 92 Chambers Flat Road, Waterford West.

This Stormwater Management Plan is required to support a proposed Material Change of Use application to Logan City Council.

## 2.0 THE SITE

### 2.1 SITE LOCATION

The subject site comprises of one lot described as Lot 3 on GTP101608 at 92 Chambers Flat Road, Waterford West. The site is bound by Moffatt Road to the South West, Chambers Flat Road to the North West, existing commercial development to the North East, and residential properties to other boundaries. The subject site is shown in Figure 1 below.



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Lot 3, 92 Chambers Flat Road, Waterford West

Figure 1 – Aerial Photograph (QLD Globe)

## 2.2 SITE DESCRIPTION

The site is currently vacant, with sparse trees and good grass coverage.

The site generally falls from the South to North at an approximate grade of 5%. The levels of the site range from RL 18.80m down to RL 15.30m.

The total area of the site is 4,123m<sup>2</sup>.

Stormwater from the site currently flows as a mixture of sheet and concentrated flow to the existing kerb and channel in Chambers Flat Road. All stormwater from site is then collected by the existing piped stormwater drainage system within Chambers Flat Road.

Details of the existing site including services and site contours are provided by detail survey a copy of which is contained in Appendix A.

## 2.3 DESCRIPTION OF DEVELOPMENT

The proposed development involves the construction of an Child Care Centre development including associated carparking, landscaping and servicing works.

Refer to the Site Plan contained within Appendix B for more information in regards to the proposed development.

## 3.0 STORMWATER QUALITY ASSESSMENT

In accordance with Logan Planning Scheme Policy 5 – Infrastructure, the Developer is opting to pay a monetary contribution to Council in lieu of providing the on site quality treatment requirements.

It is expected that a Condition of the Decision Notice be provided to address this requirement.

## 4.0 STORMWATER QUANTITY

### 4.1 LAWFUL POINT OF DISCHARGE

In accordance with Section 3 of the Queensland Urban Drainage Manual all development must address the 3 Point Lawful Point of Discharge Test.

*The criteria for determining the lawful point of discharge are:*

*(i) Will the proposed development alter the site's stormwater discharge characteristics in a manner that may substantially damage a third party property?*

It is the proposal of this Stormwater Quantity Management Plan to ensure that all stormwater runoff from the site is directed into the existing drainage system within Chambers Flat Road in a similar manner to that currently exists and therefore the answer to this test is no and thus no further steps are required to obtain tenure for a lawful point discharge (assuming any previous circumstances and changes were lawful).

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Regardless of the non-obligation to obtain tenure for a Lawful Point of Discharge it is noted that the site's Lawful Point of Discharge is considered the existing piped drainage system within Chambers Flat Road.

It is proposed to direct all stormwater runoff from the site to the lawful point of discharge.

Refer to the Stormwater Management Plan 2506544/SK02- Concept Stormwater Management Plan for more information.

## 4.2 OBJECTIVES

In accordance with the Queensland Urban Drainage Manual 2017 and Logan City Council requirements the development should not detrimentally impact on the flooding or flood risk of any area.

This means that a development should not result in adverse impacts on any other property in terms of changes in peak discharge, flood levels, the frequency and /or duration of flooding, flow velocities, water quality, sedimentation or scour effects. 'No worsening' is to be considered over fluvial and pluvial flood risk (riverine, overland flow, stormwater and coastal sources of flooding).

These standard requirements set the objectives for the management of stormwater quantity.

## 4.3 DETERMINATION OF AN INCREASE IN PEAK STORMWATER DISCHARGE

In accordance with QUDM section 4 the rational method was adopted to calculate the peak stormwater discharges for the site to compare both the pre-developed and post-developed scenario.

Parameters adopted for use in the rational method calculation are in accordance with the Queensland Urban Drainage Manual and are highlighted below.

**Table 4.3.1: Calculation of Initial Runoff Input Parameters**

<b>CALCULATION OF INITIAL RUNOFF - QUDM Section 4.00</b>			
	<b>PRE-DEV'T</b>	<b>POST-DEV'T</b>	
Catchment area (ha )	<b>0.412</b>	<b>0.412</b>	
Impervious area (ha)	<b>0.000</b>	<b>0.270</b>	<b>Ha</b>
Fraction impervious	0.0	66	%
Intensity - 1 hr, 10 yr (mm/hr)	<b>58.7</b>		<b>IFD:</b>
t <sub>c</sub> existing (min.)	12.00		
t <sub>c</sub> post-developed (min.)	5.00		

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 Lot 3, 92 Chambers Flat Road, Waterford West

**Table 4.3.2: Estimation of Peak Flows (Predeveloped)**

ESTIMATION OF PEAK FLOWS				
EY/ AEP %	Existing			
	C	I (mm/hr)	Q (m <sup>3</sup> /min)	Q (m <sup>3</sup> /s)
1 EY	0.56	78.4	3.01	0.050
0.5 EY	0.6	99.1	4.08	0.068
0.2 EY	0.67	125	5.75	0.096
<b>10 %</b>	<b>0.70</b>	<b>145</b>	<b>6.97</b>	<b>0.116</b>
<b>5 %</b>	<b>0.74</b>	<b>166</b>	<b>8.44</b>	<b>0.141</b>
2 %	0.81	194	10.79	0.180
<b>1 %</b>	<b>0.84</b>	<b>215</b>	<b>12.40</b>	<b>0.207</b>

**Table 4.3.3: Estimation of Peak Flows (Post Developed - unmitigated)**

ESTIMATION OF PEAK FLOWS				
AEP %	Post Dev't (To Tank)			
	C	I (mm/hr)	Q (m <sup>3</sup> /min)	Q (m <sup>3</sup> /s)
1 EY	0.62	101	4.30	0.072
0.5 EY	0.65	128	5.71	0.095
0.2 EY	0.73	162	8.12	0.135
<b>10 %</b>	<b>0.77</b>	<b>189</b>	9.99	<b>0.167</b>
<b>5 %</b>	<b>0.81</b>	<b>218</b>	12.13	<b>0.202</b>
2 %	0.89	257	15.71	0.262
<b>1 %</b>	<b>0.92</b>	<b>287</b>	18.13	<b>0.302</b>

**Table 4.3.4: Increase in Total Site Flows (Unmitigated)**

ARI	Increase (L/s)	Increase %
1 EY	21	42.6%
0.5 EY	27	39.9%
0.2 EY	39	41.2%
<b>10 %</b>	<b>50</b>	<b>43.4%</b>
<b>5 %</b>	<b>62</b>	<b>43.7%</b>
2 %	82	45.6%
<b>1 %</b>	<b>95</b>	<b>46.2%</b>

Peak stormwater discharges for the site for both the existing and developed scenarios are tabulated above. This peak stormwater discharge comparison was assessed for all ARI's up to the 100 year event. The highest yielding increase in peak discharge was 95l/s for the 1% AEP major storm event.

Refer to Appendix C for more detailed peak stormwater discharge calculations.

The results from these calculations show that if unmitigated the proposed development would result in an increase in peak stormwater flows due to an increase in the amount of impervious area and a decrease in the time of concentration.

## 4.4 ON SITE DETENTION

### Hydrologic Routing Analysis

In order to meet the Logan City Council and QUDM requirements of a 'no-worsening' affect to downstream stormwater infrastructure, the peak stormwater flows for the developed scenario are required to be reduced to that equal to or less than pre-developed conditions. This reduction in peak stormwater discharge is proposed to be met by providing an on-site stormwater detention system.

In accordance with QUDM, the hydraulic modelling was assessed within computer routing software (Drains) to assess the pre-development and post development cases to determine the volume of On Site Detention required to maintain pre-developed flows.

A breakdown of the pre, post and mitigated flows and proposed detention are shown in the following table.

**TABLE 4.4.1 – DRAINS PEAK DISCHARGE CALCULATIONS**

Catchment	ARI	AEP/EY	Pre-developed Flow Rates (m <sup>3</sup> /s)	Post-developed Flow Rates un-mitigated (m <sup>3</sup> /s)	Post-developed Flow Rates mitigated (m <sup>3</sup> /s)
SITE	1	1 EY	0.045	0.077	0.045
	2	0.5 EY	0.061	0.104	0.061
	5	0.2 EY	0.086	0.147	0.086
	10	10% AEP	0.106	0.180	0.106
	20	5% AEP	0.127	0.219	0.127
	50	2% AEP	0.161	0.275	0.161
	100	1% AEP	0.193	.315	0.193

**TABLE 4.4.2 – ON SITE DETENTION CALCULATIONS**

Catchment	ARI	AEP	ON SITE DETENTION (m <sup>3</sup> )
SITE	100	1%	73

This On Site Detention Storage is proposed to be provided within underground tanks.

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An orifice plate or weir arrangement will be required to be installed within the discharge control pit in order to restrict flows to that equal or less than existing.

The abovementioned stormwater detention requirements if installed correctly will sufficiently attenuate stormwater flows to that of predevelopment rate and will mitigate any potential adverse effects on downstream/neighbouring infrastructure or property in accordance with the objectives of this section.

Refer to Appendix E for peak stormwater Calculations & Drains Model Results.

Refer to 250654/SK01 \_Concept Stormwater Management Plan and 250654\_SK02 \_ Concept Stormwater Management Details for more information relating to the detention location and outlet configuration.

## **5.0 QUALIFICATIONS**

This Site Based Stormwater Management Plan for 92 Chambers Flat Road, Waterford West has been prepared specifically for this development as requested by AELC Development 2 Pty Ltd ATF AELC Developments 2 Unit Trust. Our analysis and approach is limited to the scope stated at the beginning of the report. As such third parties are not authorised to utilise this report without the written approval and advice from Cozens Regan Group Pty Ltd.

Cozens Regan Group Pty Ltd relied on the following supplied information in preparation of this report:

- Site Survey supplied by Level Surveying.
- Building Layout supplied by Raymond Design.
- Rainfall data for Loganholme supplied by the Bureau of Meteorology.

The accuracy of this report is dependent on the accuracy of the information supplied.

While Cozens Regan Group Pty Ltd has taken every precaution to ensure the accuracy of the assessment it should be noted that the catchment is ungauged and as such future observed flows may vary from that predicted.

**Proposed Childcare & Education Centre  
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## **REFERENCES**

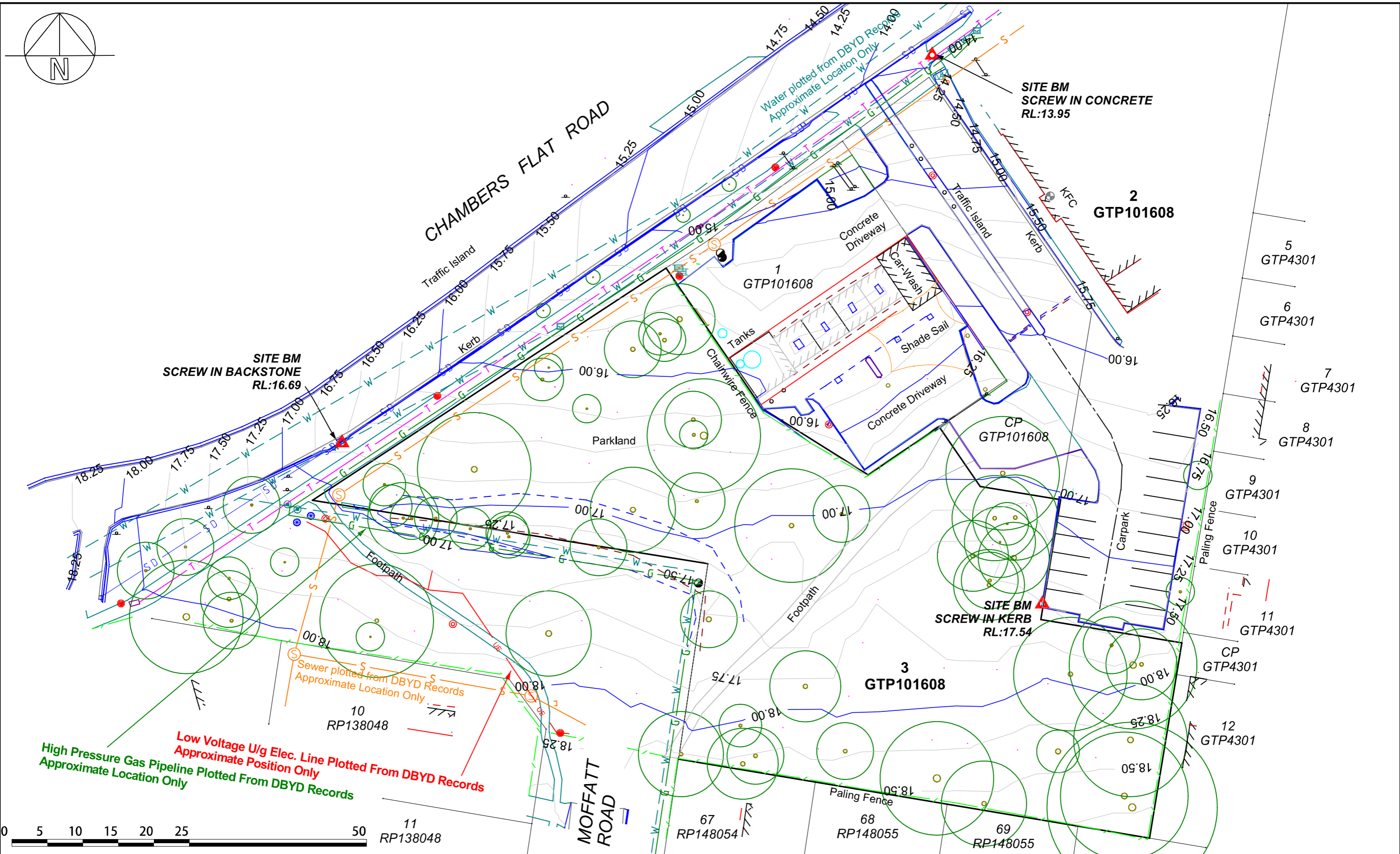
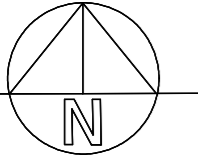
- The Logan City Council Planning Scheme
- Queensland Urban Drainage Manual 2017(Natural Resources and Water)
- Urban Stormwater – Queensland best practice environmental guidelines January 2009 (Environmental Protection Agency)

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AELC Development 2 Pty Ltd  
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Lot 3, 92 Chambers Flat Road, Waterford West



## Appendix A

CONTOUR AND DETAIL SURVEY



REVISION NOTES :-  
 Survey is on MGA2020 Meridian and co-ordinate system.  
 A ground Scale Factor has been applied.  
 If required, to convert to MGA 2020 Zone 56 Scale (Grid) apply a scale factor of 0.99950156

Horizontal Co-Ord System MGA2020 (Zone 56)		Contour Interval 0.25m	Level Datum AHD
Horizontal Co-Ord Origin: Corrs vide Nail in Conc.		Level Origin PM35600	Value 23.99m
Easting 511238.803	Northing 6938043.190	Surveyed SMK	Date 25/06/2025
Azimuth MGA2020	Field Book TSC5	Drawn SMK	Date 04/07/2025

**LEVELUP**  
 SURVEYING

E:ADMIN@LEVELUPSURVEYING.COM.AU  
 W:WWW.LEVELUPSURVEYING.COM.AU

Client	AELC Group Investments Pty Ltd
Computer File	C:\PROJECTS\1766

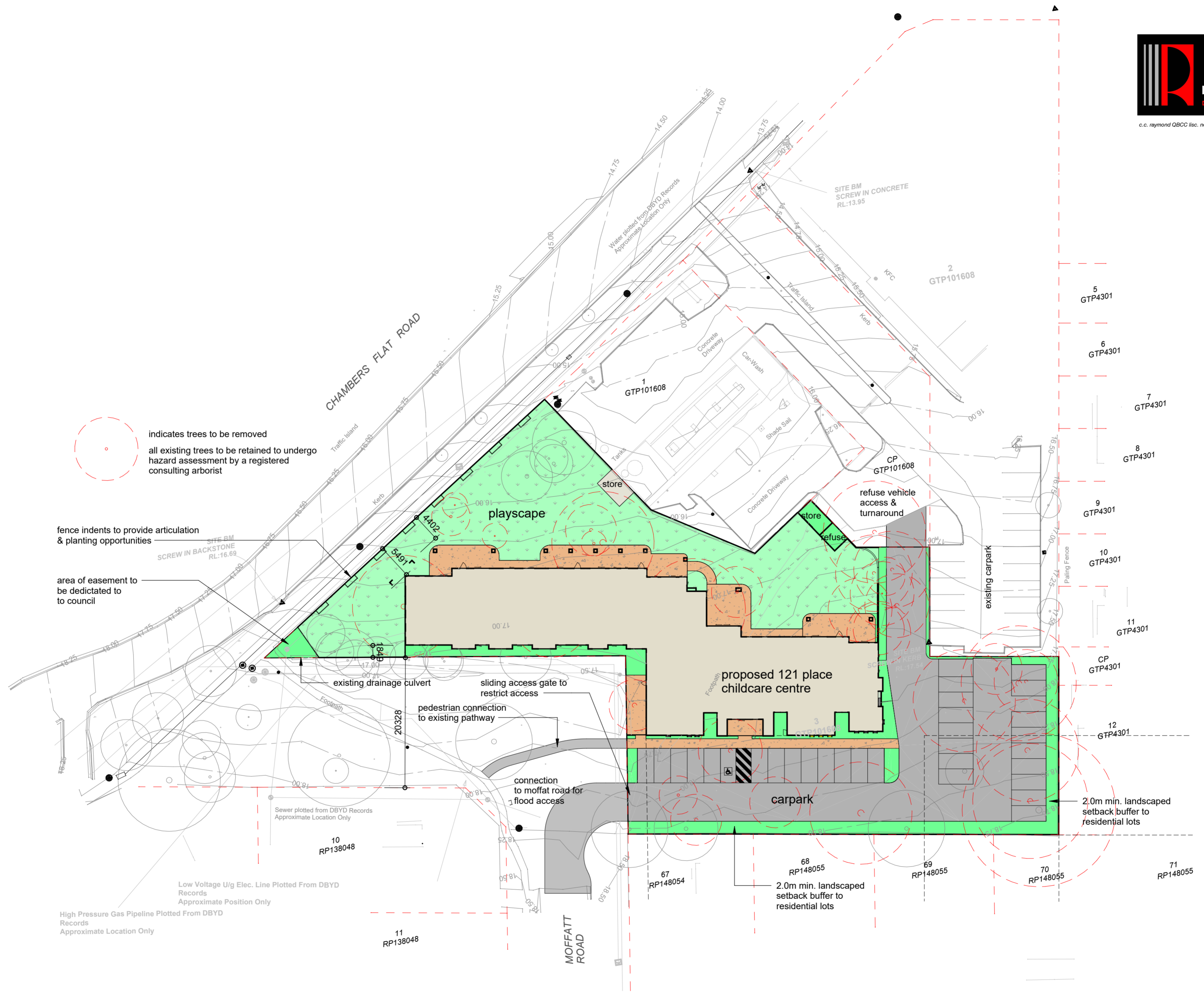
Project	-Contour and Detail Survey- 92 Chambers Flat Road				
Scale (A3)	Job No.	Locality	Drawing Number	Rev	Sheet
1:500	1766	Waterford-West	1766_D1	A	1 of 2

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ATF AELC Developments 2 Unit Trust  
Lot 3, 92 Chambers Flat Road, Waterford West



## Appendix B

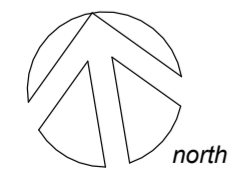
ARCHITECTURAL SITE PLAN



indicates trees to be removed  
 all existing trees to be retained to undergo hazard assessment by a registered consulting arborist

fence indents to provide articulation & planting opportunities  
 area of easement to be dedicated to council

Low Voltage U/g Elec. Line Plotted From DBYD Records Approximate Position Only  
 High Pressure Gas Pipeline Plotted From DBYD Records Approximate Location Only



overall site plan

0 12.5m 1:250 (A2)

note: this proposal is subject to site survey and development approval(s) from the relevant authority.  
 this drawing shall not be copied or used without authorisation and is protected by copyright.  
 these drawings are for sketch/DA only and not to be used for construction

proposed early learning college, lot 3, 92 chambers flat road, waterford west

## Appendix C

- Stormwater Management Plan 220454/SK01
- Stormwater Management Details 220454/SK02

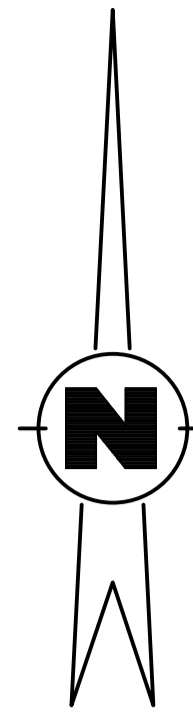
**IMPORTANT NOTE:**



ALL UNDERGROUND SERVICES SHOULD BE LOCATED ONSITE BY RELEVANT AUTHORITIES BEFORE ANY WORK IS COMMENCED.

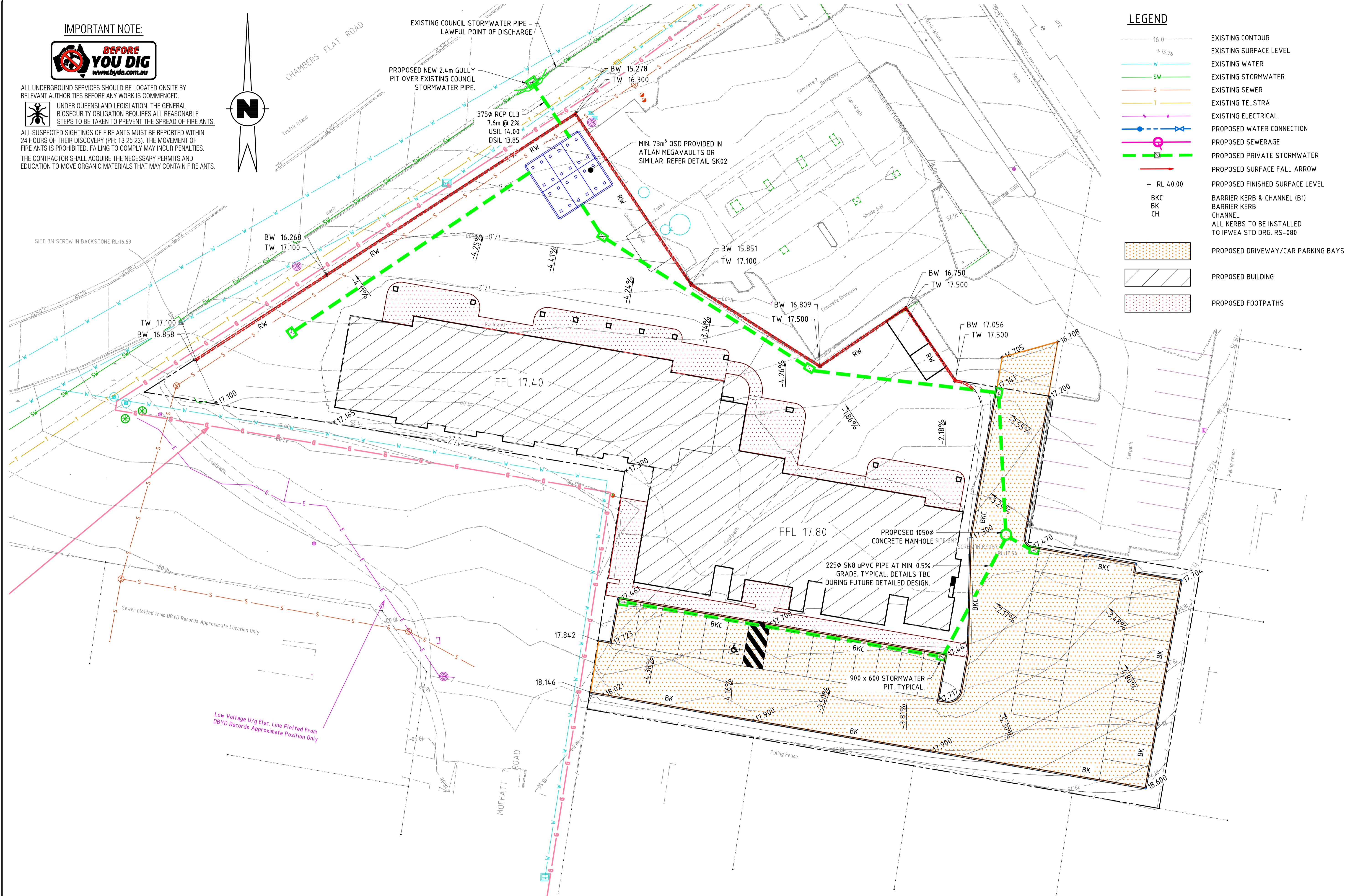
UNDER QUEENSLAND LEGISLATION, THE GENERAL BIOSECURITY OBLIGATION REQUIRES ALL REASONABLE STEPS TO BE TAKEN TO PREVENT THE SPREAD OF FIRE ANTS.

ALL SUSPECTED SIGHTINGS OF FIRE ANTS MUST BE REPORTED WITHIN 24 HOURS OF THEIR DISCOVERY (PH: 13 25 23). THE MOVEMENT OF FIRE ANTS IS PROHIBITED. FAILING TO COMPLY MAY INCUR PENALTIES. THE CONTRACTOR SHALL ACQUIRE THE NECESSARY PERMITS AND EDUCATION TO MOVE ORGANIC MATERIALS THAT MAY CONTAIN FIRE ANTS.



**LEGEND**

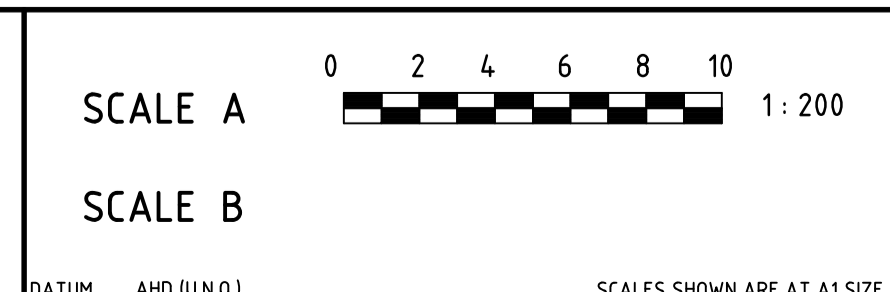
- - - - -16.0 - EXISTING CONTOUR
- + 15.76 - EXISTING SURFACE LEVEL
- W - EXISTING WATER
- SW - EXISTING STORMWATER
- S - EXISTING SEWER
- T - EXISTING TELSTRA
- +--- EXISTING ELECTRICAL
- +--- PROPOSED WATER CONNECTION
- +--- PROPOSED SEWERAGE
- +--- PROPOSED PRIVATE STORMWATER
- +--- PROPOSED SURFACE FALL ARROW
- + RL 4.0.00 - PROPOSED FINISHED SURFACE LEVEL
- BKC - BARRIER KERB & CHANNEL (B1)
- BK - BARRIER KERB
- CH - CHANNEL
- ALL KERBS TO BE INSTALLED TO IPWEA STD DRG. RS-080
- [Pattern] - PROPOSED DRIVEWAY/CAR PARKING BAYS
- [Pattern] - PROPOSED BUILDING
- [Pattern] - PROPOSED FOOTPATHS



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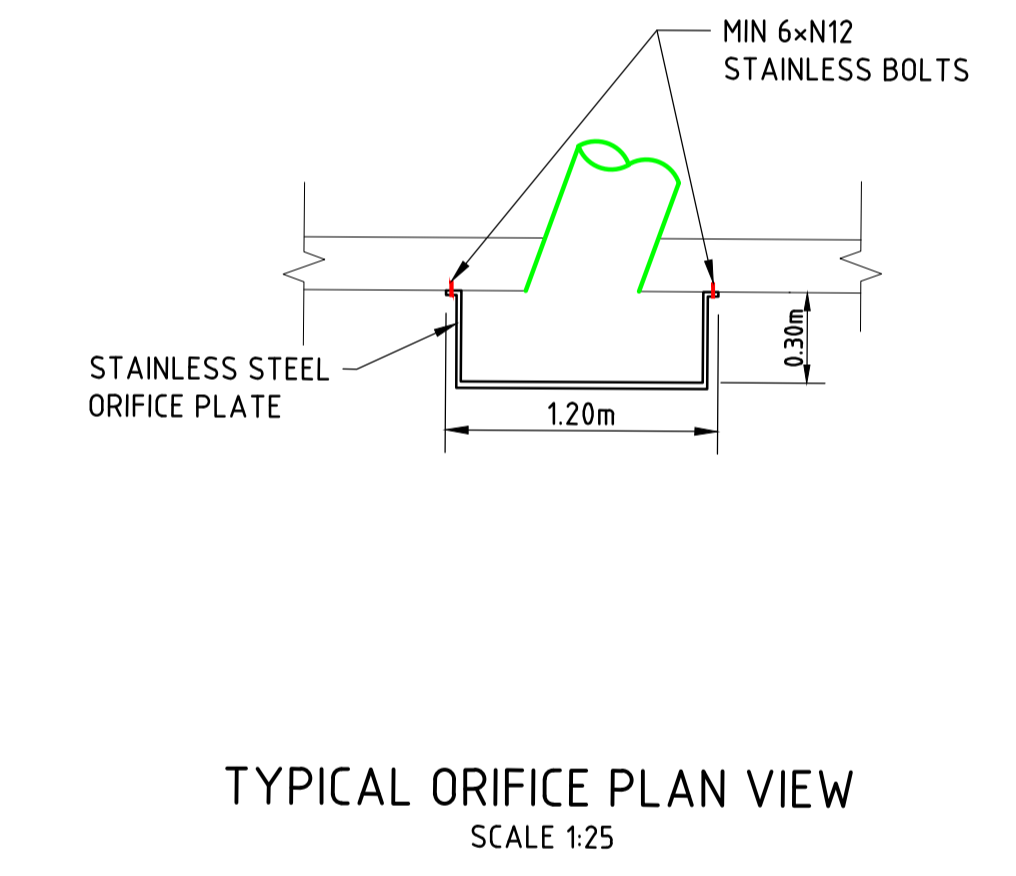
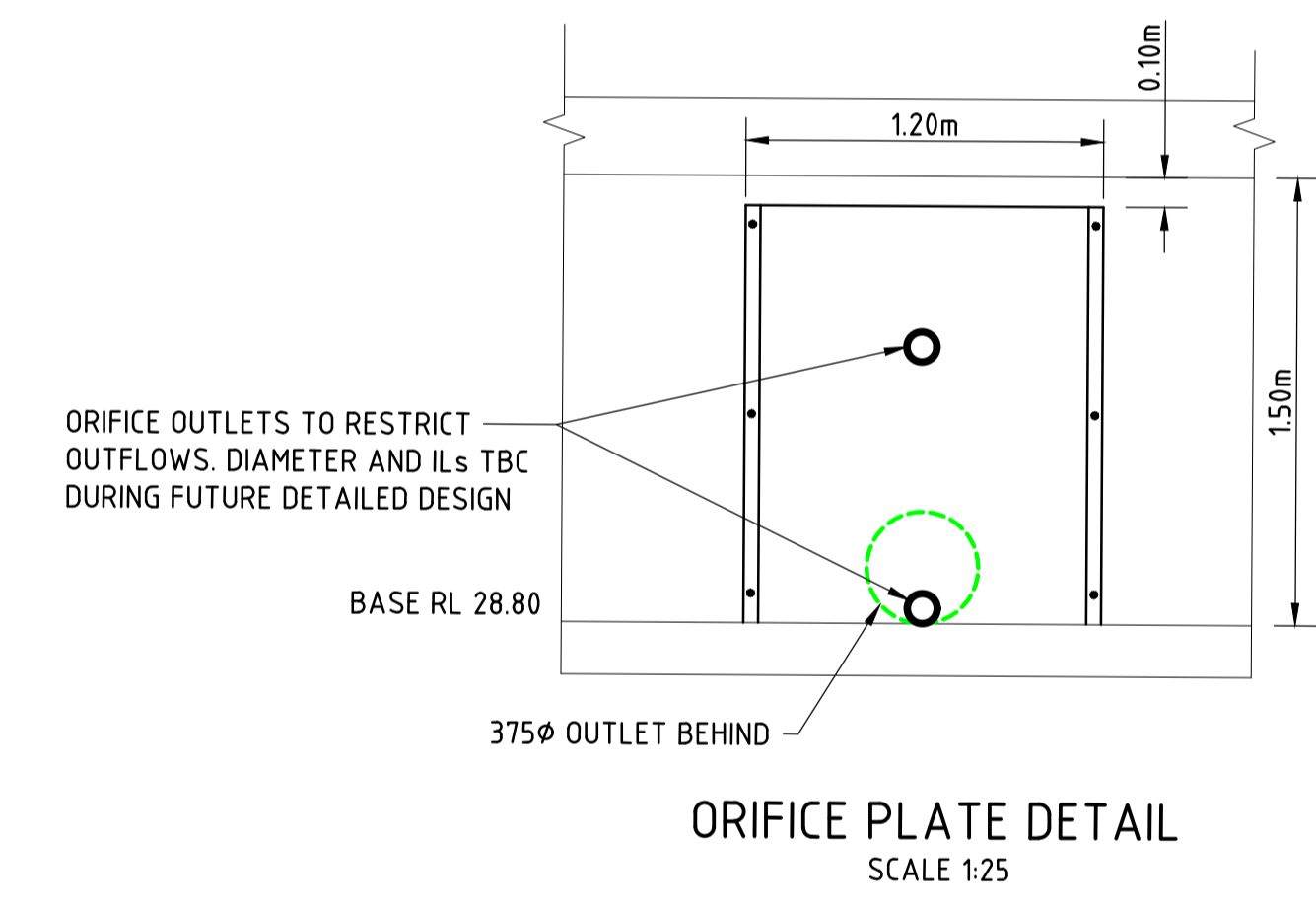
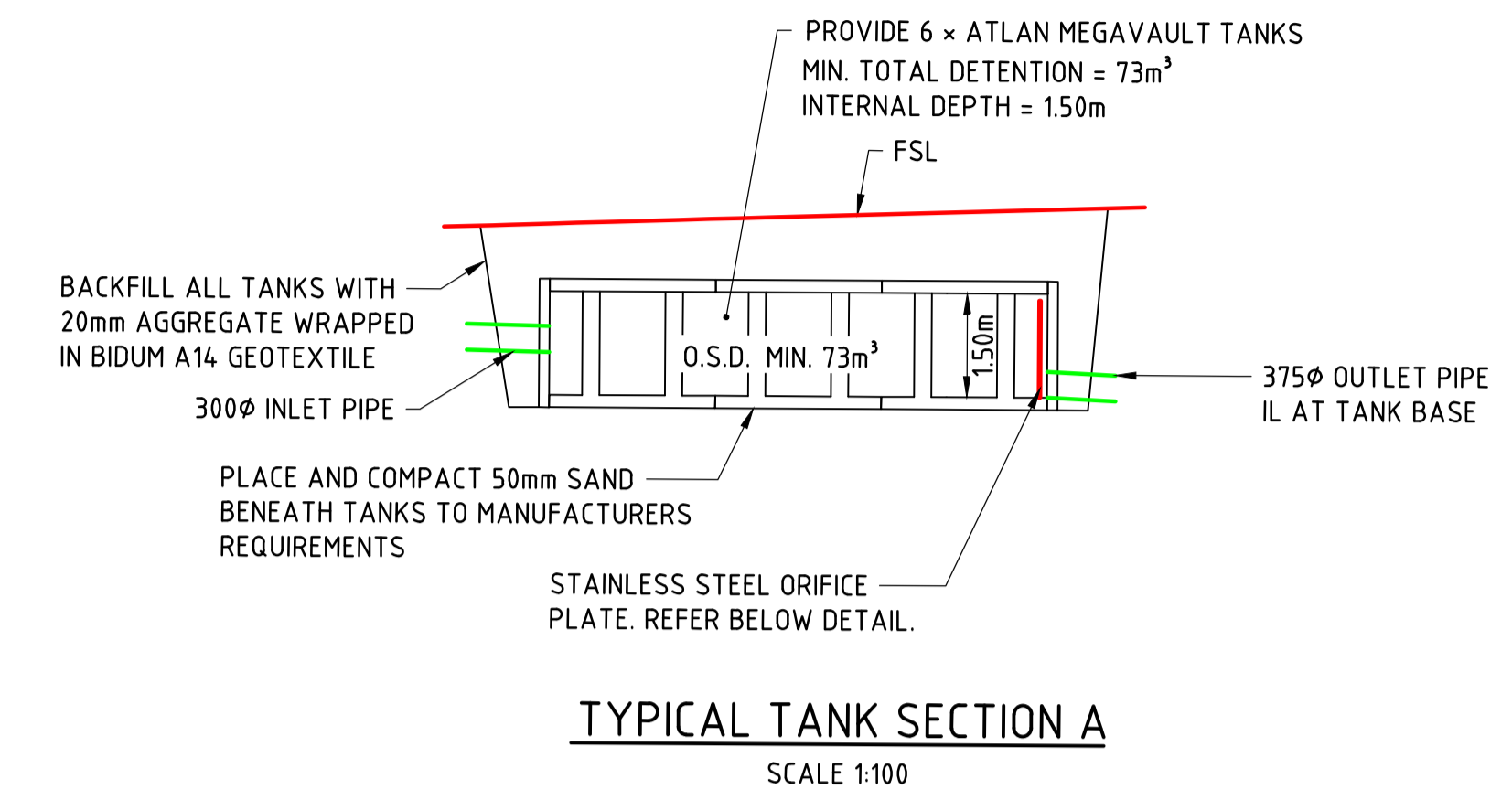
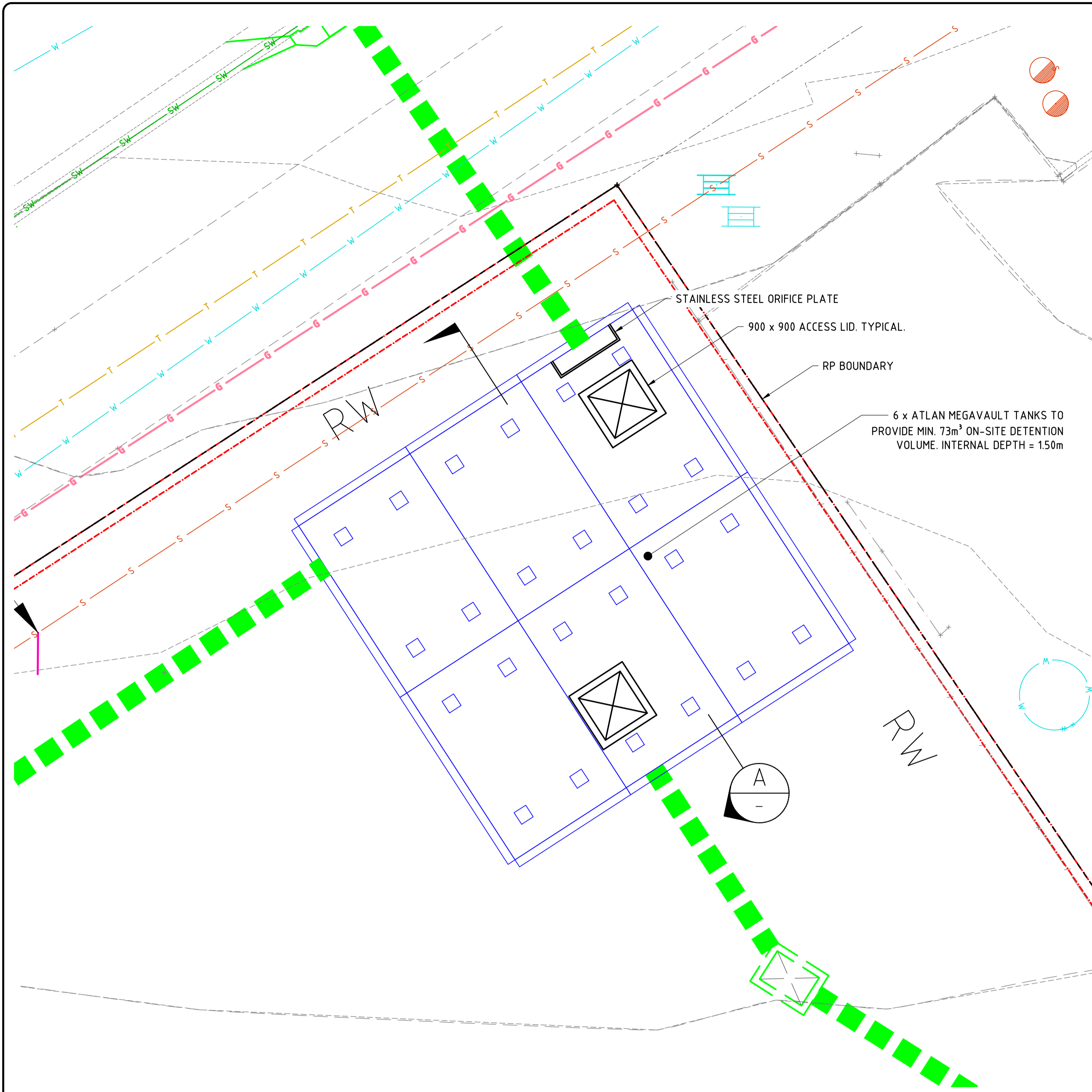
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CLIENT: AELC DEVELOPMENT 2 PTY LTD ATF

PROJECT: PROPOSED EARLY LEARNING CENTRE  
92 CHAMBERS FLAT ROAD, LOGAN RESERVE  
CONCEPT STORMWATER MANAGEMENT PLAN

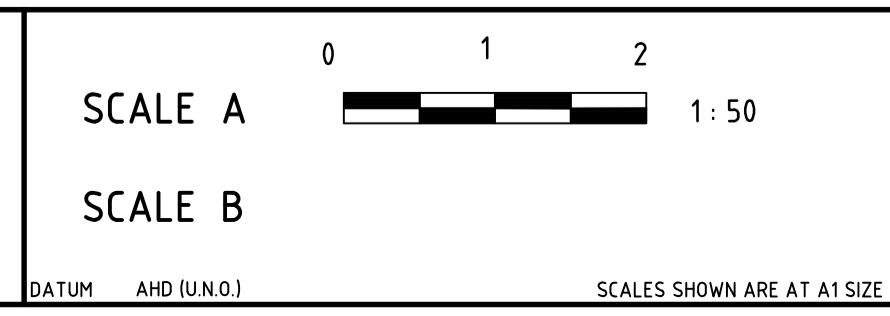
JOB NO: 250654  
DRAWING NO: SK01  
ISSUE: P1



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P1	02/26	PRELIMINARY ISSUE	Z.C.L.	T.W.N.

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APPROVED FOR AND ON BEHALF OF  
COZENS REGAN GROUP PTY LTD  
(RPEQ No 15735)

CLIENT  
**AELC DEVELOPMENT 2 PTY LTD ATF**

PROJECT  
**PROPOSED EARLY LEARNING CENTRE  
92 CHAMBERS FLAT ROAD, LOGAN RESERVE  
COCEPT STORMWATER MANAGEMENT DETAILS**

JOB NO.  
**250654**

DRAWING NO.  
**SK02**

ISSUE  
P1

Proposed Childcare & Education Centre  
AELC Development 2 Pty Ltd  
ATF AELC Developments 2 Unit Trust  
Lot 3, 92 Chambers Flat Road, Waterford West



## Appendix D

### RATIONAL METHOD STORMWATER CALCULATIONS

Project Number: 250654  
 Description: Stormwater Quantity Assessment  
 Designed: TWN 17/2/2026  
 Location: 92 CHAMBERS FLAT ROAD, WATERFORD WEST

PRE-DEVELOPMENT tc		Major	min
Standard Inlet time:			min
Friends Eqn:			
High point RL	18.5	m AHD	
Low point RL	15.3	m AHD	
Flow length:	78.0	m	
Site slope	4.1	%	
Hortons 'n'	0.035		
Overland flow travel time	12.05	min	
<b>Kerb and channel flow</b>			
High point RL		m AHD	
Low point RL		m AHD	
Flow length		m	
Slope		%	
Kerb travel time		min	
<b>Pipe flow</b>			
High point RL		m AHD	
Low point RL		m AHD	
Flow length		m	
Slope		m	
Pipe Size		mm	
n			
Q		m <sup>3</sup> /s	
Pipe travel time		min	
<b>Channel Flow</b>			
High point RL		m AHD	
Low point RL		m AHD	
Flow length		m	
Slope	#DIV/0!	m	
Hydraulic Radius	0.025	A/WP	
n	0.013		
V	#DIV/0!		
Channel Travel Time	#DIV/0!	min	
Calculated tc	12.05	min	
Adopted tc	12.0	min	

MAX 20 min. Refer QUDM 4.06.1

POST DEVELOPMENT tc		Major	min
Standard Inlet time:	5.0	min	
Friends Eqn:			
High point RL	18.6	m AHD	
Low point RL	17.4	m AHD	
Flow length:	27.0	m	
Site slope	4.4	%	
Hortons 'n'	0.013		
Overland flow travel time	3.09	min	
<b>Kerb and channel flow</b>			
High point RL		m AHD	
Low point RL		m AHD	
Flow length		m	
Slope		%	
Kerb travel time	#DIV/0!	min	
<b>Pipe flow</b>			
High point RL		m AHD	
Low point RL		m AHD	
Flow length		m	
Slope		m	
Pipe Size		mm	
n			
Q		m <sup>3</sup> /s	
Pipe travel time		min	
<b>Channel Flow</b>			
High point RL		m AHD	
Low point RL		m AHD	
Flow length		m	
Slope		m	
Hydraulic Radius		A/WP	
n			
V			
Channel Travel Time		min	
Calculated tc	5.00	min	
Adopted tc		min	

MAX 20 min. Refer QUDM 4.06.1

CALCULATION OF INITIAL RUNOFF - QUDM Section 4.00		
	PRE-DEV'T	POST-DEV'T
Catchment area (ha)	0.412	0.412
Impervious area (ha)	0.000	0.270
Fraction impervious	0.0	66%
Intensity - 1 hr, 10 yr (mm/hr)	58.7	IFD: logan
t <sub>c</sub> existing (min.)	12.00	
t <sub>c</sub> post-developed (min.)	5.00	

EY/AEP	Existing				Post development				Difference in runoff	
	C	I (mm/hr)	Q (m <sup>3</sup> /min)	Q (m <sup>3</sup> /s)	C	I (mm/hr)	Q (m <sup>3</sup> /min)	Q (m <sup>3</sup> /s)	Increase (L/s)	Increase %
1 EY	0.56	78.4	3.01	0.050	0.62	101	4.30	0.072	21	42.6%
0.5 EY	0.6	99.1	4.08	0.068	0.65	128	5.71	0.095	27	39.9%
0.2 EY	0.67	125	5.75	0.096	0.73	162	8.12	0.135	39	41.2%
10%	0.70	145	6.97	0.116	0.77	189	9.99	0.167	50	43.4%
5%	0.74	166	8.44	0.141	0.81	218	12.13	0.202	62	43.7%
2%	0.81	194	10.79	0.180	0.89	257	15.71	0.262	82	45.6%
1%	0.84	215	12.40	0.207	0.92	287	18.13	0.302	95	46.2%

APPROX. PEAK FLOWS LESS THAN Q1				
ARI	% of Q1	Existing (L/s)	Post dev't (L/s)	% inc
1 mth	25%	12.6	17.9	42.6%
2 mth	40%	20.1	28.7	42.6%
3 mth	50%	25.1	35.8	42.6%
4 mth	60%	30.1	43.0	42.6%
6 mth	75%	37.7	53.7	42.6%
9 mth	90%	45.2	64.5	42.6%
12 mths (Q1)	100%	50.2	71.7	42.6%

SUMMARY			CHECKED	COMMENT
Item	Existing	Proposed		
Area Ha	0.412	0.412		
Imperv A	0.000	0.270		
Fi %	0.0%	65.5%		
tc mins	12.00	5.00		
10yr 1hr I	58.7	58.7		
C10	0.70	0.77		
C100	0.84	0.92		
Q10 m <sup>3</sup> /s	0.116	0.167		
Q20 m <sup>3</sup> /s	0.141	0.202		
Q50 m <sup>3</sup> /s	0.180	0.262		
Q100 m <sup>3</sup> /s	0.207	0.302		
Initial Vs	Ave (m <sup>3</sup> )	Max Est Vs (m <sup>3</sup> )		
Q10	14.4	20.2		
Q20	17.6	24.6		
Q50	23.6	32.8		
Q100	27.6	38.2		

CHECKED:

### INITIAL DETENTION SIZING

Written by OC 17/07/2009

Based on QUDM 5.05 'Flood-Routing for Small Basins - Initial Sizing'

Updated by TWN Jan 2013

Flood Event	Discharge Coeff. of Runoff		Rainfall Intensity		Qi (m <sup>3</sup> /s)	Qo (m <sup>3</sup> /s) (allowable outlet flow)	Vi Approx. Inflow Volume (m <sup>3</sup> ) 4 * Qi * tc / 3	Vi =	Ratio r = (Qi-Qo)/Qi	INITIAL ESTIMATED Vs					
	Existing Cy	Post-D'ment Cy	Existing I mm/hr	Post-D'ment I mm/hr						Culp (1948)	Boyd (1989)	Carroll (1990)	Basha (1994)	Average Vs	Maximum Estimated Vs
										Vs m <sup>3</sup> /s	Vs m <sup>3</sup> /s	Vs m <sup>3</sup> /s	Vs m <sup>3</sup> /s		
1	0.56	0.62	78	101	0.072	0.050	29		0.30	4.6	8.6	4.8	6.6	6.1	8.6
2	0.6	0.65	99	128	0.095	0.068	38		0.29	5.7	10.9	6.0	8.3	7.7	10.9
5	0.67	0.73	125	162	0.135	0.096	54		0.29	8.3	15.8	8.8	12.1	11.3	15.8
10	0.7	0.77	145	189	0.167	0.116	67		0.30	10.8	20.2	11.4	15.5	14.4	20.2
20	0.74	0.81	166	218	0.202	0.141	81		0.30	13.2	24.6	13.9	18.9	17.6	24.6
50	0.81	0.89	194	257	0.262	0.180	105		0.31	17.8	32.8	18.7	25.3	23.6	32.8
100	0.84	0.92	215	287	0.302	0.207	121		0.32	20.8	38.2	21.9	29.5	27.6	38.2

Initial Sizing: QUDM (5.05.1)

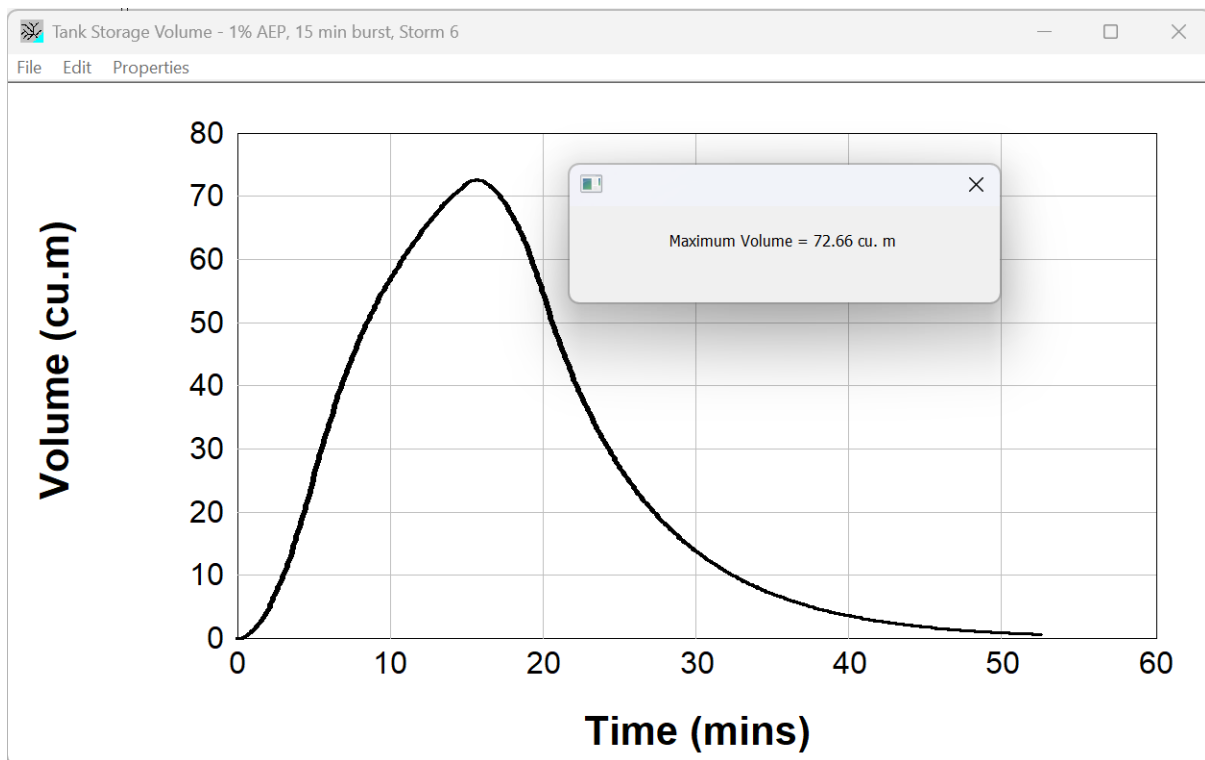
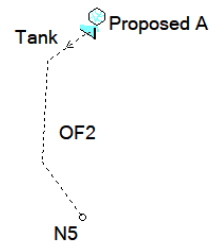
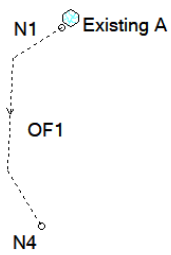
Note: Initial sizing in above table does not allow for any run-off routing or relationship between catchment size and time of concentration

Proposed Childcare & Education Centre  
AELC Development 2 Pty Ltd  
ATF AELC Developments 2 Unit Trust  
Lot 3, 92 Chambers Flat Road, Waterford West

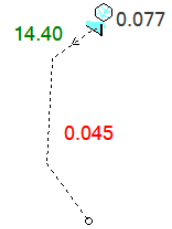
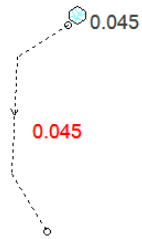


## Appendix E

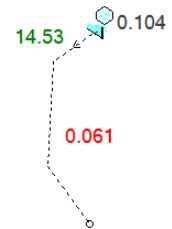
DRAINS MODEL RESULTS



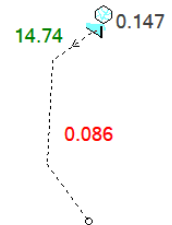
Results for median storm in critical 1EY ensembles  
using Lite hydraulic model.



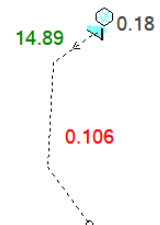
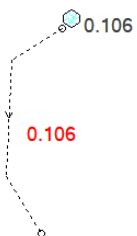
Results for median storm in critical 0.5EY ensembles  
using Lite hydraulic model.



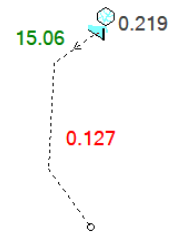
Results for median storm in critical 0.2EY ensembles  
using Lite hydraulic model.



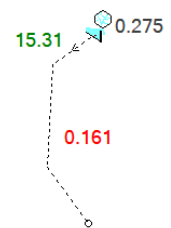
Results for median storm in critical 10% AEP ensembles  
using Lite hydraulic model.



Results for median storm in critical 5% AEP ensembles using Lite hydraulic model.



Results for median storm in critical 2% AEP ensembles using Lite hydraulic model.



Results for median storm in critical 1% AEP ensembles using Lite hydraulic model.

