DELIVERING FOR QUEENSLAND | Queensland Government

Department of
State Development,
Infrastructure and Planning

SARA reference: 2508-47651 SRA
Council reference: D/102-2025
Applicant reference: 250702

20 October 2025

Chief Executive Officer
Rockhampton Regional Council
enquiries@rrc.qld.gov.au

Attention: Michelle Mackay

Dear Sir/Madam

SARA referral agency response - 1 Barton Court, Parkhurst

(Referral agency response given under chapter 3, part 3, division 1, section 56 of the *Planning Act 2016*)

The development application described below was confirmed as properly referred by the State Assessment and Referral Agency (SARA) on 18 August 2025.

Response

Outcome:	Referral agency response – with conditions
Date of response:	20 October 2025
Conditions:	The conditions in **Attachment 1** must be attached to any development approval
Advice:	Advice to the applicant is in **Attachment 2**
Reasons:	The reasons for the referral agency response are in **Attachment 3**

Development details

Description:	Development Permit	Material change of use for a Warehouse (Self Storage Facility)

South East Queensland (North) regional office
Level 4, Foundation Place 3 South Sea Islander Way, Maroochydore
PO Box 1129, Maroochydore QLD 4558

SARA role:	Referral agency
SARA trigger:	Schedule 10, Part 9, Division 4, Subdivision 1, Table 1, Item 1 (Planning Regulation 2017) Development application impacting on state transport infrastructure Schedule 10, Part 9, Division 4, Subdivision 1, Table 1, Item 1 (Planning Regulation 2017) Development application for a material change of use within 25m of a state-controlled road
SARA reference:	2508-47651 SRA
Assessment manager:	D/102-2025
Street address:	1 Barton Court, Parkhurst
Real property description:	Lot 1 on SP326319
Applicant name:	Middle Pond Pty Ltd c/- ADAMS + SPARKES Town Planning
Applicant contact details:	admin@astpd.com.au
Human Rights Act 2019 considerations:	A consideration of the 23 fundamental human rights protected under the *Humans Right Act 2019* has been undertaken as part of this decision. It has been determined that this decision does not limit human rights.

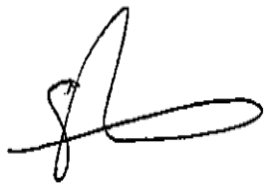
Representations

An applicant may make representations to a concurrence agency, at any time before the application is decided, about changing a matter in the referral agency response (chapter 1, part 7, section 30 Development Assessment Rules). Copies of the relevant provisions are in **Attachment 4**.

A copy of this response has been sent to the applicant for their information.

For further information please contact Rosanna Nobile, Planning Officer, on (07) 5352 9777 or via email SEQNorthSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely



###Secondary2###
A/ Manager Planning

cc Middle Pond Pty Ltd c/- ADAMS + SPARKES Town Planning, admin@astpd.com.au

enc Attachment 1 - Referral agency conditions
Attachment 2 - Advice to the applicant

Attachment 3 - Reasons for early referral agency response
Attachment 4 - Representations about a referral agency response provisions
Attachment 5 - Documents referenced in conditions

Attachment 1—Referral agency conditions

(Under chapter 3, part 3, division 1, section 56(1)(b)(i) of the *Planning Act 2016* the following conditions must be attached to any development approval relating to this application) (Copies of the documents referenced below are found at Attachment 5)

No.	Conditions	Condition timing
Development Permit: Material change of use		
Schedule 10, Part 9, Division 4, Subdivision 2, Table 4, Item 1 — State transport corridors and future State transport corridors — The chief executive administering the *Planning Act 2016* nominates the Director-General of the Department of Transport and Main Roads to be the enforcement authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following condition:		
1.	Carry out the stormwater management of the development generally in accordance with sections 3.1 and 3.2 of the Stormwater Management Plan prepared by Dileigh dated 28/08/2025, reference D25.176-RP01, revision B (as amended in red by SARA).	At all times

Attachment 2—Advice to the applicant

General advice	
1.	Terms and phrases used in this document are defined in the *Planning Act 2016*, its regulation or the State Development Assessment Provisions (SDAP) (version 3.3). If a word remains undefined it has its ordinary meaning.

Attachment 3—Reasons for referral agency response

(Given under chapter 3, part 3, division 1, section 56(7) of the *Planning Act 2016*)

The reasons for the SARA's decision are:

- The development permit for a material change of use for a Warehouse (Self Storage Facility) at 1 Barton Court, Parkhurst formally described as Lot 1 on SP326319.
- The proposed development has triggered referral for works within 25m of a state-controlled road and impacting on state transport infrastructure.
- SARA assessed the development against the following codes of the State Development Assessment Provisions (SDAP), version 3.3:
    - State code 1: Development in a state-controlled road environment.
    - State code 6: Protection of state transport networks
- The development complies with the assessment benchmarks of State code 1 of SDAP in that the development:
    - does not adversely impact the structural integrity or physical condition of the state controlled road
    - does not adversely impact the function and efficiency of the state controlled road
    - maintains access to active transport infrastructure.
- The development complies with the assessment benchmarks of State code 6 of SDAP in that the development:
    - maintains the operating performance of the transport network

Material used in the assessment of the application:

- the development application material and submitted plans
- *Planning Act 2016*
- Planning Regulation 2017
- the SDAP (version 3.3), as published by SARA
- the Development Assessment Rules
- SARA DA Mapping system
- section 58 of the *Human Rights Act 2019*

Attachment 4—Representations about a referral agency response provisions

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Attachment 5—Documents referenced in conditions

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Development Assessment Rules—Representations about a referral agency response

The following provisions are those set out in sections 28 and 30 of the Development Assessment Rules[1] regarding **representations about a referral agency response**

Part 6: Changes to the application and referral agency responses

28 Concurrence agency changes its response or gives a late response

28.1. Despite part 2, a concurrence agency may, after its referral agency assessment period and any further period agreed ends, change its referral agency response or give a late referral agency response before the application is decided, subject to section 28.2 and 28.3.

28.2. A concurrence agency may change its referral agency response at any time before the application is decided if—

(a) the change is in response to a change which the assessment manager is satisfied is a change under section 26.1; or

(b) the Minister has given the concurrence agency a direction under section 99 of the Act; or

(c) the applicant has given written agreement to the change to the referral agency response.[2]

28.3. A concurrence agency may give a late referral agency response before the application is decided, if the applicant has given written agreement to the late referral agency response.

28.4. If a concurrence agency proposes to change its referral agency response under section 28.2(a), the concurrence agency must—

(a) give notice of its intention to change its referral agency response to the assessment manager and a copy to the applicant within 5 days of receiving notice of the change under section 25.1; and

(b) the concurrence agency has 10 days from the day of giving notice under paragraph (a), or a further period agreed between the applicant and the concurrence agency, to give an amended referral agency response to the assessment manager and a copy to the applicant.

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1 Pursuant to Section 68 of the *Planning Act 2016*

2 In the instance an applicant has made representations to the concurrence agency under section 30, and the concurrence agency agrees to make the change included in the representations, section 28.2(c) is taken to have been satisfied.

Part 7: Miscellaneous

30 Representations about a referral agency response

30.1. An applicant may make representations to a concurrence agency at any time before the application is decided, about changing a matter in the referral agency response.[3]

[3] An applicant may elect, under section 32, to stop the assessment manager's decision period in which to take this action. If a concurrence agency wishes to amend their response in relation to representations made under this section, they must do so in accordance with section 28.

DILEIGH

CIVIL / STRUCTURAL DESIGN & PROJECT MANAGEMENT

PROPOSED SELF STORAGE FACILITY
1 BARTON COURT, PARKHURST

STORMWATER MANAGEMENT PLAN

FOR MIDDLE POND PTY LTD

D25.176-RP01

MIDDLE POND PTY LTD

STORMWATER MANAGEMENT PLAN

PROPOSED SELF STORAGE FACILITY
1 BARTON COURT, PARKHURST

Document History & Status

REVISION	DATE	ISSUED TO	DESCRIPTION	BY	APPROVED
A	23.07.2025	M Clarke – Parker Property Group	Original Issue – For lodgement	AML	TL
B	28.08.2025	M Clarke – Parker Property Group	Amended post-dev treatments	AML	TL

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Date: 28/08/2025
Reference: D25.176-RP01

1. Introduction

This report was prepared for Middle Pond Pty Ltd in support of a proposed development at 1 Barton Court, Parkhurst. This report should be read in conjunction with the overall application relating to this project. The proponent is seeking approval to develop the site with a self storage facility, which shall be constructed over two stages:

- **Stage 1:** Construction of six (6) storage shed structures (Buildings A – F) and associated landscaping / concrete access
- **Stage 2:** Conversion of Buildings B & C and Buildings D & F into two (2) enclosed multi-level storage buildings

The land subject to this application is described as 1 SP326319 and has an area of 1 hectare (10,000m^2).

Stormwater calculations were undertaken in accordance with the Rational Method as per *Queensland Urban Drainage Manual (QUDM)* 4th edition (2018).

2. Existing Stormwater Conditions

2.1. Surrounding Underground Infrastructure

An existing 375mm diameter inter-allotment drainage inlet was observed in the south-west corner of the allotment, servicing the subject site and two undeveloped allotments to the west (2 SP326319 and 7 SP326319) prior to discharging to an existing detention / bio-retention basin located adjacent the Barton Court cul-de-sac head (8 SP326319). The location of the interallotment drainage is indicated on drawings in **Appendix A.**

The past approval for the surrounding industrial precinct (Rockhampton Regional Council [RRC] Ref D/137-2020) were reviewed as part of this assessment. While calculation tables for the inter-allotment drainage could not be found, the approved stormwater layout (Siris and Associates Consulting Engineers [Siris] Plan Number SCE-115-013, stamped 9 July 2021) denotes the inter-allotment drainage line through Lots 1, 2 and 7 as roof water infrastructure.

In absence of fraction impervious (Fi) and time of concentration (Tc) assumed by Siris and due to inconsistencies in the stormwater catchments, it is appropriate to consider the capacity of the inter-allotment drainage line to determine allowable inflows. Given a longitudinal grade of 1% as per detailed site survey and Siris design levels, the approximate inter-allotment pipe capacity is approximately 180 L/s based on QUDM Chart A1-2.

Therefore, it is appropriate to assume a maximum of 60L/s per lot discharging to the inter-allotment drainage line. This corresponds to 1,000m^2 of roof area per lot and caters for up to a 5% AEP (1 in 20 year ARI) design storm event where the Tc is 5 minutes in accordance with QUDM Table 4.6.3.

ASSUMED INTER-ALLOTMENT DRAINAGE FLOWS (PER LOT)

Development Area **0.100** ha

Event AEP	**C**	**I**	**A**	**Q**
%	coefficient	mm/hr	ha	m^3/s
63.2	0.720	115.0	0.1	0.0230
50	0.765	128.0	0.1	0.0272
20	0.855	170.0	0.1	0.0404
10	0.900	200.0	0.1	0.0500
5	0.945	229.0	0.1	**0.0601**

Fi	1.000
$^1I_{10}$ (mm/hr)	65.1
TC (minutes)	5
C_{10}	0.900

From QUDM Table 4.5.3

2.2. Surrounding Above Ground Infrastructure

2.2.1. Existing Swale Maximum Capacity

A large, grassed swale was observed directly south of the development site and is presented in Figure 1. It is noted that this swale was constructed as part of the Rockhampton North Access Upgrades (RNAU) project.

In proximity to the development site, the channel is observed between a cross-drainage outlet structure north-east of the site adjacent to Yaamba Road, and a cross-drainage inlet structure south-west of the site adjacent to Boundary Road. Multiple outlet structures discharging to the swale were observed. The surveyed section of the channel exhibits a longitudinal slope of 0.3%.

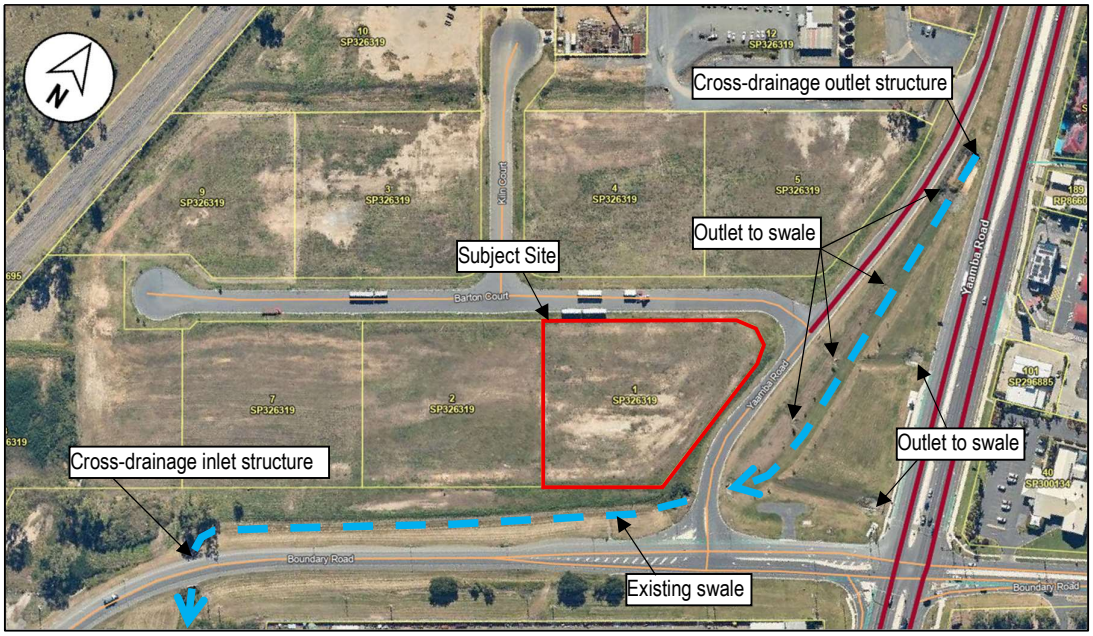


Figure 1: Existing Swale in proximity to site (Queensland Globe)

Analysis was undertaken in Autodesk Hydraflow Express Extension for the typical swale cross-section south of the development site. The typical geometry and maximum capacity are summarised in Table 1. A detailed output report is attached in **Appendix B.**

Table 1: Existing swale maximum capacity and geometry

Feature	Result
Shape	Trapezoidal
Base Width	2.0m (min)
Depth	1.8m
Side Slope	1 in 4
Longitudinal Slope	0.3%
Mannings value	0.030
Peak capacity	29.91 m^3/s

2.2.2. Upstream Discharge to Existing Swale

While design input information (assumed catchment areas, Fi, Tc, etc.) for the channel was unavailable at the time of this report, the remaining capacity in the swale can be assessed based on the approximated upstream catchment(s) and detailed survey information for the swale in proximity to the site.

A significant upstream catchment was observed, with existing stormwater infrastructure shown on records to be discharging to the swale. Included in the catchment are the following sub-catchments:

- A **commercial centre**, corresponding to a **Fi of 1.0** based on aerial imagery
- **Low density residential lots** (typically 600m^2 – 750m^2), corresponding to a **Fi of 0.75** as per Capricorn Municipal Development Guidelines (CMDG) Table D05.06.1
- **Large lots currently occupied by caravan park / accommodation** (typically 4 hectares), corresponding to an approximate **Fi of 0.25** based on aerial imagery
- **Road corridors**, inclusive of local government, state-controlled roads and a half-road catchment from Boundary Road, with a typical **Fi of 0.8** based on aerial imagery
- **A portion 5SP326319** (allotment opposite the development site), which shall be assumed to be developed as an industrial site with a **Fi of 0.9** as per CMDG Table D05.06.1

A sample of the upstream stormwater infrastructure taken from RRC Interactive Mapping is presented in Figure 2, represented in green lines (pipes) and squares / circles (inlets / access chambers respectively). More detailed catchment information is presented on drawings in **Appendix A.**

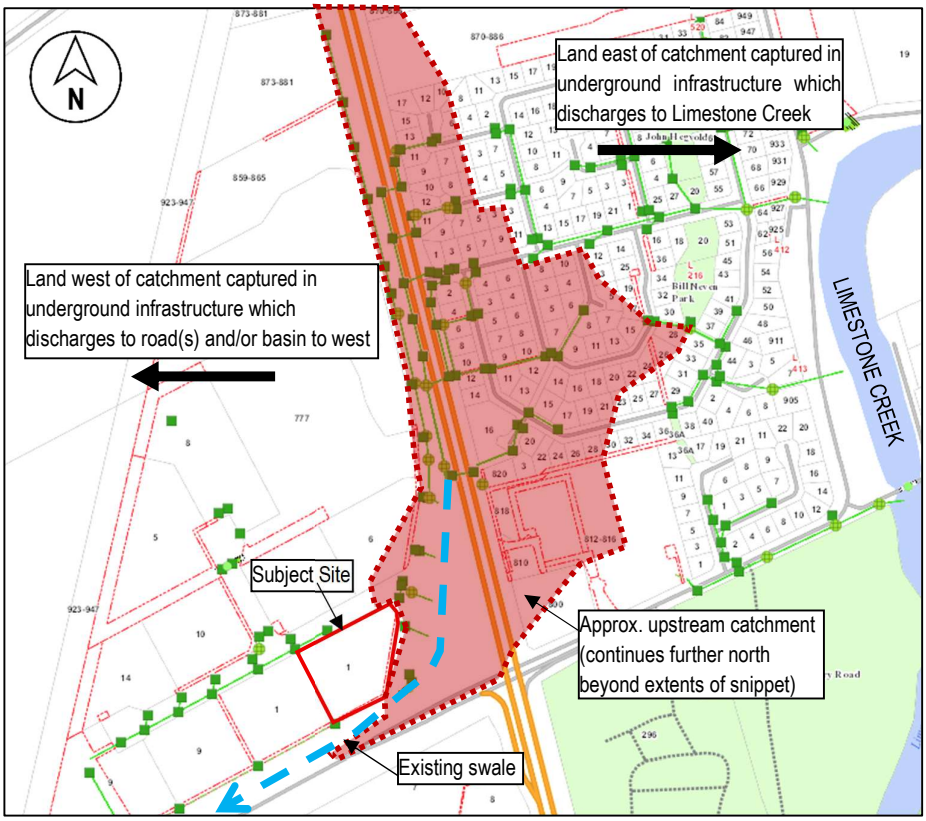


Figure 2: Upstream Infrastructure (RRC Interactive Mapping)

Given a total upstream catchment area of approximately **18.7 hectares** and the respective area for each sub-catchment, an **overall Fi of 0.75** was adopted for analysis.

Only Lidar information for the upstream catchment was available at the time of this report, which appeared to not be updated to include the RNAU works. In lieu of detailed surface elevation data and omission of external stormwater network modelling, which is beyond the scope of this report, it is considered appropriate to adopt a Tc based on a combination of standard inlet times, estimated pipe flow and estimated channel flow.

Given a typical slope at the top of each catchment of less than 3%, a standard inlet time of **15 minutes was adopted for the overland flow component(s)** as per QUDM Table 4.6.2.

The desktop review of the underground stormwater network was conducted. Given the length of the main network segments and assuming moderate slopes, a Tc of **5 minutes for the pipe flow component(s)** was considered appropriate based on QUDM Figure 4.5.

Assuming a 0.3% longitudinal slope for the upstream swale section (between the Yaamba Road cross-drainage and upstream pipe outlet), an approximate length of 220m and a multiplier of 4 as per QUDM Technical Note for Figure 4.5, a Tc of **36 minutes for the channel flow component** was considered appropriate.

Therefore, **an overall Tc of 56 minutes** for the fully engaged upstream catchment was adopted.

A corresponding C_{10} value of 0.838 (From QUDM Table 4.5.3) was adopted in accordance with QUDM Table 4.5.3.

Utilising the relevant rainfall intensities, the following discharges from site were calculated:

UPSTREAM CATCHMENT TO EXISTING SWALE

Development Area **18.2** ha

Event AEP	C	I	A	Q
%	coefficient	mm/hr	ha	m^3/s
63.2	0.670	38.9	18.7	1.3538
50	0.712	43.3	18.7	1.6011
20	0.796	57.8	18.7	2.3888
10	0.838	68.1	18.7	2.9626
5	0.879	78.5	18.7	3.5858
2	0.963	92.8	18.7	4.6427
1	1.000	104.0	18.7	5.4022

In accordance with QUDM Eqn. 4.3

Fi	0.750
$^1I_{10}$ (mm/hr)	65.1
TC (minutes)	56
C_{10}	0.838

From QUDM Table 4.5.3

The resulting peak flows are expected to be well below the maximum capacity of the swale portion downstream of the development site and are expected to correspond to a flow depth of approximately 0.85m, as per Hydraflow Express report attached in **Appendix B.**

2.2. Existing Site Runoff

The site is currently undeveloped and generally falls to the south-west with an average longitudinal slope of 0.8%. The ground surface is grass covered and appears compacted. Existing runoff is currently captured in the existing external swale.

Due to the expected minimal volume of existing runoff (<1 m^3/s) and significant remaining capacity in the swale, pre-development runoff volumes were not calculated.

3. Post Developed Site Flows and Management

3.1 Post Developed Flows

The proposed development involves the construction of internal concrete access and parking, and storage shed structures. While the proportion of roof area differs between Stage 1 and Stage 2, the overall impervious surface coverage remains consistent.

Total Site	10,000 m²
Concrete & Roof Areas (Stages 1 & 2)	9,138 m²
fi	0.914

Assuming post developed surface levels and slopes shall remain similar to existing, a post development Tc of 9 minutes was adopted.

Friends Equation (Eq 4.5) - Shallow overland sheet flow				
L	**Surface**	**n**	**S**	**tc**
m		Mannings	%	minutes
150	Paved	0.015	0.8	9

A C_{10} value of 0.883 (From QUDM Table 4.5.3) was adopted and the following revised discharges from site were calculated:

POST-DEVELOPMENT SITE CONDITIONS

Development Area **1.000** ha

Event AEP	**C**	**I**	**A**	**Q**
%	coefficient	mm/hr	ha	m³/s
63.2	0.706	99.4	1	0.1950
50	0.750	111.0	1	0.2314
20	0.839	147.0	1	0.3425
10	0.883	172.0	1	0.4218
5	0.927	198.0	1	0.5098
2	1.000	233.0	1	0.6472
1	1.000	260.0	1	0.7222

In accordance with QUDM Eqn. 4.3

Fi	0.914
$^1I_{10}$ (mm/hr)	65.1
TC (minutes)	9
C_{10}	0.883

From QUDM Table 4.5.3

3.2 Discharge Flow Management

3.2.1 Quantity Mitigation

The existing external swale has sufficient remaining capacity to receive the calculated developed site discharge. Provision of on-site detention or other measures to reduce the quantity of stormwater runoff is not considered necessary.

3.2.2 Underground Stormwater Drainage

Options Analysis

Various options for managing internal flows and releasing stormwater from the site were considered. It is noted that, due to the expected volume of runoff from the site, it is appropriate to install grated inlets within the carpark to avoid significant flow depths which might result in inundation of structures or undesirable / unsafe flow depths for site visitors.

Given the gentle sloping nature of the site, it is not possible to provide a headwall outlet within the property boundary without significant filling and provision of a retaining wall along the east and south property boundaries.

A surcharge pit option – allowing controlled release from a large, grated chamber within the landscaping area next to Building 1 – was considered but was not supported by RRC.

As per discussions between Dileigh Consulting Engineers and RRC, it is preferred to release stormwater from the site in a staged manner. Very minor / very frequent flows should be discharged into the existing inter-allotment drainage line. Larger storms should bypass the inter-allotment drainage line and be released into the existing swale adjacent to Boundary Road. As per recommendations by RRC received in an Information Request dated 14 August 2025, an outlet end wall within the Boundary Road swale shall be supported.

Additional Considerations

It is proposed to control release of stormwater in the following manner:

- 225mm diameter pipe at 0.9% grade (or equivalent that restricts flows to 60L/s), discharging from the final internal access chamber to the existing interallotment drainage line
- 450mm diameter pipe at minimum 3.4% grade discharging from the final internal access chamber to the swale in Boundary Road. The upstream invert level must be at the obvert of the 225mm pipe, or greater.

Very frequent / minor storms will be released to the inter-allotment line only. Site-generated runoff greater than 60L/s will be released to the swale in Boundary Road.

It is proposed to provide scour protection at the outlet to the full width of the swale base and with rock sizing d50 = 300mm, in accordance with Catchments and Creeks “Rock Sizing for Single Pipe Outlets”.

Additional Considerations

Internal stormwater drainage lines and grated inlets have been indicated between Buildings B & C and Building D & E respectively on drawings in **Appendix A**. It is noted that Stage 2 works involve constructing an additional level over the top of the Stage 1 buildings, resulting in the driveway areas below no longer being subject to surface runoff. If stormwater drainage infrastructure is constructed in the areas indicated, it will be redundant upon completion of Stage 2.

If preferrable to the proponent, the relevant sections of the internal stormwater drainage could be omitted, noting that it may result in deeper surface flows in the period between the Stage 1 and Stage 2 works. In order to overcome the increased surface flow depth, it may be necessary to raise the FFL of Buildings B – E to ensure no ingress of overland flows to the storage units.

While deeper surface flows are undesirable for site visitors, they are not expected to become hazardous to persons or vehicles due to the low flow velocity. In accordance with *Australian Institute for Disaster Resilience Guideline 7-3 Section 4,* flows where the product of depth and velocity is 0.2 or less are considered safe for vehicles and people. Even if the depth of overland flows between the proposed buildings is increased, the product of depth and velocity is expected to be in the order of 0.1 or less. Additionally, due to the proposed site use, the site is expected to be occupied by visitors on an infrequent basis and for short durations only.

3.2.3 Surface Stormwater Flows

It is proposed to shape the internal driveway areas between buildings as shallow v-drains to prevent ingress of overland flows to the storage units. Refer the typical section included on drawings in **Appendix A.** The fall of the v-drain shall be steeper on the eastern side to accommodate the gradually rise of elevations across the allotment.

It is noted that design inflows to the stormwater pits is based on a 20% AEP design storm and generally corresponds to 30L/s. Gap flows during major events (up to 1% AEP), which shall bypass the grated inlets and be released from site as surface flows, are expected to be in the order of 13L/s and shall result in a flow depth of approximately 21.3mm.

Noting an anticipated varying step from the driveway (at the top of the v-drain) and storage unit FFL of between 20mm and 50mm, the proposed driveway formation shall have sufficient capacity to convey overland flows without risk of inundating the storage units and provide a minimum freeboard of approximately 18mm, at each location where the FFL of the storage unit steps down.

The nominated step between the driveway and the storage units was determined in collaboration with the proponent, with the intent to minimize step whilst providing some degree of immunity during storm events. If preferred, strip drains could be provided across the entry to each storage unit to improve the inflow rate to the proposed underground stormwater line during larger storms when the v-drain formation is fully engaged.

If the infrastructure between Buildings B & C and Building D & E are omitted as discussed in Section 3.2.2, the driveway formation will not have sufficient capacity to convey overland flows in areas where the step from the driveway to the storage unit FFL is 20mm.

The overall site shall be graded to direct gap flows to the landscaped area south of Building 1, where gap flows will be released from site through the vegetation as shallow overland sheet flow.

The capacity of the driveway formation and estimated freeboard was calculated using Hydraflow Express. Output reports have been included in **Appendix B.**

3.3 Stormwater Quality Management

Due to the size of the development (>2500m^2), State Planning Policy (SPP) Healthy Water has been triggered.

It is noted that the existing regional treatment facility located in 8SP326319 was sized to cater for the developed site and surrounding “Lily Place” industrial subdivision. Minor flows discharged to this facility shall be treated in line with SPP requirements, as demonstrated by approved drawings and reports (RRC Ref D/137-2020).

It is noted that the existing external swale terminates at a heavily vegetated undeveloped site (69SP304748) which, based on review of Lidar surface information, appears to naturally attenuate stormwater inflows i.e. is not freely draining and has an area of 7.78 hectares. It is expected that the site in its existing state functions as a regional treatment facility. The substantial vegetation cover and natural retention shall enable significant filtration, sedimentation and nutrient uptake processes to occur without implementation of additional controls in line with SPP requirements.

Additionally, the extended flow path through the external swale (over 1km) shall promote flow velocity reduction and shall provide some minor infiltration and sedimentation prior to reaching Lot 69. No additional bio-retention basins or similar facilities are proposed.

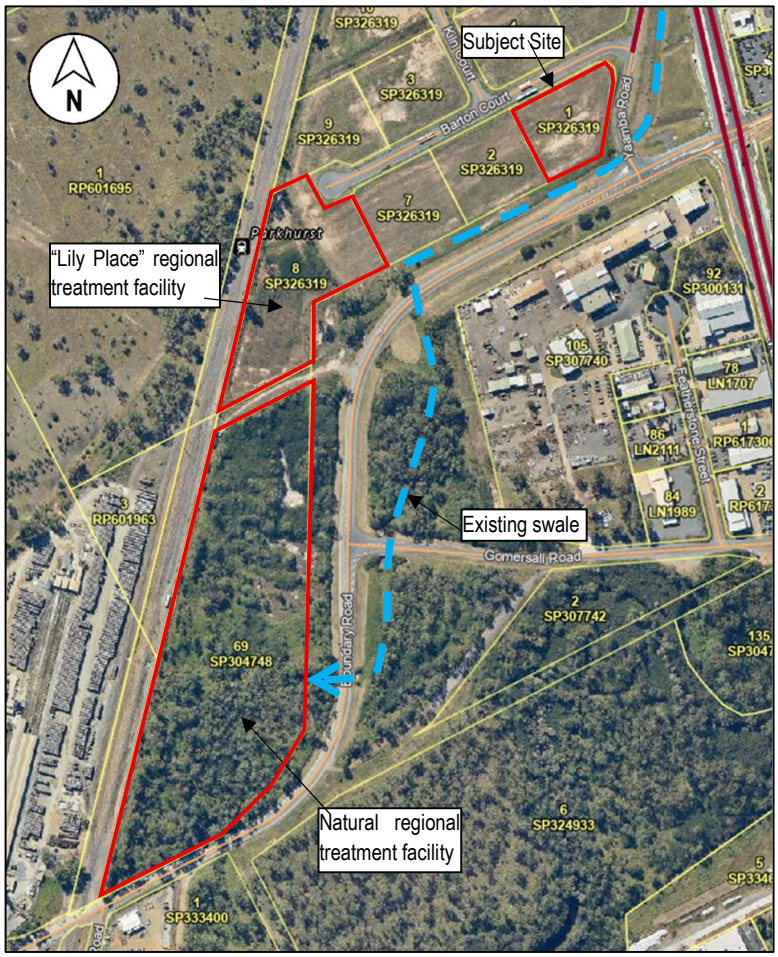


Figure 3: Downstream Treatment Facilities (Queensland Globe)

It is proposed to provide gross pollutant traps (GPTs) within the proposed site, installed at all grated inlets, to prevent release large debris to receiving waters.

4. Conclusion

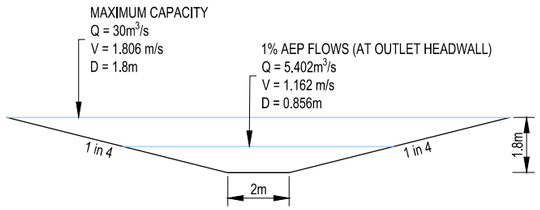
The proposed development will result in increased discharge of stormwater from the site. A desktop review of the downstream swale adjacent to Boundary Road indicates that there is sufficient capacity remaining to accommodate stormwater from the developed site without a need for on-site detention. It is proposed to capture internal runoff with grated inlets, provided with GPTs to ensure capture of debris, which shall first release inflows to the existing inter-allotment drainage line prior to discharging to the existing swale via piped outlet with suitable rock scour protection. Existing regional treatment facilities downstream of the site are expected to sufficiently treat quality of runoff from the site, so no additional treatment devices are required.

Ashleigh Lucas
For and On Behalf of
Dileigh Consulting Engineers Pty Ltd

Appendix A – Site Hydrology Drawings

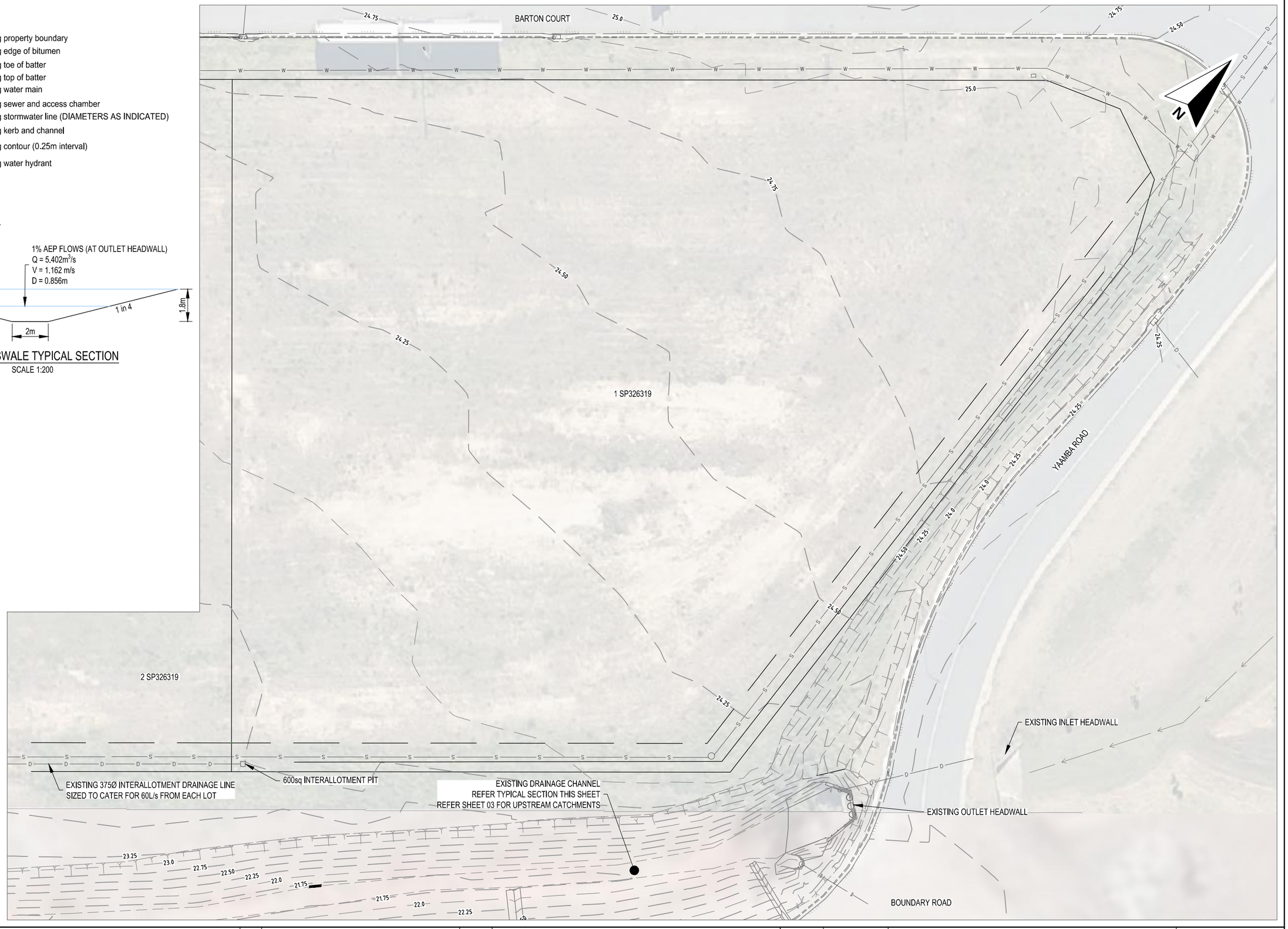
LEGEND

- Existing property boundary
- Existing edge of bitumen
- Existing toe of batter
- Existing top of batter
- Existing water main
- Existing sewer and access chamber
- Existing stormwater line (DIAMETERS AS INDICATED)
- Existing kerb and channel
- 43.5 — Existing contour (0.25m interval)
- FH — Existing water hydrant



EXISTING SWALE TYPICAL SECTION

SCALE 1:200



DATUM: HORIZ. GDA 94 VERT. AHD

0 2.5 5 7.5 10 1:500
LAYOUT

SCALES m. FULL SIZE A3

PRELIMINARY ISSUE

NOT FOR CONSTRUCTION

REV	REVISION DESCRIPTION	DATE
A	INITIAL VERSION	23.07.2025
B	UPDATED SITE LAYOUT	

DILEIGH
CIVIL / STRUCTURAL DESIGN & PROJECT MANAGEMENT

ACN 121 309 171
47 Normanby Street
Yeppoon, Queensland 4703

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DRAFTED	AML / LD
DESIGNED	AML
CHECKED	TL
APPROVED	TONY LAU
RPEQ 19272	SIGN
28.08.2025	

MIDDLE POND PTY LTD
PROPOSED SELF-STORAGE FACILITY
1 BARTON COURT, PARKHURST
STORMWATER MANAGEMENT PLAN
EXISTING FEATURES AND SERVICES

DWG No. D25.176-01
CIVIL
REVISION B

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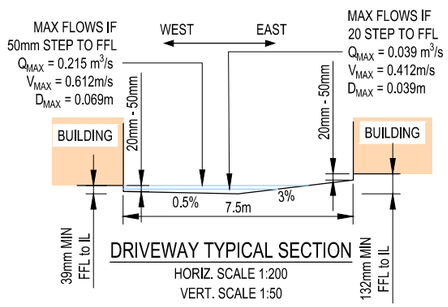
LEGEND

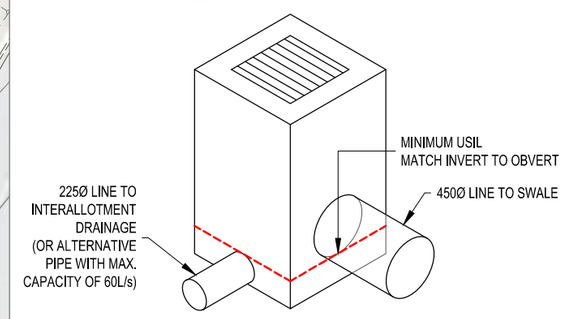
- Existing property boundary
- Existing edge of bitumen
- Existing toe of batter
- Existing top of batter
- Existing water main
- Existing sewer and access chamber
- Existing stormwater line (DIAMETERS AS INDICATED)
- Existing kerb and channel
- Existing contour (0.25m interval)
- Existing water hydrant
- Proposed contour (0.25m interval) - prelim. only
- Proposed stormwater drainage (prelim. diameters as indicated)
- Proposed 600sq grated inlet (size of chamber below to suit pipes)
- Proposed building
- Proposed concrete access
- Proposed vegetation
- Proposed rock scour protection

NOTES:

1. STORMWATER DRAINAGE, FINISHED SURFACE AND FINISHED FLOOR LEVELS ARE PRELIMINARY ONLY AND SHALL BE SUBJECT TO CHANGE AT DETAILED DESIGN.
2. PRELIMINARY SIZING OF STORMWATER DRAINAGE BASED ON 20% AEP STORM INFLOWS AND DETERMINED WITH RATIONAL METHOD AS PER QUDM 4TH EDN. 2018 UTILISING 2016 BOM IFDS.
3. PRELIMINARY ROCK SIZING BASED ON CATCHMENTS AND CREEKS GUIDELINES. FINAL SIZING AND CHUTE DESIGN SUBJECT TO CHANGE AT DETAILED DESIGN.
4. SHAPE OF V-DRAIN FORMATION BETWEEN BUILDINGS NOMINATED TO SUIT BOTH RISE IN ELEVATION ACROSS THE ALLOTMENT AND TO ACCOMMODATE TYPICAL RUNOFF CAPTURED IN EACH PIT (30L/s)
5. GROSS POLLUTANT TRAPS TO BE INSTALLED TO ALL INLETS



DRIVEWAY TYPICAL SECTION
HORIZ. SCALE 1:200
VERT. SCALE 1:50



OUTLET CHAMBER DETAIL
SCALE 1:50

POST-DEVELOPMENT SITE CONDITIONS

Development Area **1** ha

Event AEP %	C coefficient	I mm/hr	A ha	Q m^3/s
63.2	0.706	99.4	1	0.1950
50	0.750	111.0	1	0.2314
20	0.839	147.0	1	0.3425
10	0.883	172.0	1	0.4218
5	0.927	198.0	1	0.5098
2	1.000	233.0	1	0.6472
1	1.000	260.0	1	0.7222

Fi	0.914
$^1I_{10}$ (mm/hr)	65.1
TC (minutes)	9
C_{10}	0.883

From QUDM Table 4.5.3

In accordance with QUDM Eqn. 4.3

DATUM: HORIZ. GDA 94 VERT. AHD

0 2.5 5 7.5 10 LAYOUT 1:500

SCALES m. FULL SIZE A3

PRELIMINARY ISSUE

NOT FOR CONSTRUCTION

REV	REVISION DESCRIPTION	DATE
A	INITIAL VERSION	23.07.2025
B	UPDATED SITE LAYOUT	

DILEIGH
CIVIL / STRUCTURAL DESIGN & PROJECT MANAGEMENT

ACN 121 309 171
47 Normanby Street
Yeppoon, Queensland 4703

Phone: 07 49112553
Fax: 07 49383660
Email: admin@dileigh.com.au

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APPROVED	TONY LAU
RPEQ 19272	SIGN
28.08.2025	

MIDDLE POND PTY LTD
PROPOSED SELF-STORAGE FACILITY
1 BARTON COURT, PARKHURST
STORMWATER MANAGEMENT PLAN
PROPOSED SITE LAYOUT (STAGE 1)

DWG No. D25.176-02
CIVIL
REVISION B

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LEGEND

- Existing property boundary
- Existing edge of bitumen
- Existing toe of batter
- Existing top of batter
- Existing water main
- Existing sewer and access chamber
- Existing stormwater line (from records, approximate only)
- 43.5 — Existing contour (0.25m interval)

UPSTREAM CATCHMENT TO EXISTING SWALE

Development Area **18.7** ha

Event AEP	C	I	A	Q
%	coefficient	mm/hr	ha	m^3/s
63.2	0.670	38.9	18.7	1.3538
50	0.712	43.3	18.7	1.6011
20	0.796	57.8	18.7	2.3888
10	0.838	68.1	18.7	2.9626
5	0.879	78.5	18.7	3.5858
2	0.963	92.8	18.7	4.6427
1	1.000	104.0	18.7	5.4022

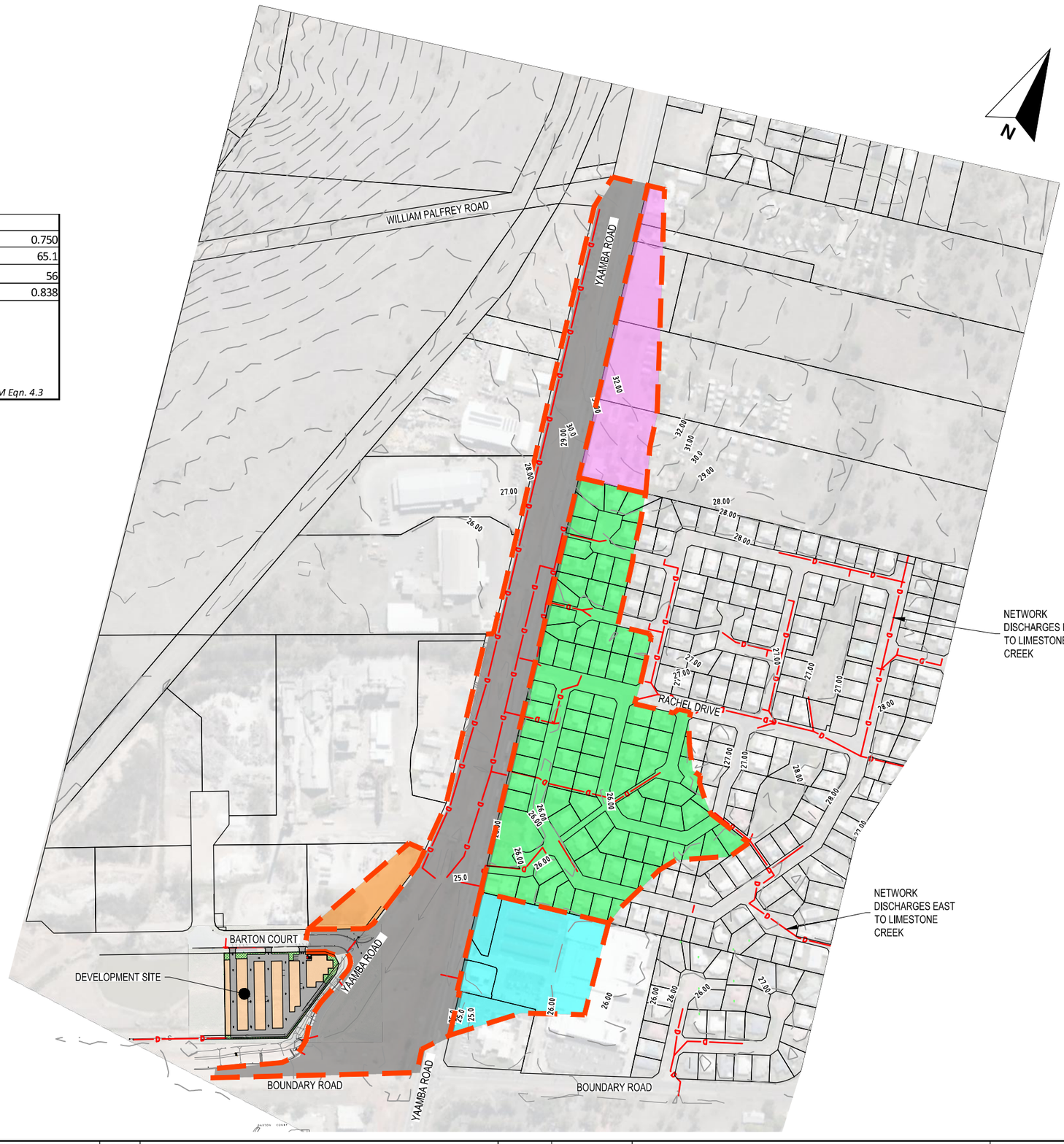
Fi	0.750
$^1I_{10}$ (mm/hr)	65.1
TC (minutes)	56
C_{10}	0.838

From QUDM Table 4.5.3

In accordance with QUDM Eqn. 4.3

EXTERNAL CATCHMENTS

COLOUR	AREA (ha)	Fi	DESCRIPTION
	0.440	0.900	INDUSTRY
	7.140	0.750	LOW-DENSITY RESIDENTIAL (INCLUDING ROADS)
	1.730	0.250	CARAVAN PARK & LARGE RESIDENTIAL LOTS
	7.610	0.800	ROAD CORRIDOR
	1.860	1	COMMERCIAL CENTRE



DATUM: HORIZ. GDA 94 VERT. AHD

0 25 50 75 100 LAYOUT 1:5000

SCALES m. FULL SIZE A3

PRELIMINARY ISSUE

NOT FOR CONSTRUCTION

REV	REVISION DESCRIPTION	DATE
A	INITIAL VERSION	23.07.2025
B	UPDATED SITE LAYOUT	

DILEIGH
CIVIL / STRUCTURAL DESIGN & PROJECT MANAGEMENT

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MIDDLE POND PTY LTD
PROPOSED SELF-STORAGE FACILITY
1 BARTON COURT, PARKHURST
STORMWATER MANAGEMENT PLAN
EXTERNAL STORMWATER CATCHMENTS

DWG No. D25.176-03

CIVIL

REVISION B

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Appendix B – Hydraflow Express Reports

Channel Report

Existing Swale (Boundary Road) Existing Flows

Trapezoidal

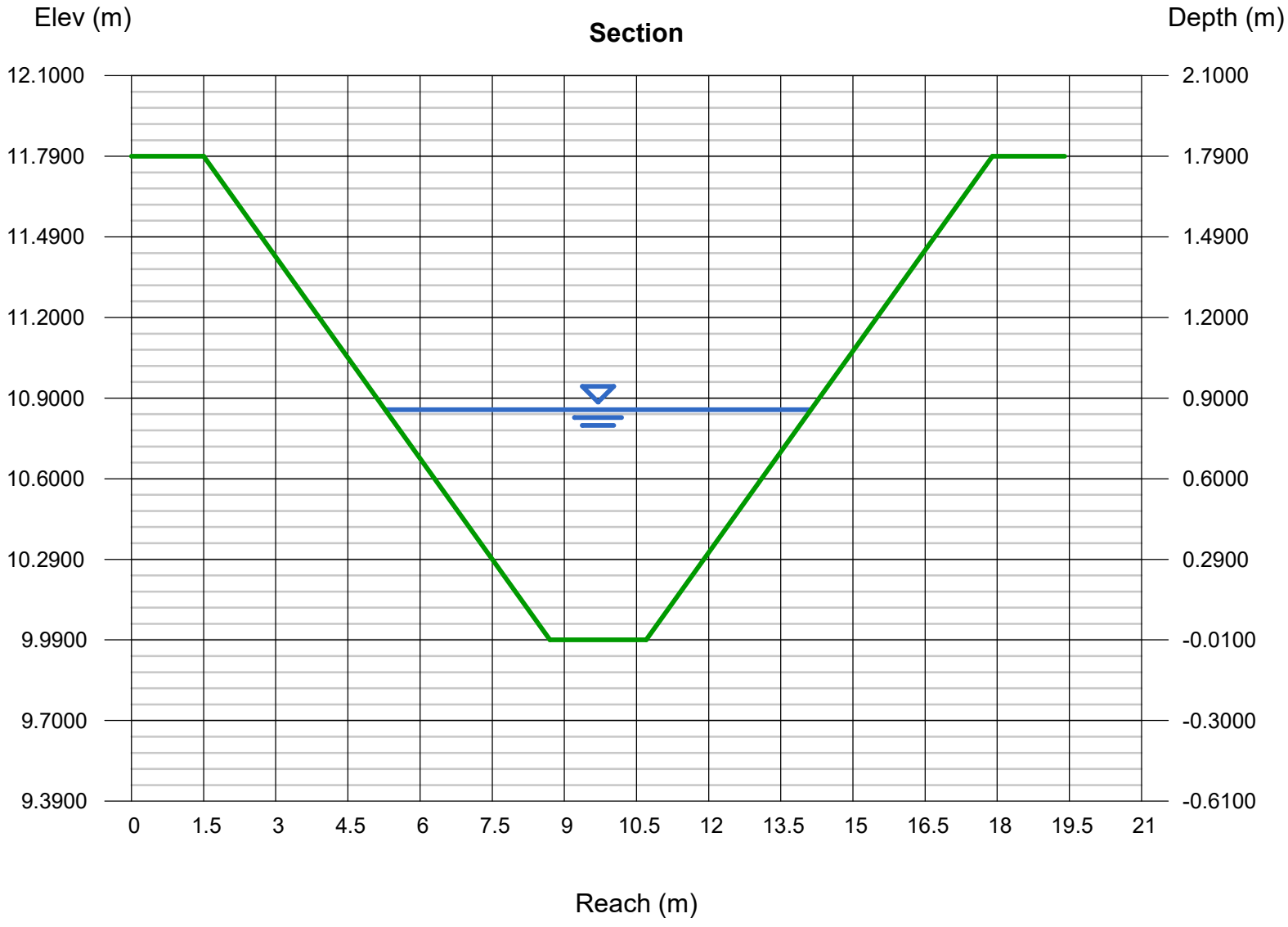
Bottom Width (m)	= 2.0000
Side Slopes (z:1)	= 4.0000, 4.0000
Total Depth (m)	= 1.8000
Invert Elev (m)	= 10.0000
Slope (%)	= 0.3000
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cms)	= 5.4020

Highlighted

Depth (m)	= 0.8565
Q (cms)	= 5.4020
Area (sqm)	= 4.6473
Velocity (m/s)	= 1.1624
Wetted Perim (m)	= 9.0628
Crit Depth, Yc (m)	= 0.6157
Top Width (m)	= 8.8519
EGL (m)	= 0.9254



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jul 18 2025

Existing Swale (Boundary Road) Peak Capacity

Trapezoidal

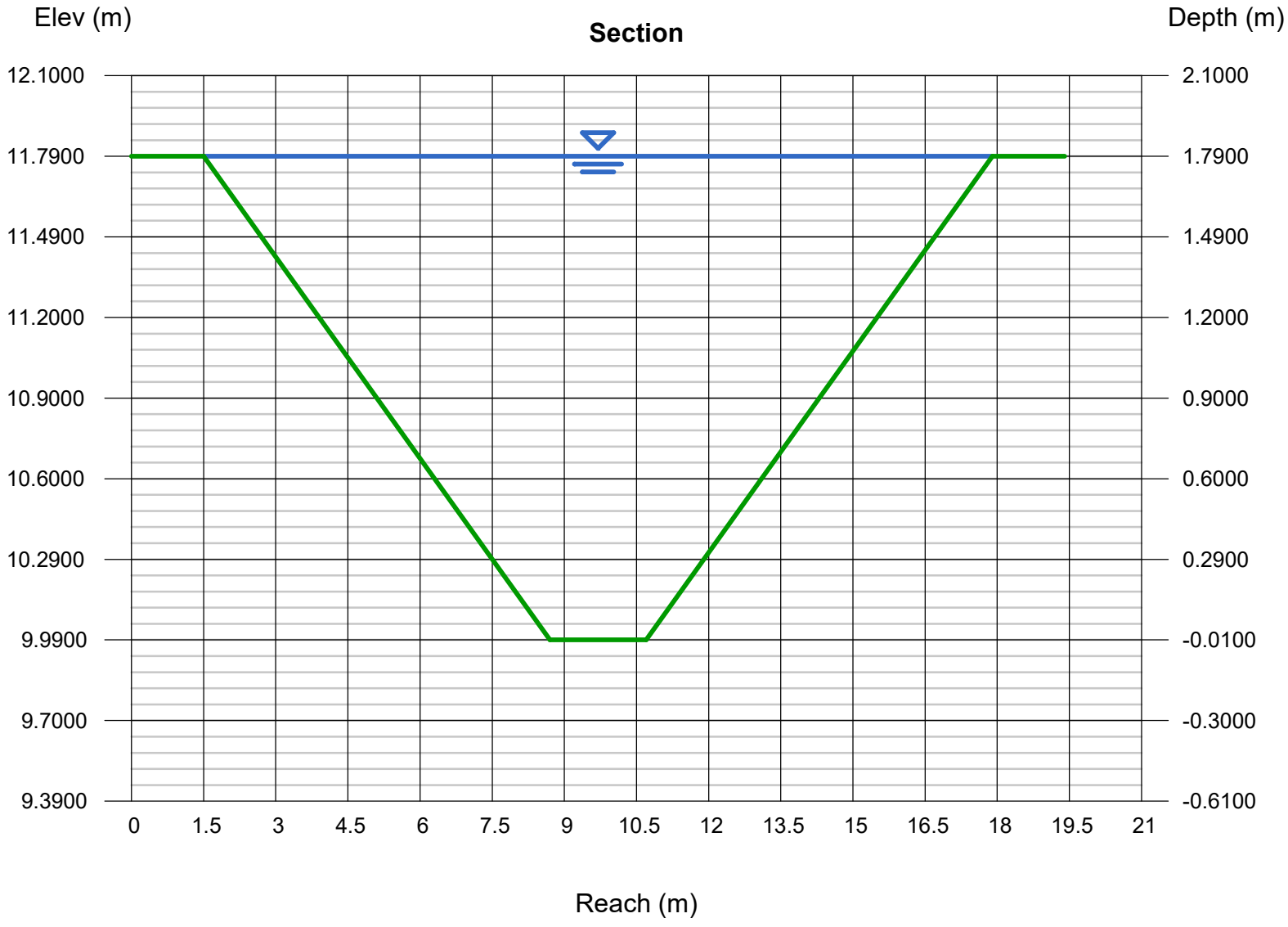
Bottom Width (m)	= 2.0000
Side Slopes (z:1)	= 4.0000, 4.0000
Total Depth (m)	= 1.8000
Invert Elev (m)	= 10.0000
Slope (%)	= 0.3000
N-Value	= 0.030

Calculations

Compute by:	Known Depth
Known Depth (m)	= 1.8000

Highlighted

Depth (m)	= 1.8000
Q (cms)	= 30
Area (sqm)	= 16.5600
Velocity (m/s)	= 1.8060
Wetted Perim (m)	= 16.8432
Crit Depth, Yc (m)	= 1.4021
Top Width (m)	= 16.4000
EGL (m)	= 1.9664



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 22 2025

Driveway Typical Section (between buildings) - 20 Step to FFL

User-defined

Invert Elev (m)	= 1.0000
Slope (%)	= 0.5000
N-Value	= 0.015

Calculations

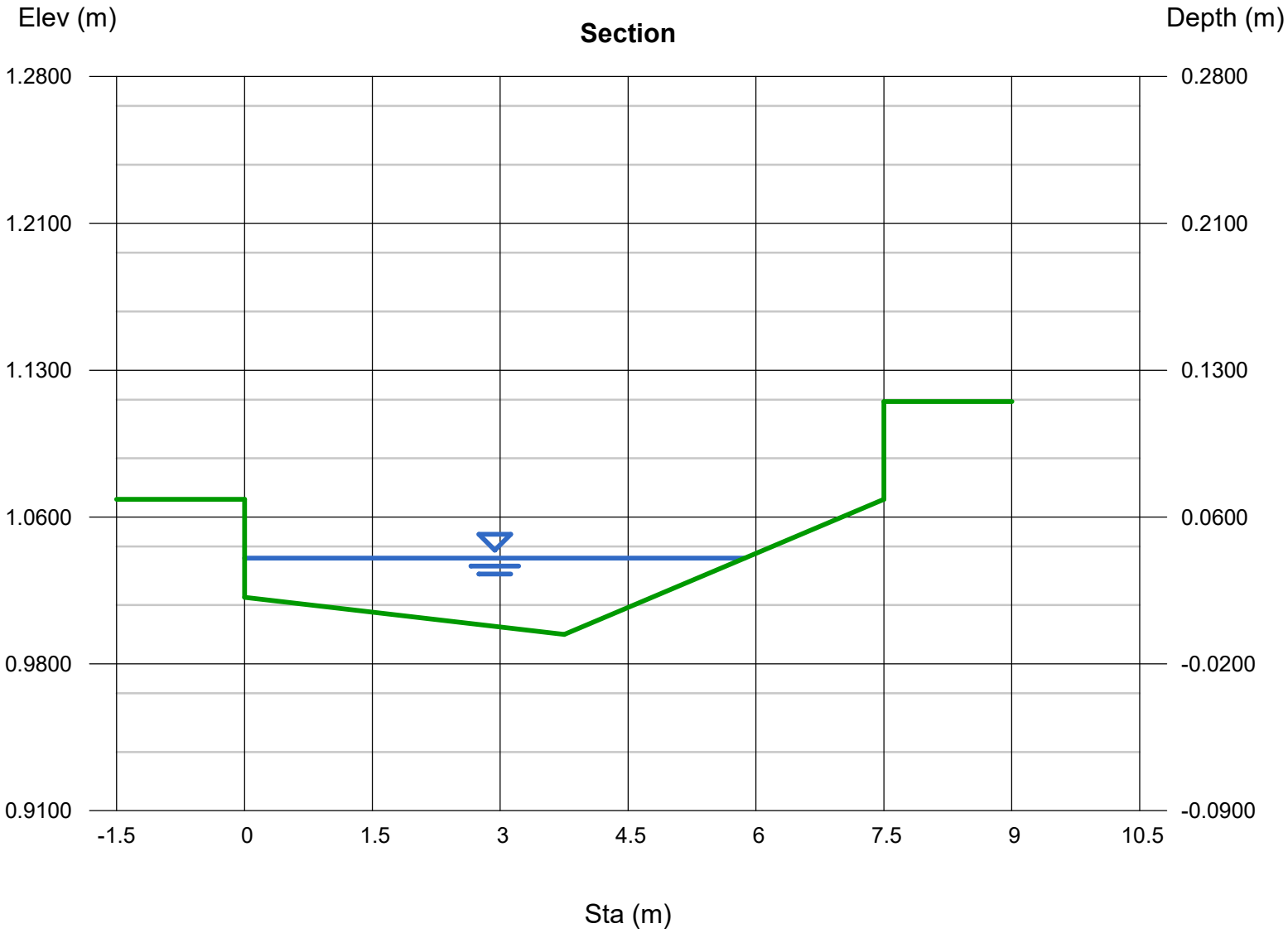
Compute by:	Known Depth
Known Depth (m)	= 0.0390

Highlighted

Depth (m)	= 0.0390
Q (cms)	= 0.063
Area (sqm)	= 0.1519
Velocity (m/s)	= 0.4121
Wetted Perim (m)	= 5.8890
Crit Depth, Yc (m)	= 0.0366
Top Width (m)	= 5.8690
EGL (m)	= 0.0477

(Sta, El, n)-(Sta, El, n)...

(0.0000, 1.0690)-(0.0010, 1.0190, 0.015)-(3.7500, 1.0000, 0.015)-(7.5000, 1.0690, 0.015)-(7.5010, 1.1190, 0.015)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jul 22 2025

Driveway Typical Section (between buildings) - 50mm Step to FFL

User-defined

Invert Elev (m)	= 1.0000
Slope (%)	= 0.5000
N-Value	= 0.015

Calculations

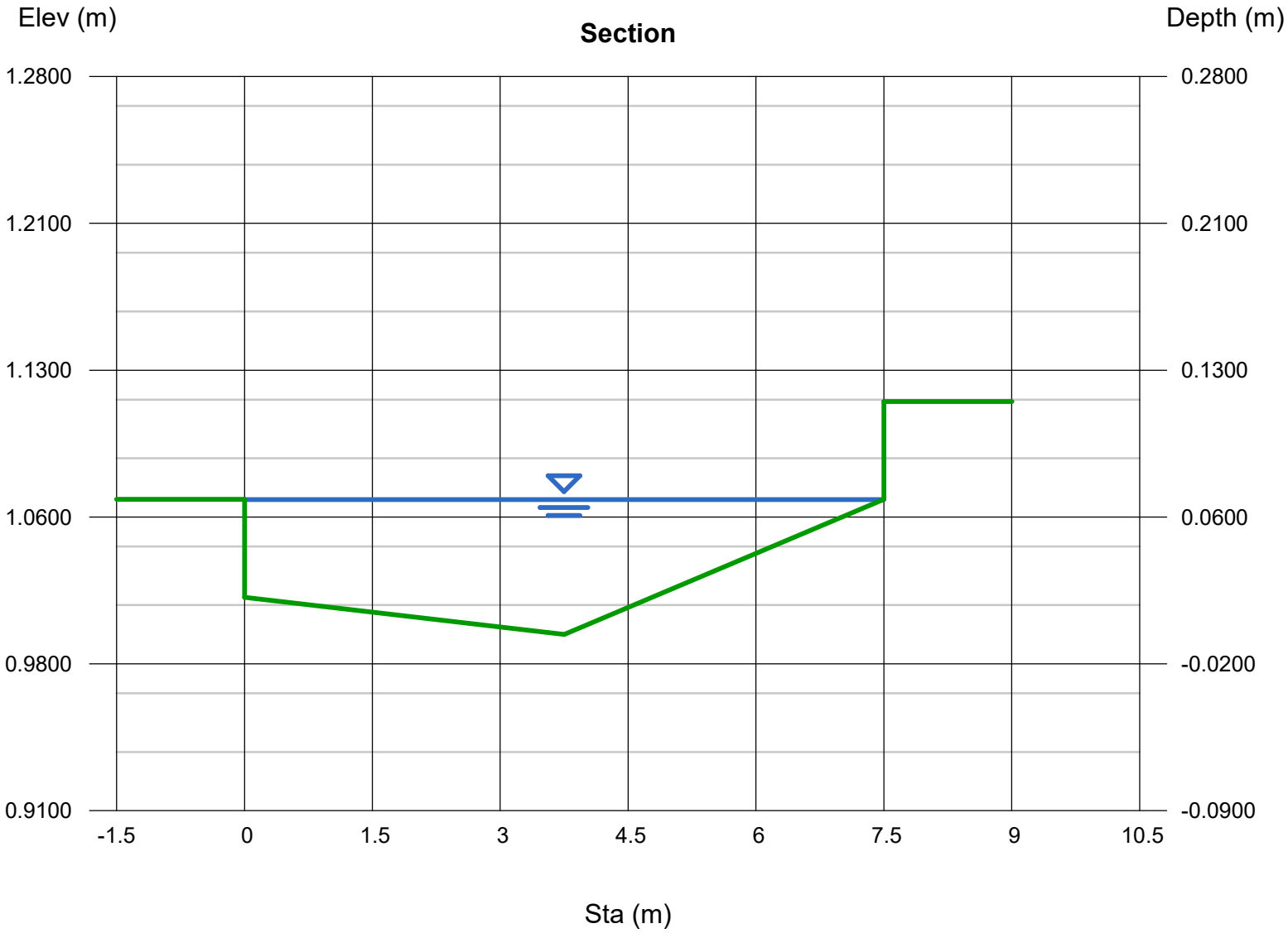
Compute by:	Known Depth
Known Depth (m)	= 0.0689

Highlighted

Depth (m)	= 0.0689
Q (cms)	= 0.215
Area (sqm)	= 0.3517
Velocity (m/s)	= 0.6116
Wetted Perim (m)	= 7.5442
Crit Depth, Yc (m)	= 0.0671
Top Width (m)	= 7.4946
EGL (m)	= 0.0880

(Sta, El, n)-(Sta, El, n)...

(0.0000, 1.0690)-(0.0010, 1.0190, 0.015)-(3.7500, 1.0000, 0.015)-(7.5000, 1.0690, 0.015)-(7.5010, 1.1190, 0.015)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Aug 28 2025

Driveway Typical Section (between buildings) - Gap Flow Depth

User-defined

Invert Elev (m)	= 1.0000
Slope (%)	= 0.5000
N-Value	= 0.015

Calculations

Compute by:	Known Q
Known Q (cms)	= 0.0130

Highlighted

Depth (m)	= 0.0213
Q (cms)	= 0.013
Area (sqm)	= 0.0567
Velocity (m/s)	= 0.2291
Wetted Perim (m)	= 4.9111
Crit Depth, Yc (m)	= 0.0213
Top Width (m)	= 4.9086
EGL (m)	= 0.0240

(Sta, El, n)-(Sta, El, n)...

(0.0000, 1.0690)-(0.0010, 1.0190, 0.015)-(3.7500, 1.0000, 0.015)-(7.5000, 1.0690, 0.015)-(7.5010, 1.1190, 0.015)