STORMWATER REPORT

Unit Development
12 Fenwick Crescent
Derwent Park TAS 7009

260414 SR 25 E 52 - 47 Rev B

ALDANMARK
CONSULTING ENGINEERS

Lower Ground
199 Macquarie Street
Hobart TAS 7000

GPO Box 1248
Hobart TAS 7001

03 6234 8666

mail@aldanmark.com.au
www.aldanmark.com.au

ABN 79 097 438 714

14/04/2026

PROJECT INFORMATION

DOCUMENT TITLE	Stormwater Report - 25 E 52 - 47 Rev B
PROJECT LOCATION	12 Fenwick Crescent, Derwent Park TAS 7009
CLIENT ORGANISATION	Lyden Builders
CLIENT REFERENCE	Unit Development
CLIENT CONTACT/S	
ALDANMARK REFERENCE	25 E 52 - 47
ALDANMARK CONTACT/S	Giancarlo Rigoli (grigoli@vertotas.com.au)

DOCUMENT CONTROL

REVISION	DATE	REVISION DETAILS	PREPARED	VERIFIED	APPROVED
A	23/03/2026	Development Approval	GR		DE
B	14/04/2026	Development Approval	GR		DE

TABLE OF CONTENTS

TABLE OF FIGURES

1. INTRODUCTION

Verto have been engaged to provide a stormwater report for the proposed development at 12 Fenwick Crescent, Derwent Park.

The development must comply with the stormwater quantity requirements of the Glenorchy City Council Stormwater Management Policy and Planning RFI PLN-26-025 dated 3rd of March 2026:

- Stormwater runoff from the site will be no greater than pre-existing runoff for a 5% AEP rainfall event.
- The stormwater system must incorporate water sensitive urban design principles for the treatment and disposal of stormwater.

This report aims to demonstrate that the development at 12 Fenwick Crescent, Derwent Park complies with the above stormwater quality and quantity requirements.

2. SITE OVERVIEW

The subject site is currently undeveloped with grass and minimal vegetation as shown in Figure 1. No known stormwater lot connection has been located however a stormwater and sewer easement runs along the rear of the property.

Two residential units are proposed to be constructed on the subject site, as well as new concrete driveway and parking areas as. The increase in impervious area within the site is expected to increase the quantity of site stormwater runoff.

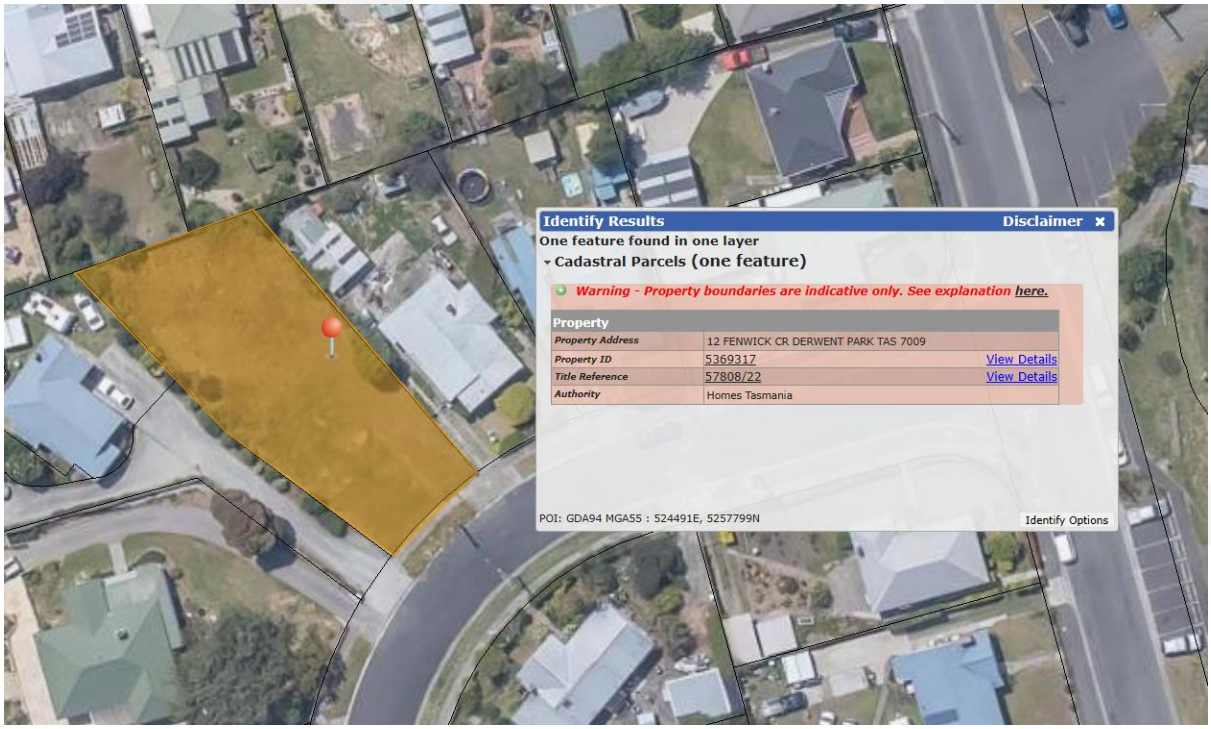

FIGURE 1: LOCALITY PLAN

GLENORCHY CITY COUNCIL
PLANNING SERVICES
APPLICATION No. : PLN-26-025
DATE RECEIVED: 17 April 2026

3. CATCHMENT MODEL

3.1 MODELLING APPROACH

DRAINS software was utilised to calculate the site runoff and to determine the size of the site's stormwater conveyance and detention infrastructure. A screen shot of the DRAINS model can be found in Appendix 6.2.

The Initial Loss / Continuing Loss (IL-CL) loss model was applied within DRAINS. The parameters for the loss model were retrieved from the ARR Data Hub website (https://data.arr-software.org/).

3.2 DESIGN RAINFALL DEPTHS

Rainfall depths for the model were retrieved from the Bureau of Meteorology website (http://www.bom.gov.au/water/designRainfalls/revised-ifd/). Temporal patterns, pre-burst rainfall depths and rural losses were sourced from the ARR Data Hub website.

TABLE 2: IFD DESIGN RAINFALL DEPTHS

Duration (minutes)	5% AEP (mm/hr)	2% AEP (mm/hr)	1% AEP (mm/hr)
1	138.6	169.2	194.4
5	84.84	102.36	116.4
10	63.6	78.6	91.2
20	44.1	54.3	63
25	38.88	47.52	54.72
30	34.8	42.4	48.8
45	27.07	36.7	37.2
60	22.7	27.1	30.7
90	17.8	21	25.53
120	15.05	17.65	19.65

3.3 STORM LOSSES

Rural initial and continuing losses were sourced from the ARR Data Hub website. Impervious area losses have been set as per advice in ARR 2019 Book 5 Chapter 3 Section 3.5.3.1.2. Table 3.3 shows the storm losses assumed in the DRAINS model.

TABLE 3: ASSUMED STORM LOSSES (ARR)

	Without Climate Change
Impervious Area Initial Losses (mm)	1
Impervious Area Continuing Losses (mm/hr)	0
Pervious Area Initial Losses (mm)	28
Pervious Area Continuing Losses (mm/hr)	3.7

3.4 SITE CATCHMENTS

The site catchments assumed for the initial loss – continuous loss calculations were determined from the architectural site plan prepared by Pinnacle dated February 2026. Table 4 below outlines the proportions of the effective impervious area (EIA), remaining impervious area (RIA) and pervious area (PA). The pre-development catchment was simulated as a single homogenous catchment. In the post-development scenarios, separate catchments were defined for each inlet pit, each unit roof area, and for the remaining area bypassing the site drainage system. Refer to Appendix 6.1 for the site catchment plan.

Times of concentration for all catchments were determined within DRAINS using the kinematic wave equation.

TABLE 4: SITE CATCHMENT BREAKDOWN

CATCHMENT	AREA (m^2)	AREA (ha)	EIA (%)	RIA (%)	PA (%)
Pre-development	770	0.077	55	0	45
Post -development	770	0.077	60	4	36

3.5 PROPOSED DEVELOPMENT PEAK OUTFLOWS

As per the Glenorchy City Councils Stormwater Management Policy, a factor of 0.55 (55%) with the remaining area being pervious was applied to the pre-development catchment to obtain the outflow. As per the Glenorchy City Council RFI dated 30th March 2026, a time of concentration (Tc) of 30 minutes is to be analysed for the site. As shown below in Table 5, the pre-development site runoff is 4 L/s.

TABLE 5: UNMITIGATED SITE RUNOFF

5% AEP	SITE RUNOFF (L/S)	CRITICAL 5% AEP STORM DURATION (MINS)
Site Discharge		
Pre-development	4	30
Post-development (Unmitigated)	10	5

4. MODEL RESULTS

4.1 PEAK FLOWS

The results from the DRAINS Analysis model show that the post-development site runoff 12 Fenwick Crescent, Derwent Park is increased by 6 l/s over pre-existing runoff quantities for a 5% AEP storm event as shown in Table 5. As per Glenorchy City Council's Planning RFI point 8, on site detention is required to reduce the post development peak runoff below the pre-development runoff.

Refer to Appendix 7 for box and whisker plots of pre & post development outflows.

4.2 ONSITE DETENTION

To reduce the post-development site outflow below pre-development quantities, an on-site detention system was modelled in DRAINS. The results of the model show that an end of line pit fitted with a 50mm orifice plate is required to reduce the post – development outflow to match the pre – development outflow.

4.3 ONSITE DETENTION OUTFLOW

TABLE 1: DETENTION MODEL SUMMARY - 5% AEP

5 % AEP	SITE RUNOFF (L/S)	CRITICAL STORM DURATION (MINS)
Site Discharge		
Pre-development	4	30
Post-development (Unmitigated)	10	5
Post-development with OSD	4	20

5. CONCLUSION

This report has demonstrated that the proposed development at 12 Fenwick Crescent, Derwent Park complies with the stormwater quantity conditions of Glenorchy City Council's planning RFI and Stormwater Management Policy.

Note:

- No assessment has been undertaken of Council's stormwater infrastructure and its capacity.
- This report assumes the Council stormwater main has capacity for the pre-development peak discharge.
- It is the responsibility of Council to assess their infrastructure and determine the impact (if any) of altered inflows into their stormwater network.

Please contact me at grigoli@vertotas.com.au if you require any additional information.

Yours faithfully,

Giancarlo Rigoli
Graduate Civil / Structural Engineer

6. APPENDIX A

6.1 SITE CATCHMENT PLAN

FIGURE 2: SITE CATCHMENT PLAN

6.2 DRAINS MODEL

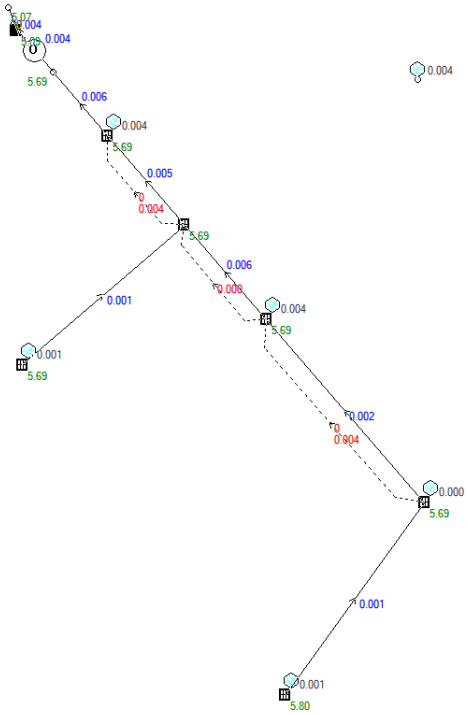

FIGURE 3: DRAINS MODEL

7. APPENDIX B – BOX AND WHISKER PLOTS

7.1 PRE DEVELOPMENT

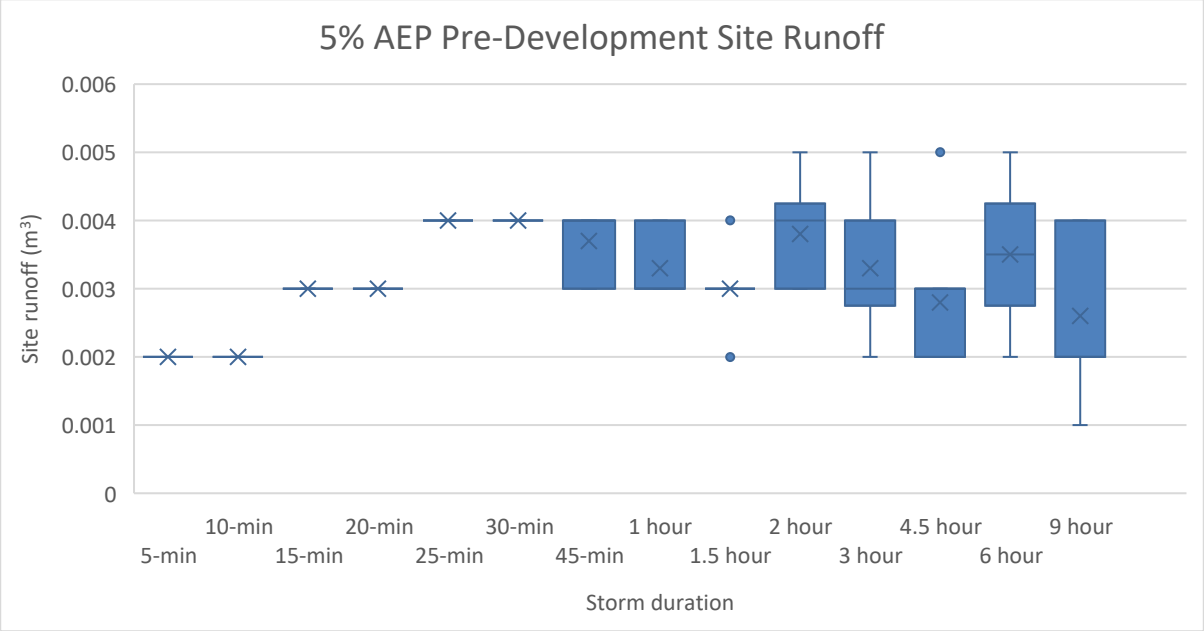

FIGURE 4: PRE-DEVELOPMENT 5% AEP OUTFLOW

7.2 POST DEVELOPMENT

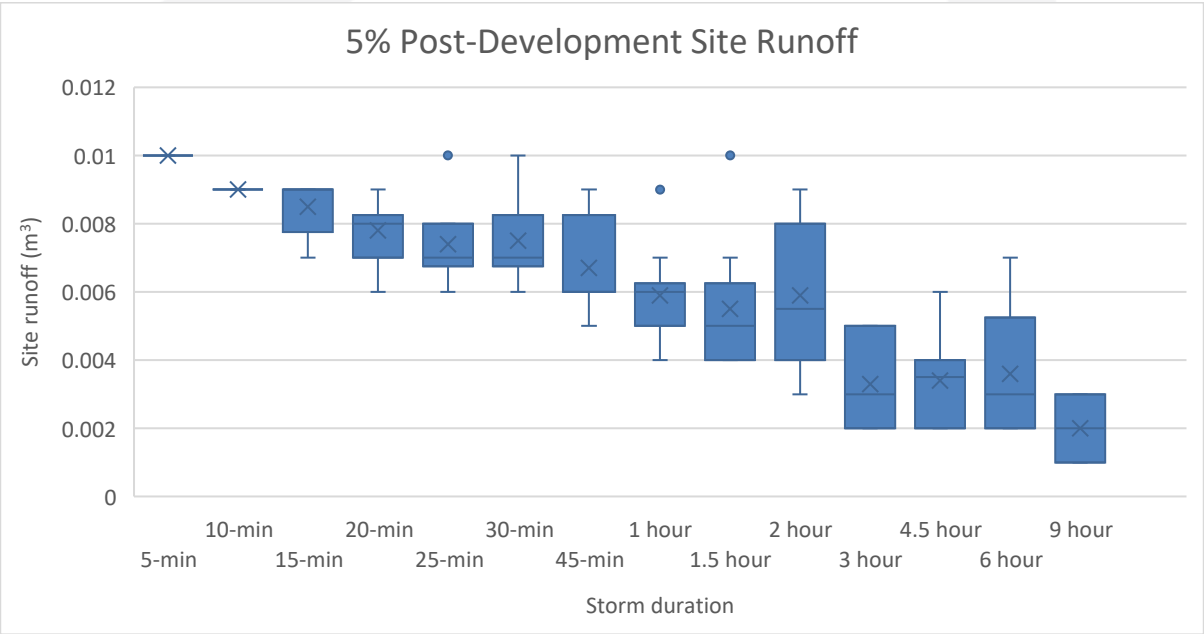

FIGURE 5: POST-DEVELOPMENT 5% AEP OUTFLOW - UNMITIGATED

14/04/2026

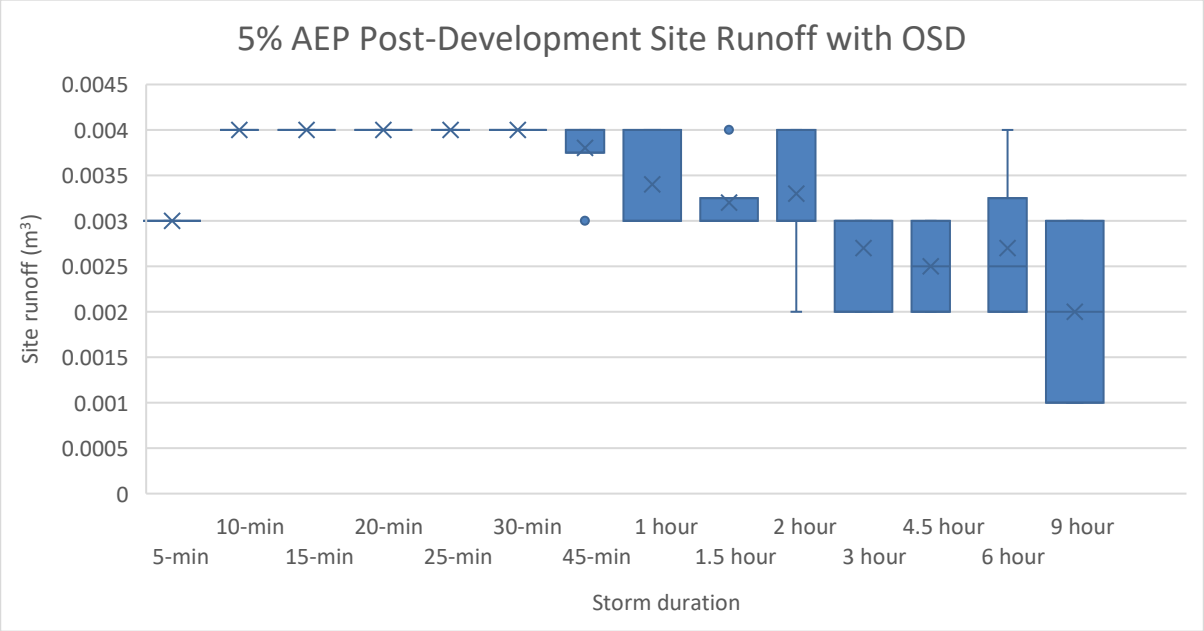

FIGURE 6: POST-DEVELOPMENT 5% AEP OUTFLOW - MITIGATED