SITE AREA'S

INTERNAL GFA:	952 m²	23.2 %
COVERED VERANDAHS / ENTRY:	388 m²	9.5 %
SHED:	24 m²	0.6 %
GRASSED AREA:	1190 m²	29.0 %
CAR PARK:	990 m²	24.2 %
GARDENS:	377 m²	9.2 %
CONCRETE PATHS:	177 m²	4.3 %
TOTAL SITE AREA	**4,098 m²**	

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

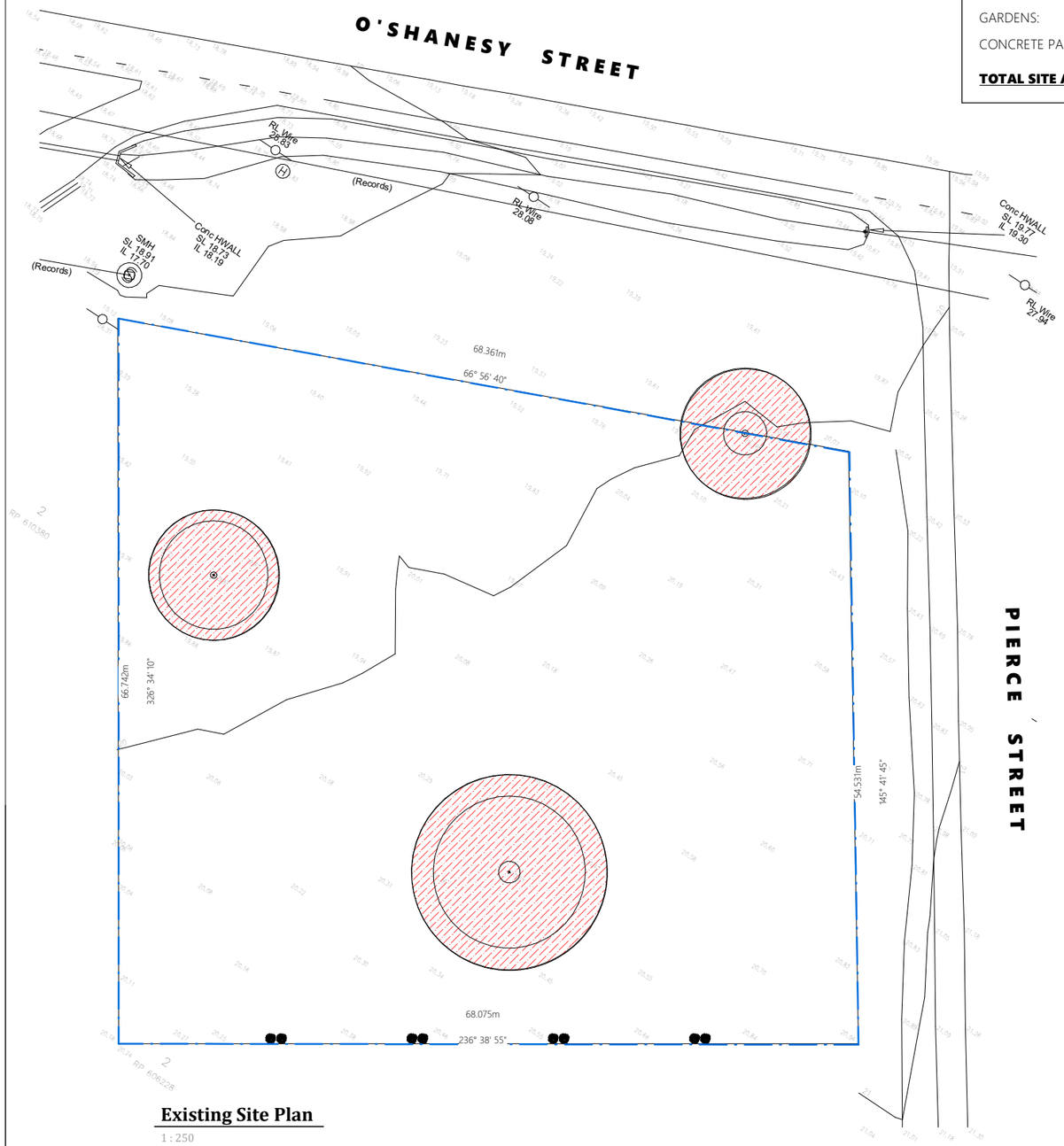
Development Permit No.: D/36-2024

Dated: 15 November 2024

DO NOT SCALE DRAWING
ALL DIMENSION IN MILLIMETERS

REVISIONS

No:	Description:	Date:
P1	PRELIMINARY	29.02.2024
P2	PRELIMINARY	07.03.2024
P3	UPDATED PRELIMINARY	15.08.2024
P4	UPDATED PRELIMINARY	09.10.2024



Existing Site Plan
1 : 250

Proposed Site Plan
1 : 250

ISSUED FOR
PRELIMINARY

Project Details:
CHILDCARE
Address:
3 O'SHANESY STREET, GRACEMERE

Drawing Title:
SITE PLAN

dezignelements BUILDING DESIGNERS
0407 271 336 M
info@dezignelements.com.au E
QBCC No: 1247120 BDAQ No: 0001677

Scale:	As indicated	Rev:	P4
Date:	FEB 2024		
Drawn:	NJB		
Project No:	24_016	Drawing No:	S-03

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ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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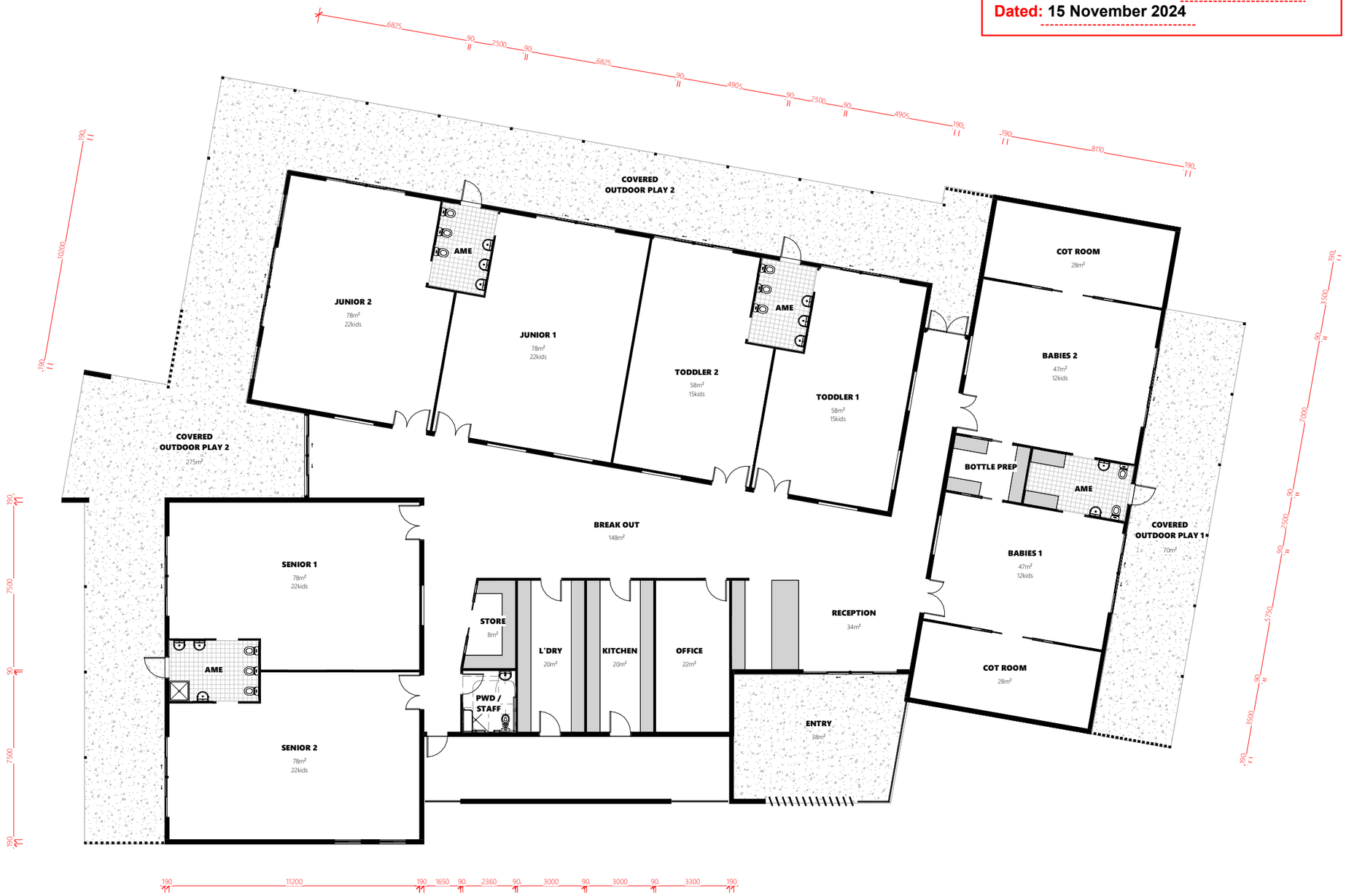

_Proposed Ground Floor

1 : 100

ISSUED FOR
PRELIMINARY

ELEVATIONS

Project Details:	**CHILDCARE**
Address:	**3 O'SHANESY STREET, GRACEMERE**
Drawing Title:	**PROPOSED FLOOR PLAN**

dezignelements BUILDING DESIGNERS
0407 271 336 M
info@dezignelements.com.au E
QBCC No: 1247120 BDAQ No: 0001677

Scale: 1 : 100		Rev: **P4**
Date: FEB 2024		
Drawn: NJB		
Project No: **24_016**	Drawing No: **S-05**	

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DO NOT SCALE DRAWING
ALL DIMENSION IN MILLIMETERS

REVISIONS

No:	Description:	Date:
P1	PRELIMINARY	29.02.2024
P2	PRELIMINARY	07.03.2024
P3	UPDATED PRELIMINARY	15.08.2024
P4	UPDATED PRELIMINARY	09.10.2024

Proposed Elevation 1 - O'Shanesy Street

1 : 100

Proposed Elevation 2 - Pierce Street

1 : 100

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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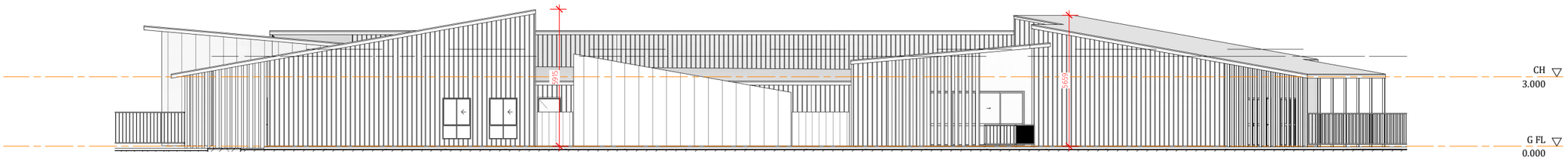
Development Permit No.: D/36-2024

Dated: 15 November 2024



Proposed Elevation 3

1 : 100

Proposed Elevation 4

1 : 100

ISSUED FOR
PRELIMINARY

Project Details:
CHILDCARE
Address:
3 O'SHANESY STREET, GRACEMERE

Drawing Title:
ELEVATIONS

dezignelements BUILDING DESIGNERS
0407 271 336 M
info@dezignelements.com.au E
QBCC No: 1247120 BDAQ No: 0001677

Scale: 1 : 100	Rev: **P4**
Date: FEB 2024	
Drawn: Author	
Project No: **24_016**	Drawing No: **S-06**

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ALL DIMENSION IN MILLIMETERS

REVISIONS

No:	Description:	Date:
P1	PRELIMINARY	29.02.2024
P2	PRELIMINARY	07.03.2024
P3	UPDATED PRELIMINARY	15.08.2024
P4	UPDATED PRELIMINARY	09.10.2024

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/36-2024

Dated: 15 November 2024

Proposed Landscaping Plan

1 : 250

LANDSCAPE LEGEND

LARGE SHADE TREE	E.G. TUCKEROO
MEDIUM TREE	E.G. LILLY PILLY, MAGENTA CHEERY
LOW BUSHES / SHRUBS / GROUND COVER	E.G. SWAMP LILLY, SPIDER LILLY, FALSE CROCUS,

GARDEN BED - MULCH / IRRIGATED

ISSUED FOR
PRELIMINARY

Project Details:
CHILDCARE
Address:
3 O'SHANESY STREET, GRACEMERE

Drawing Title:
PROPOSED LANDSCAPING PLAN

dezignelements BUILDING DESIGNERS
0407 271 336 M
info@dezignelements.com.au E
QBCC No: 1247120 BDAQ No: 0001677

Scale: 1 : 250
Date: FEB 2024
Drawn: Author
Rev: **P4**
Project No: **24_016**
Drawing No: **S-04**

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MCE
McMurtrie Consulting Engineers

Engineering reimagined.

Childcare Centre at 3 O'Shanesy Street, Gracemere 4702

Stormwater Management Plan

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/36-2024

Dated: 15 November 2024

DATE
6 August 2024

REF
R014-24-25

CLIENT
VP Medical Services Pty Ltd

COMMERCIAL IN CONFIDENCE

Engineering reimagined.

Contact Information

McMurtrie Consulting Engineers Pty Ltd
ABN 25 634 181 294

Rockhampton Office
63 Charles Street
North Rockhampton, QLD 4701

www.mcmengineers.com
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Document Information

Prepared for	VP Medical Services Pty Ltd
Document Name	Stormwater Management Plan
Job Reference	R014-24-25
Revision	A

Document History

Revision	Date	Description of Revision	Prepared by	Approved by		
				Name	Signature	RPEQ No
A	6/08/2024	Original Issue	T. Lisle	C. Hewitt		05141

Contents

Appendices

1 Introduction

McMurtrie Consulting Engineers have been commissioned by VP Medical Services Pty Ltd (the Client) to undertake a site-based Stormwater Management Plan to support a Development Application for a Material Change of Use, for a childcare centre. The site is located at 3 O'Shanesy Street, Queensland 4702, on land described as Lot 1 on RP602231, and is shown in Figure 1 .

Figure 1 - Site location plan

The aim of this SMP is to demonstrate that the proposed development will comply with Council planning scheme requirements, the Queensland Urban Drainage Manual (IPWEAQ, 2016), Australian Rainfall and Runoff (Ball, et al., 2019) and the State Planning Policy (DILGP, 2017).

1.1 Methodology

The assessment methodology adopted for this SMP is summarised below.

- Broadly identify the contributing catchments to the project.
- Identify Lawful Point of Discharge (LPOD) for the site stormwater runoff.
- Estimate peak discharge runoff for pre-development and post-development scenarios.
- Identify potential mitigation and management strategies to ensure no worsening to downstream catchments and infrastructure.

1.2 Data Sources

The background data used to undertake this assessment were collected from the following sources:

- ARR'16 data hub
- Elvis - Elevation and Depth – Foundation Spatial Data hub
  - 2015 Rockhampton 1m DEM
- Rockhampton Regional Council – Planning Scheme & Infrastructure Mapping
- Capricorn Survey Group – Detail Survey
- Dezign Elements - Site Layout Plan dated February 2024

2 Site Characteristics

2.1 Pre-Development

The site is a vacant lot with road frontages to the north and eastern boundaries, and adjacent residential uses to the south and western boundaries. It falls from the eastern corner to the western corner at approximately 2%, with the southern boundary forming a crest that results in the site having no external catchments, and similarly meaning that the lot forms its own singular internal catchment.

The Lawful Point of Discharge (LPOD) for the site is the O'Shanesy Street road reserve, which has a swale drain taking runoff from the road and properties towards the west and ultimately to Gracemere Creek.

The site is not impacted by riverine or creek catchment flooding.

2.2 Post-Development

The proposed site layout is shown below in Figure 2. The main components of the proposed layout include the large parking area and childcare building.

It is expected that earthworks and retaining will be required to ensure that major event runoff is directed towards the proposed basin, which is located in the southern corner, and this will result in an effective internal catchment slope of 0.5%. Both a piped (minor) and grassed swale (major) discharge system will be required along the western boundary towards the existing swale the O'Shanesy Street road reserve. In doing so, the existing LPOD will be maintained.

Figure 2 - Proposed site layout plan

3 Hydrology

Hydrologic calculations have been undertaken using XPSTORM 2023.1 for pre and post development scenarios.

3.1 Catchment Hydrologic Parameters

Table 1 presents the input data for the development site in pre-development and post-development conditions. Consistent with the conventions of the Laurenson method, each catchment is split into two sub-catchments, one for 0% fraction impervious and one for 100% fraction impervious.

Table 1 - XP Storm model parameters

Parameter		Pre-Development		Post-Development	
		Pervious	Impervious	Pervious	Impervious
Area (ha)		0.41	0	0.143	0.266
Percent Impervious (%)		0	100	0	100
Slope (%)		2	2	0.5	0.5
Laurenson 'n' (storage non-linearity exponent)		-0.285	-0.285	-0.285	-0.285
Infiltration	Initial Loss (mm/hr)	34	0	27.2	0
	Continuing Loss (mm/hr)	1.8	0	1.8	0
Manning's Roughness		0.045	0.015	0.045	0.015

3.2 Hydrology Results

Table 2 summarises the maximum mean storm events for the site.

Table 2 - Hydrology results

Annual Exceedance Probability (AEP %)	Pre-Development	Post-Development
10% (Minor Event)	ECN_10pct_1hr (0.06910m^3/s)	ECN_10pct_10min (0.14154m^3/s)
1% (Major Event)	ECN_1pct_30min (0.14251m^3/s)	ECN_1pct_15min (0.21287m^3/s)

4 Hydraulics

4.1 Stormwater Management Strategy

The following works are proposed to manage the lawful discharge of water from the site:

- Filling of the site to ensure all internal runoff is directed to the proposed storage.
- Construction of a storage structure to attenuate mean peak flows to pre-development magnitudes.
- Construction of a piped, underground minor outlet from the storage and a formed major overland flow path from the storage to facilitate emergency discharge.

Refer to Appendix D which shows the proposed layout of the stormwater management strategy.

4.2 Storage

The storage will be rectangular in shape, with a linear stage/storage relationship. Utilising the area shown in Figure 2 as 'detention basin', a tank style basin can be provided. In order to maintain the maximum available site area for the use of the site, the storage will be sized to fully contain up to and including the 1% event (i.e. will not discharge as overland flow in an event greater than the 10% AEP event). Notwithstanding, the site should be graded to ensure that an emergency overland flow path is provided to convey flows to the road reserve in an extreme event or should blockage occur. Details of this flow path can be provided as part of the Operational Works design documentation.

Table 3 - Storage structure details

Storage area	60m^2, vertical walls
Storage levels	19.9m AHD (to top of media/storage floor) 20.5m AHD (to crest of storage)
Outlet details	900x900 pit within storage 200mm dia orifice plate, invert at 19.2m AHD Suitably sized pipe downstream of orifice plate, USIL 19.2m AHD, DSIL 18.5m AHD
Outlet pit levels	19.2m AHD (pit invert) 20.2m AHD (pit lip to achieve 300mm EDD depth)

4.3 Results

Table 4 presents the results of incorporating the proposed stormwater strategy. The box-and-whisker plots that summarise the ensemble results are shown in Appendix C.

Table 4 - Hydraulic results

Annual Exceedance Probability (AEP %)	Pre-Development	Mitigated	Change
10% (Minor Event)	ECN_10pct_1hr (0.06910m^3/s)	ECN_10pct_45min (0.05832m^3/s)	-15.6%
1% (Major Event)	ECN_1pct_30min (0.14251m^3/s)	ECN_1pct_45min (0.08309m^3/s)	-41.7%

Based on an overall reduction in discharges from the site, it is determined that the proposed development will not result in nuisance or impacts as a result of an increase in impervious area.

5 Stormwater Quality

The State Planning Policy 2017 (SPP) identifies the State Government's interests in water quality, and the performance outcomes relevant to achieve compliance.

The proposed development is for an urban purpose of greater than 2,500 m^2 and therefore triggers the water quality assessment benchmarks set out in the SPP (DILGP, 2017) for a Material Change of Use, Reconfiguring a Lot or Operational Works application.

5.1 Construction Phase

The application is likely to require operational works for an urban purpose that involves disturbing a land area 2500m^2 or greater in size.

5.1.1 Design Objectives

The relevant design objectives for Operational Works during the construction phase are as presented in Appendix 2, Table A of the SPP.

The following subsections propose strategies to address each issue category identified in the Design Objectives.

5.1.1.1 Drainage Control

1. Implementation of clean water diversion drains to direct external and uncontaminated flows around the construction site.
2. Limiting sheet flow lengths to ensure concentrated flows are avoided.
3. Providing adequately sized and lined temporary drainage paths to ensure in-situ materials are maintained on the site.
4. Providing adequately sized and designed emergency spillways to all sediment basins.

5.1.1.2 Erosion Control

1. Implementation of a staging plan (where feasible) to ensure clearing and construction works minimise the exposure time for soils.
2. Protection of exposed soils from wind and rain driven erosion by way of temporary surface cover.
3. Implementation of short-term stabilisation of exposed soils prior to the removal of sediment controls from the site.

5.1.1.3 Sediment Control

1. Implementation of dirty water diversion drains to direct internal and contaminated flows to the site sediment controls.
2. Where exposed areas exceed 2500m^2, provide sediment controls that are designed, implemented and maintained to a standard which would achieve at least 80% of the average annual runoff volume of the contributing catchment treated to 50mg/L of TSS and pH in the range of 6.5-8.5.
    a. This will generally be achieved by providing a Type F (or Type D where dispersive soils are expected on the site) sediment basin.

5.1.1.4 Litter, Hydrocarbons and Other Contaminants

1. Provide, as part of the Contractor's site management plans, appropriate consideration for gross pollutant and litter disposal to avoid their release to the site or site drainage.
2. Maintain on the site adequate spill kits and ensure appropriate measures are in place in the event of a spill.
3. Identify and implement a procedure, as part of the Contractor's site management plans, for the lawful disposal of contaminants at an authorised facility.

5.1.1.5 Waterway Stability and Flood Flow Management

1. Where measures are required to meet post-construction waterway stability objectives, generally this will be achieved by over-sizing the sediment basin.
2. All drainage, erosion and sediment controls to be located within a flood prone area are designed to ensure non-worsening for all events up to and including the 1% AEP event.

5.1.2 Erosion Hazard Assessment

The determination of the site erosion hazard level is to be based on the annual soil loss due to erosion, as determined by the Revised Universal Soil Loss Equation (RUSLE):

$$A = R.K.LS.C.P$$

$$A = 3425.91 \times 0.05 \times 0.31 \times 1 \times 1.3$$

$$A = 69.03$$

where;

A	=	annual soil loss due to erosion (t/ha/yr)
R	=	rainfall erosivity factor
K	=	soil erodibility factor
LS	=	topographic factor derived from slope length and slope gradient
C	=	cover and management factor
P	=	erosion control practice factor

The annual soil loss due to erosion can be used, in conjunction with the *Best Practice Erosion and Sediment Control* (IECA, 2018) manual to determine the standard of sediment control device required to achieve 'best practice'. Table 5 presents a reproduction of Table B1 from the Appendix B of the manual.

Table 5 - Sediment control standard (default) based on soil loss rate, reproduced from (IECA, 2018)

Catchment Area (m2)	Soil Loss (t/ha/yr)		
	Type 1	Type 2	Type 3
250	N/A	N/A	Type 3 sediment trap
1000	N/A	N/A	All cases
2500	N/A	>75	75
>2500	>150	150	75
>10,000	>75	N/A	75

Therefore, 'Type 3' controls are required for the site.

5.1.3 Legislative Context

Section 493A of the Environmental Protection Act 1994 states that an act that causes serious or material environmental harm, or a breach of s.440ZG of the same, is unlawful unless it is authorised by one of the provisions listed in s.493A(2). If a release is not expressly permitted by a condition provision listed under s.493A, or the approval is silent on the matter, the lawfulness of the release needs to be determined by assessing compliance with s.319 General Environmental Duty (GED).

Section 319 (GED) requires that all reasonable and practicable measures be taken to prevent or minimise environmental harm including water contamination and environmental nuisance. Demonstrating compliance with the GED constitutes a defence against offences.

In the context of sites greater than 2500m^2, which as per the State Planning Policy require treatment of runoff to 50mg/L total suspended solids, that a Type A or Type B sediment basin cannot reasonably or practicably be provided, effective erosion control can be implemented in lieu of requiring sediment controls (Department of Environment and Science, 2023).

5.1.4 Drainage Controls

Drainage controls are to include clean and dirty water diversion drains that limit the effective catchment of the construction site. All drainage controls are to be lined to limit erosion.

The hydraulic design criteria provided by the SPP will be adopted as per Table 6. Details of drainage control works will be provided at the Operational Works design stage.

Table 6 - Stormwater management design objectives for temporary drainage works, reproduced from (DILGP, 2017)

Temporary Drainage Works	**Anticipated Operational Design Life and Minimum Design Storm Event**		
	‹ 12 Months	**12-24 Months**	**› 24 Months**
Drainage structure	39% AEP	18% AEP	10%AEP
Where located immediately up-slope of an occupied property that would be adversely affected by the failure or overtopping of the structure	10% AEP		
Culvert crossing	63% AEP		

5.1.5 Erosion and Sediment Controls

5.1.5.1 Erosion Controls

Type 3 sediment controls are unlikely to measurably achieve the treatment requirements (50mg/L total suspended solids) for exposed areas greater than 2500m^2 as prescribed by the SPP. In order to ensure compliance, it is recommended that exposed areas be minimised during construction (to less than 2500m^2). This can be achieved by effectively stabilising surfaces, which is defined as a surface that does not have visible evidence of soil loss (including subsoil) caused by sheet, rill or gully erosion, or lead to sedimentation or water contamination.

Appropriate methods of stabilising exposed surfaces could include:

- Staging clear and grub works to maintain the maximum natural/existing cover, where that cover is reasonably likely to effectively stabilise the surface.
- Hydromulch, bonded fibre matrix or other sprayed surface protection layers.
- Erosion control blankets.
- Compost/mulch blankets.

All clear and grubbing, earthworks, site works, and landscaping works should be appropriately staged to ensure that effective stabilisation is achieved.

Details of erosion control works will be provided at the Operational Works design stage.

5.1.5.2 Sediment Controls

Type 3 sediment controls should be implemented as part of the operational works design in accordance with Table 7, as reproduced from Table 4.5.3 of the manual.

Table 7 - Default classification of sediment control techniques, reproduced from (IECA, 2008)

Type 1	Type 2	Type 3
Sheet flow treatment techniques		
– Buffer zone capable of infiltrating 100% of stormwater runoff or process water – Infiltration basin or sand filter bed capable of infiltrating 100% of flow	– Buffer zone capable of infiltrating the majority of flows from design storms – Compost/mulch berm	– Buffer zone – Filter fence – Modular sediment trap – Sediment fence
Concentrated flow treatment techniques		
– Sediment basin (sized in accordance with design standard)	– Block & aggregate drop inlet protection – Excavated sediment trap with Type 2 outlet – Filter sock – Filter tube dam – Mesh & aggregate drop inlet protection – Rock & aggregate drop inlet protection – Rock filter dam – Sediment trench	– Coarse sediment trap – Excavated drop inlet protection – Excavated sediment trap with Type 3 outlet – Fabric drop inlet protection – Fabric wrap field inlet sediment trap – Modular sediment trap – Straw bale barrier – U-Shaped sediment trap
De-watering sediment control techniques (selection not based on soil loss rate)		
– Type F/D sediment basin – Stilling pond	– Filter bag or filter tube – Filter pond – Filter tube dam – Portable sediment tank – Settling pond – Sump pit	– Compost berm – Filter fence – Grass filter bed – Hydrocyclone – Portable sediment tank – Sediment fence
Instream sediment control techniques (selection not based on soil loss rate)		
– Pump sediment-laden water to an off-stream Type F or Type D sediment basin or higher filtration system	– Filter tube barrier – Modular sediment barrier – Rock filter dam – Sediment weir	– Modular sediment barrier – Sediment filter cage

Details of sediment control works will be provided at the Operational Works design stage.

5.2 Operational Phase

5.2.1 Design Objectives

The stormwater quality design objectives relevant to the site, as prescribed by the State Planning Policy are:

- Total Suspended Solids (TSS) - 85% removal of mean annual load.
- Total Phosphorous (TP) – 60% removal of mean annual load.
- Total Nitrogen (TN) – 45% removal of mean annual load.
- Gross Pollutants >5mm – 90% removal of mean annual load.

5.2.2 MUSIC Model

In order to assess the efficiency of a treatment train with regards to removal of pollutants, *Model for Urban Stormwater Improvement Conceptualisation (MUSIC)*, version 6.3, was utilised. In all instances, the MUSIC Modelling Guidelines (WaterbyDesign, 2018) were followed with regards to the following key model parameters:

- Rainfall Runoff Parameters – Urban Commercial adopted per Table A1.2.
- Pollutant Export Parameters – Urban Commercial adopted per Table 3.9.

The following meteorological data was adopted, as sourced from BOM (courtesy of eWater):

- Pluviograph & PET Data – Rockhampton Aero (Station 39083).

In accordance with the MUSIC Modelling Guidelines, a 6-minute model timestep was adopted for a 10 year period (2000 – 2010).

The MUSIC model layout and results are shown in Figure 3.

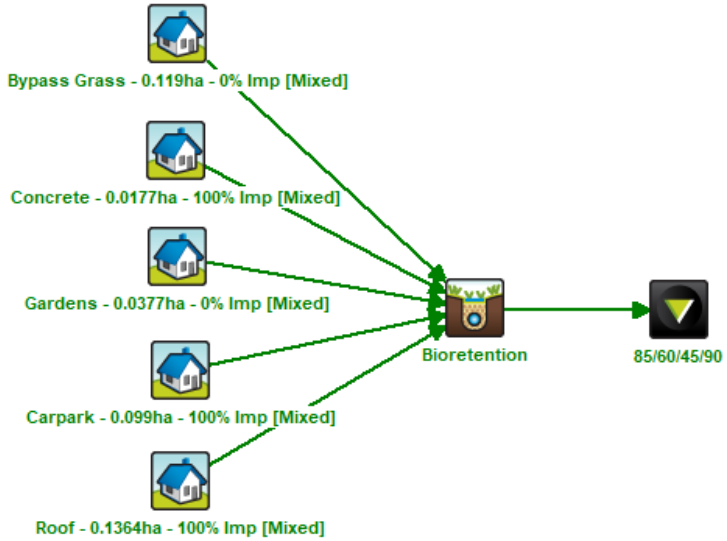

Figure 3 - MUSIC model layout & results

Table 8 - Treatment train effectiveness - receiving node

Parameter	Sources	Residual Load	Reduction (%)	Target (%)
Flow (ML/yr)	1.9	1.8	5.6	N/A
Total Suspended Solids (kg/yr)	361	50.5	86	85
Total Phosphorus (kg/yr)	0.53	0.142	73.3	60
Total Nitrogen (kg/yr)	6.18	2.94	52.5	45
Gross Pollutants (kg/yr)	38.3	0	100	90

5.2.3 Stormwater Quality Improvement Device/s

The following design parameters are presented for the proposed stormwater quality improvement devices:

- Bioretention basin

The bioretention node parameters are provided in Table 9.

Table 9 - Bioretention node MUSIC details

Parameter	Bioretention Basin
Extended Detention Depth (m)	0.3
Surface Area (m^2)	50
Filter Area (m^2)	50
Filter Depth (m)	0.5
Saturated Hydraulic Conductivity (mm/hr)	200
TN Content of Filter Media (mg/kg)	800
Orthophosphate Content of Filter Media (mg/kg)	30
Exfiltration Rate (mm/hr)	0
Lined Base	No
Effective Nutrient Removal Vegetation	Yes
Underdrain	Yes

5.2.4 Maintenance

Maintenance should be in accordance with the *Maintaining Vegetated Stormwater Assets* (WaterbyDesign, 2012) or the manufacturers specifications.

6 Summary

As discussed throughout this report, the development of Lot 1 on RP602231 for the purpose of a childcare centre will not result in an increase in runoff for the design events relevant to the use of the land. Hydrologic and hydraulic modelling using XP-STORM has demonstrated that there will be no actionable nuisance as a result of the development.

Through implementation of a bioretention basin, the stormwater quality objectives per the State Planning Policy have been met.

6.1 Qualifications

This stormwater management memorandum has been prepared by MCE to support a Development Application for Material Change of Use, for a childcare centre. The site is located at 3 O'Shanesy Street, Queensland 4702, on land described as Lot 1 on RP602231.

The analysis and overall approach were specifically catered to the requirement of this project and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from MCE.

Whilst this report accurately assesses the catchment hydrology performance using industry-standard theoretical techniques and engineering practices, actual future observed catchment flows may vary from those predicted herein.

It is acknowledged that, due to the general course of coordination of a development application, some discrepancies may arise between the architectural layout shown within this document and the finalised architectural plans submitted by the Applicant. Generally, this does not constitute a material impact to the proposed development from an engineering perspective. Conservative engineering principles have been applied with consideration to earthworks, stormwater and servicing. As such, any concern should be suitable for conditioning as part of the detailed design process (i.e. to be finalised at the Operational Works stage).

6.2 References

Ball, J., Babister, M., Nathan, R., Weeks, W., Weinmann, E., Retallick, M., & Testoni, I. (2019). Australian Rainfall and Runoff: A Guide to Flood Estimation. Commonwealth of Australia (Geoscience Australia).

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IECA. (2018). *Best Practice Erosion and Sediment Control - Appendix B.* Picton NSW: International Erosion Control Association (Australasia).

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WaterbyDesign. (2018, November). MUSIC Modelling Guidelines.

Appendix A: Site Layout Plans

REFER TO ATTACHMENT

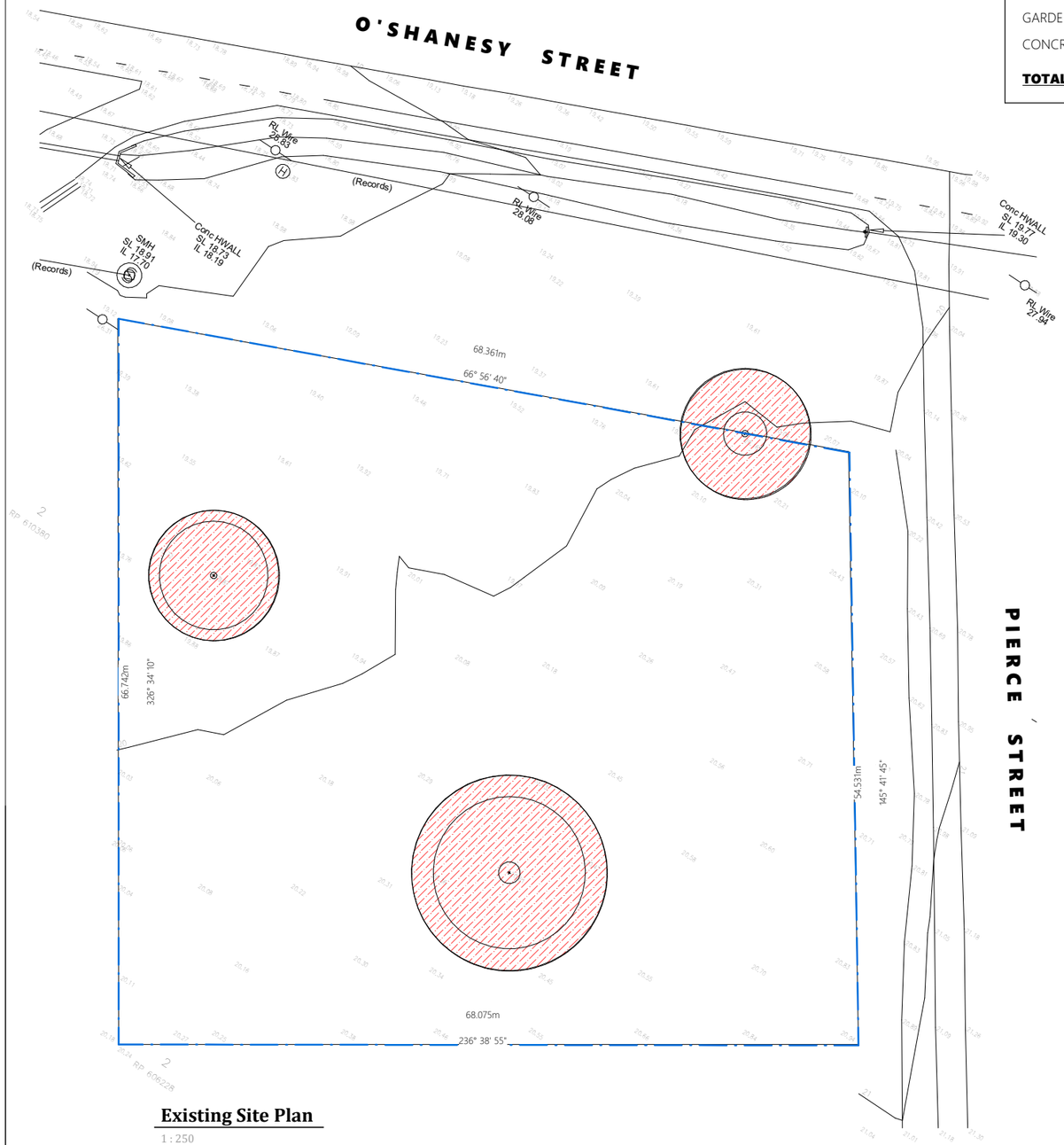
SITE AREA'S

INTERNAL:	952 m²	23.2 %
COVERED VERANDAHS:	388 m²	9.5 %
SHED:	24 m²	0.6 %
GRASSED AREA:	1190 m²	29.0 %
CAR PARK:	990 m²	24.2 %
GARDENS:	377 m²	9.2 %
CONCRETE PATHS:	177 m²	4.3 %
TOTAL SITE AREA	**4,098 m²**	

DO NOT SCALE DRAWING
ALL DIMENSION IN MILLIMETERS

REVISIONS

No:	Description:	Date:
P1	PRELIMINARY	29.02.2024
P2	PRELIMINARY	07.03.2024



Existing Site Plan
1 : 250

Proposed Site Plan
1 : 250

ISSUED FOR
PRELIMINARY

Project Details:
CHILDCARE
Address:
3 O'SHANESY STREET, GRACEMERE

Drawing Title:
SITE PLAN

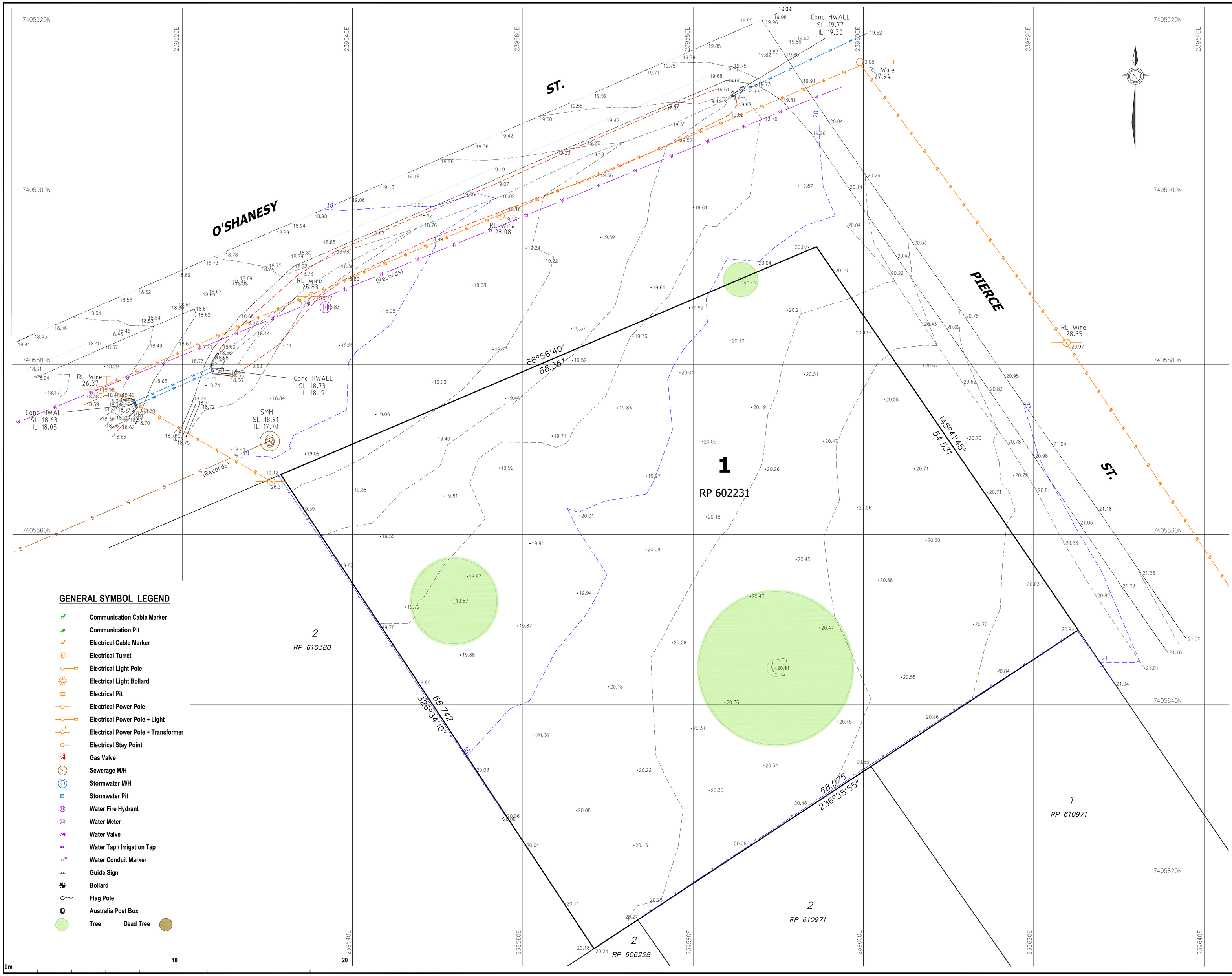
dezignelements BUILDING DESIGNERS
0407 271 336 M
info@dezignelements.com.au E
QBCC No: 1247120 BDAQ No: 0001677

Scale:	As indicated	Rev:	P2
Date:	FEB 2024		
Drawn:	NJB		
Project No:	24_016	Drawing No:	S-03

7/03/2024 11:57:40 AM

Appendix B: Detail Survey

REFER TO ATTACHMENT



GENERAL SYMBOL LEGEND

- Communication Cable Marker
- Communication Pit
- Electrical Cable Marker
- Electrical Turret
- Electrical Light Pole
- Electrical Light Bollard
- Electrical Pit
- Electrical Power Pole
- Electrical Power Pole + Light
- Electrical Power Pole + Transformer
- Electrical Stay Point
- Gas Valve
- Sewerage M/H
- Stormwater M/H
- Stormwater Pit
- Water Fire Hydrant
- Water Meter
- Water Valve
- Water Tap / Irrigation Tap
- Water Conduit Marker
- Guide Sign
- Bollard
- Flag Pole
- Australia Post Box
- Tree
- Dead Tree

0m 10 20

PRINCIPAL

DESIGN & ARCHITECTURE PTY LTD

DESCRIPTION

DETAIL SURVEY OF LOT 1 ON RP602231

3 O'SHANESY ST., GRACEMERE

REAL PROPERTY DESCRIPTION

Lot/Plan :	Lot 1 on RP602231
Area :	4115 m² (Deed)
Parish :	Gracemere
County :	Livingstone
Locality :	Gracemere
Local Authority :	Rockhampton Regional Council

NOTES

This plan was prepared for Design & Architecture Pty Ltd from field survey for the purpose of designing new constructions on the subject land and should not be used by any other persons for any other purpose.

Property boundaries have not been reinstated or marked at the time of survey and are approximate only, based on appropriate boundary connections. Discrepancies appear between fences & plan dimensions of up to 1.4m.

Where possible, underground services have been located by field survey. Some services shown hereon are compiled from services plans and/or plans provided by the client and are noted accordingly on the plan.

Prior to any design, excavation or construction on site, the relevant authorities, and a qualified service locator should be engaged to ensure all services that may be affected by any future works have been located.

These plans have been prepared as verification plots only. Some text RL's have been omitted for clarity. Please refer to the relevant 3D data files for any spatial interrogation requirements.

Any discrepancies should be verified in writing with Capricorn Survey Group (CQ) Pty Ltd.

This note is an integral part of this plan.

LEGEND

SERVICES LEGEND

- S — UG Sewerage Line
- SW — UG Stormwater Line
- Overland Flow/Direction
- E — UG Electrical Line
- OH Electrical Line
- T — UG Communication Line
- W — UG Water Line
- W — AG Water Line
- G — UG Gas Line
- Top of Bank
- Toe of Bank
- C/L of Bitumen
- Edge of Bitumen
- Line Marking
- Fence Line
- Gate

CONTOUR LEGEND

- 0.25m Interval
- 1.00m Interval

DATUM

Vertical Datum :	AHD vide PSM148907 RL 14.785
Horizontal Datum :	MGA94 vide PSM148907
Contour Interval :	0.25m, 1.0m Index
Co-ord System :	Arbitrary

WARNING

LOCATION AND CONNECTIVITY OF U/G SERVICES SHOWN HEREON HAVE BEEN DETERMINED BY DIRECT ACCESS OR COMPILED FROM SERVICE PLANS ONLY. FURTHER INVESTIGATION MAY BE REQUIRED TO DETERMINE LOCATIONS OF ALL INACCESSIBLE SERVICES. NO TELECOMMUNICATIONS SEARCHES HAVE BEEN UNDERTAKEN AT THE TIME OF SURVEY.

REVISION

Rev.	Date	Details	Authorised

CREATED BY

capricornsurveygroupcq
SURVEYING & PLANNING SOLUTIONS
07 4927 5199 | recption@csgcq.com.au | 132 Victoria Parade, Rockhampton QLD 4700

SCALE **1:200 @ A1**

DRAWING NUMBER **6731-01-DTL (1/1)** REVISION **-**

Appendix C: Box-and-Whisker Plots

C-1: Pre-Development

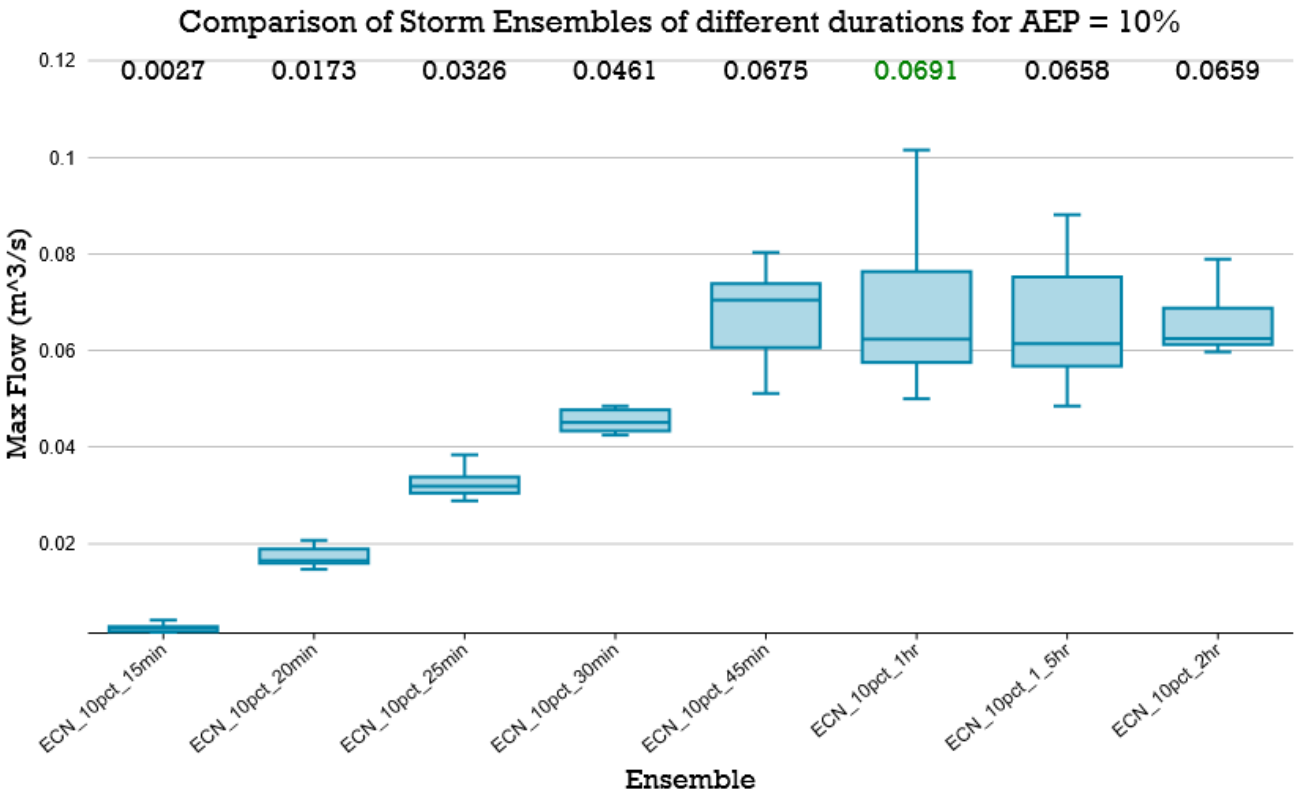


Figure 4 - Pre-development 10% AEP results

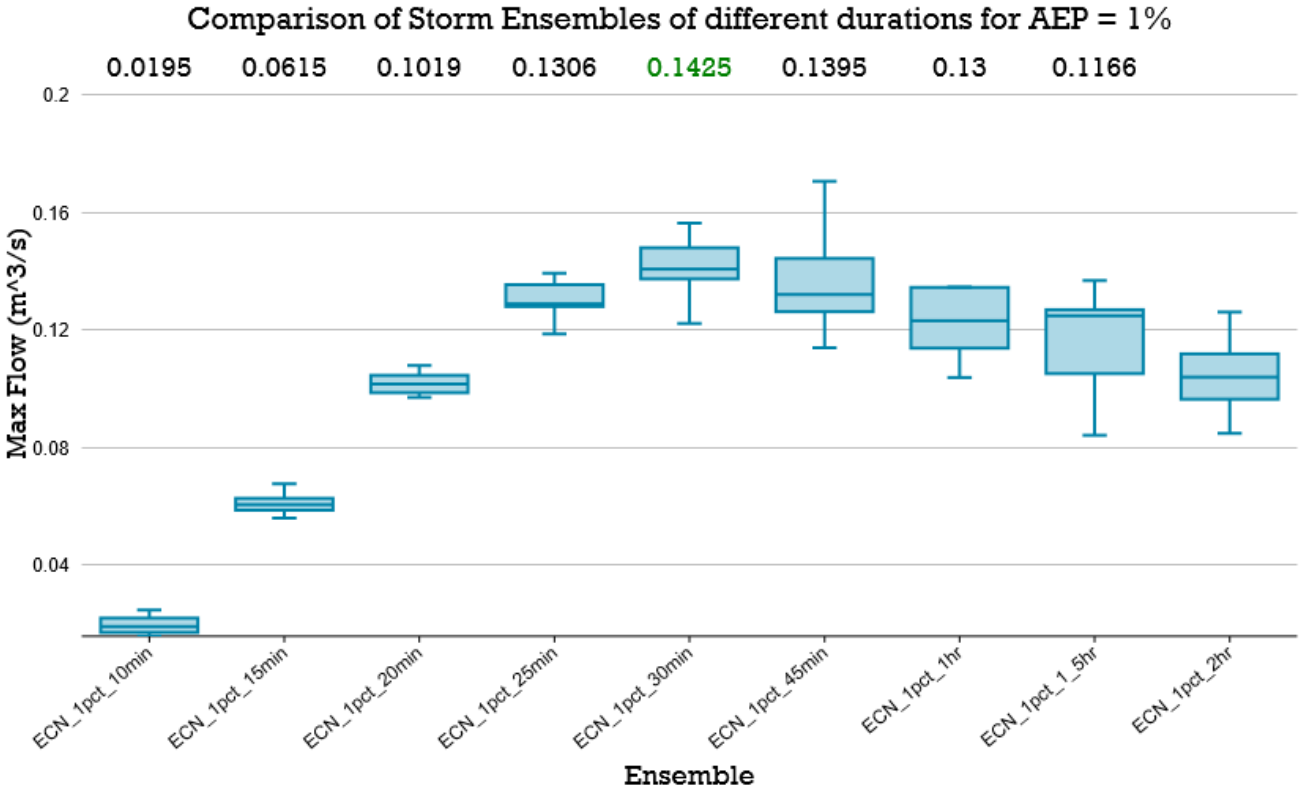


Figure 5 - Pre-development 1% AEP results

C-2: Post-Development

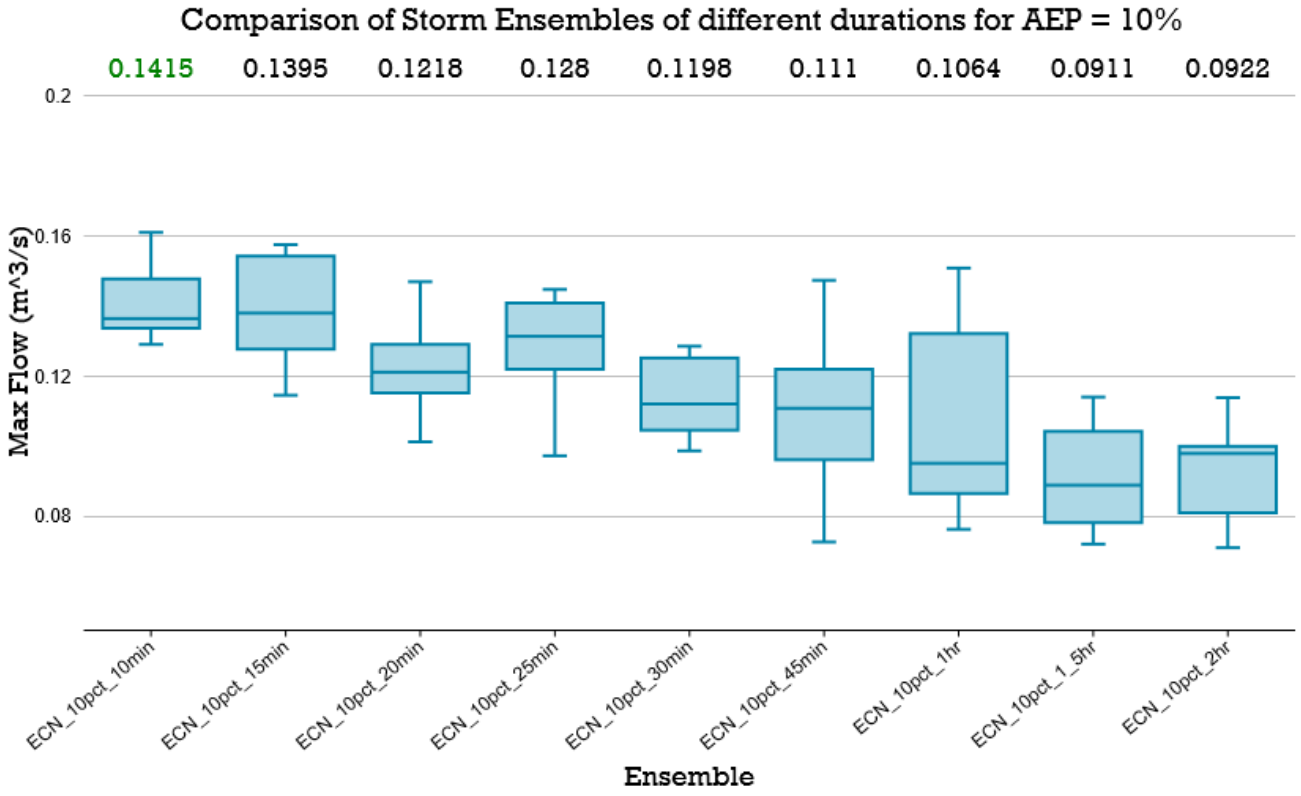


Figure 6 - Post-development 10% AEP results

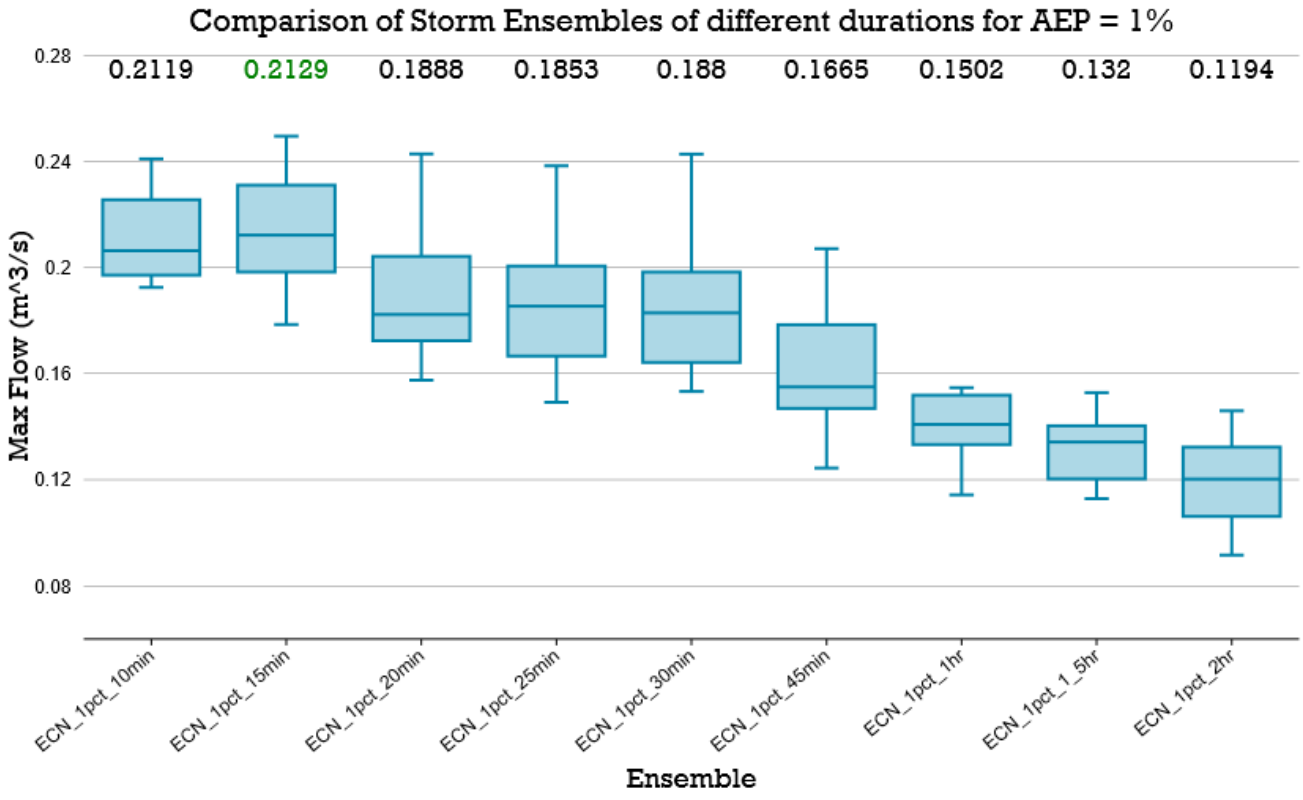


Figure 7 - Post-development 1% AEP results

C-3: Mitigated (Discharge)

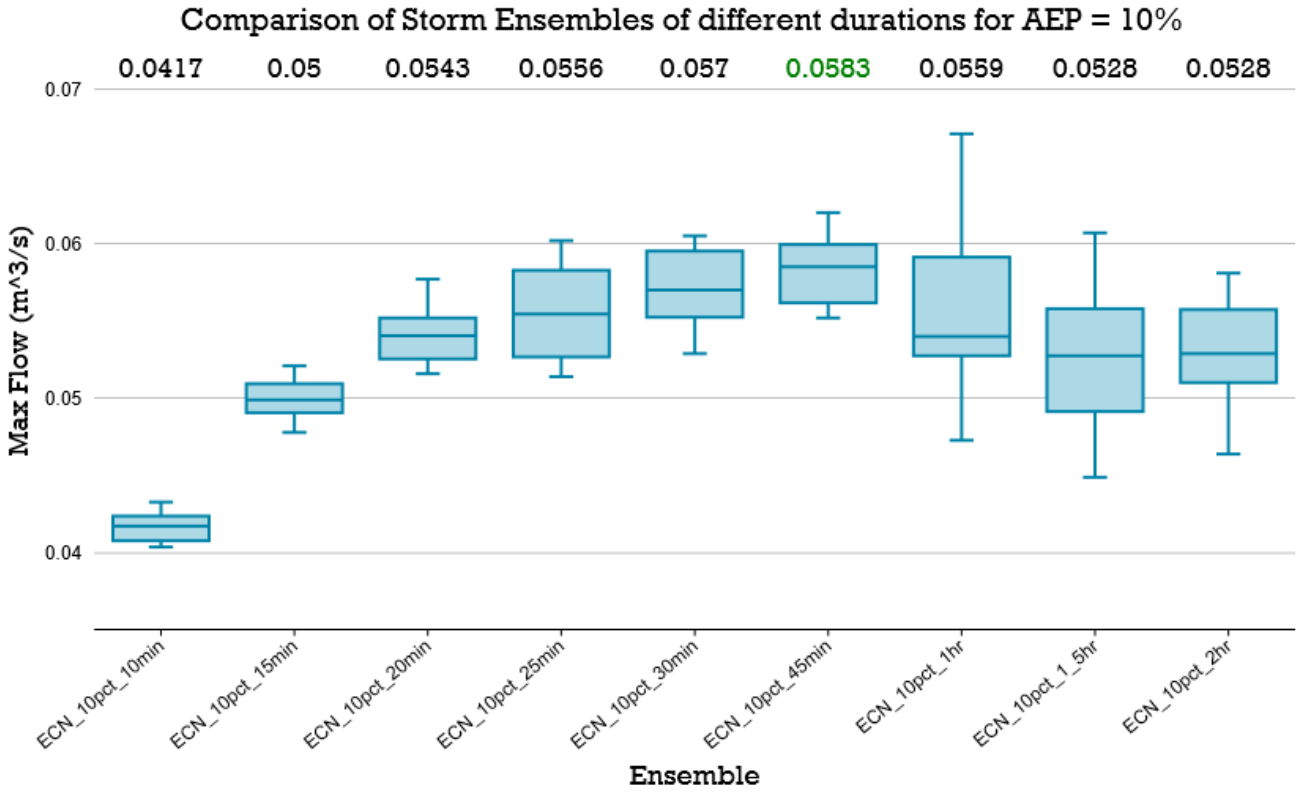


Figure 8 - Mitigated 10% AEP results

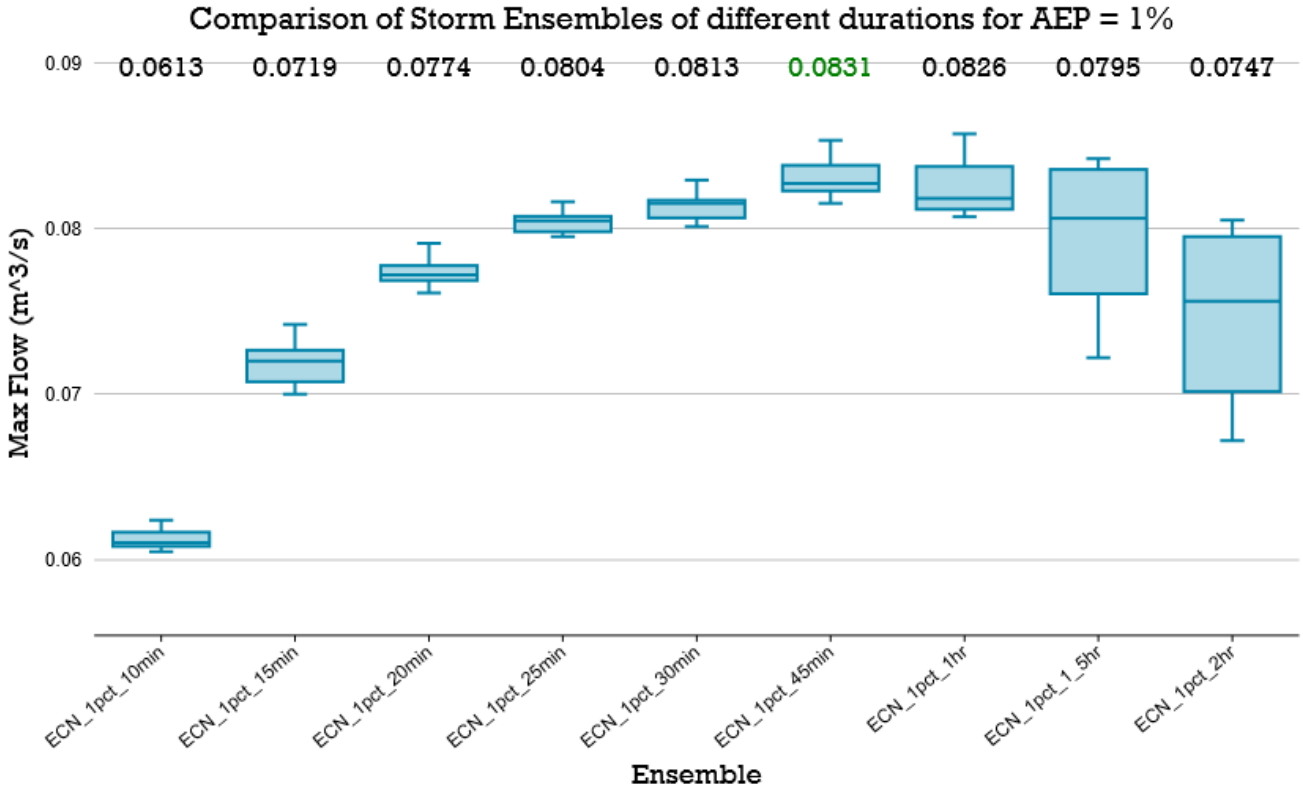


Figure 9 - Mitigated 1% AEP results

C-4: Mitigated (Stage)

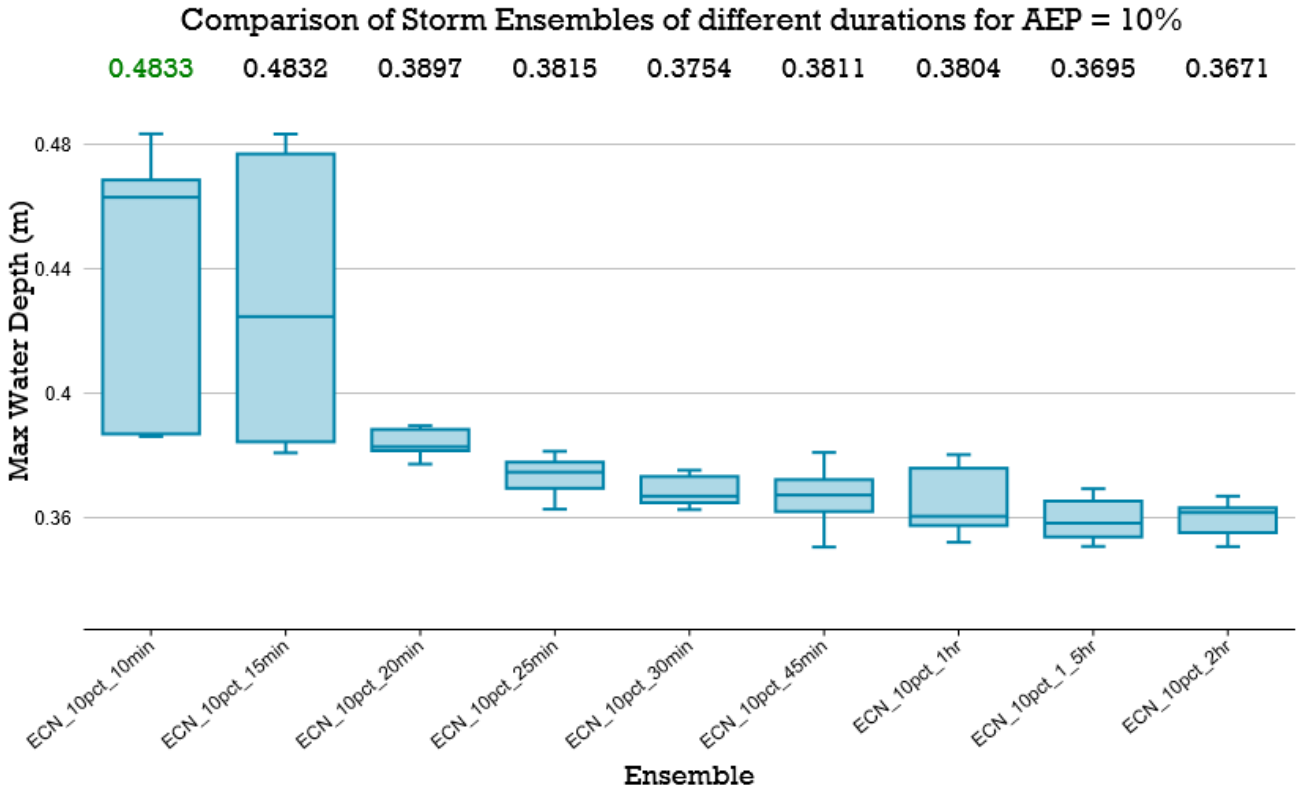


Figure 10 - Mitigated 10% AEP results

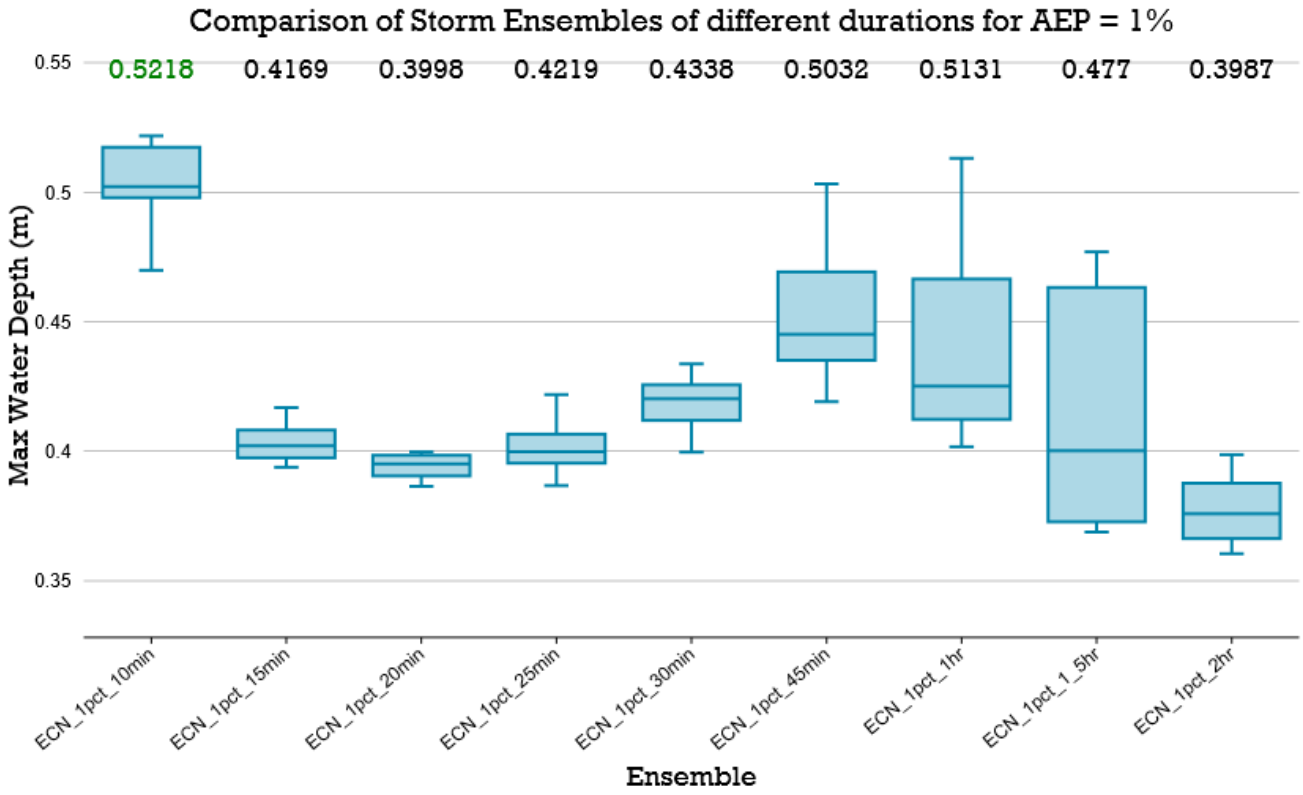
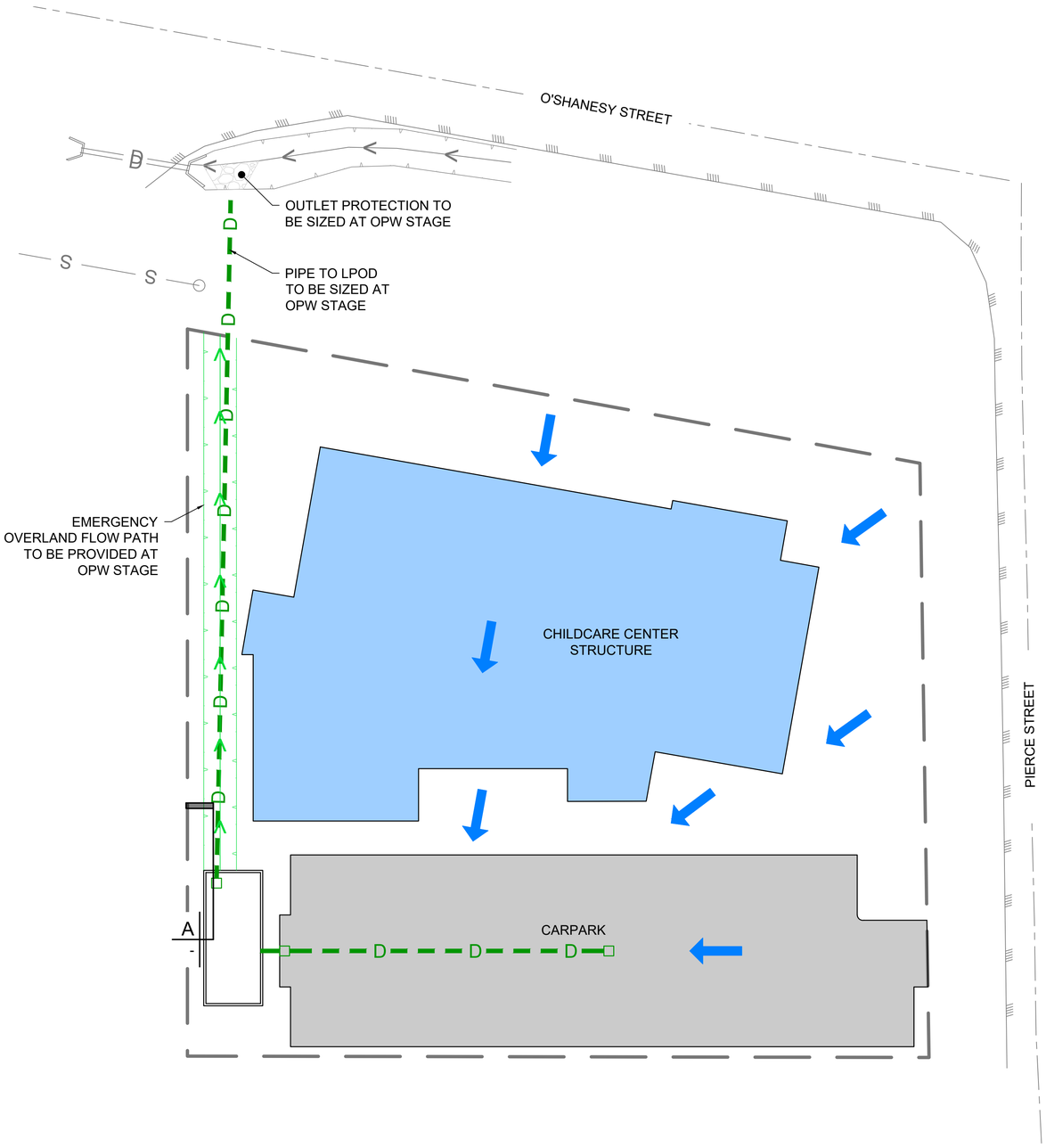


Figure 11 - Mitigated 1% AEP results

Appendix D: Stormwater Management Layout Plan

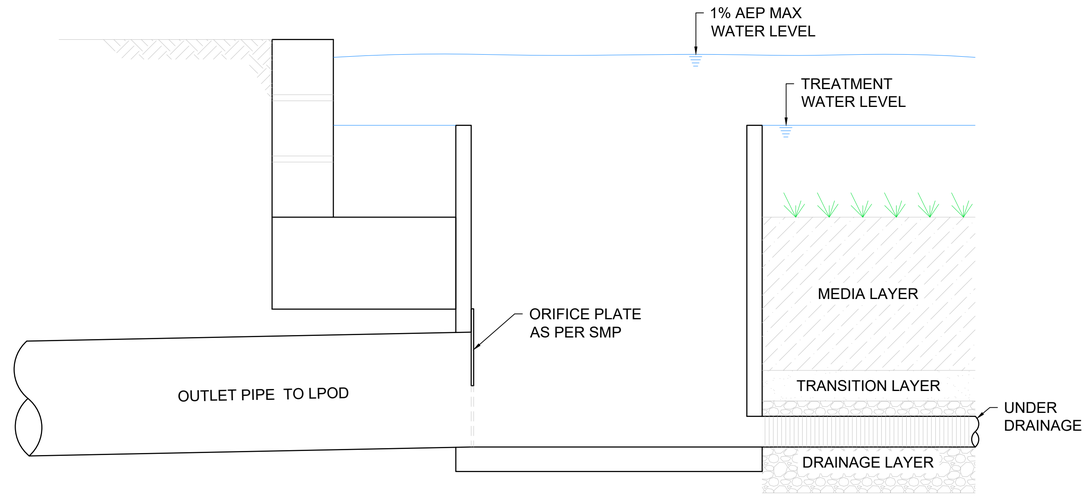
REFER TO ATTACHMENT

Engineering Reimagined.



PLAN

SCALE 1:250(A1) 1:500(A3)



A - SECTION

SCALE 1:10(A1) 1:20(A3)

PROJECT STAMP

ISSUED FOR INFORMATION

DRAWING SCALE

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SCALE 1:250 @ A1 1:500 @ A3
0 0.2 0.4 0.6 0.8m
SCALE 1:10 @ A1 1:20 @ A3

ISSUE REVISION

ISSUE	REV	DATE	DES	DESCRIPTION
INFO	A	06/08/24	T.L	ISSUED FOR INFORMATION

PROJECT MANAGEMENT

THIS DOCUMENT IS UNCONTROLLED AND IS NOT TO BE USED

RPEQ CERTIFICATION		
T.L		
DESIGNER	CHECKED	APPROVED
INTERNAL PROJECT NO.	R014-24-25	
DATUM	SURVEY	

McMurtrie Consulting Engineers
ROCKHAMPTON | BUNDABERG
PH (07) 4921 1780 | mail@mcmengineers.com | MCMENGINEERS.COM

PROJECT IDENTIFIER

CLIENT VP MEDICAL SERVICES PTY LTD
PROJECT 3 O'SHANESY STREET, GRACEMERE
TITLE
STORMWATER MANAGEMENT

DRAWING NUMBER R014-24-25-SK01

REVISION A

MCE
McMurtrie Consulting Engineers

Engineering reimagined.

Childcare Centre at 3 O'Shanesy St, Gracemere 4702 (Lot 1 on RP602231)

Traffic Impact Assessment

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

These plans are approved subject to the current conditions of approval associated with

Development Permit No.: D/36-2024

Dated: 15 November 2024

DATE
11 September 2024

REF
R014-24-25

CLIENT
VP Medical Services Pty Ltd

COMMERCIAL IN CONFIDENCE

Engineering reimagined.

Contact Information

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mail@mcmengineers.com

Document Information

Prepared for	VP Medical Services Pty Ltd
Document Name	Traffic Impact Assessment
Job Reference	R014-24-25
Revision	A

Engineering reimagined.

Document History						
Revision	Date	Description of Revision	Prepared by	Approved by		
				Name	Signature	RPEQ No
A	11/09/2024	Original Issue	R. Crouch	C. Hewitt		05141

Contents

Appendices

1 Introduction

1.1 Project Background

VP Medical Services Pty Ltd are proposing to establish a Childcare Centre at 3 O'Shanesy St, Gracemere 4702 on land described as Lot 1 on RP602231. The Childcare Centre is expected to cater for Eastbound and Westbound passing traffic on the adjacent section of O'Shanesy St and is proposed to cater up to 120 children, with approximately 20 full time equivalent staff. It is anticipated that the development will occur over one stage, opening in 2025.

1.2 Scope and Study Area

McMurtrie Consulting Engineers (MCE) have been commissioned by VP Medical Services Pty Ltd to undertake a Traffic Impact Assessment (TIA) for the proposed Childcare Centre.

This Traffic Impact Assessment (TIA) was carried out to determine the level of potential impacts of the project on the operation of the surrounding road network. The outcomes of the TIA will be used in support of the Development Application which will be assessed by Rockhampton Regional Council (RRC)

The assessment methodology adopted for this TIA is summarised in the key tasks listed below.

- Broadly identify the existing transport infrastructure which is of relevance to the project.
- Estimate traffic generation associated with the project and the distribution of this development traffic on the identified road network.
- Assess the potential impact of the project on the surrounding transport infrastructure.
- Identify potential mitigation and management strategies to be implemented to offset the impact of the proposed project (if required).

The process allows for the assessment of the traffic impacts of the project in terms of road safety, access requirements, road link capacity and other transport infrastructure. Following this, if required, potential mitigation and/or management measures would be formulated to address the potential traffic impacts caused by the proposed Project.

1.2.1 Study Area

As previously identified, the proposed Childcare Centre is proposed to be located at 3 O'Shanesy St, Gracemere 4701 on land described as Lot 1 on RP602231. The site is located along O'Shanesy St near the intersection with Pierce Street.

2 Existing Conditions

2.1 Surrounding Road Network Links

O'Shanesy Street

At the time of the initial TIA submission the O'Shanesy St was typically a two-way, two-lane road with a posted speed limit of 50km/h, generally with direct access to properties fronting the route. The eastbound and westbound lanes are undivided, allowing vehicles to pass and turn into the opposite lane.

Adjacent to the proposed development, the speed limit is 50km/h, and the road is currently classified as a Minor Urban Collector. Access to O'Shanesy St for the proposed development will be unrestricted given the current design of the route, as indicated in Figure 1.

Figure 1 - Study area – Lot 1 on RP602231 (Source: QLD Globe)

2.2 Land Use and Zoning

The subject site of the proposed childcare development (formally Lot 1 on RP602231) is designated as low medium density residential zoning under Council's Planning Scheme and is currently a vacant block as shown in Figure 2.

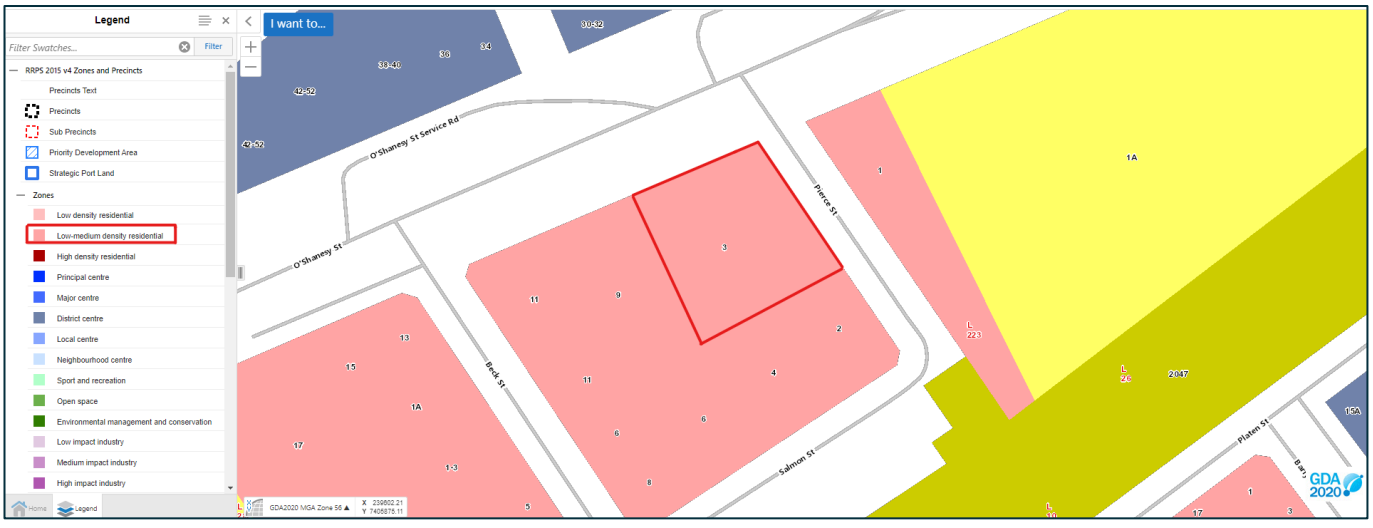

Figure 2: Land Use Zoning – Lot 1 on RP602231 (Source: Rockhampton Regional Council Planning Scheme)

2.3 Traffic Volumes

2.3.1 Road Link Volumes

Currently there are no traffic counts present along Salmon or Pierce Street, however using first principles and the current number of dwellings along both roads, an approximate volume of through traffic during the peak periods can be established. To determine the traffic generation of the existing dwellings, reference has been made to RTA: Guide to Traffic Generating Developments. This data stipulates a weekday peak hour vehicle trip of 0.85 per dwelling for dwelling houses. Taking a conservative approach and assuming a rate of 1 trip to the existing dwellings would equate to a peak hour trip generation of 5 trips (entry and exit). Furthermore, an access point for the Aurizon rail corridor is present at the end of Pierce Street, expecting to generate approximately 1 trip (entry and exit) during the peak hour.

The background traffic volumes for the relevant section of O'Shanesy Street were provided by Rockhampton Regional Council. Using these established traffic volumes for the relevant road link, the development year (2025) daily traffic volumes on the network were established assuming a very conservative 10-year growth rate of 3% based on the available census data.

A summary of the forecast background traffic volumes for each of the relevant road sections for the current year (2025) is provided in Table 1.

Table 1: Existing (2021) AADT Traffic Volumes Forecast

Site ID	AADT Segment		Base Data Year	Base Year (2021) AADT				10 Yr. GR %	Background AADT (2025)			
									Gaz		A-Gaz	
	Start (km)	End (km)		Gaz	% HV	A-Gaz	% HV		Total	HV	Total	HV
O'Shanesy St												
			2021	700	14.3%	700	14.3%	3.0%	788	113	788	113

2.4 Road Safety Issues

2.4.1 Existing Site Conditions

A desktop review of the existing traffic conditions on the relevant road network was undertaken by Chris Hewitt (RPEQ/Road Safety Auditor) on Wednesday 31 July 2024. No obvious safety issues were identified.

2.4.2 Road Crash History Review

A review of the road crash history was undertaken on the eastbound and westbound lanes along the relevant section of O'Shanesy Street, 300m either side of the proposed access. This was undertaken using the road crash data available from the Queensland Globe database, with the assessment completed from data from the past 10 years (January 2014 – January 2024). The results of this assessment identified accident rates in proximity to the intersection are relatively low, with no serious incidents in the past seven (10) years (2014 – 2024)

2.5 Site Access

As previously identified, access to the site will be via an unrestricted access intersection along Pierce Street.

3 Proposed Development Details

3.1 Operational Details

The proposed development is a Childcare Centre, which will occupy the entire lot on the subject site as shown in the site plan included in Appendix A. The proposed development represents the final form of the site, and no further development is expected. The development is proposed to cater up to 120 children, with approximately 20 full time equivalent staff. It is anticipated that the development will occur over one stage, opening in 2025. Vehicular access is proposed via an unrestricted access intersection with Pierce Street.

The traffic elements of the proposed development are discussed further in the following sections.

3.2 Proposed Access and Parking

3.2.1 Site Access

As previously identified, vehicular access to the development is proposed to be provided via an unrestricted access intersection with Pierce Street catering for vehicles travelling along O'Shanesy Street in the eastbound and westbound lanes.

In addition to the proposed site access location, it is proposed that a crossover/access width of approximately 6 – 7m be provided for use by the Childcare Centre development. Further details of the access crossover arrangements are provided below:

- Crossover connection to roadside to be generally in accordance with CMDG standard drawing CMDG-R-042 Type A – Two Way Commercial Driveway Slab.

Based on the information provided above, it can be concluded that the proposed site access arrangements can be expected to be adequate to cater for the traffic volumes generated by the proposed childcare centre development.

3.2.2 Internal Site Facilities

To assess the adequacy of the internal traffic facilities, reference has been made to the Access, Parking and Transport Code within the Rockhampton Regional Council Planning Scheme, as well as the relevant Australian Standards.

Compliance with the requirements of these documents is discussed in the following sections.

3.2.2.1 Car Parking

Table 9.3.1.3.2: Parking requirements of RRC's Planning Scheme stipulates a car parking requirement of one (1) space per 6 children and 1 space per employee (FTE) for Childcare Centre developments. Given the proposed Childcare Centre is expected to accommodate 120 children and 20 FTE staff, this would equate to a recommended minimum parking provision of 40 parking spaces (20 for visitors/children and 20 for staff). As shown on the site plan (Appendix A), a total of 41 carparks are proposed on site including 1 PWD Bay for Persons with Disabilities, which meets Council's requirements. Further details of the proposed configuration of the parking area for the childcare centre are provided below:

- Visitor parking spaces are generally 5.4m long and 2.6m wide, which meets the requirements for short term, high turnover (Class 3) parking as per Figure 2.2 of AS2890.1.
- Staff parking spaces are generally 5.4m long and 2.4m wide, which meets the requirements for employee (Class 1/1A) parking as per Figure 2.2 of AS2890.1.
- The parking bays are accessed from a 6.2m wide parking aisle which exceeds the minimum requirements for Class 3 parking (5.8m) and is in accordance with the requirements for Class 1 parking as stipulated in Figure 2.2 of AS2890.1.
- The provision of 1 PWD bay for the proposal aligns with the general PWD bay provision rate of between 1-2% of the overall parking bays on site. Further to this, the proposed PWD bay is in accordance with the requirements of AS2890.6, including the provision of a 2.4m x 5.4m bay and adjacent 2.4m x 5.4m shared area.

As such, the proposed parking provision on site is in accordance with the parking requirements under RRC's *Access, Parking and Transport Code* and can therefore be deemed acceptable for the proposed childcare centre development.

3.2.2.2Service Vehicle Access, Circulation and Loading

It is noted that no specific requirement for service bays for childcare centres is identified within RRC's *Access, Parking and Transport Code*. Notwithstanding this, the design service vehicle for childcare centres are typically vans (as per Brisbane City Council's TAPS policy) and as such they are expected to utilise the standard parking bays on site, which is considered acceptable as the service vehicle movements are expected to be infrequent.

As highlighted in the site layout plan (Appendix A), the development will utilise standard waste collection wheelie bins stored on the eastern side of the site. Which are to be collected via kerbside pickup via standard waste collection services.

Based on the information above, it is considered that the service vehicle provision on site is generally in accordance with RRC's *Access, Parking and Transport Code* and is adequate to cater for the expected service vehicle movements associated with the operation of the proposed Childcare Centre development.

4 Development Traffic

4.1 Traffic Generation

Whilst it is noted that standard daily and peak hour (AM and PM peak) traffic generation rates for Childcare Centres are specified in the RMS *Guide to Traffic Generating Developments (v2 2002)*, reference has been made to the more recent data within the Traffic Generation Data—2006–2021 recently published on the Queensland Government website (https://www.data.qld.gov.au/dataset/traffic-generation-data-2006-2019). This dataset includes the recorded weekday trip generation rates for 17 separate childcare centres in Queensland, with 2 located within Rockhampton.

A summary of the relevant childcare centre data is provided in Figure 3 below, which reveals that the two existing centres located in Rockhampton have an average daily trip generation rate of 3.8 trips / childcare space and a peak hour trip generation rate of 0.86 trips / childcare space.

Year	Land use	Suburb	Local Government Area	Variable Units	Variable Value	Start Date	End Date	Average Weekday Volume	Average Weekday Rate	Weekday Peak Volume	Weekday Peak Rate
2006	Child Care	ROBERTSON	Brisbane City	Childcare Spaces	75	9/05/2006	23/05/2006			50	0.67
2006	Child Care	ROTHWELL	Moreton Bay Regional	Childcare Spaces	74	9/05/2006	23/05/2006			56	0.76
2006	Child Care	OXLEY	Brisbane City	Childcare Spaces	75	9/05/2006	23/05/2006			49	0.65
2006	Child Care	NORTH LAKES	Moreton Bay Regional	Childcare Spaces	75	9/05/2006	23/05/2006			48	0.64
2009	Child Care	ROBERTSON	Brisbane City	Childcare Spaces	75	5/05/2009	11/05/2009	186	2.5	32	0.43
2009	Child Care	ROTHWELL	Moreton Bay Regional	Childcare Spaces	74	5/05/2009	11/05/2009	228	3.1	42	0.57
2009	Child Care	OXLEY	Brisbane City	Childcare Spaces	75	5/05/2009	11/05/2009	138	1.8	30	0.4
2009	Child Care	HENDRA	Brisbane City	Childcare Spaces	75	17/05/2009	23/05/2009	162	2.2	30	0.4
2010	Child Care	KENMORE	Brisbane City	Childcare Spaces	72	4/10/2010	10/10/2010	220	3.1	50	0.69
2010	Child Care	ANNERLEY	Brisbane City	Childcare Spaces	72	4/10/2010	10/10/2010	262	3.6	53	0.74
2010	Child Care	EIGHT MILE PLAINS	Brisbane City	Childcare Spaces	72	4/10/2010	10/10/2010	271	3.8	52	0.72
2010	Child Care	BOONDALL	Brisbane City	Childcare Spaces	72	4/10/2010	10/10/2010	265	3.7	53	0.74
2010	Child Care	NEW FARM	Brisbane City	Childcare Spaces	48	4/10/2010	10/10/2010	80	1.7	15	0.31
2010	Child Care	THE RANGE	Rockhampton Regional	Childcare Spaces	72	22/11/2010	28/11/2010	253	3.5	58	0.81
2010	Child Care	BARGARA	Bundaberg Regional	Childcare Spaces	72	22/11/2010	28/11/2010	222	3.1	46	0.64
2010	Child Care	THABEBAN	Bundaberg Regional	Childcare Spaces	72	22/11/2010	28/11/2010	204	2.8	47	0.65
2010	Child Care	FRENCHVILLE	Rockhampton Regional	Childcare Spaces	72	22/11/2010	28/11/2010	297	4.1	65	0.9
							Queensland Average		3.0		0.63
							Rockhampton Average		3.8		0.86

Figure 3: Traffic Generation Data Childcare Centres TMR (Source: https://www.data.qld.gov.au/dataset/traffic-generation-data-2006-2019/resource/fc0429b2-6292-4a5e-ab2e-ecba49ef12f7)

Adopting the trip generation assumptions identified above, the following traffic generation volumes were established for the proposed Childcare Centre development:

Table 2: Traffic Generation Summary – Proposed Childcare Centre Development

Scenario	AM Peak	PM Peak	Daily
Traffic Generation Rates	0.86 Trips / Child	0.86 Trips / Child	3.80 Trips / Child
120 Childcare Spaces	104 Trips	104 Trips	456 Trips

4.2 Traffic Distribution

Table 3 - Proposed development traffic distribution

AM Peak	PM Peak
Arrival/Departure Split	
– 50% traffic inbound to development; and – 50% traffic outbound from development.	– 50% traffic inbound to development; and – 50% traffic outbound from development.
Trip Distribution	
Inbound – 90% From O'Shanesy Street (East) – 10% From O'Shanesy Street (West) **Outbound** – 90% To O'Shanesy Street (East) – 10% To O'Shanesy Street (West)	**Inbound** – 90% From O'Shanesy Street (East) – 10% From O'Shanesy Street (West) **Outbound** – 90% To O'Shanesy Street (East) – 10% To O'Shanesy Street (West)

4.3 Development Traffic Volumes on the Network

Based on the information outlined above and the conservative assumptions applied, an estimate of the additional development traffic volumes at the key site access intersection of Pierce Street and O'Shanesy Street have been established, with a summary of the resultant AM and PM peak hour development traffic volumes provided in the figure below.

The development year has been assumed as 2025 thus resulting in a 10-year design period of 2035.

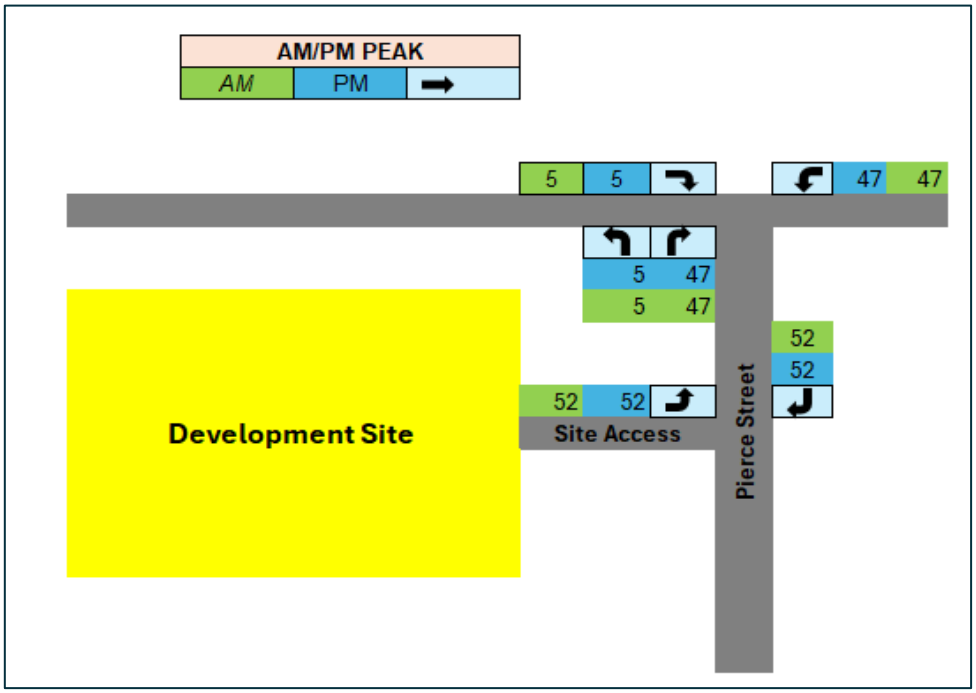

Figure 4: AM/PM Development Volumes

5 Impact Assessment and Mitigation

Based on the information provided above, it was determined that the critical elements of the surrounding road network in terms of the potential impact of the proposed developments was the Pierce Street access intersection and the Pierce St / O'Shanesy St intersection.

Further details of the assessment of the impact of the development on road network is provided in the following sections.

5.1 Access and Frontage Impact Assessment and Mitigation

The proposed site access ingress and egress will be provided as per Appendix A. Pierce Street provides a straight geometry with relatively level gradients in the direction of incoming traffic. As such, the existing roadway provides an unobstructed view line between the driver exiting the site and vehicles approaching the development from along Pierce Street. As such, this site access exceeds the SISD requirements in accordance with AS2890.1 for a posted speed of 50km/h.

Estimation of the peak hour volume is made with reference to Section 3 of the Guide to Traffic Management Part 6, which states a peak hour/24-hour volume ratio of 8-10% for an urban situation. Applying 10% to the background AADT and design AADT gives a peak hour traffic volume of 79 and 106 veh/h respectively for both directions along O'Shanesy Street. Additionally, as per Section 2.3.1 the through traffic volumes for Pierce Street have been estimated as 6 trips (entry and exit) during the peak hour.

Forecast through road and access volumes based on Table 1 & 2 and Figure 4, hourly volumes as estimated above, and a compound growth rate of 3% are shown in Figure 5 below for the opening year of 2025 and the 10-year design horizon of 2035.

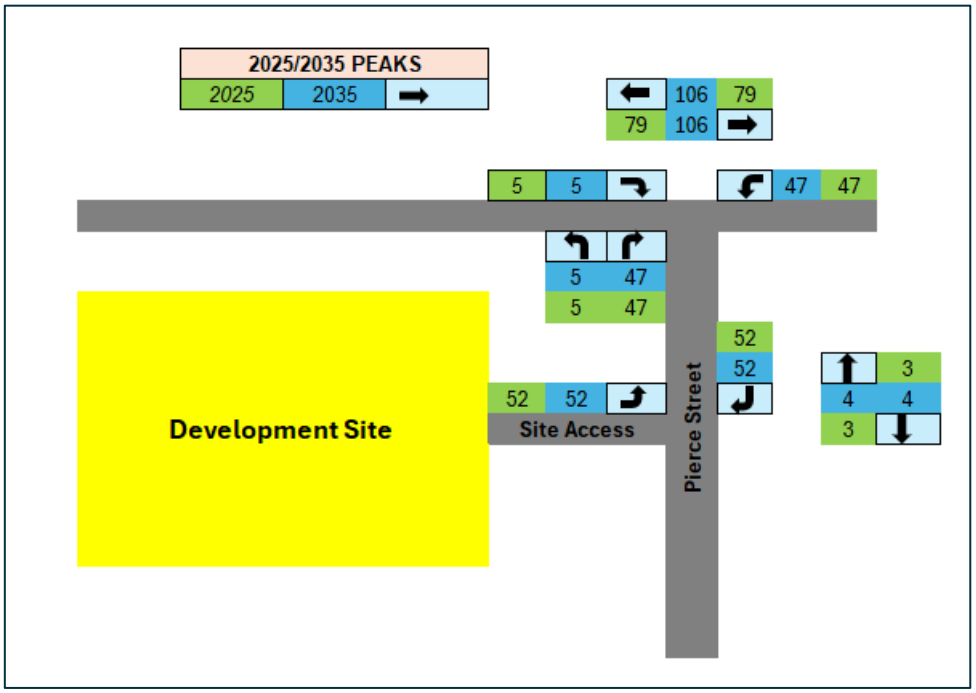

Figure 5: Development volumes 2025/2035

A turn warrants assessment was undertaken for the current site access intersection with Pierce Street and the intersection with O'Shanesy Street based on the forecast post development traffic volumes from the proposed developments as identified in Figure 5. The assessment was completed using Figure 2.26b of Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings, which depicts the turn warrants graph for design speeds less than 70km/h

The resultant graphs from the assessment for the post development (2035) traffic conditions at the site access and O'Shanesy Street intersection are provided in Figure 6 and Figure 7 below.

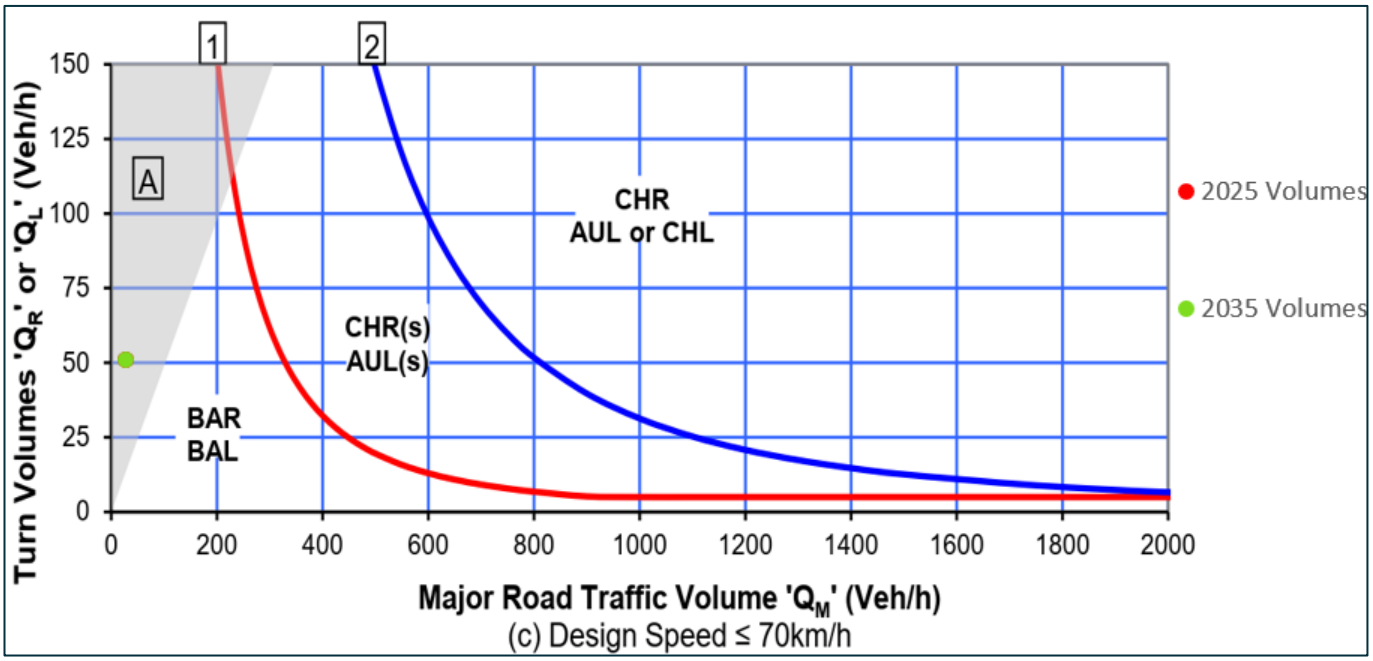

Figure 6: Pierce St. Site Access Turn Warrants Assessment Graph

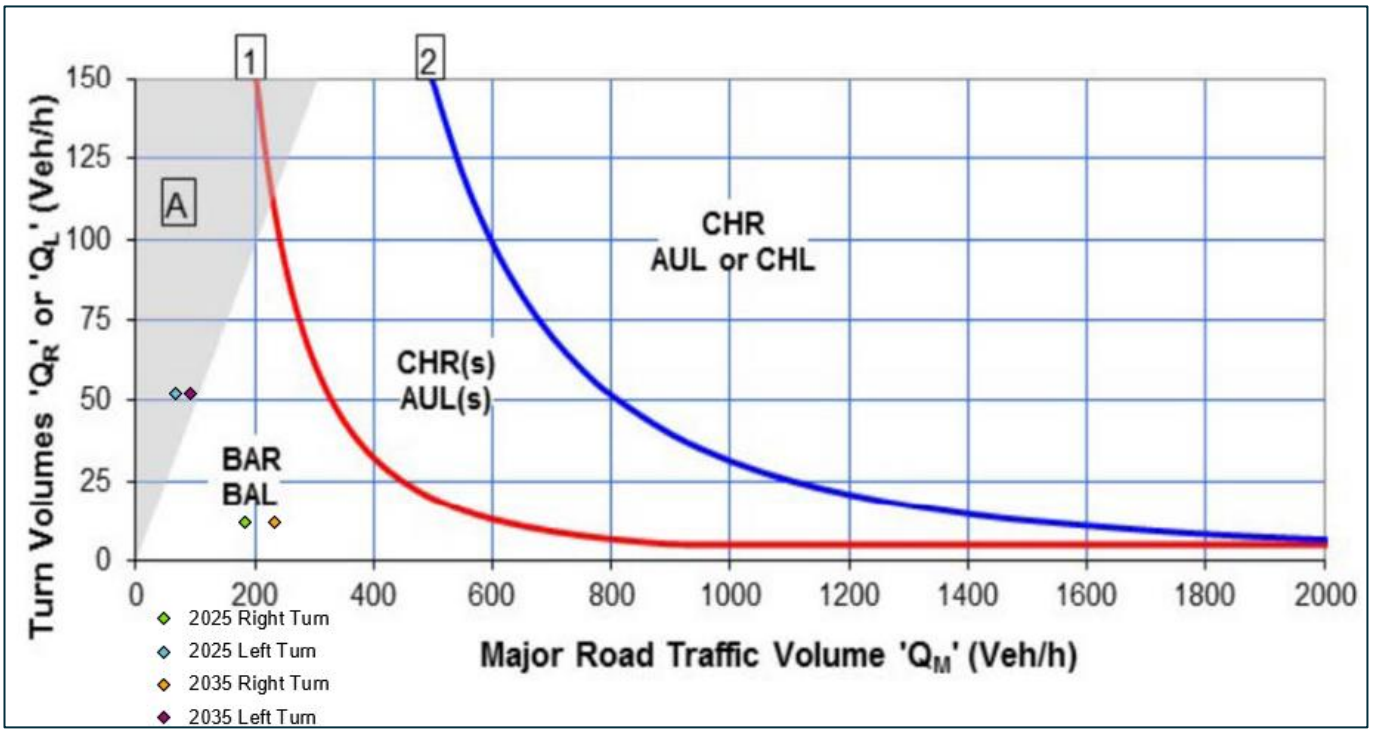

Figure 7: O'Shanesy Street Turn Warrants Assessment

The result of the turn warrants assessment indicate that the recommended turn treatments at the site access intersection with Pierce Street and the O'Shanesy Street intersection for the post development traffic volume scenario was a BAR/BAL. As such it is expected that the provision of the proposed access, including the crossover connection to the roadside in accordance with CMDG standard drawing CMDG-R-042 Type A – Two Way Commercial Driveway Slab, will be suitable to cater for the expected traffic movements to the proposed Childcare Centre development.

As a result, no further treatments are proposed to the exiting intersection on O'Shanesy Street and the site access with Pierce Street.

5.2 Pavement Impact Assessment and Mitigation

Given that the proposed development is a Childcare Centre and that the proposed development construction period will be completed in a short number of months, it is not expected to generate a significant number of new heavy vehicle movements under typical operation, no pavement mitigation works are deemed warranted or required because of the proposal.

6 Conclusions and Recommendations

6.1 Summary of Impacts and Mitigation Measures Proposed

6.1.1 Internal Facilities

The traffic elements of the proposed plan of development have been designed generally in accordance with the requirements of AS2890 and RRC's *Access, Parking and Transport Code*.

Given the proposed childcare centre is expected to accommodate 120 children and 20 FTE staff, this would equate to a recommended minimum on-site parking provision of 40 parking spaces (20 for visitors/children and 20 for staff). The site accommodates 41 carparks which meets Council's requirements.

In addition to the on-site parking provision, all elements of the parking area and site access are proposed to be provided in accordance with the required standards and considered suitable to service the expected vehicle traffic from the Childcare Centre.

Finally, the proposed servicing and refuse collection arrangements for the Childcare Centre can be considered adequate, with the development nominating kerbside pickup for waste collection during standard waste collection services.

6.1.2 Traffic Impacts

In addition to the review of the internal transport facilities proposed, an assessment of the potential traffic impact of the proposed development on the external road network was also undertaken.

This assessment identified that based on the expected increases in daily traffic volumes and the resultant post development volumes still being within the capacities of Pierce and O'Shanesy Street. As such, the additional traffic from the proposed childcare centre is not anticipated to have a significant impact on the operation of the surrounding road links.

A turn warrants check was also undertaken to assess the proposed Pierce Street / Childcare Centre Access intersection and the O'Shanesy Street intersection, for post development traffic conditions at the relevant design horizon (10-year design horizon – 2035). The results of this assessment identified that a BAL/BAR should be applied at both intersections.

As such it is expected that the provision of the proposed access, including the crossover connection to the existing kerb line in accordance with CMDG standard drawing CMDG-R-042 Type A – Two Way Commercial Driveway Slab, will be suitable to cater for the expected traffic movements to the proposed childcare centre development.

6.1.3 Recommendations

Considering the information provided above, it is concluded that the proposed development will have a negligible impact on the adjacent road network and can therefore be recommended to be approved from a traffic engineering perspective.

6.2 Certification Statement and Authorisation

A copy of the RPEQ certification and authorisation statement covering this assessment of the proposed Childcare development located at 3 O'Shanesy St, Gracemere 4702 on land described as Lot 1 on RP602231 is included for reference as Appendix B.

Appendix A: Site Layout Plan

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DO NOT SCALE DRAWING
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REVISIONS

No:	Description:	Date:
P1	PRELIMINARY	29.02.2024
P2	PRELIMINARY	07.03.2024

Proposed Landscaping Plan

1 : 250

ISSUED FOR
PRELIMINARY

Project Details:
CHILDCARE
Address:
3 O'SHANESY STREET, GRACEMERE

Drawing Title:
PROPOSED LANDSCAPING PLAN

dezignelements BUILDING DESIGNERS
0407 271 336 M
info@dezignelements.com.au E
QBCC No: 1247120 BDAQ No: 0001677

Scale:	1 : 250
Date:	FEB 2024
Drawn:	Author
Rev:	P2
Project No:	24_016
Drawing No:	S-04

7/03/2024 11:57:40 AM

Appendix B: RPEQ Certification

Certification of Traffic Impact Assessment Report

Registered Professional Engineer Queensland

for

Project Title:	3 O'Shanesy Street MCU

As a professional engineer registered by the Board of Professional Engineers of Queensland pursuant to the *Professional Engineers Act 2002* as competent in my areas of nominated expertise, I understand and recognise:

- the significant role of engineering as a profession, and that
- the community has a legitimate expectation that my certification affixed to this engineering work can be trusted, and that
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible RPEQ, I certify:

i. I am satisfied that all submitted components comprising this traffic impact assessment, listed in the following table, have been completed in accordance with the Guide to Traffic Impact Assessment published by the Queensland Department of Transport and Main Roads and using sound engineering principles, and

ii. where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment, and that

iii. the outcomes of this traffic impact assessment are a true reflection of results of assessment, and that

iv. I believe the strategies recommended for mitigating impacts by this traffic impact assessment,

v. embrace contemporary practice initiatives and will deliver the desired outcomes.

Name:	Chris Hewitt	RPEQ No:	05141
RPEQ Competencies:	Civil		
Signature:		Dated:	01/08/2024
Postal Address:	PO Box 2149 Wandal QLD 4700		
Email:	chris@mcmengineers.com		

Traffic impact assessment components to which this certification applies	✓
1. Introduction	
Background	✓
Scope and study area	✓
Pre-lodgement meeting notes	N/A
2. Existing Conditions	
Land use and zoning	✓
Adjacent land uses / approvals	N/A
Surrounding road network details	✓
Traffic volumes	✓
Intersection and network performance	N/A
Road safety issues	✓
Site access	✓
Public transport (if applicable)	N/A
Active transport (if applicable)	N/A
Parking (if applicable)	N/A
Pavement (if applicable)	N/A
Transport infrastructure (if applicable)	N/A
3. Proposed Development Details	
Development site plan	✓
Operational details (including year of opening of each stage and any relevant catchment / market analysis)	✓
Proposed access and parking	✓
4. Development Traffic	
Traffic generation (by development stage if relevant and considering light and heavy vehicle trips)	✓
Trip distribution	✓
Development traffic volumes on the network	✓
5. Impact Assessment and Mitigation	
With and without development traffic volumes	✓
Construction traffic impact assessment and mitigation (if applicable)	N/A
Road safety impact assessment and mitigation	✓
Access and frontage impact assessment and mitigation	✓
Intersection delay impact assessment and mitigation	N/A
Road link capacity assessment and mitigation	✓
Pavement impact assessment and mitigation	✓
Transport infrastructure impact assessment and mitigation	N/A
Other impacts assessment relevant to the specific development type / location (if applicable)	N/A
6. Conclusions and Recommendations	
Summary of impacts and mitigation measures proposed	✓
Certification statement and authorisation	✓