DEVELOPMENT SCHEDULE

ZONING
MEDIUM IMPACT INDUSTRIAL
USE
WAREHOUSE

PARKING
1/100M2 WAREHOUSE ETC
1960 M2 Approx
20 REQUIRED
20 PROVIDED

TRAFFIC
DELIVERY AND PICKS UPS
2 TO 3 B DOUBLE PER WEEK
4-6 TRUCKS PER DAY
6-10 UTE/CARS PER DAY

LANDSCAPING
SITE AREA 8128M2
STAGE 1 SITE AREA 4740M2
REQUIRED 474 M2 (10%)
PROVIDED 280.1 M2 (5.91 %)

SITE AREAS	
NAME	Measured Area
FUTURE PAVEMENT 2	2096.79
FUTURE SHED 2	1298.85
LANDSCAPE 1	36.55
LANDSCAPE 2	92.30
LANDSCAPE 3	118.81
LANDSCAPE 4	8.86
LANDSCAPE 5	24.14
PAVEMENT STAGE 1	2467.25
SHED 1	1963.44
	8106.99 m²

FUTURE SHED 2
A: 1298.85 m²

As Amended by council
19/07/2024
Future stage not approved

FUTURE PAVEMENT 2
A: 2096.79 m²

R.CONC CROSSOVER AND DRIVEWAY 2. REFER CIVIL ENGINEERING DETAILS AT OPERATIONAL WORKS

WADE STREET

R.CONC CROSSOVER AND DRIVEWAY 1. REFER CIVIL ENGINEERING DETAILS AT OPERATIONAL WORKS

20000
offset driveway
centreline burke st

ROADWORKS (KERB AND CHANNEL) REFER RRC PROPOSED WORKS

58546
81601
9000

GATE B
GATE A

LANDSCAPE 1
A: 36.55 m²
LANDSCAPE 2
A: 92.30 m²
86.86 m²
IF 1.5M WIDE
TO LANDSCAPE AREA 2
LANDSCAPE 3
A: 118.81 m²
LANDSCAPE 4
A: 8.86 m²
LANDSCAPE 5
A: 24.14 m²

DRIVEWAY
ONE WAY
(ANGLE PARKING)

OFFICE
INTERNAL RACKING
INTERNAL RACKING
EXTERNAL RACKING

SHED 1
A: 1963.44 m²

GATE
controlled access

AWNING A
203.26 m²
AWNING B
291.60 m²
AWNING C
202.81 m²

LOADING AREA
COMMERCIAL WASTE BIN
PAVEMENT STAGE 1
A: 2467.25 m²

#toPZvalue

8720
56720

55000
58000

BURKE STREET

U/G STORMWATER DETENTION TANK REFER CIVIL ENGINEERS DETAILS

STORMWATER OUTLET AND HEADER WALL REFER CIVIL ENGINEERS DETAILS AT OPERATIONAL WORKS

Stage 2
A: 3395.65 m²
Stage 1
A: 4729.47 m²

58546 | 6580 | 8420 | 48600 | 8420 | 9580
122146
18000
140146

SITE AREAS	
NAME	Measured Area
Stage 1	4729.47
Stage 2	3395.65
	8125.12 m²

1 SITE PLAN
Scale 1:200

N

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/44-2024
Dated: 24 July 2024

R.P.D
LOT 1 RP 603514
ROCKHAMPTON REGIONAL COUNCIL
192 WADE ST PARKHURST QLD 4701

OVERALL SITE PLAN

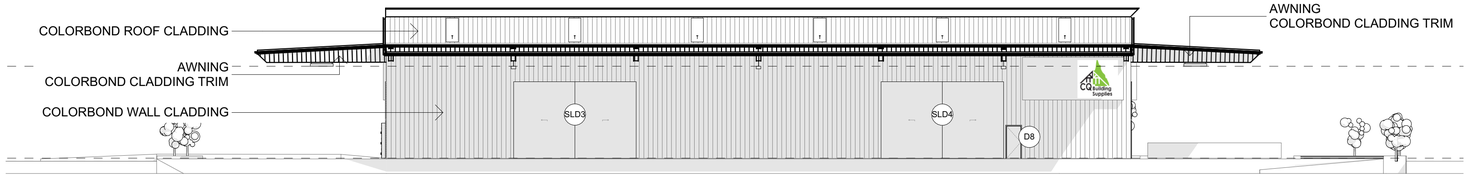
REV ID	Issue Date	DESCRIPTION
B - AMENDMENT	7/06/2024	MCU APPLICATION - RFI
A	4/04/2024	MCU APPLICATION
REV 2	5/02/2024	REV FOR COMMENT

AMF BUILDING DESIGN
262 Grubb St
Koongal QLD 4701
e: amfprojects@bigpond.com
m 0423 375 400
QBCC No 1068756
ABN 22143 527 198
all projects
residential,commercial,industrial

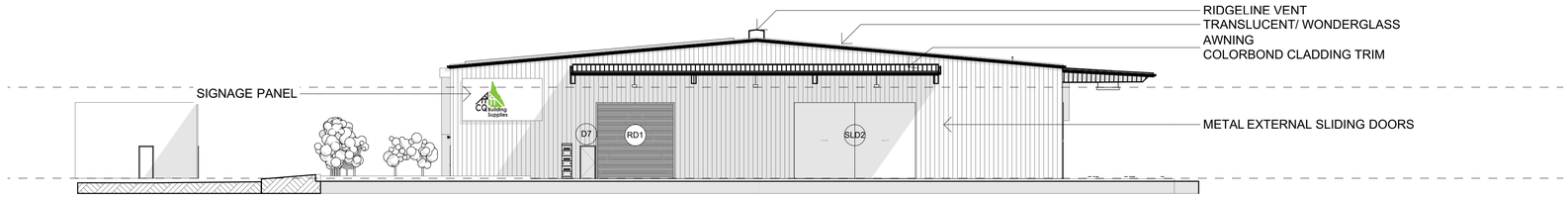
PROJECT
PROPOSED INDUSTRIAL SHED
FOR
Spicer Trading
AT
192 WADE ST PARKHURST QLD 4701

APPROVED	
CHECKED	-
DRAWN	AMF
DESIGN	

JOB No. **AMF 23538**
DWG/REV. **SD/02**
B - AMENDME

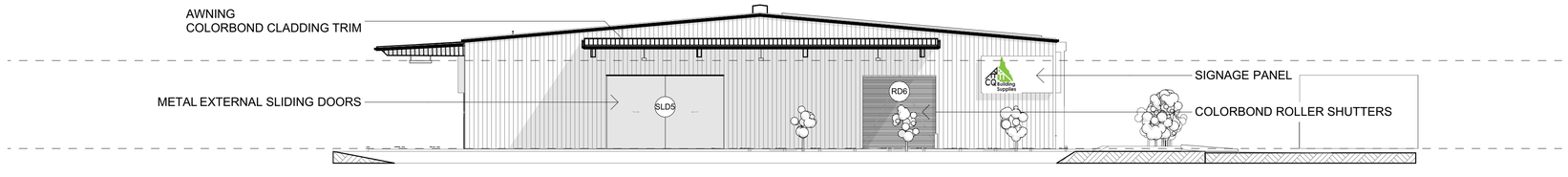


2 SOUTH ELEVATION
Scale 1:200



3 WEST ELEVATION
Scale 1:200

1 NORTH ELEVATION
Scale 1:200



2 EAST ELEVATION
Scale 1:200

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/44-2024

Dated: 24 July 2024

Elevations

REV ID	Issue Date	DESCRIPTION
B - AMENDMENT	7/06/2024	MCU APPLICATION - RFI
A	4/04/2024	MCU APPLICATION
REV 2	5/02/2024	REV FOR COMMENT

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Koongal QLD 4701
e: amfprojects@bigpond.com
m 0423 375 400
QBCC No 1068756
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all projects
residential,commercial,industrial

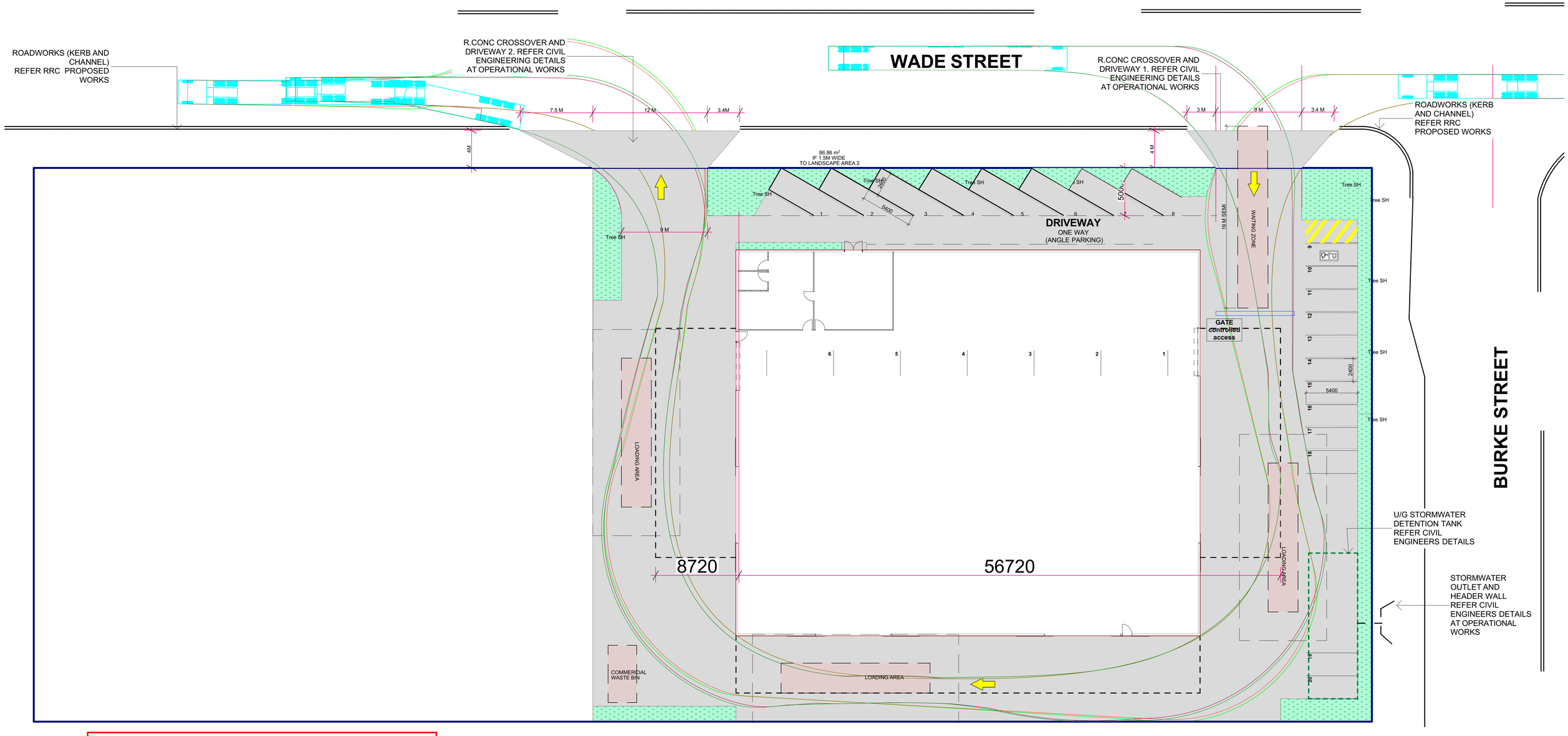
BUILDING DESIGN

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
Spicer Trading
AT
192 WADE ST PARKHURST QLD 4701

APPROVED	
CHECKED	-
DRAWN	AMF
DESIGN	

JOB No. **AMF 23538**

DWG/REV. **SD/03** **B - AMENDME**



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/44-2024

Dated: 24 July 2024

1 SEMI & B DOUBLE TRUCK ACCESS
Scale 1:200

SEMI ACCESS

B - AMENDMENT	7/06/2024	MCU APPLICATION - RFI
A	4/04/2024	MCU APPLICATION
REV 2	5/02/2024	REV FOR COMMENT
REV ID	Issue Date	DESCRIPTION

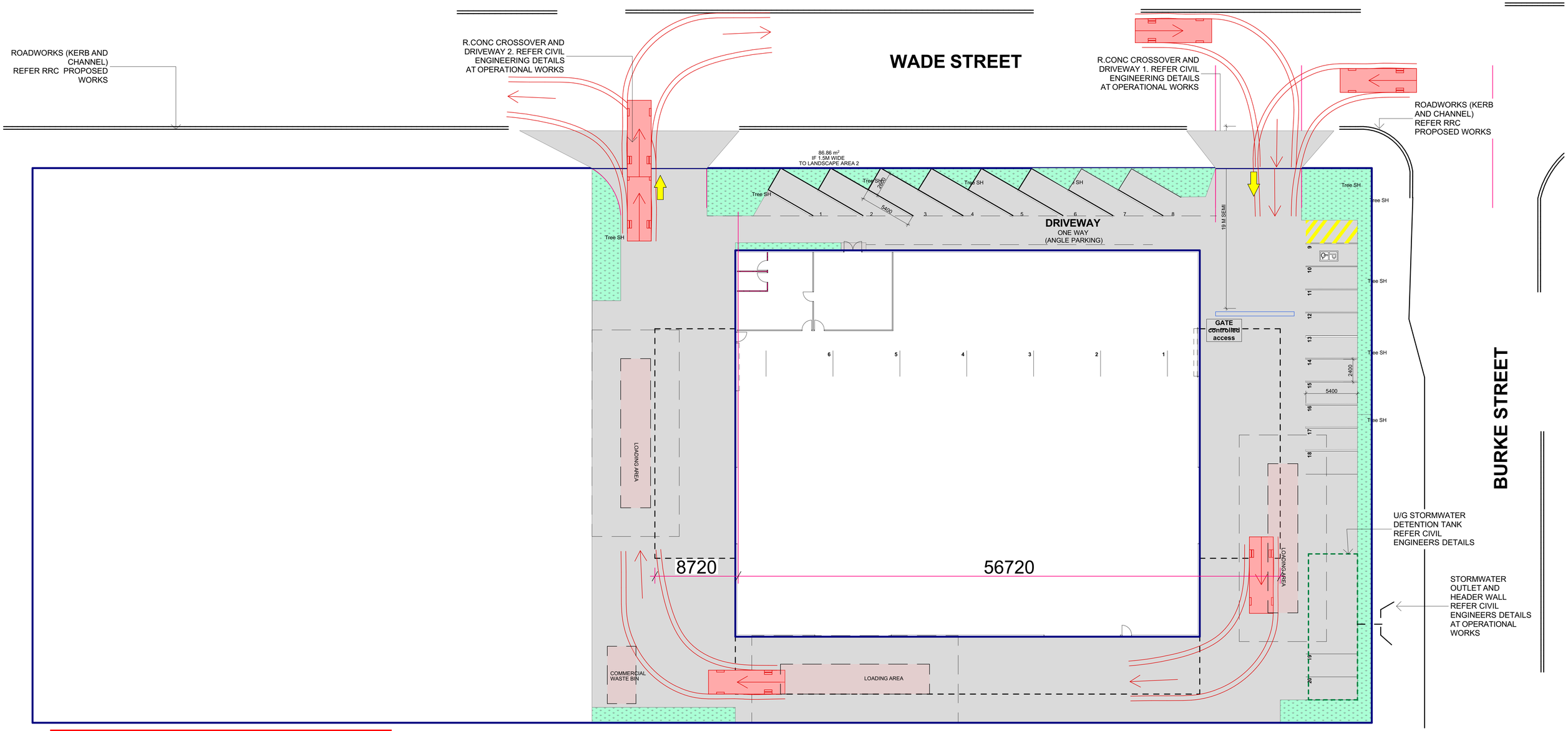
AMF BUILDING DESIGN
262 Grubb St
Koongal QLD 4701
e: amfprojects@bigpond.com
m 0423 375 400
QBCC No 1068756
ABN 22143 527 198
all projects
residential,commercial,industrial

BUILDING DESIGN

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
Spicer Trading
AT
192 WADE ST PARKHURST QLD 4701

APPROVED	
CHECKED	-
DRAWN	AMF
DESIGN	

JOB No. **AMF 23538**
DWG/REV. **SD/04**
B - AMENDME



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/44-2024

Dated: 24 July 2024

1 MRV (BODY TRUCKS) ACCESS
Scale 1:200

MRV VEHICLE ACCESS

REV ID	Issue Date	DESCRIPTION
B - AMENDMENT	7/06/2024	MCU APPLICATION - RFI
A	4/04/2024	MCU APPLICATION

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m 0423 375 400
QBCC No 1068756
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all projects
residential,commercial,industrial

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
Spicer Trading
AT
192 WADE ST PARKHURST QLD 4701

APPROVED	
CHECKED	-
DRAWN	AMF
DESIGN	

JOB No. AMF 23538
DWG/REV. SD/05
B - AMENDME

ROADWORKS (KERB AND CHANNEL) REFER RRC PROPOSED WORKS

R.CONC CROSSOVER AND DRIVEWAY 2. REFER CIVIL ENGINEERING DETAILS AT OPERATIONAL WORKS

WADE STREET

R.CONC CROSSOVER AND DRIVEWAY 1. REFER CIVIL ENGINEERING DETAILS AT OPERATIONAL WORKS

ROADWORKS (KERB AND CHANNEL) REFER RRC PROPOSED WORKS

APPROX LOCATION OF FIRE HYDRANT BOOSTER IF REQUIRED. REFER FIRE ENGINEERING DETAILS

FUTURE STAGE 2 SEWER SERVICE CONNECTION POINT.REFER CIVIL ENGINEERING DETAILS

LANDSCAPE 1 A: 36.55 m²

LANDSCAPE 2 A: 92.30 m²

LANDSCAPE 3 A: 118.81 m²

LANDSCAPE 4 A: 3.86 m²

LANDSCAPE 5 A: 24.14 m²

DRIVEWAY ONE WAY (ANGLE PARKING)

WAITING ZONE

GATE Controlled access

FUTURE SHED 2
A: 1298.85 m²

SHED 1
A: 1963.44 m²

8720

56720

FUTURE PAVEMENT 2
A: 2096.79 m²

PAVEMENT STAGE 1
A: 2467.25 m²

SITE DETENTION STAGE 2 REFER CIVIL ENGINERR

Stage 2
A: 3395.65 m²

Stage 1
A: 4729.47 m²

SITE DETENTION TANK (REFER CIVIL ENGINEERS DETAILS) 170.39m²

CONNECTION TO SEWER MAIN (NEW PROPOSED CHAMBER) REFER CIVIL ENGINEERS DETAILS

U/G STORMWATER DETENTION TANK REFER CIVIL ENGINEERS DETAILS

STORMWATER OUTLET AND HEADER WALL REFER CIVIL ENGINEERS DETAILS AT OPERATIONAL WORKS

BURKE STREET

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/44-2024

Dated: 24 July 2024

1 SITE PLAN
Scale 1:200

SITE SERVICES

REV ID	Issue Date	DESCRIPTION
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APPROVED	
CHECKED	-
DRAWN	AMF
DESIGN	

JOB No. **AMF 23538**

DWG/REV. **SD/06**

B - AMENDME

MCE
McMurtrie Consulting Engineers

Engineering reimagined.

Industrial Development at 192 Wade St, Parkhurst

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/44-2024

Dated: 24 July 2024

DATE
3 April 2024

REF
R037-23-24

CLIENT
Australasia Commodities 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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mail@mcmengineers.com

Document Information

Prepared for	Australasia Commodities Pty Ltd
Document Name	Stormwater Management Plan
Job Reference	R037-23-24
Revision	B

Document History

Revision	Date	Description of Revision	Prepared by	Approved by		
				Name	Signature	RPEQ No
A	15/01/2024	Original Issue	T. Lisle	R. Bywater		23569
B	3/04/2024	Layout Changed	T. Lisle	R. Bywater		23569

Contents

1 Introduction

1.1 Project Overview

McMurtrie Consulting Engineers have been commissioned by Australasia Commodities Pty Ltd (the Client) to undertake a site-based Stormwater Management Plan (SMP) to support a Development Application for a Material Change of Use (MCU) and Reconfiguring a Lot (ROL), for an industrial shed development. The site is located at 192 Wade Street, Parkhurst 4702, on land described as Lot 1 on RP063514.

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

1.2 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.

1.3 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

3 Site Characteristics

3.1 Pre-Development

The site is generally flat, with sparse vegetation and a slight (0.4% - 0.6%) fall from the east to west. As can be seen in Figure 1 below, the site has historically been used as a hardstand for heavy vehicles, and as such approximately 16% of the site has been compacted by traffic, which for the purpose of modelling has been assumed to have a fraction impervious of 50%. The remaining 84% of the site has been assumed to be fully pervious.

The existing Lawful Point of Discharge (LPOD) for the development site is the Wade Street reserve on the western boundary of the site.

Figure 1 - Existing topography plan

3.2 Post-Development

The proposed development, which is shown in Appendix B and Figure 2, will result in two large industrial sheds on separate lots, and associated surrounding hardstand areas. It is noted that the eastern shed is proposed to be developed immediately, while the western shed is planned to be developed after upgrades to Wade St are provided by RRC. In order to facilitate the development, an internal stormwater network will be constructed.

While the pre-development LPOD is to the west of the site, it is proposed that the development achieves lawful discharge to the Burke Street boundary, where an existing open channel drain conveys runoff south to an existing stormwater network. This is necessary due to a lack of suitable infrastructure to the west of the site to convey the runoff, and which would also necessitate additional filling of the site to achieve discharge at existing ground levels.

Figure 2 – Proposed development plan

The rationale in determining the allowable discharge to the Burke Street drainage network is discussed further in Section 3.3 and Section 6.

3.3 Adjacent Development

The site sits adjacent to a relatively recently constructed industrial development. In order to determine the feasibility of connecting the site to the existing drainage network constructed as part of said development, the original design plans were reviewed to determine the capacity of the network.

Drawings R1128-01-01-028 and R1128-01-01-029 of Appendix C show that the network was designed for a Cy value of 0.83, which corresponds to design fraction impervious of 0.9, which is consistent with the proposed development intent.

Further, reference to Drawing R1128-021-01-025 shows that a portion of the subject site has been accommodated for within the design catchment of the network – refer to Figure 3.

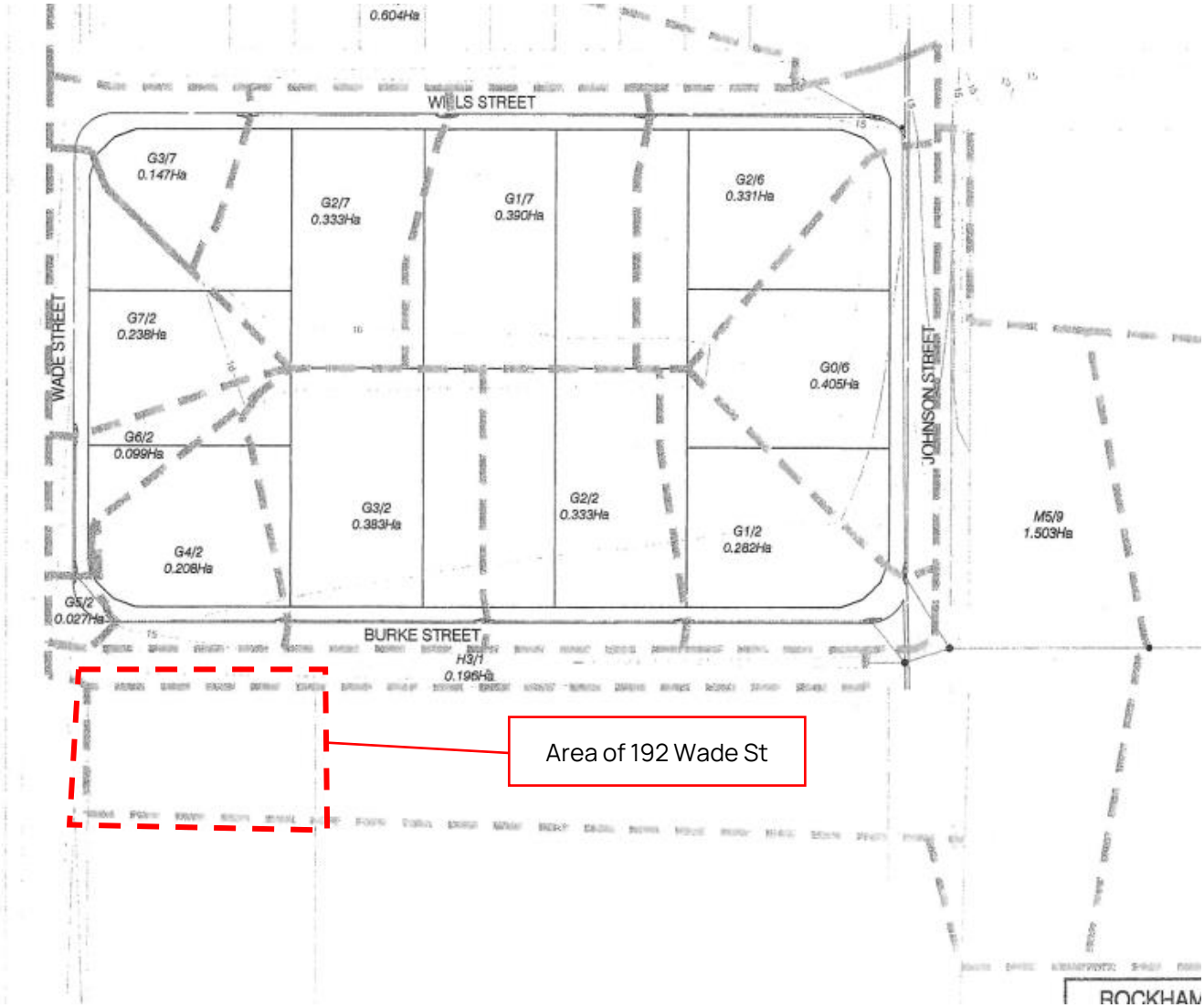


Figure 3 – Catchment area

Given that Council infrastructure records indicate that there has been minimal to no expansion of the catchment feeding this network, it can be reasonably assumed that there is sufficient capacity to accommodate the portion of development site shown on Drawing R1128-021-01-025 at a fraction impervious of 0.9. This has been quantified as shown in Table 3.

4 Hydrology

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

4.1 Catchment Parameters

Table 1 - XP Storm model parameters

Parameter		Pre-Development		Post-Development	
		Pervious	Impervious	Pervious	Impervious
Area (ha)		0.746	0.065	0.081	0.73
Percent Impervious (%)		0	100	0	100
Slope (%)		0.4	0.4	0.5	0.5
Laurenson 'n' (storage non-linearity exponent)		-0.285	-0.285	-0.285	-0.285
Infiltration	Initial Loss (mm/hr)	28	1	28	1
	Continuing Loss (mm/hr)	1.7	0	1.7	0

4.2 Development Results

Table 2 - Hydrology results

Annual Exceedance Probability (AEP %)	Pre-Development	Post-Development
0.5EY (Minor Event)	ECN_0.5EY_1.5hr (0.05906m^3/s)	ECN_0.5EY_10min (0.278m^3/s)
5% (Allotment Drainage)	ECN_5pct_1hr (0.14322m^3/s)	ECN_5pct_10min (0.456m^3/s)
1% (Major Event)	ECN_1pct_45min (0.22370m^3/s)	ECN_1pct_10min (0.605m^3/s)

The results shown are for the full catchment in its pre-development case assuming discharge to the west.

6 Stormwater Management Plan

It is understood that Council has plans to provide stormwater infrastructure in the Wade Street reserve in the future. Therefore, it is proposed that the western shed (DE1) be built after this infrastructure is provided. Given the infrastructure has allowed for a 90% impervious fraction, there is no need to provide a detention tank for this portion of the site.

As discussed in Section 3, there is some capacity within the drainage network to accommodate approximately 0.19ha of the development site at 90% imperviousness. Given there is no formalised drainage infrastructure west of the site (in the immediate term), it is proposed that the development will utilise the capacity in the drainage network to the east, up to the quantum available in the pre-development case for the eastern most shed. To achieve this, the runoff from the site will be attenuated by an underground storage tank, which will receive the full development area and discharge at the pre-development rate shown below (refer to Appendix A-2: Pre-Development (Adjacent Development Design Allowance)).

Table 3 - Existing drainage network - limit of design capacity

Annual Exceedance Probability (AEP %)	Pre-Development
0.5EY (Minor Event)	ECN_0.5EY_30min (0.0675m³/s)
5% (Allotment Drainage)	ECN_5pct_10min (0.10769m³/s)
1% (Major Event)	ECN_1pct_10min (0.1424m³/s)

6.1 Storage Device/s

An underground tank is proposed to attenuate the runoff from the development site to the levels identified as being permissible based on the design of the existing stormwater network. The propsoed layout is shown in Figure 4. The parameters of the tank are provided in Table 4.

Figure 4 – Onsite Storage plan

Table 4 – Tank parameters – DE2

Parameter	Value
Area	170m^2
Depth	1.2m
Outlet	250mm orifice plate

6.2 Mitigation Results

Table 5 shows the results of the discharge from the proposed tank in catchment DE2.

It is proposed that in the interim of catchment DE1 being developed, the catchment will maintain it's pre-development discharge location to the Wade Street road reserve.

Table 5 - Hydrology results – DE2

Annual Exceedance Probability (AEP %)	Orifice Outlet	Driveway Overtopping	Change
0.5EY (Minor Event)	ECN_0.5EY_30min (0.0648m^3/s)	-	-4%
5% (Allotment Drainage)	ECN_5pct_45min (0.1022m^3/s)	-	-5.1%
1% (Major Event)	ECN_1pct_45min (0.1307m^3/s)	ECN_1pct_30min (0.0064m^3/s)	-3.8%

7 Stormwater Quality

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 MCU works.

7.1 Construction Phase

7.1.1 Key Pollutants

During the construction phase, a number of key pollutants have been identified for this development. Table 6 below illustrates the key pollutants that have been identified.

Table 6 - Key pollutants - construction phase

Pollutant	Sources
Litter	Paper, construction packaging, food packaging, cement bags, material offcuts.
Sediment	Exposed soils and stockpiles during earthworks and building works.
Hydrocarbons	Fuel and oil spills, leaks from construction equipment and temporary car park areas.

7.1.2 Erosion and Sediment Controls

Erosion and Sediment Control (ESC) devices employed on the site shall be designed and constructed in accordance with Council's guidelines.

Pre-Construction

- Stabilised site access/exit locations.
- Sediment fences are to be located along the contour lines downstream of disturbed areas.
- Diversion drains to divert clean runoff around the construction site.
- Educate site personnel on the requirements of the Sediment and Erosion Control Plan.

Construction

- Maintain construction access/exit, sediment fencing, catch drains and all other existing controls as required.
- Progressively surface and revegetate finished areas as appropriate.
- During construction, all areas of exposed soils allowing dust generation are to be suitably treated. Treatments will include mulching the soil and watering.
- Road access is to be regularly cleaned to prevent the transmission of soil on vehicle wheels and eliminate any build-up of typical road dirt and tyre dust from delivery vehicles.
- Adequate waste disposal facilities are to be provided and maintained on the site to cater for all waste materials such as litter hydrocarbons, toxic materials, acids or alkaline substances.

7.2 Operational Phase

7.2.1 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.

7.2.2 MUSIC Model

In order to assess the efficiency of a treatment train with regards to the 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 – Industrial adopted per Table A1.2.
- Pollutant Export Parameters – Industrial adopted per Table 3.8 & 3.9.
- The following meteorological data was adopted, as sourced from BOM (courtesy of eWater):
- Pluviograph & PET Data – Rockhampton (Station 39083).
- In accordance with the MUSIC Modelling Guidelines, a 6-minute model timestep was adopted for a 10 year period (1991 – 2001).

The MUSIC model layout is shown in Figure 5.

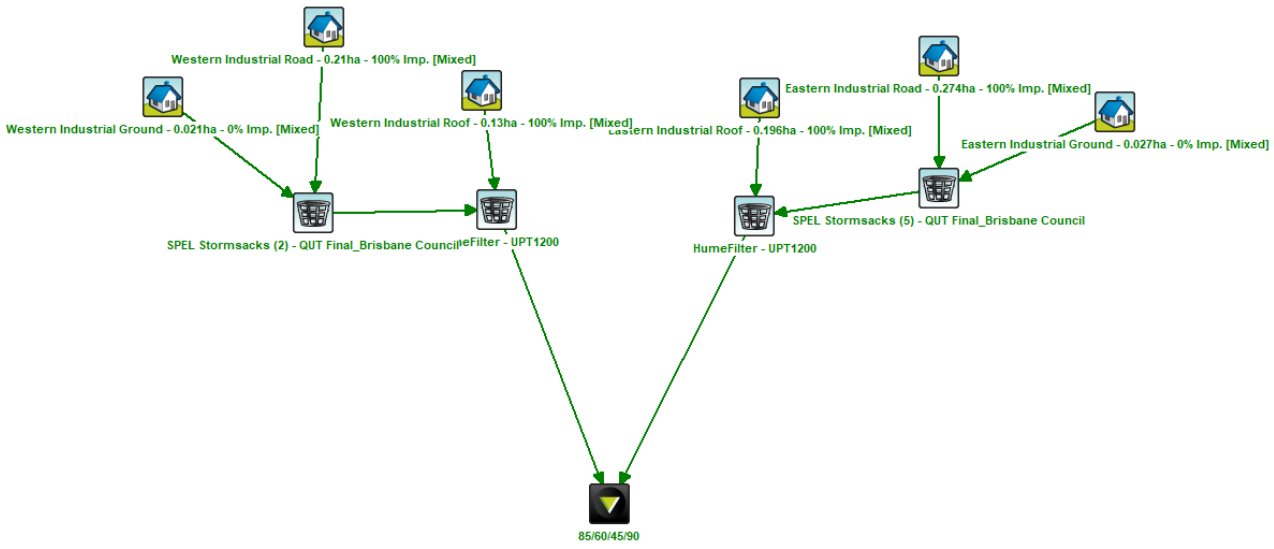


Figure 5 - MUSIC model layout

The proposed treatment train effectiveness is shown in Table 7.

Table 7 - Treatment train effectiveness - receiving node

Parameter	Sources	Residual Load	Reduction (%)	Target (%)
Flow (ML/yr)	4.88	4.88	0	N/A
Total Suspended Solids (kg/yr)	1350	192	85.8	85
Total Phosphorus (kg/yr)	2.4	0.794	67	60
Total Nitrogen (kg/yr)	11.3	5.16	54.5	45
Gross Pollutants (kg/yr)	123	10.9	91.1	90

7.2.3 Stormwater Quality Improvement Device/s

The following Stormwater Quality Improvement Devices (SQIDS) are proposed:

Western Shed

- Humes UPT1200; and,

- 2x 600x600 SPEL Stormsacks (or approved equivalent).

Eastern Shed

- Humes UPT1200; and,
- 5x 600x600 SPEL Stormsacks (or approved equivalent).

It can be confirmed that the treatment performance for each shed side is independent and can be staged separately and still achieve water quality compliance.

7.2.4 Maintenance

Maintenance should be provided in accordance with the Manufacturer's specifications.

8 Summary

8.1 Conclusion

The development of the site will result in an increase in runoff. By reconfiguring the LPOD to discharge to the existing stormwater network in Burke Street, and providing a detention tank, the impacts of the development are effectively managed. It has been confirmed through modelling that the proposal does not impact on the capacity or performance of the existing network. Further, by implementing SQIDS onsite the quality of the stormwater runoff has been aligned with the requirements of the SPP.

It is proposed that the western shed be provided after the construction of the stormwater network within Wade Street, and can be conditioned as such.

8.2 Qualifications

This stormwater management plan has been prepared by MCE to support a Development Application for Material Change of Use, for an industrial shed development. The site is located at 192 Wade Street, Parkhurst 4702, on land described as Lot 1 on RP063514.

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).

8.3 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).

DILGP. (2017, July). State Planning Policy. Department of Infrastructure, Local Government and Planning.

IPWEAQ. (2016). Queensland Urban Drainage Manual - Fourth Edition. Institute of Public Works Engineering Australiasia, Queensland.

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

Appendix A: Box and Whisker Plots

A-1: Pre-Development (Whole Site)

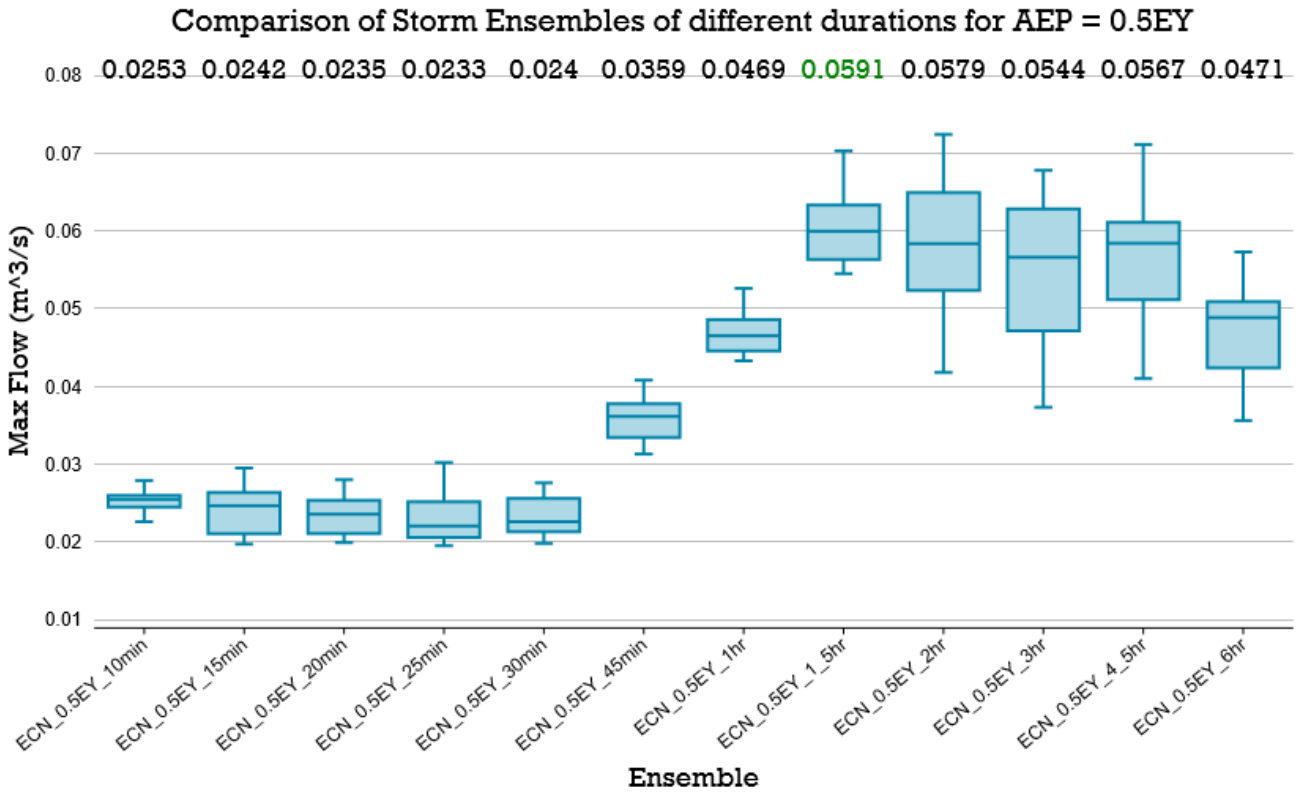


Figure 6 - 0.5EY Box and Whisker Plot

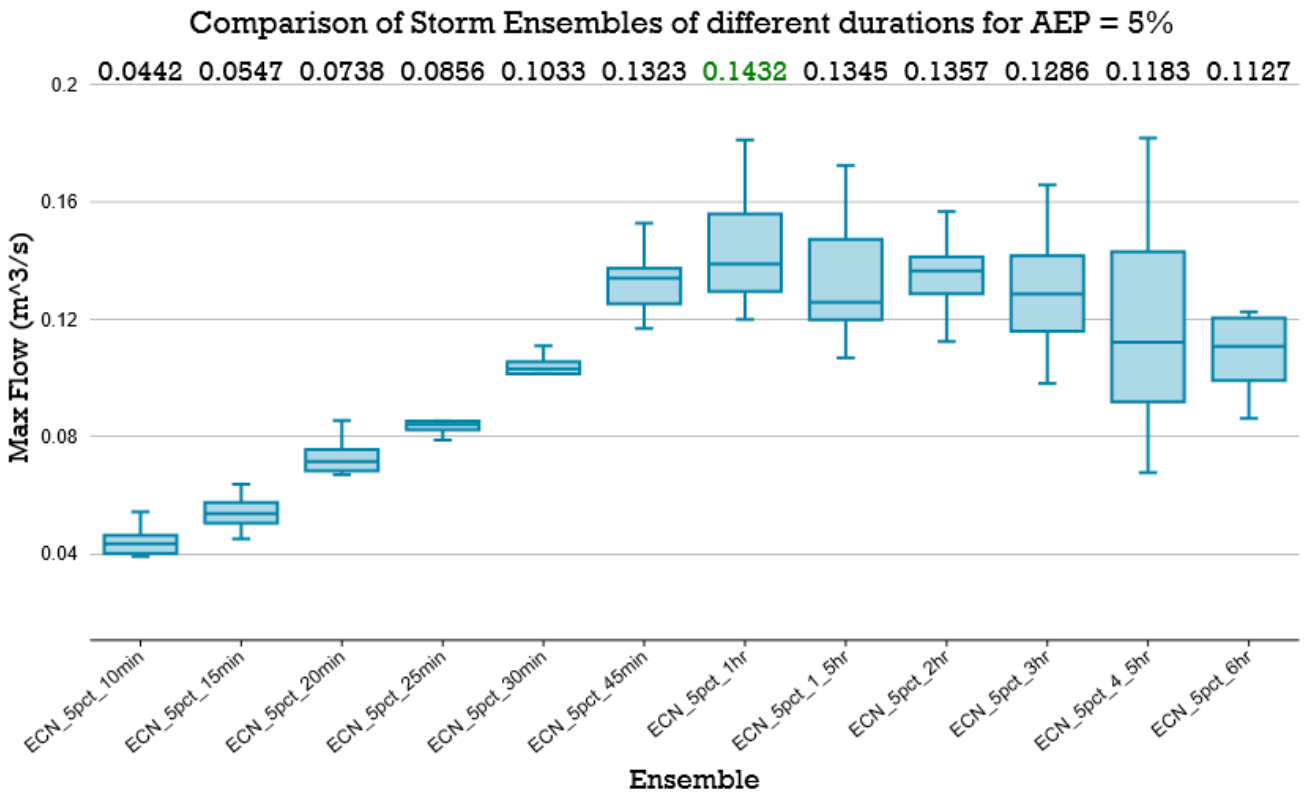


Figure 7 – 5% AEP Box and Whisker Plot

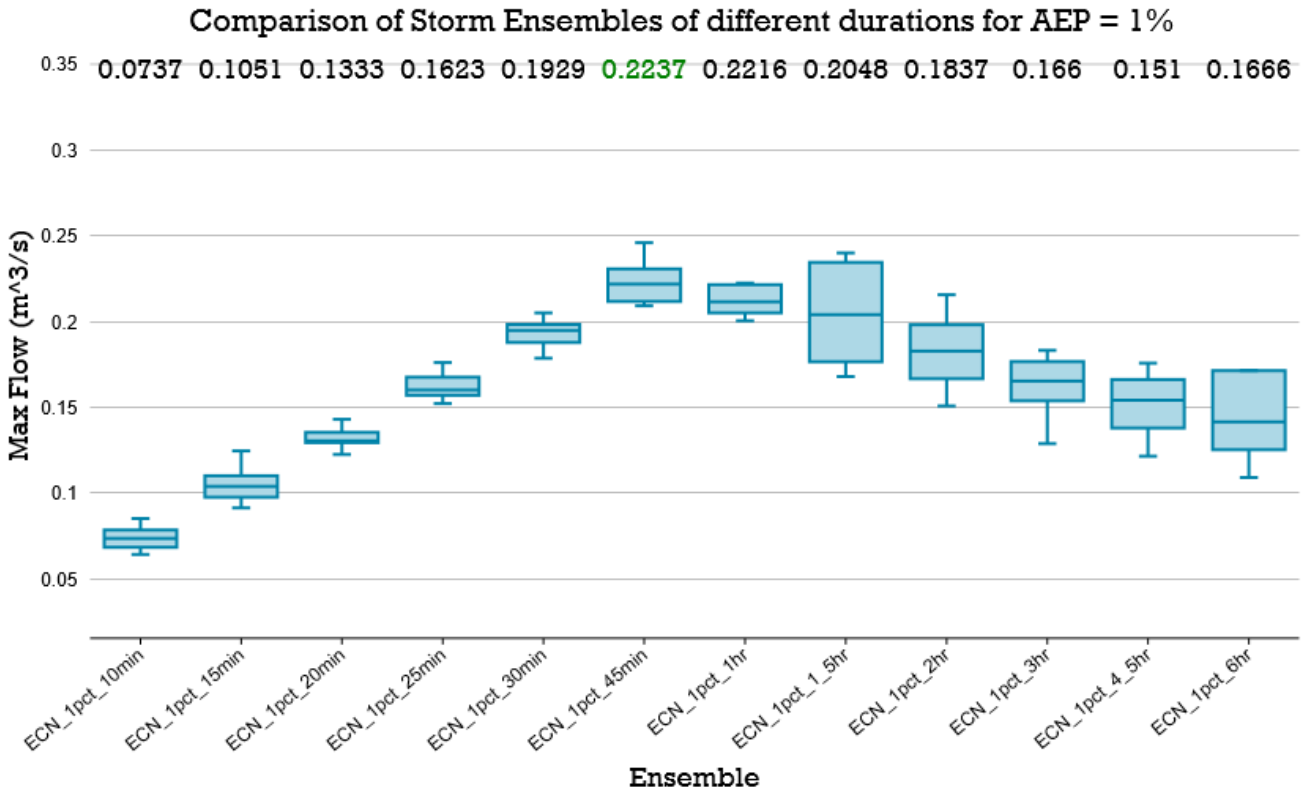


Figure 8 - 1% AEP Box and Whisker Plot

A-2: Pre-Development (Adjacent Development Design Allowance)

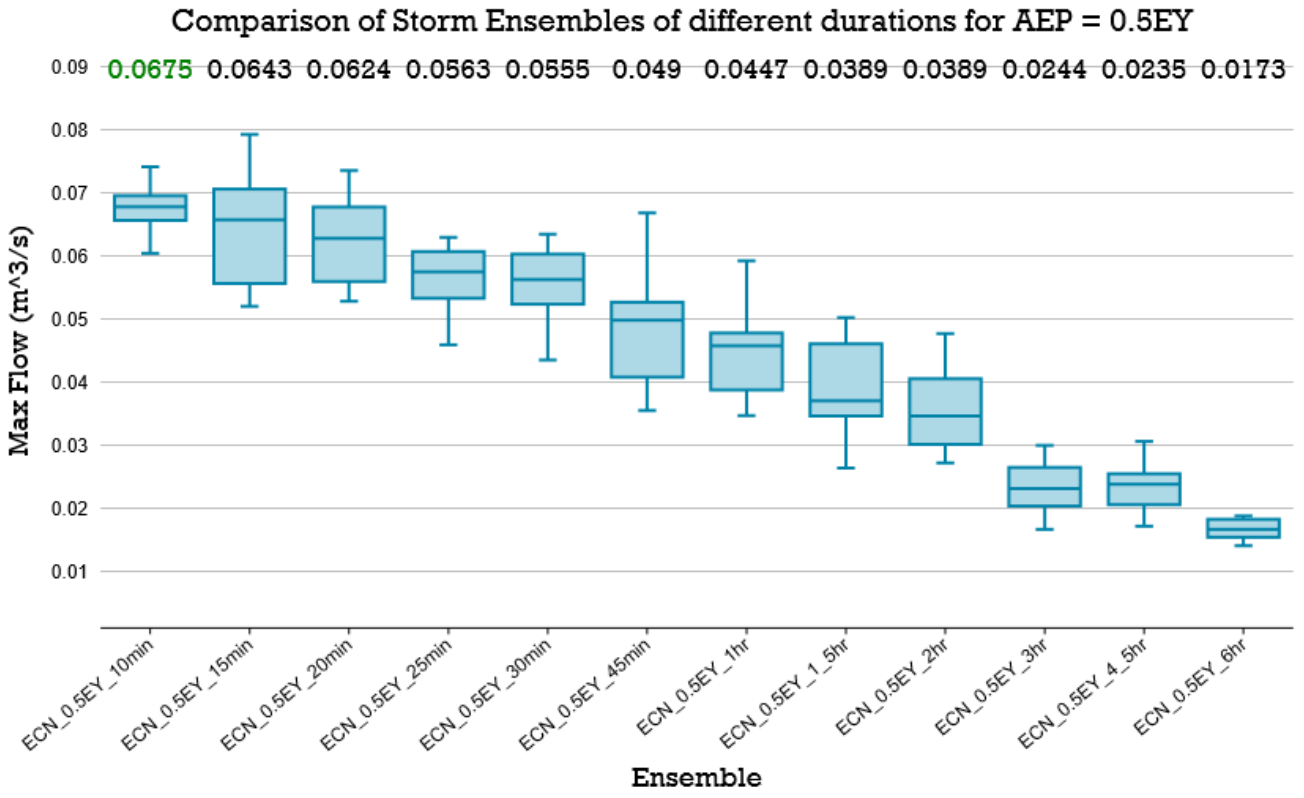


Figure 9 - 0.5EY Box and Whisker Plot

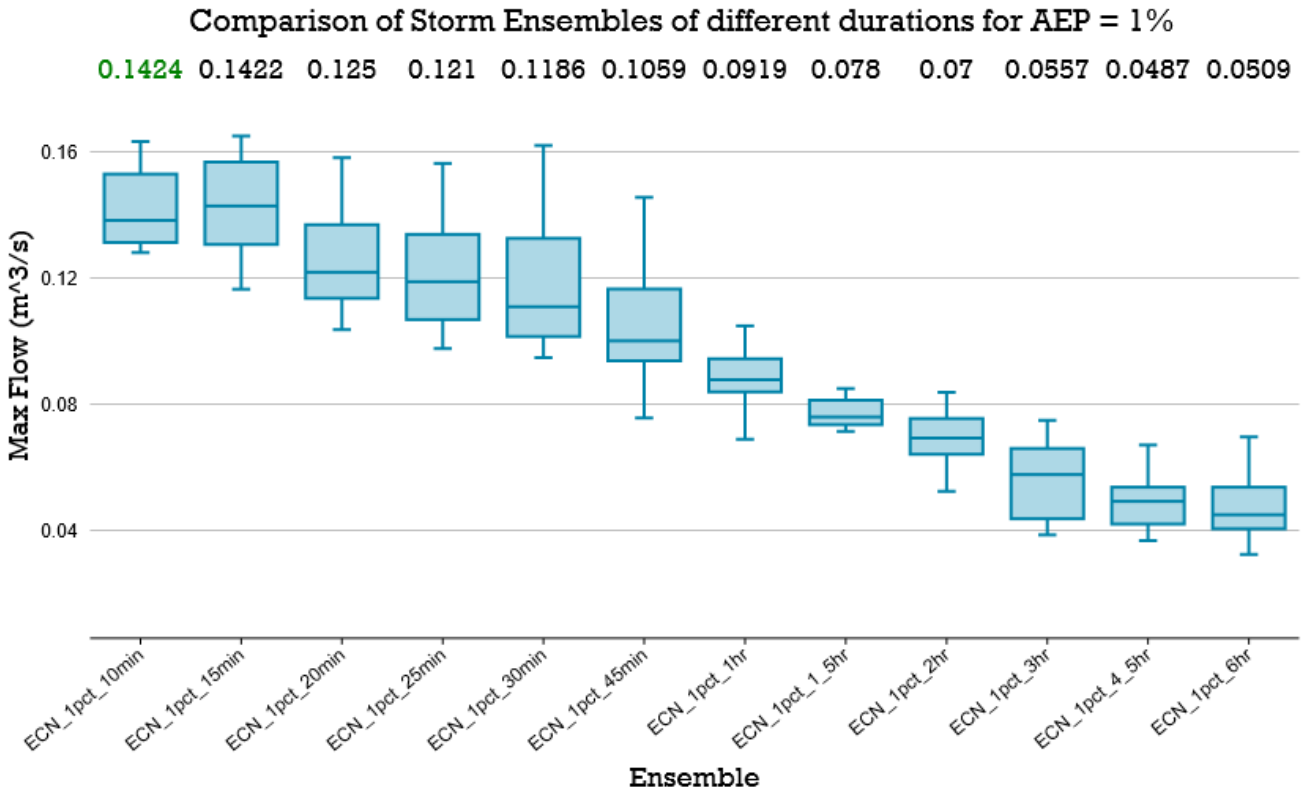


Figure 10 - 1% AEP Box and Whisker Plot

A-3: Post-Development

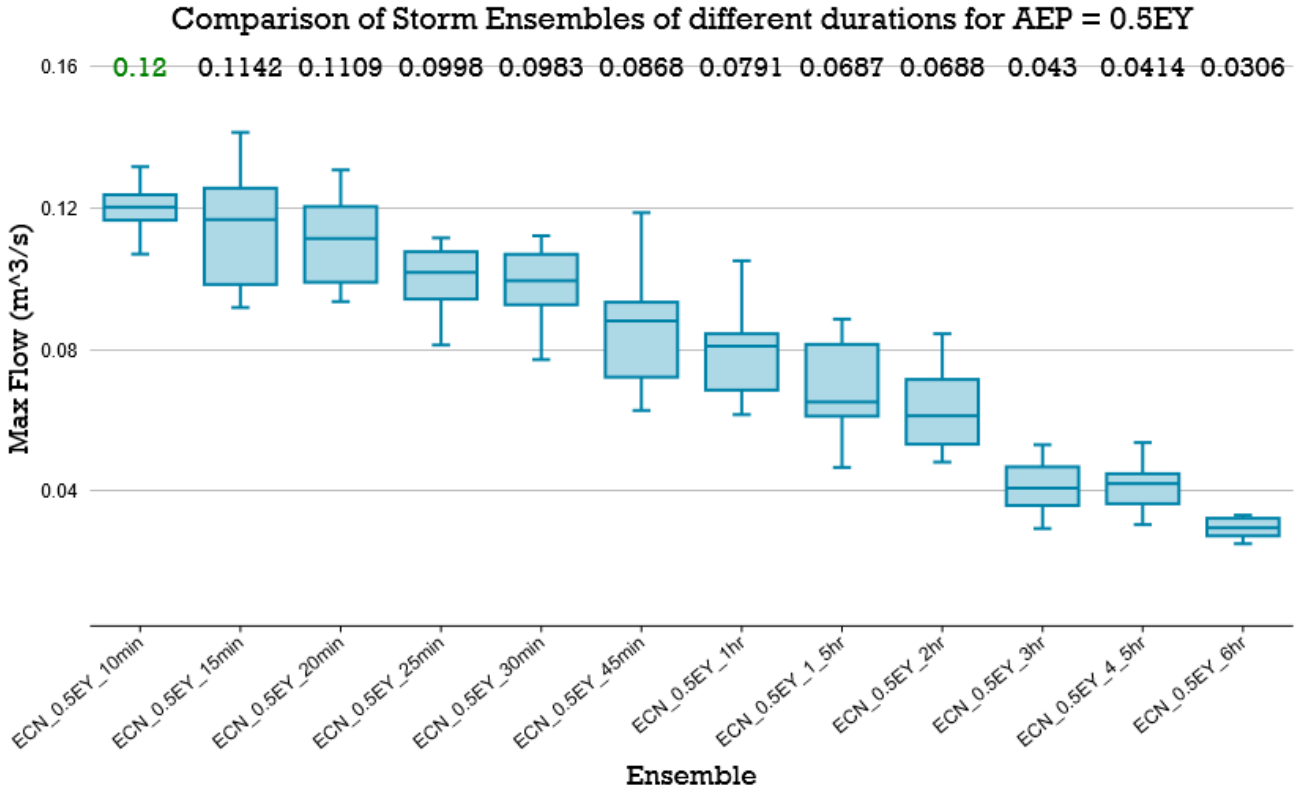


Figure 11 – DE01 0.5EY Box and Whisker Plot

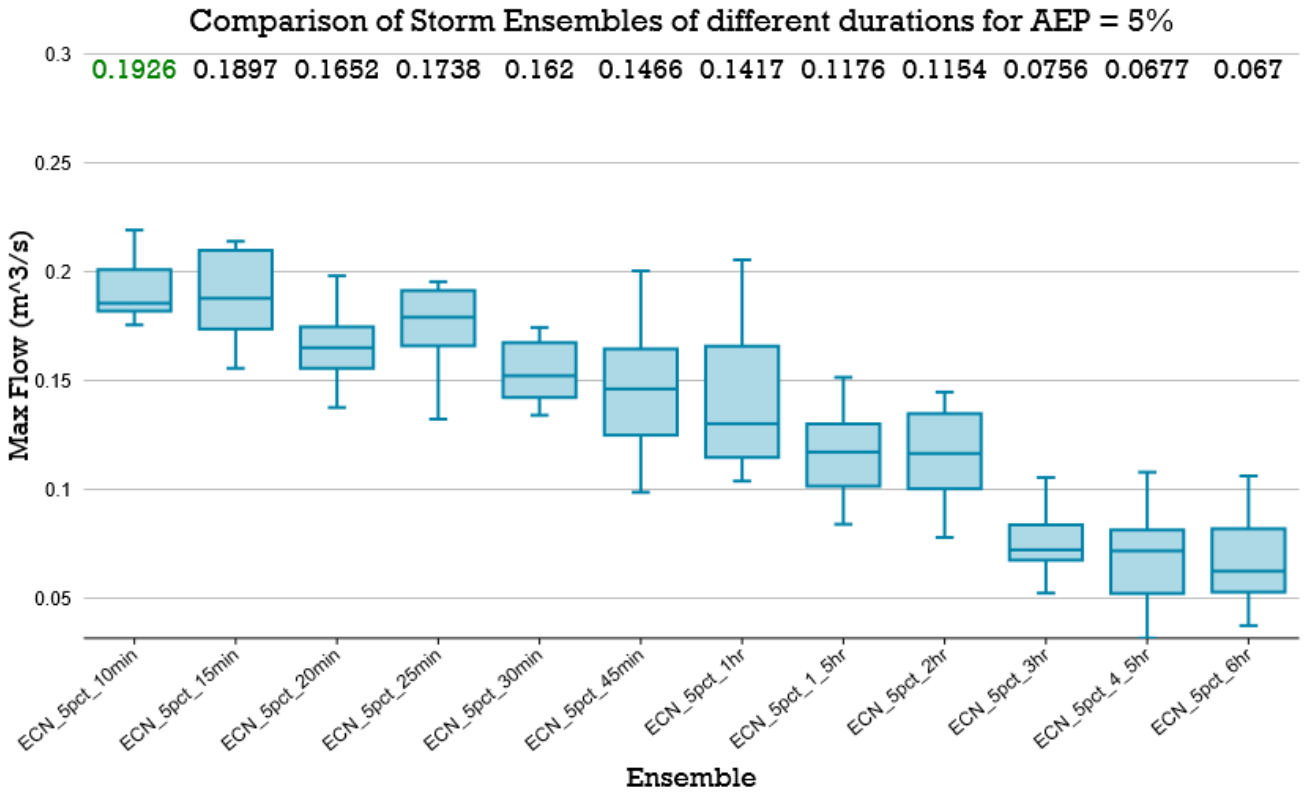


Figure 12 – DE01 5% AEP Box and Whisker Plot

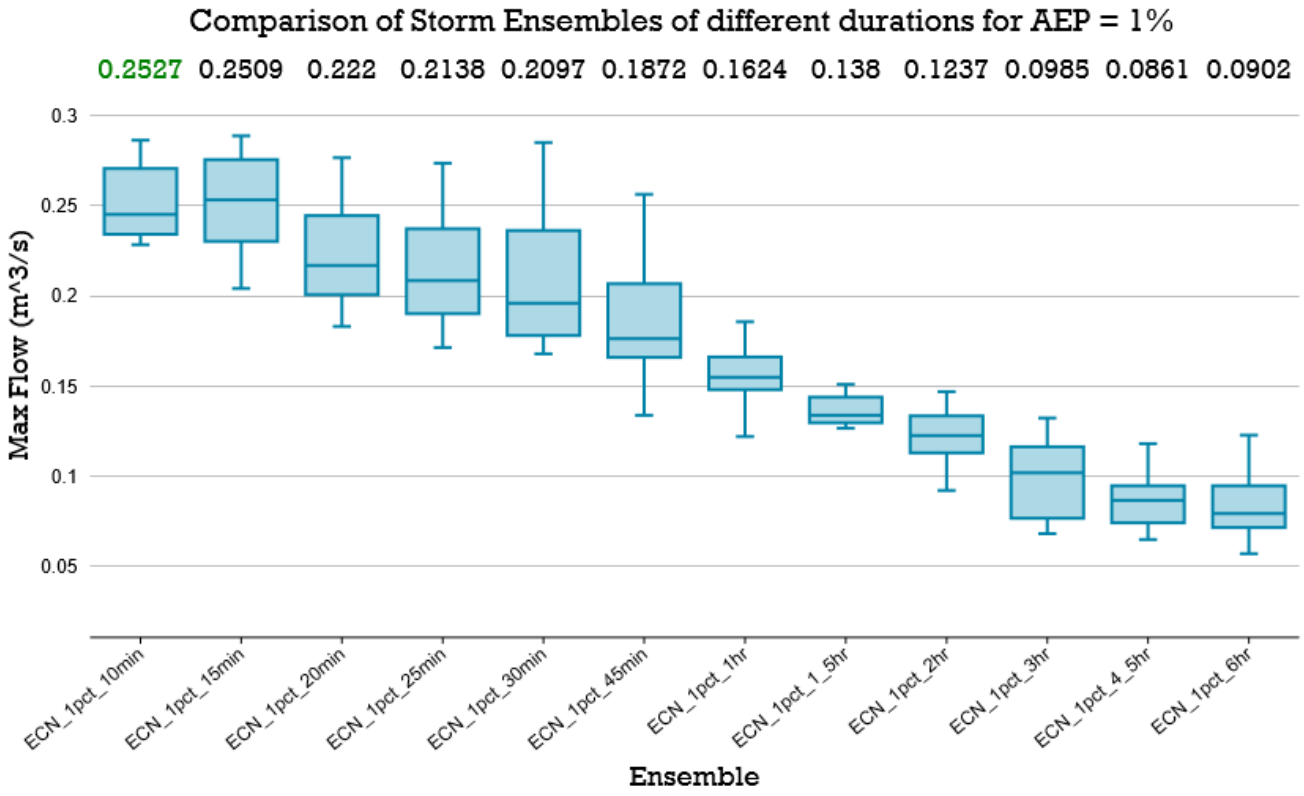


Figure 13 – DE01 1% AEP Box and Whisker Plot

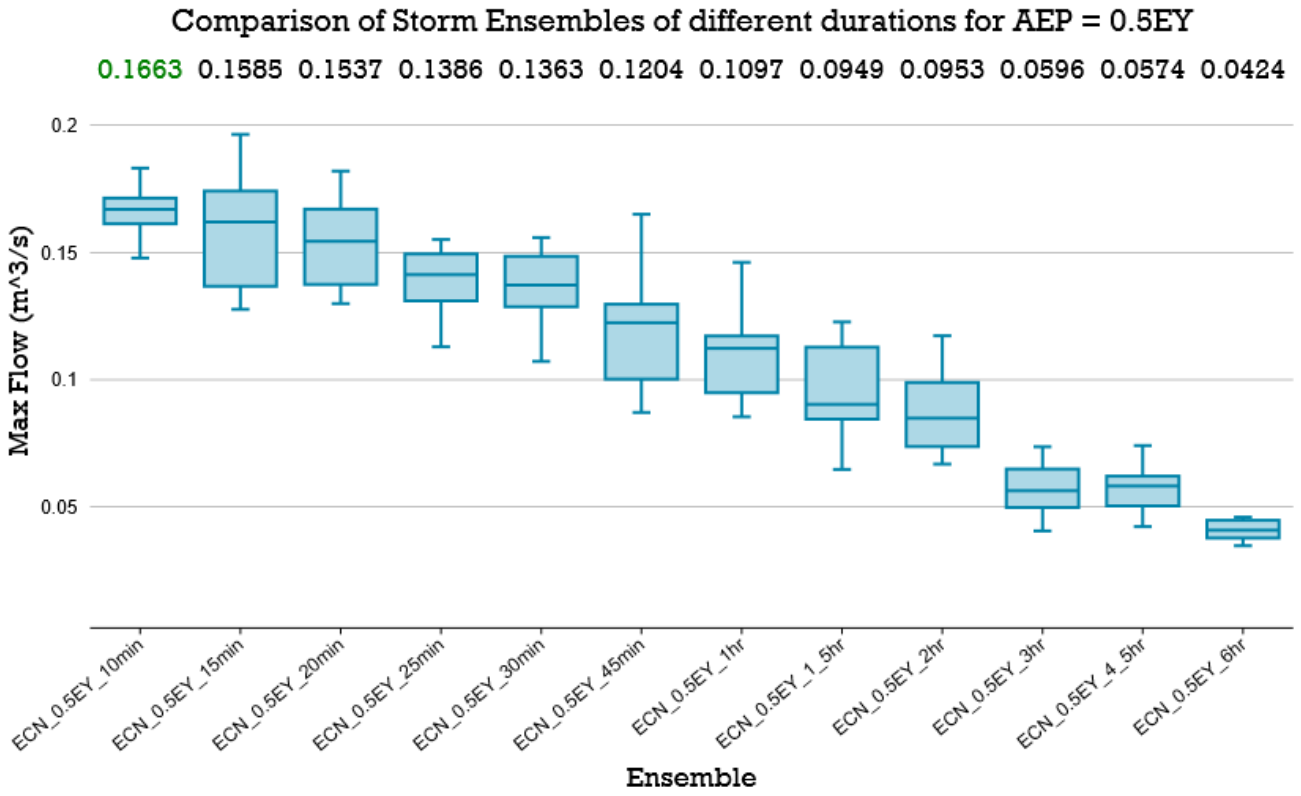


Figure 14 – DE02 0.5EY Box and Whisker Plot

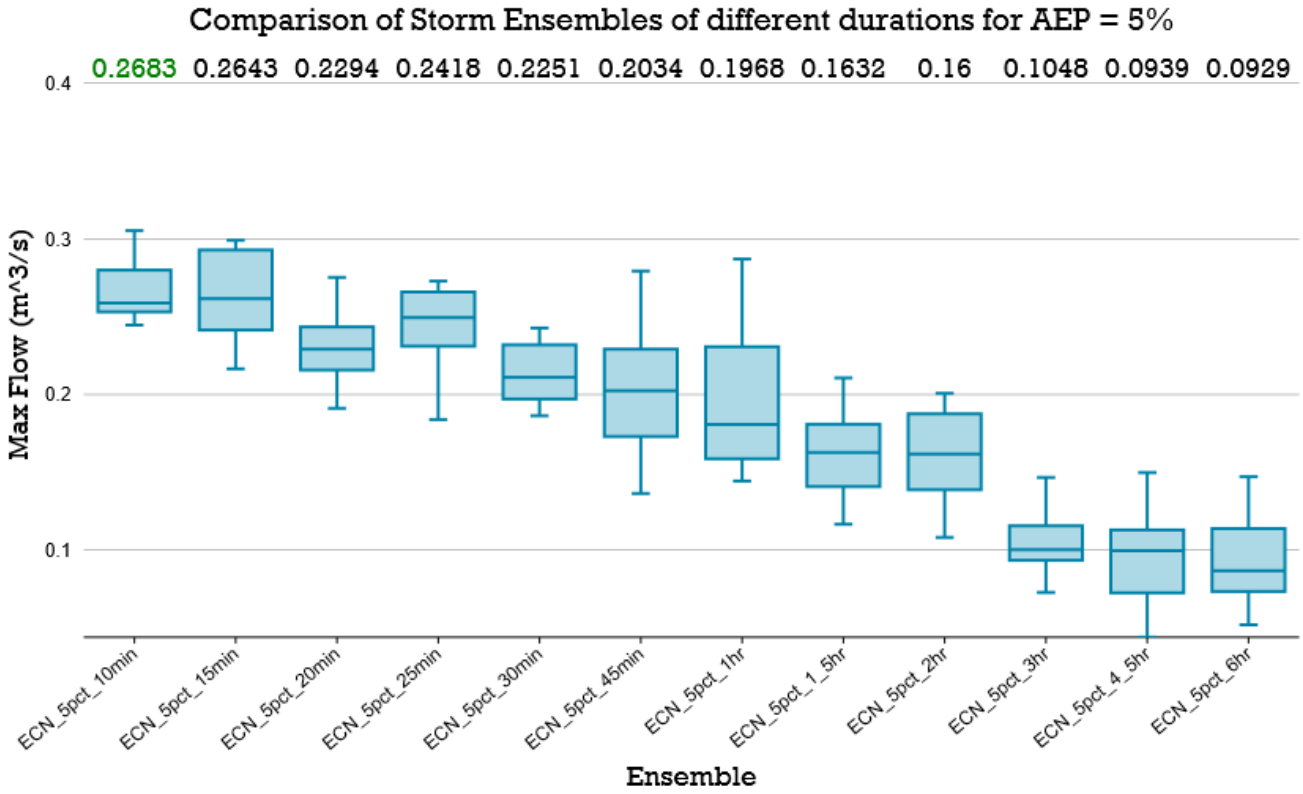


Figure 15 – DE02 5% AEP Box and Whisker Plot

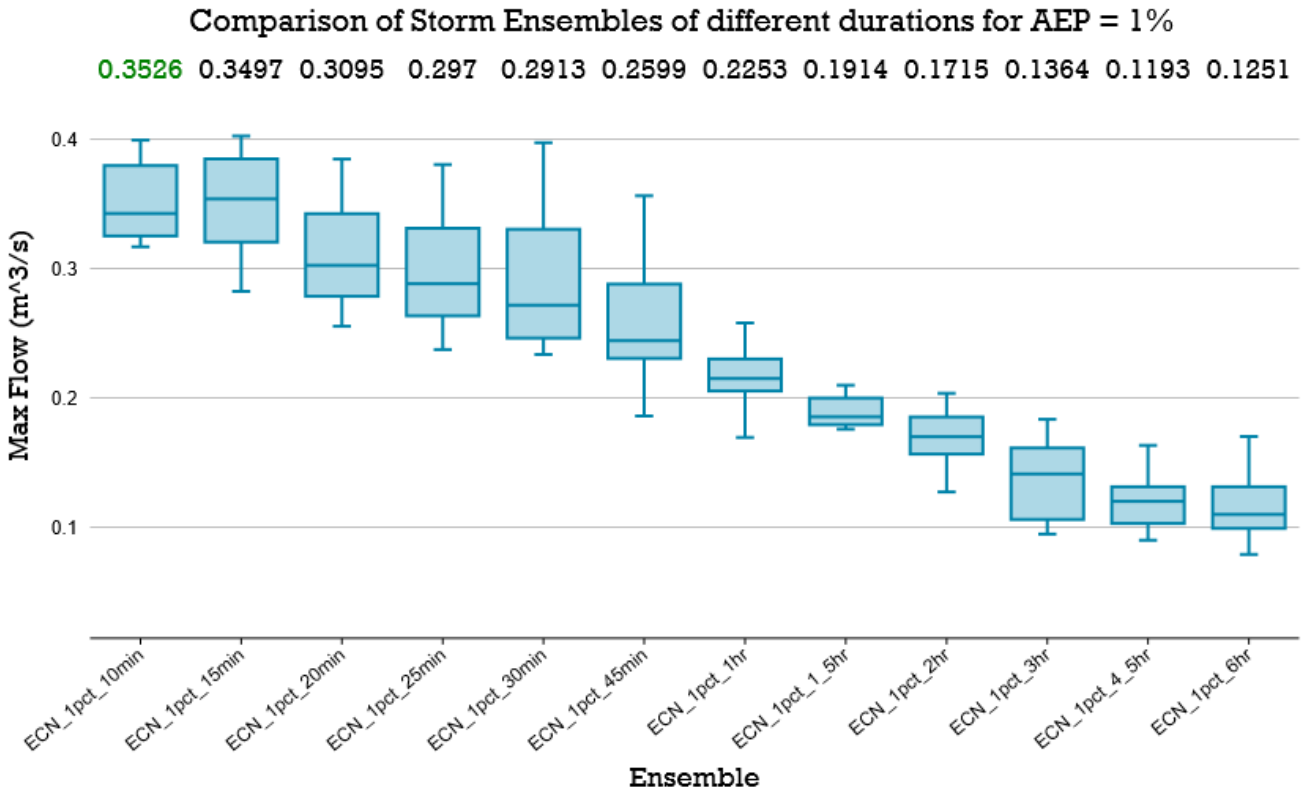


Figure 16 – DE02 1% AEP Box and Whisker Plot

A-4: Mitigated

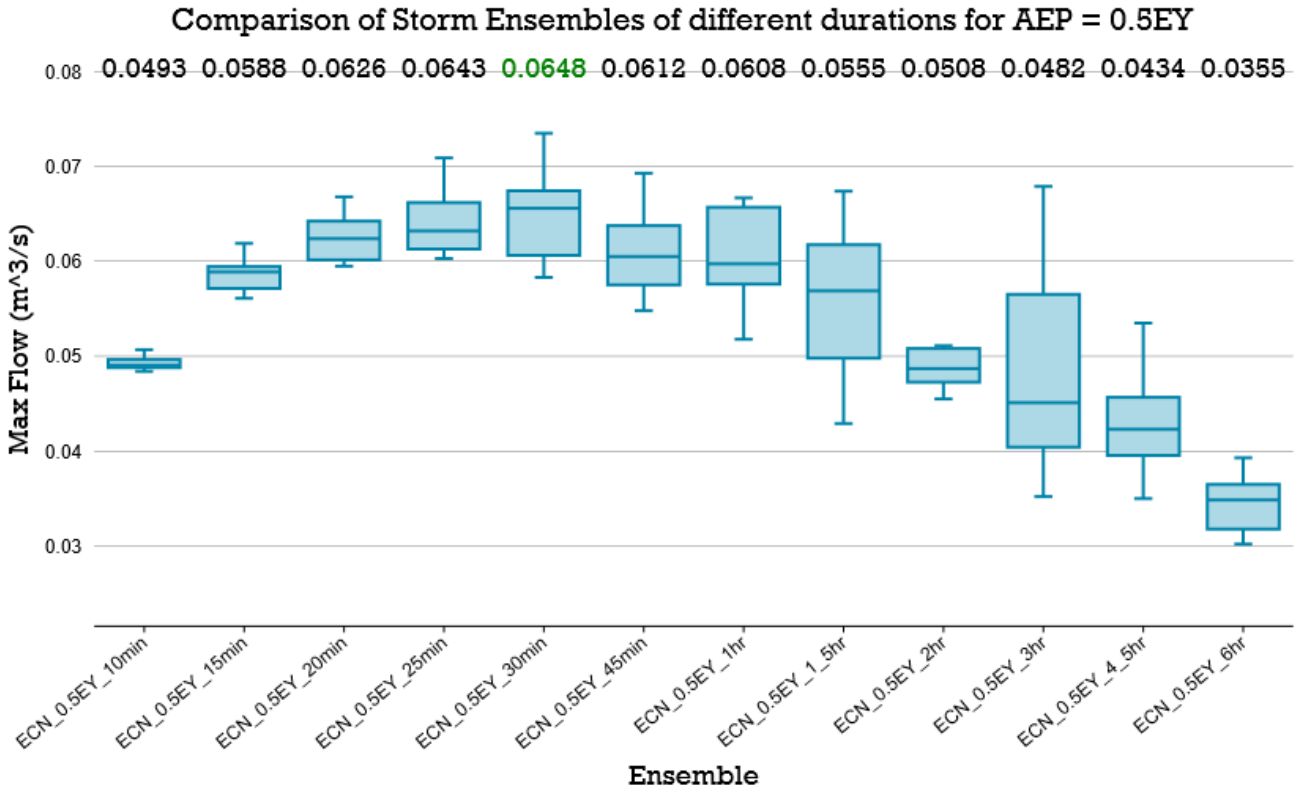


Figure 17 - 0.5EY Box and Whisker Plot (To Eastern Boundary) – Minor/Orifice Flow

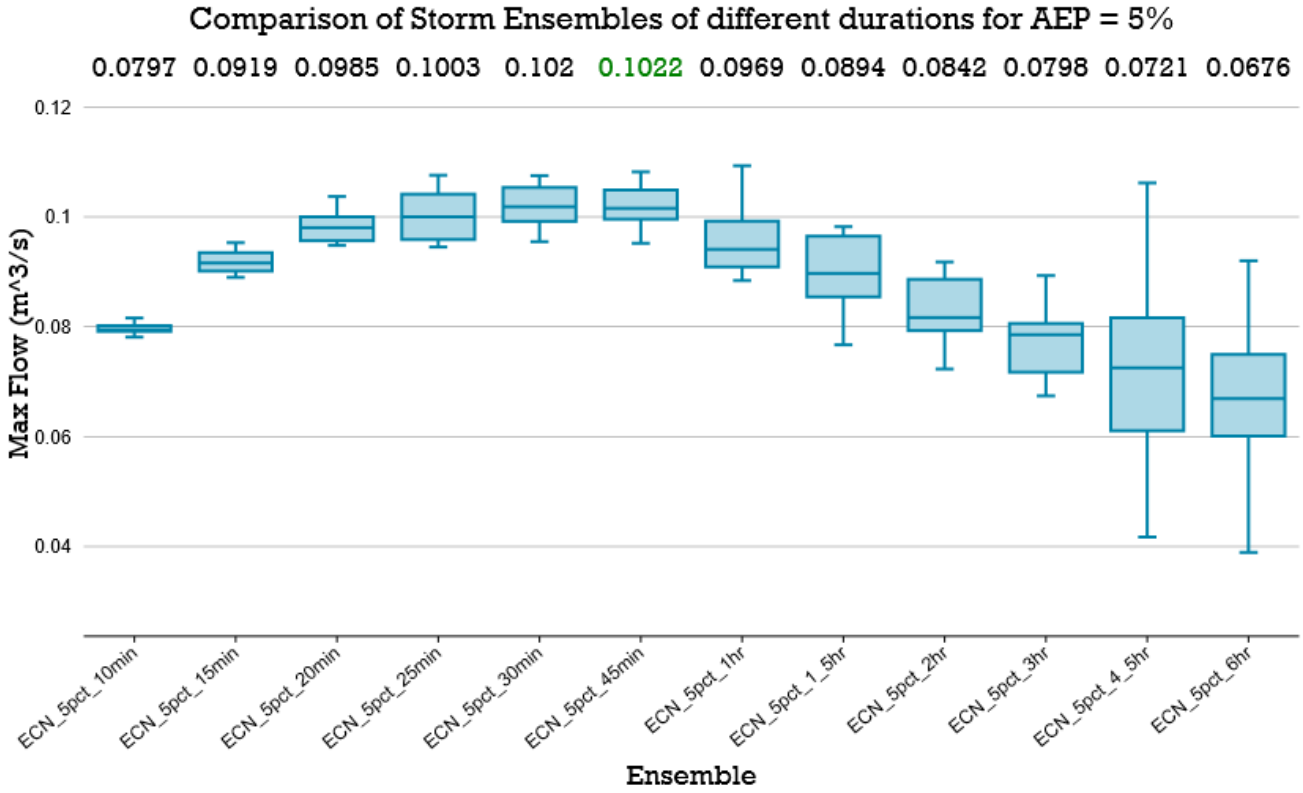


Figure 18 - 1% AEP Box and Whisker Plot (to Eastern Boundary) – Minor/Orifice Flow

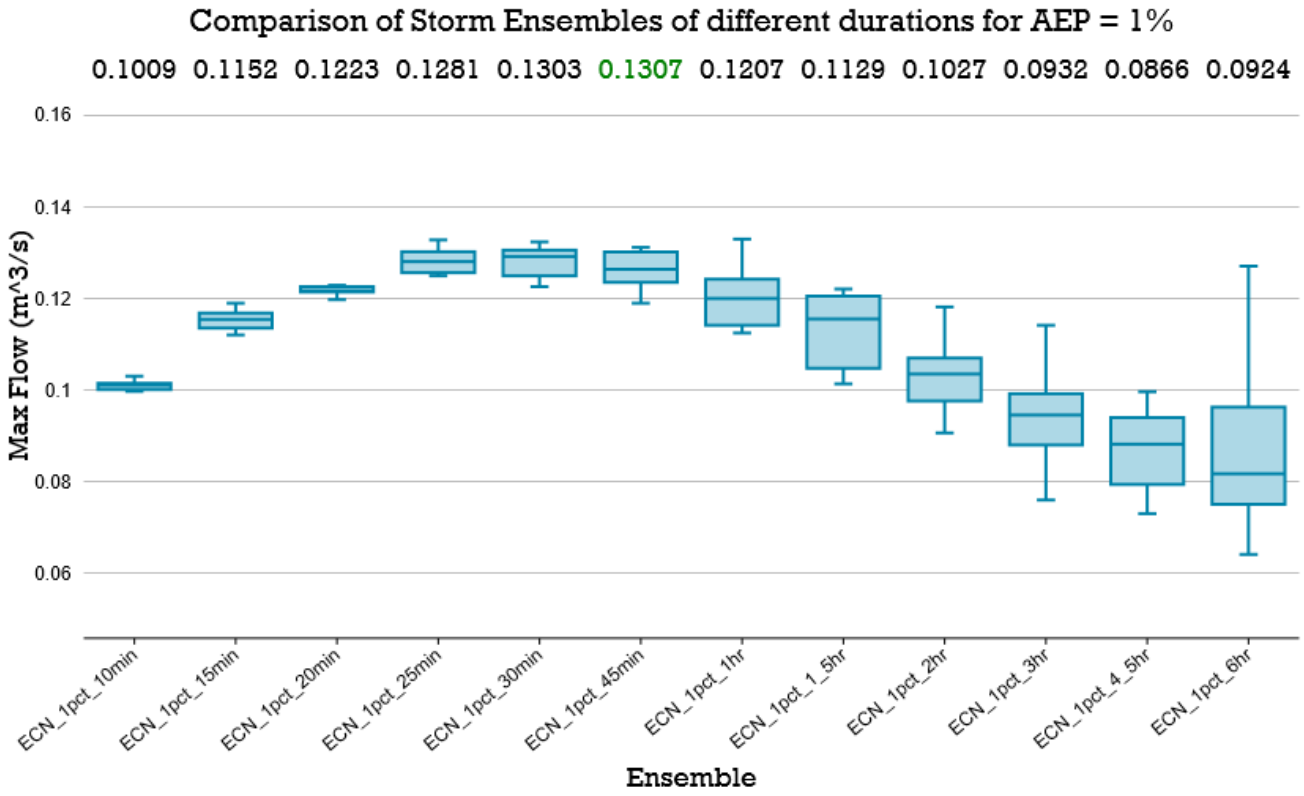


Figure 19 - 1% AEP Box and Whisker Plot (to Eastern Boundary) – Minor/Orifice Flow

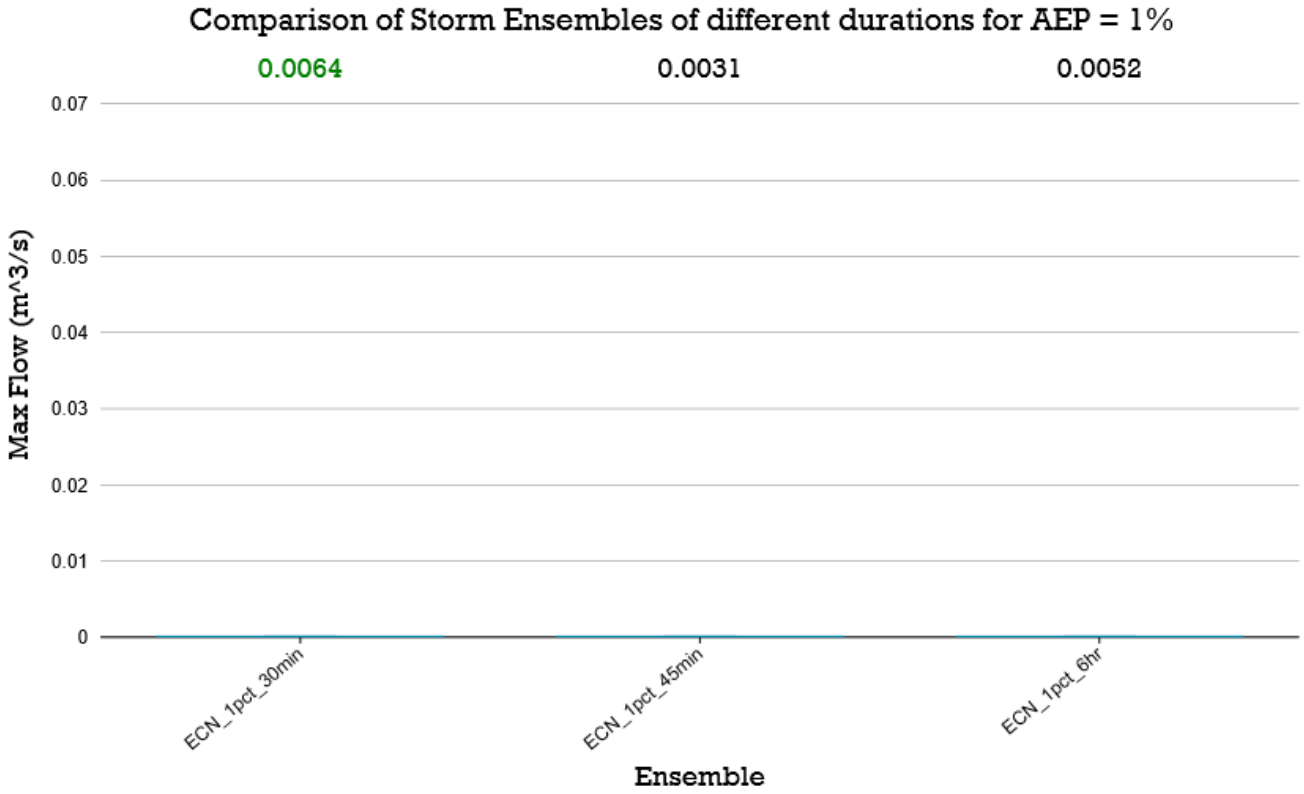


Figure 20 - 1% AEP Box and Whisker Plot (to Eastern Boundary) – Major/Driveway Flow

Appendix B: Site Layout Plan

REFER TO ATTACHMENT

SKETCH DESIGN
FOR TOWN PLANNING APPLICATION ONLY
FURTHER MORE DETAILED DESIGN INFORMATION REQUIRED FOR CONSTRUCTION.

WADE ST

BURKE ST

CREEK CATCHMENT
(APPROX 300MM)
SITE WORKSREQUIRED

LANDSCAPE 1
A: 25.81 m²

LANDSCAPE 2
A: 92.44 m²

LANDSCAPE 3
A: 58.05 m²

LANDSCAPE 4
A: 8.86 m²

FUTURE SHED 2
A: 1298.85 m²

SHED 1
A: 1963.44 m²

40400

8420

48600

8420

6000

FUTURE PAVEMENT 2
A: 2096.79 m²

PAVEMENT STAGE 1
A: 2579.96 m²

SITE DETENTION
STAGE 2
M3
REFER CIVIL ENGINERR

SITE
DETECTION
(REFER CIVIL ENG)
M3

Stage 2
A: 3395.65 m²

Stage 1
A: 4729.47 m²

1 SITE PLAN
Scale 1:200

SITE SERVICES

REV ID	Transmittal Set Date	DESCRIPTION
REV 3 - WIP	Work in Progress	REV FOR COMMENT
REV 2	5/02/2024	REV FOR COMMENT

Work in Progress

AMF BUILDING DESIGN
262 Grubb St
Koongal QLD 4701
e: amfprojects@bigpond.com
m 0423 375 400
QBCC No 1068756
ABN 22143 527 198
all projects
residential,commercial,industrial

BUILDING DESIGN

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
Spicer Trading
AT
192 WADE ST PARKHURST QLD 4701

APPROVED	
CHECKED	-
DRAWN	AMF
DESIGN	

JOB No. **AMF 23538**
DWG/REV. **SD/06**
REV 3 - WIP

I:\AMF projects\2023\23538_192 Wade St_ENG\05 Drawings\AMF 23538_192 WADE ST_V3_IDC.pln

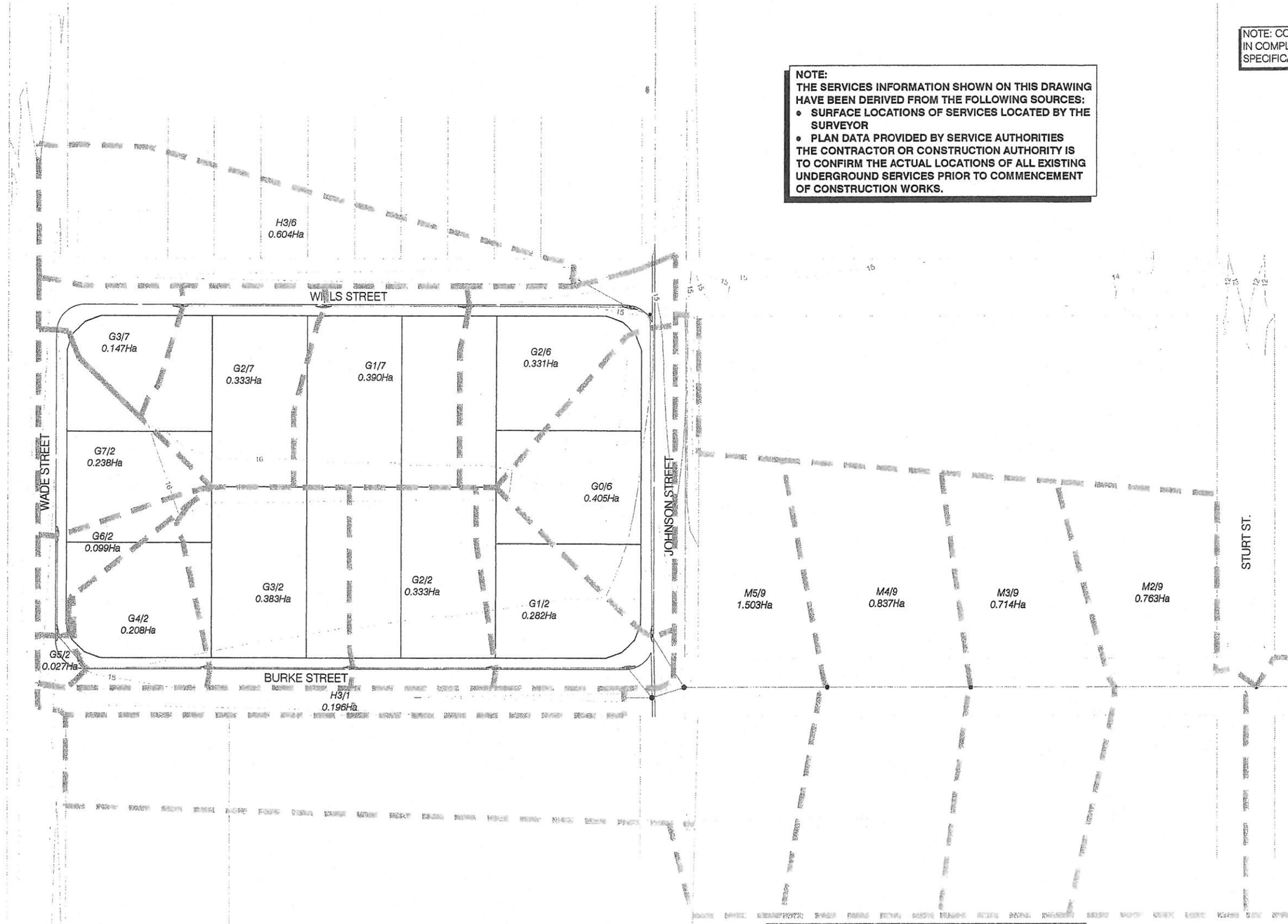
Appendix C: Adjacent Development Plans

REFER TO ATTACHMENT

NOTE: CONSTRUCTION OF SUBDIVISION TO BE IN COMPLIANCE WITH THE CMDG STANDARD SPECIFICATIONS AND DRAWING STANDARDS.

NOTE:
THE SERVICES INFORMATION SHOWN ON THIS DRAWING HAVE BEEN DERIVED FROM THE FOLLOWING SOURCES:
- **SURFACE LOCATIONS OF SERVICES LOCATED BY THE SURVEYOR**
- **PLAN DATA PROVIDED BY SERVICE AUTHORITIES**

THE CONTRACTOR OR CONSTRUCTION AUTHORITY IS TO CONFIRM THE ACTUAL LOCATIONS OF ALL EXISTING UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.



LEGEND

25 DESIGN CONTOURS

PROPOSED CATCHMENT BOUNDARY

ROCKHAMPTON REGIONAL COUNCIL
These plans are approved subject to the current conditions of approval associated with Development Permit No. D/2008-1382
Dated 22/7/2009

10 5 0 10 20 30 40 50
1 : 750 (A1), 1 : 1500 (A3)

FOR APPROVAL

Rv.	DATE	REVISIONS	REC.	APPR.
4	10.07.09	FURTHER STORMWATER AMENDMENTS	A.Sk	CWS
3	14.05.09	STORMWATER SYSTEM AMENDED	A.Sk	CWS
2	03.03.09	STORMWATER DETENTION ADDED	A.Sk	CWS
1	03.12.08	FOR APPROVAL	PTM	CWS
0	12.08.08	OPERATIONAL WORKS SUBMISSION	CWS	CGF
A	10.01.08	FIRST ISSUE	SH	CS

DRAWN: E. BEATTIE
DESIGNED: P. MOORE
CHECKED: C SHIELDS
A1 DATUM:
R1128-01-01-025 STORMWATER CATCHMENT PLAN.dwg

RECOMMENDED: PROJECT MANAGER C. SHIELDS
APPROVED: PROJECT DIRECTOR STUART DOAK RPEQ 3222

Cardno
Cardno (Qld) Pty Ltd ACN: 051 074 992
1 Aquatic Place, North Rockhampton Q 4701
Ph (07) 4924 7500 Fax (07) 4926 4375
Email: rocky@cardno.com.au

OFFICES:	TELEPHONE	FAX
Gold Coast	(07) 5539 9333	(07) 5538 4647
Brisbane	(07) 3369 9822	(07) 3369 9722
Sydney	(02) 9416 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5842
Townsville	(07) 4772 1186	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Rockhampton	(07) 4924 7500	(07) 4926 4375
Central Coast	(02) 4323 2558	(02) 4324 3251
Port Moresby	(0011675) 325 2322	(0011675) 325 0851
Philippines	(0011632) 910 5146	(0011632) 910 5146

KELE BROS. PTY LTD
INDUSTRIAL SUBDIVISION
JOHNSON STREET, PARKHURST

STORMWATER CATCHMENT PLAN

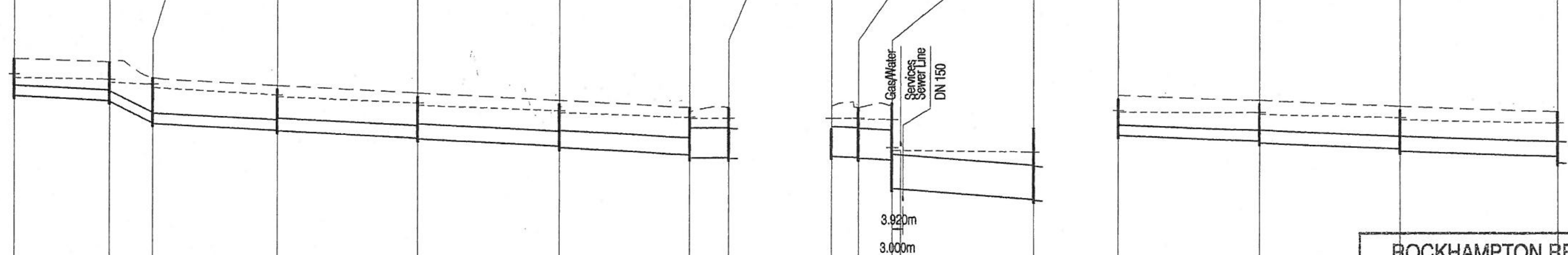
DATE: 10/01/08
DRAWING No: R1128-01-01-025

3 2 1 0 A 4 Rv.

LEGEND:

FINISHED SURFACE	— — — — —
EXISTING SURFACE	
H.G.L.	- - - - - - - - -
(2)	RC PIPE CLASS 2
(U)	uPVC CLASS DWV

HOR. 20 10 0 20 40 60 80
VERT. 2 1 0 2 4 6 8
HORIZONTAL 1 : 1000 (A1), 1 : 2000 (A3)
VERTICAL 1 : 100 (A1), 1 : 200 (A3)



LINE 2 (DATUM RL -4.0)

STRUCTURE NAME	G7/2	G6/2	G5/2	G4/2	G3/2	G2/2	G1/2	M2/1
STRUCTURE DESCRIPTION	C-M RGU MODEL L24R	C-M RGU MODEL L24R	C-M RGU MODEL M12	C-M RGU MODEL L24R	C-M RGU MODEL L24R	C-M RGU MODEL L24R	C-M RGU MODEL C24R INC 1500dia CHAMBER	2100dia PRECAST MANHOLE
WATER LEVEL IN STRUCTURE	15.237	15.051	14.884	14.531	14.257	13.999	13.794	13.749
HYDRAULIC GRADE LEVEL	15.237 / 15.105	15.051 / 14.951	14.881 / 14.775	14.531 / 14.475	14.257 / 14.182	13.999 / 13.932	13.788 / 13.750	13.745 / 13.711
DEPTH TO INVERT	1.310	1.373 / 1.393	1.593 / 1.613	1.467 / 1.487	1.487 / 1.507	1.508 / 1.554	1.689 / 1.800	1.787
INVERT LEVEL OF DRAIN	14.471	14.297 / 14.277	13.511 / 13.491	13.274 / 13.254	13.004 / 12.984	12.734 / 12.688	12.456 / 12.345	12.345
DESIGN SURFACE LEVEL	15.781	15.670	15.104	14.741	14.491	14.242	14.145	14.132
ROAD CHAINAGE (Offset)				60.000 (6.050L)	110.000 (6.050L)	160.000 (6.050L)		
RUNNING CHAINAGE	0.000	34.727	50.052	93.468	143.469	193.469	239.842	253.548

PIPE	G7/2–G6/2	G6/2–G5/2	G5/2–G4/2	G4/2–G3/2	G3/2–G2/2	G2/2–G1/2	G1/2–M2/1
PIPE SIZEmm (Class)	375(2)	375(2)	375(2)	450(2)	525(2)	600(2)	1050(2)
PIPE GRADE %	0.50%	5.00%	0.50%	0.50%	0.50%	0.50%	0.00%
PIPE SLOPE 1 in X	200.00	20.00	200.00	200.00	200.00	200.00	
FULL PIPE FLOW VELOCITY (m/s)	0.62	1.07	1.19	1.18	1.21	1.22	0.59
PART FULL FLOW VELOCITY (m/s)							
PIPE FLOW (Cumecs)	0.069	0.118	0.131	0.188	0.272	0.358	0.531
PIPE CAPACITY AT GRADE (Cumecs)	0.124	0.392	0.124	0.201	0.318	0.453	0.000
RUNNING CHAINAGE (length)	34.727	15.325	43.416	50.001	50.000	46.373	13.706

LINE 1 (DATUM RL -3.0)

STRUCTURE NAME	H3/1	M2/1	M1/1	M5/9
STRUCTURE DESCRIPTION	PRECAST HEADWALL INLET	2100dia PRECAST MANHOLE	1800dia Manhole	1500dia Manhole
WATER LEVEL IN STRUCTURE	13.745	13.749	13.706	13.542
HYDRAULIC GRADE LEVEL	13.745 / 13.745	13.745 / 13.711	13.706 / 13.606	13.542 / 13.313
DEPTH TO INVERT	0.992	1.787 / 1.807	2.023 / 2.043	2.545
INVERT LEVEL OF DRAIN	12.392	12.345 / 12.325	12.265 / 12.245	11.846
DESIGN SURFACE LEVEL	13.384	14.132	14.288	14.391
ROAD CHAINAGE (Offset)				
RUNNING CHAINAGE	0.000	9.472	21.352	71.322

PIPE	H3/1–M2/1	M2/1–M1/1	M1/1–M5/9
PIPE SIZEmm (Class)	1050(2)	1050(2)	1200(2)
PIPE GRADE %	0.50%	0.50%	0.80%
PIPE SLOPE 1 in X	200.00	200.00	125.00
FULL PIPE FLOW VELOCITY (m/s)	0.06	0.65	1.25
PART FULL FLOW VELOCITY (m/s)			
PIPE FLOW (Cumecs)	0.053	0.584	1.455
PIPE CAPACITY AT GRADE (Cumecs)	2.009	2.009	3.635
RUNNING CHAINAGE (length)	9.472	11.880	49.970

LINE 7

STRUCTURE NAME	G3/7	G2/7	G1/7	G2/6
STRUCTURE DESCRIPTION	C-M RGU MODEL R24R	C-M RGU MODEL R24R	C-M RGU MODEL R24R	C-M RGU MODEL C24R INC 1500dia CHAMBER
WATER LEVEL IN STRUCTURE	15.026	14.934	14.763	14.548
HYDRAULIC GRADE LEVEL	15.026 / 14.973	14.934 / 14.869	14.763 / 14.691	14.548 / 14.375
DEPTH TO INVERT	1.310	1.317 / 1.392	1.392 / 1.476	1.594
INVERT LEVEL OF DRAIN	14.133	13.926 / 13.851	13.651 / 13.567	13.357
DESIGN SURFACE LEVEL	15.443	15.243	15.043	14.951
ROAD CHAINAGE (Offset)	50.000 (6.050R)	100.000 (6.050R)	150.000 (6.050R)	
RUNNING CHAINAGE	0.000	50.000	100.000	156.834

PIPE	G3/7–G2/7	G2/7–G1/7	G1/7–G2/6
PIPE SIZEmm (Class)	375(2)	450(2)	525(2)
PIPE GRADE %	0.41%	0.40%	0.37%
PIPE SLOPE 1 in X	241.55	250.00	270.40
FULL PIPE FLOW VELOCITY (m/s)	0.44	0.83	1.01
PART FULL FLOW VELOCITY (m/s)			
PIPE FLOW (Cumecs)	0.049	0.131	0.226
PIPE CAPACITY AT GRADE (Cumecs)	0.113	0.180	0.273
RUNNING CHAINAGE (length)	50.000	50.000	56.834

NOTE: CONSTRUCTION OF SUBDIVISION TO BE IN COMPLIANCE WITH THE CMDG STANDARD SPECIFICATIONS AND DRAWING STANDARDS.

ROCKHAMPTON REGIONAL COUNCIL
These plans are approved subject to the current conditions of approval associated with Development Permit No. D/2008-1282
Dated 22/7/2009

FOR APPROVAL

Rv.	DATE	REVISIONS	REC.	APPR.
4	10.07.09	FURTHER STORMWATER AMENDMENTS	A.Sk	CWS
3	14.05.09	STORMWATER SYSTEM AMENDED	A.Sk	CWS
2	03.03.09	STORMWATER DETENTION ADDED	A.Sk	CWS
1	03.12.08	FOR APPROVAL	PTM	CWS
0	12.08.08	OPERATIONAL WORKS SUBMISSION	CWS	CGF
A	10.01.08	FIRST ISSUE	SH	CS

DRAWN: E. BEATTIE
DESIGNED: P. MOORE
CHECKED: C SHIELDS
A1 DATUM:
RECOMMENDED: PROJECT MANAGER C. SHIELDS
APPROVED: PROJECT DIRECTOR STUART DOAK RPEQ 3222

R1128-01-01-026 STORMWATER LONGITUDINAL SECTION - SHEET 1.dwg

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Philippines	(0011632) 910 5146	(0011632) 910 5146

KELE BROS. PTY LTD

INDUSTRIAL SUBDIVISION
JOHNSON STREET, PARKHURST
STORMWATER LONGITUDINAL SECTIONS
SHEET 1 OF 2

DATE: 10/01/08
DRAWING No: R1128-01-01-026
Rv. 4

STRUCTURE NAME	H3/6	G2/6	M1/6		G0/6	M1/1
	1050dia FIELD INLET INC 900x600 DOME GRATE	C-M RGU MODEL C24R INC 1500dia CHAMBER	1500dia Manhole		C-M RGU MODEL R24R INC 1200dia CHAMBER	1800dia Manhole
STRUCTURE DESCRIPTION						
WATER LEVEL IN STRUCTURE	14.595	14.548	14.386		13.799	13.706
HYDRAULIC GRADE LEVEL	14.595 / 14.563	14.548	14.375 / 14.345	14.154	13.799 / 13.752	13.706 / 13.606
PIPE FLOW (Cumecs)		0.298	0.747	0.837		0.871
PIPE CAPACITY AT GRADE (Cumecs)		0.821	0.821	1.058		1.337
DEPTH TO INVERT	1.140	1.802	1.822 / 1.808	1.884	2.003 / 2.080	2.023
INVERT LEVEL OF DRAIN	13.262	13.149	13.129 / 13.093	13.017	12.450 / 12.373	12.265
DESIGN SURFACE LEVEL	14.402	14.951	14.901		14.453	14.288
ROAD CHAINAGE (Offset)						
RUNNING CHAINAGE	0.000	22.637 / 22.637	7.263 / 29.900	113.385	143.285 / 21.453	164.738
PIPE SIZEmm (Class)		750(2)	750(2)	825(2)		900(2)
PIPE GRADE %		0.50%	0.50%	0.50%		0.50%
PIPE SLOPE 1 in X		200.00	200.00	200.00		200.00
FULL PIPE FLOW VELOCITY (m/s)		0.65	1.64	1.52		1.32
PART FULL FLOW VELOCITY (m/s)						

LINE 6

STRUCTURE NAME	M5/9	M4/9	M3/9	M2/9	M1/9	GPT/9	O/9
	1500dia Manhole	1500dia Manhole	1500dia Manhole	1500dia Manhole	1500dia Manhole		Precast End Structure to suit
STRUCTURE DESCRIPTION							
WATER LEVEL IN STRUCTURE	13.542	13.165	12.525	11.533	11.001	10.535	10.341
HYDRAULIC GRADE LEVEL	13.542 / 13.313	13.165	12.774 / 12.525	12.303 / 11.533	11.340 / 11.001	10.852 / 10.511	10.376 / 10.341
PIPE FLOW (Cumecs)		2.060	2.870	3.141	3.345	3.423	3.423
PIPE CAPACITY AT GRADE (Cumecs)		4.064	2.874	2.874	2.874	2.874	2.874
DEPTH TO INVERT	2.565	2.793	2.813 / 2.937	2.957 / 3.117	4.226 / 4.552	4.572 / 2.061	2.081 / 1.530
INVERT LEVEL OF DRAIN	11.826	11.326	11.306 / 11.056	11.036 / 10.786	9.677 / 9.427	9.407 / 9.166	9.146 / 9.122
DESIGN SURFACE LEVEL	14.391	14.119	13.993	13.903	13.979	11.227	10.652
ROAD CHAINAGE (Offset)							
RUNNING CHAINAGE	0.000	50.000 / 50.000	50.000 / 100.000	50.001 / 150.001	49.999 / 200.000	48.120 / 248.120	4.880 / 253.000
PIPE SIZEmm (Class)		1200(2)	1200(2)	1200(2)	1200(2)	1200(2)	1200(2)
PIPE GRADE %		1.00%	0.50%	0.50%	0.50%	0.50%	0.50%
PIPE SLOPE 1 in X		100.00	200.00	200.00	200.00	200.00	200.00
FULL PIPE FLOW VELOCITY (m/s)		1.77	2.46	2.69	2.87	2.93	2.93
PART FULL FLOW VELOCITY (m/s)							

9

LEGEND:

FINISHED SURFACE	
EXISTING SURFACE	
H.G.L.	
(2)	RC PIPE CLASS 2
(U)	uPVC CLASS DWV

HOR. 20 10 0 20 40 60 80
VERT. 2 1 0 2 4 6 8
HORIZONTAL 1 : 1000 (A1), 1 : 2000 (A3)
VERTICAL 1 : 100 (A1), 1 : 200 (A3)

Water Line DN 100 (x3)
5.640m
4.350m
1.110m
Sewer Line DN 300
3.500m

NOTE: CONSTRUCTION OF SUBDIVISION TO BE IN COMPLIANCE WITH THE CMDG STANDARD SPECIFICATIONS AND DRAWING STANDARDS.

OUTLET TO BE GRADED OUT AT MIN 1.0% TO EXISTING

ROCKHAMPTON REGIONAL COUNCIL
These plans are approved subject to the current conditions of approval associated with Development Permit No. D/2008-1282
Dated 22/7/2009

FOR APPROVAL

Rv.	DATE	REVISIONS	REC.	APPR.
4	10.07.09	FURTHER STORMWATER AMENDMENTS	A.Sk	CWS
3	14.05.09	STORMWATER SYSTEM AMENDED	A.Sk	CWS
2	03.03.09	STORMWATER DETENTION ADDED	A.Sk	CWS
1	03.12.08	FOR APPROVAL	PTM	CWS
0	12.08.08	OPERATIONAL WORKS SUBMISSION	CWS	CGF
A	10.01.08	FIRST ISSUE	SH	CS

DRAWN: E. BEATTIE
DESIGNED: P. MOORE
CHECKED: C SHIELDS
A1 DATUM:
R1128-01-01-027 STORMWATER LONGITUDINAL SECTION - SHEET 2.dwg

RECOMMENDED: PROJECT MANAGER C. SHIELDS
APPROVED: PROJECT DIRECTOR STUART DOAK RPEQ 3222

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KELE BROS. PTY LTD
INDUSTRIAL SUBDIVISION
JOHNSON STREET, PARKHURST
STORMWATER LONGITUDINAL SECTIONS
SHEET 2 OF 2

DATE: 10/01/08
DRAWING No: R1128-01-01-027
Rv: 3 2 1 0 A 4

LOCATION					TIME			SUB-CATCHMENT RUNOFF						INLET DESIGN							DRAIN DESIGN															HEADLOSSES										PART FULL		DESIGN LEVELS							
						tc	I	C10	C	A	C*A	+CA	Q					Qg	Qb		tc	I	+CA	Qt	Qm	Qs	Qp	L	S		V	T				V2/2g	Ku	hu	Kl	hl	Kw	hw	Sf	hf		Vp							
DESIGN ARI	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	10yr RUNOFF CO-EFFICIENT	CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C * A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C * A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W.S.E CO-EFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L * SI)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.
yrs					%	min	mm/h			ha	ha	ha	l/s	l/s	%	l/s		l/s	l/s		min	mm/h	ha	l/s	l/s	l/s	l/s	m	%	mm	m/s	min			m		m		m		m		m		m/s	m	m	m	m	m	m	
5 100	G7/2	G7/2 to G6/2	G7/2			5.00 5.00	179 322		0.83 1.00	0.238 0.238	0.198 0.238	0.198 0.238	98 213	96	0.30	106	7	69	29	G6/2	5.00 5.00	179 322	0.198 0.238	213			69 (Pipe flow= Grate flow)	34.727	0.50	375(2)	0.82 (1.12)	0.58		Qg 0.069 Qo 0.069 Do 375 CHRT 32: Vo2/2gDo 0.05 H/Do Kg side flow 6.73 end flow 5.03	0.020	6.73	0.132			6.73	0.132	0.16	0.054			14.848 14.672	15.105 15.051	15.237		15.237	15.781	G7/2
5 100	G6/2	G6/2 to G5/2	G7/2;G6/2			5.00 5.00	179 322		0.83 1.00	0.099 0.099	0.082 0.099	0.082 0.099	41 89	70	0.32	110	7	55	15	G5/2	5.58 5.58	171 309	0.280 0.337	289			118 (Pipe flow= Sum upstr atten flows)	15.325	5.00	375(2)	1.07 (3.55)	0.24		Qg 0.053 Qo 0.118 Do 375 CHART 37 Angle 41 Case 2 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.44 K 1.55 S/Do 2.06 cor 0.16 Ku 1.71 Kw 1.71	0.056	1.71	0.100			1.71	0.100	0.46	0.070			14.652 13.886	14.951 14.881	15.051		15.051	15.670	G6/2
5 100	G5/2	G5/2 to G4/2	G7/2;G6/2;G5/2			5.00 5.00	179 322		0.83 1.00	0.027 0.027	0.022 0.027	0.022 0.027	11 24	26	1.33	224	7F.5	16	10	G4/2	5.82 5.82	168 304	0.302 0.364	307			131 (Pipe flow= Sum upstr atten flows)	43.416	0.50	375(2)	1.19 (1.12)	0.61		Qg 0.015 Qo 0.131 Do 375 Angle 49 Chart 39 S/Do 2.5 chart Du/Do 1.00 K0 1.80 K0.5 1.91 Qu/Qo 0.89 Cg 0.29 K 1.83 S/Do 4.0 K0 1.42 K0.5 1.54 K 1.45 S/Do 3.0 K0 1.53 K0.5 1.73 K 1.65	0.072	1.46	0.106	Interp val for S/Do 3.72 Kw 1.51 CHART 38 S/Do 4.0 K0 1.40 K0.5 1.49 K 1.42 S/Do 3.0 K0 1.57 K0.5 1.69 K 1.57 Interp val for S/Do 3.72 Ku 1.46		1.51 (3.72 Kw 1.51	0.109	0.56	0.244			13.866 13.649	14.775 14.531	14.881		14.884	15.104	G5/2
5 100	G4/2	G4/2 to G3/2	G7/2;G6/2;G5/2;G4/2			5.00 5.00	179 322		0.83 1.00	0.206 0.206	0.172 0.206	0.172 0.206	86 166	96	0.50	137	7	68	28	G3/2	6.43 6.43	162 293	0.474 0.572	466			188 (Pipe flow= Sum upstr atten flows)	50.001	0.50	450(2)	1.18 (1.27)	0.71		Qg 0.062 Qo 0.188 Do 450 CHART 33 Angle 0 S/Do 2.5 Du/Do 0.83 Qg/Qo 0.33 K 0.66 S/Do 2.84 cor -0.07 Ku 0.79 Kw 0.79	0.071	0.79	0.056			0.79	0.056	0.44	0.218			13.704 13.454	14.475 14.257	14.531		14.531	14.741	G4/2
5 100	G3/2	G3/2 to G2/2	G7/2;G6/2;G5/2;G4/2 ;G3/2			5.00 5.00	179 322		0.83 1.00	0.383 0.383	0.318 0.383	0.318 0.383	158 343	186	0.50	137	7	106	80	G2/2	7.14 7.14	155 282	0.792 0.955	748			272 (Pipe flow= Sum upstr atten flows)	50.000	0.50	525(2)	1.21 (1.42)	0.69		Qg 0.092 Qo 0.272 Do 525 CHART 33 Angle 0 S/Do 2.5 Du/Do 0.86 Qg/Qo 0.34 K 0.96 S/Do 2.38 cor 0.03 Ku 1.01 Kw 1.01	0.075	1.01	0.075			1.01	0.075	0.37	0.183			13.518 13.268	14.182 13.999	14.257		14.257	14.491	G3/2
5 100	G2/2	G2/2 to G1/2	G7/2;G6/2;G5/2;G4/2 ;G3/2;G2/2			5.00 5.00	179 322		0.83 1.00	0.333 0.333	0.277 0.333	0.277 0.333	138 298	218	0.50	137	7	113	105	G1/2	7.83 7.83	150 272	1.069 1.289	974			358 (Pipe flow= Sum upstr atten flows)	46.373	0.50	600(2)	1.22 (1.55)	0.83		Qg 0.095 Qo 0.358 Do 600 CHART 33 Angle 0 S/Do 2.5 Du/Do 0.88 Qg/Qo 0.26 K 0.80 S/Do 2.15 cor 0.08 Ku 0.86 Kw 0.88	0.076	0.88	0.087			0.88	0.087	0.31	0.144			13.298 13.068	13.932 13.788	13.999		13.999	14.242	G2/2
5 100	G1/2	G1/2 to M2/1	G7/2;G6/2;G5/2;G4/2 ;G3/2;G2/2;G1/2			5.00 5.00	179 322		0.83 1.00	0.282 0.282	0.234 0.282	0.234 0.282	116 252	291	0.00	224	17S.1	224	67		8.46 8.46	146 264	1.303 1.571	1152	632	621 (Pipe flow= Sum upstr atten flows)	531	13.706	0.00	1050(2)	0.59 (0.00)	0.23		Qg 0.163 Qo 0.531 Do 1050 Angle 52 Chart 39 S/Do 2.5 chart Du/Do 0.57 K0 2.61 K0.5 1.64 Qu/Qo 0.86 Cg 0.76 K 1.83 S/Do 2.0 K0 2.93 K0.5 1.75 K 2.04 S/Do 1.5 K0 3.45 K0.5 2.05 K 2.39	0.018	2.19	0.038	Interp val for S/Do 1.36 Kw 2.50 CHART 38 S/Do 2.0 K0 2.28 K0.5 1.69 K 1.83 S/Do 1.5 K0 2.71 K0.5 1.81 K 2.11 Interp val for S/Do 1.36 Ku 2.16		2.50 (0.00)	0.044	0.03	0.005			13.411 13.411	13.750 13.745	13.788		13.794	14.145	G1/2
5 100	H3/1	H3/1 to M2/1	H3/1	UNLOCK INLET CAPACITY - to reduce overland flow at M4/9 Major ARI gutter flow: Crit Inlet 322mm/h @ H3/1 30% of atten. major ARI catchment runoff from H3/1 = 53 (Catchment flow 175 x 322/322 x 30%) 30% of atten. major ARI catchment runoff from H3/1 = 26 (Catchment flow 175 x 322/322 x 30%) Total major ARI gutter flow 79			5.00 5.00	179 322		0.83 1.00	0.196 0.196	0.163 0.196	0.163 0.196	61 175	61 Maj 79	0.50	917		81 (UNLOCKED	0 53)		5.00 5.00	179 322	0.163 0.196	175	1545	122 (Pipe flow=	53 Unlocked	9.472 grate flow)	0.50	1050(2)	0.09 (2.25)	0.16			0.000	1.50	0.000			1.50	0.000	0.00	0.000			13.458 13.411	13.745 13.745	13.745		13.745	13.384	H3/1
5 100	M2/1	M2/1 to M1/1	G7/2 to G1/2;H3/1														24				8.69 8.69	144 261	1.466 1.767	1291			584 (Pipe flow= Sum upstream flows)	11.880	0.50	1050(2)	0.65 (2.25)	0.20		Qo 0.584 Do 1050 Routine 2.24 Join Pipes: G1/2 and H3/1 Vel1 0.613 Vel2 0.061	0.022	1.57	0.034	Eq Dia 1149 Angle 245 Flow 0.584 CHART 6D Du/Do1.09 alpha 65 Kw 0.28 Vu 0.56 WSE 0.04 Ku 1.57 Kw 1.78		1.78 (Eq Dia 1149 Angle 245 Flow 0.584	0.038	0.04	0.005			13.391 13.331	13.711 13.706	13.745		13.749	14.132	M2/1
5 100	G3/7	G3/7 to G2/7	G3/7			5.00 5.00	179 322		0.83 1.00	0.147 0.147	0.122 0.147	0.122 0.147	61 131	61 FLOW WIDTH/DEPTH 2.167m DOWNSTREAM 0.877m	0.40	123	7	49	12	G2/7	5.00 5.00	179 322	0.122 0.147	131			49 (Pipe flow= Grate flow)	50.000	0.41	375(2)	0.44 (1.02)	0.83		Qg 0.049 Qo 0.049 Do 375 CHRT 32: Vo2/2gDo 0.03 H/Do Kg side flow 5.31 end flow 4.02	0.010	5.31	0.053			5.31	0.053	0.08	0.039			14.506 14.301	14.973 14.934	15.026		15.026	15.443	G3/7
5 100	G2/7	G2/7 to G1/7	G3/7;G2/7			5.00 5.00	179 322		0.83 1.00	0.333 0.333	0.277 0.333	0.277 0.333	138 298	150 FLOW WIDTH/DEPTH 3.290m DOWNSTREAM 2.132m	0.40	123	7	91	59	G1/7	5.83 5.83	168 304	0.399 0.461	406			131 (Pipe flow= Sum upstr atten flows)	50.000	0.40	450(2)	0.83 (1.13)	0.83		Qg 0.065 Qo 0.131 Do 450 CHART 33 Angle 0 S/Do 2.5 Du/Do 0.83 Qg/Qo 0.65 K 1.76 S/Do 2.41 cor 0.05 Ku 1.83 Kw 1.83	0.035	1.83	0.065			1.83	0.065	0.21	0.106			14.301 14.101	14.669 14.763	14.934		14.934	15.243	G2/7
5 100	G1/7	G1/7 to G2/6	G3/7;G2/7;G1/7			5.00 5.00	179 322		0.83 1.00	0.390 0.390	0.324 0.390	0.324 0.390	161 349	220 FLOW WIDTH/DEPTH 3.877m DOWNSTREAM 2.808m	0.40	123	7	114	106	G2/6	6.66 6.66	159 290	0.723 0.871	702			226 (Pipe flow= Sum upstr atten flows)	56.634	0.37	525(2)	1.01 (1.22)	0.94		Qg 0.101 Qo 0.226 Do 525 CHART 33 Angle 0 S/Do 2.5 Du/Do 0.86 Qg/Qo 0.45 K 1.26 S/Do 2.24 cor 0.10 Ku 1.38 Kw 1.38	0.052	1.38	0.072			1.38	0.072	0.25	0.143			14.101 13.891	14.691 14.548	14.763		14.763	15.049	G1/7
5 100	H3/6	H3/6 to G2/6	H3/6	UNLOCK INLET CAPACITY - to reduce overland flow at G2/6 Major ARI gutter flow: Crit Inlet 322mm/h @ H3/6 60% of atten. major ARI catchment runoff from H3/6 = 324 (Catchment flow 540 x 322/322 x 60%) Total major ARI gutter flow 324			5.00 5.00	179 322		0.83 1.00	0.604 0.604	0.501 0.604	0.501 0.604	249 540	249 Maj 324 FLOW WIDTH/DEPTH 0.839m	0.40	821	101	249 (UNLOCKED	0 298)		5.00 5.00	179 322	0.501 0.604	540	1654	243 (Pipe flow=	298 Unlocked	22.637 grate flow)	0.50	750(2)	0.65 (1.80)	0.38			0.022	1.50	0.032			1.50	0.032	0.07	0.015			14.024 13.911	14.563 14.548	14.595		14.595	14.402	H3/6
5 100	G2/6	G2/6 to M1/6	G3/7;G2/7;G1/7;H3/6; G2/6			5.00 5.00	179 322		0.83 1.00	0.331 0.331	0.274 0.331	0.274 0.331	136 296	242 FLOW WIDTH/DEPTH 3.568m	0.04	224	17S.1	224	18		7.60 7.60	152 275	1.498 1.806	1380	632	632 (Pipe flow=	747 Sum upst	7.263 ream flows)	0.50	750(2)	1.64 (1.80)	0.07		Qg 0.224 Qo 0.747 Do 750 Routine 2.15 Join Pipes: G1/7 and H3/6 Vel1 1.042 Vel2 0.673 Eq Dia 894 Angle 179 Flow 0.523	0.137	1.26	0.173	CHART 33 Angle 1 S/Do 2.5 Du/Do 1.19 Qg/Qo 0.30 K 1.08 S/Do 1.86 cor 0.18 Ku 1.26 Kw 1.26		1.26 (1.26 Kw 1.26	0.173	0.41	0.030			13.891 13.655	14.375 14.345	14.548		14.548	14.951	G2/6
5 100	M1/6	M1/6 to G0/6	G3/7;G2/7;G1/7;H3/6; G2/6														24				7.67 7.67	151 274	1.498 1.931	1470			837 Additional flow: 0.095 cumecs (Pipe flow= Sum upstr atten flows)	113.385	0.50	825(2)	1.52 (1.92)	1.24		Qo 0.837 Do 825 CHART 50 Du/Do0.91 alpha 73 Kw 0.29 Vu 1.68 WSE 0.23 Ku 1.62 Kw 1.97	0.118	1.82	0.191			1.97	0.232	0.31	0.355			13.655 13.288	14.154 13.799	14.345		14.366	14.901	M1/6
5 100	G0/6	G0/6 to M1/1	G3/7;G2/7;G1/7;H3/6; G2/6;G0/6			5.00 5.00	179 322		0.83 1.00	0.405 0.405	0.337 0.405	0.337 0.405	168 362	168 FLOW WIDTH/DEPTH 2.768m DOWNSTREAM 1.799m	1.12	206	7	98	70	G1/2	8.91 8.91	143 259	1.835 2.337	1681	1578	810 (Pipe flow=	871 Sum upst	21.453 ream flows)	0.50	900(2)	1.32 (2.03)	0.27		Qg 0.078 Qo 0.871 Do 900 CHART 34 Angle 32 Case 3 S/Do 2.5 Du/Do 0.82 Qg/Qo 0.09 K 0.45 S/Do 1.56 cor 0.09 Ku 0.54 Kw 0.54	0.089	0.54	0.047			0.54	0.047	0.21	0.046			13.288 13.180	13.752 13.706	13.799		13.799	14.453	G0/6
5 100	M1/1	M1/1 to M5/9	G7/2 to G1/2;H3/1;G3 /7;G2/7;G1/7;H3/6;G2 /6;G0/6														24				9.18 9.18	142 256	3.301 4.104	2918			1455 (Pipe flow= Sum upstream flows)	49.970	0.80	1200(2)	1.25 (3.11)	0.67		Qo 1.455 Do 1200 Routine 2.19 Combined pipes in line case Join Pipes: G0/6 and M2/1 Vel1 0.574 Vel2 1.389	0.080	1.25	0.100	Eq Dia 1303 Angle 207 Flow 1.455 CHART 6D Du/Do1.09 alpha 0 Kw 0.05 Vu 1.09 WSE 0.05 Ku 0.59 Kw 0.63 Interpolated Ku= 1.25 Kw= 1.25		1.25 (Eq Dia 1303 Angle 207 Flow 1.455	0.100	0.13	0.064			13.464 13.065	13.606 13.542	13.706		13.706	14.288	M1/1

ROCKHAMPTON REGIONAL COUNCIL
These plans are approved subject to the current conditions of approval associated with Development Permit No. D/2008-1282
Dated 22/7/2009

CALCULATIONS TABLE

FOR APPROVAL

Rv.	DATE	REVISIONS	REC.	APPR.
4	10.07.09	FURTHER STORMWATER AMENDMENTS	A.Sk	CWS
3	14.05.09	STORMWATER SYSTEM AMENDED	A.Sk	CWS
2	03.03.09	STORMWATER DETENTION ADDED	A.Sk	CWS
1	03.12.08	FOR APPROVAL	PTM	CWS
0	12.08.08	OPERATIONAL WORKS SUBMISSION	CWS	CGF
A	10.01.08	FIRST ISSUE	SH	CS

DRAWN: E. BEATTIE
DESIGNED: P. MOORE
CHECKED: C. SHIELDS
A1 DATUM:
R1128-01-01-028 STORMWATER CALCULATION TABLE.dwg

RECOMMENDED: PROJECT MANAGER C. SHIELDS
APPROVED: PROJECT DIRECTOR STUART DOAK RPEQ 3222

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Sydney	(02) 9416 8233	(02) 9416 8529
Sunshine Coast	(07) 5443 2555	(07) 5443 5642
Townsville	(07) 4772 1166	(07) 4721 2508
Hervey Bay	(07) 4124 5455	(07) 4124 5155
Rockhampton	(07) 4924 7500	(07) 4926 4375
Central Coast	(02) 4323 2558	(02) 4324 3251
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Philippines	(00116632) 910 5146	(00116632) 910 5146

KELE BROS. PTY LTD
INDUSTRIAL SUBDIVISION
JOHNSON STREET, PARKHURST
STORMWATER CALCULATION TABLE
SHEET 1 OF 2

DATE: 10/01/08
DRAWING No: R1128-01-01-028
Rv: A | 4

CALCULATIONS TABLE

LOCATION						TIME		SUB-CATCHMENT RUNOFF						INLET DESIGN							
						tc	I	C10	C	A	C*A	+CA	Q					Qg	Qb		
DESIGN ARI	STRUCTURE No.	DRAIN SECTION	SUB-CATCHMENTS CONTRIBUTING	LAND USE	SLOPE OF CATCHMENT	SUB-CATCHMENT TIME OF CONC.	RAINFALL INTENSITY	10yr RUNOFF CO-EFFICIENT	CO-EFFICIENT OF RUNOFF	SUB-CATCHMENT AREA	EQUIVALENT AREA	SUM OF (C * A)	SUB-CATCHMENT DISCHARGE	FLOW IN K&C (INC. BYPASS)	ROAD GRADE AT INLET	MINOR FLOW ROAD CAPACITY	INLET TYPE	FLOW INTO INLET	BYPASS FLOW	BYPASS STRUCTURE No.	(notes)
yrs					%	min	mm/h			ha	ha	ha	l/s	l/s	%	l/s		l/s	l/s		
5 100	M5/9	M5/9 to M4/9	G7/2 to G1/2;H3/1;G3/7;G2/7;G1/7;H3/6;G2/6;G0/6;M5/9			15.00 15.00	116 207		0.83 1.00	1.503 1.503	1.247 1.503	1.247 1.503	402 864	402 Maj 605	0.50	137	101	402 (UNLOCKED	0 605)		FLOW WIDTH/DEPTH 4.777m UNLOCK INLET CAPACITY - to reduce overland flow at M4/9 Major ARI gutter flow: Crit Inten 207mm/h @ M5/9 70% of atten. major ARI catchment runoff from M5/9 = 605 (Catchment flow 864 x 207/207 x 70%) Total major ARI gutter flow 605
5 100	M4/9	M4/9 to M3/9	G7/2 to G1/2;H3/1;G3/7;G2/7;G1/7;H3/6;G2/6;G0/6;M5/9;M4/9			15.00 15.00	116 207		0.83 1.00	0.837 0.837	0.695 0.837	0.695 0.837	224 481	224 Maj 810	0.50	137	101	224 (UNLOCKED	0 810)		FLOW WIDTH/DEPTH 3.723m UNLOCK INLET CAPACITY - to reduce overland flow at M2/9 Major ARI gutter flow: Crit Inten 204mm/h @ M4/9 50% of atten. major ARI catchment runoff from M4/9 = 237 (Catchment flow 481 x 204/207 x 50%) 50% of total atten. overland flow for M5/9 = 573 (O/land flow 1164 x 204/207 x 50%) Total major ARI gutter flow 810
5 100	M3/9	M3/9 to M2/9	G7/2 to G1/2;H3/1;G3/7;G2/7;G1/7;H3/6;G2/6;G0/6;M5/9;M4/9;M3/9			15.00 15.00	116 207		0.83 1.00	0.714 0.714	0.593 0.714	0.593 0.714	191 411	191 Maj 587	0.50	137	101	191 (UNLOCKED	0 271)		FLOW WIDTH/DEPTH 3.473m UNLOCK INLET CAPACITY - to reduce overland flow at M2/9 Major ARI gutter flow: Crit Inten 202mm/h @ M3/9 50% of atten. major ARI catchment runoff from M3/9 = 200 (Catchment flow 411 x 202/207 x 50%) 50% of total atten. overland flow for M4/9 = 387 (O/land flow 781 x 202/204 x 50%) Total major ARI gutter flow 587
5 100	M2/9	M2/9 to M1/9	G7/2 to G1/2;H3/1;G3/7;G2/7;G1/7;H3/6;G2/6;G0/6;M5/9;M4/9;M3/9;M2/9			15.00 15.00	116 207		0.83 1.00	0.763 0.763	0.633 0.763	0.633 0.763	204 439	204	0.50	137	101	204	0		FLOW WIDTH/DEPTH 3.574m
5 100	M1/9	M1/9 to GPT/9	G7/2 to G1/2;H3/1;G3/7;G2/7;G1/7;H3/6;G2/6;G0/6;M5/9;M4/9;M3/9;M2/9;M1/9			15.00 15.00	116 207		0.83 1.00	0.420 0.420	0.349 0.420	0.349 0.420	112 241	112	3.64	371	101	112	0		FLOW WIDTH/DEPTH 1.692m
5 100	GPT/9	GPT/9 to O/9	G7/2 to G1/2;H3/1;G3/7;G2/7;G1/7;H3/6;G2/6;G0/6;M5/9;M4/9;M3/9;M2/9;M1/9														24				

STRUCTURE No.	DRAIN DESIGN													
	tc	I	+CA	Qt	Qm	Qs	Qp	L	S		V	T		
	CRITICAL TIME OF CONC.	RAINFALL INTENSITY	TOTAL (C * A)	MAJOR TOTAL FLOW	MAJOR SURFACE FLOW CAPACITY	MAJOR SURFACE FLOW	PIPE FLOW	REACH LENGTH	PIPE GRADE	PIPE / BOX DIMENSIONS (CLASS)	FLOW VELOCITY FULL (PIPE GRADE VELOCITY)	TIME OF FLOW IN REACH	STRUCTURE CHART No.	STRUCTURE RATIOS FOR 'K' VALUE CALCULATIONS
	min	mm/h	ha	l/s	l/s	l/s	l/s	m	%	mm	m/s	min		
M5/9	15.00 15.00	116 207	4.548 5.607	3224	2683	1164 (Pipe flow	2060 = Sum upstream flows)	50.000	1.00	1200(2)	1.77 (3.48)	0.47		Qg 0.605 Qo 2.060 Do 1200 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.29 K 1.07 S/Do 1.41 cor 0.36 Ku 1.43 Kw 1.43
M4/9	15.47 15.47	114 204	5.243 6.444	3651	1055	781 (Pipe flow	2870 = Sum upstream flows)	50.000	0.50	1200(2)	2.46 (2.46)	0.34		Qg 0.810 Qo 2.870 Do 1200 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.28 K 1.04 S/Do 1.54 cor 0.29 Ku 1.33 Kw 1.33
M3/9	15.81 15.81	113 202	5.836 7.158	4016	1055	875 (Pipe flow	3141 = Sum upstream flows)	50.001	0.50	1200(2)	2.69 (2.46)	0.31		Qg 0.271 Qo 3.141 Do 1200 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.09 K 0.47 S/Do 1.22 cor 0.13 Ku 0.60 Kw 0.60
M2/9	16.12 16.12	112 200	6.469 7.921	4400	1055	1055 (Pipe flow	3345 = Sum upstream flows)	49.999	0.50	1200(2)	2.87 (2.46)	0.29		Qg 0.204 Qo 3.345 Do 1200 Flow M3/9 made eqv grate flow CHRT 32: Vo2/2gDo 0.34 H/Do Kg side flow 4.08 end flow 3.54 K vals above for stepped pipes as grate flow grate flow decreased by 3.141 from M3/9
M1/9	16.41 16.41	111 198	6.818 8.341	4587		(Pipe flow=	3423 Sum upstr atten flows)	48.120	0.50	1200(2)	2.93 (2.46)	0.27		Qg 0.107 Qo 3.423 Do 1200 CHART 33 Angle 0 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.03 K 0.30 S/Do 1.31 cor 0.04 Ku 0.34 Kw 0.34
GPT/9	16.68 16.68	110 197	6.818 8.341	4564		(Pipe flow=	3423 Sum upstr atten flows)	4.880	0.50	1200(2)	2.93 (2.46)	0.03		Qo 3.423 Do 1200 CHART 50 Du/Do1.00 alpha 0 Kw 0.05 Vu 3.03 WSE 0.16 Ku 0.31 Kw 0.36

STRUCTURE No.	HEADLOSSES									PART FULL		DESIGN LEVELS						
	V2/2g	Ku	hu	Kl	hl	Kw	hw	Sf	hf		Vp							
	VELOCITY HEAD	U/S HEADLOSS COEFFICIENT	U/S PIPE STRUCT. HEADLOSS	LAT. HEADLOSS CO-EFFICIENT	LAT. PIPE STRUCT. HEADLOSS	W.S.E CO-EFFICIENT	CHANGE IN W.S.E	PIPE FRICTION SLOPE	PIPE FRICTION HEADLOSS (L * Sf)	DEPTH	VELOCITY	OBVERT LEVELS	DRAIN SECTION H.G.L	UPSTREAM H.G.L	LAT. H.G.L	W.S.E.	SURFACE OR K&C INVERT LEVEL	STRUCTURE No.
	m		m		m		m	%	m	m	m/s	m	m	m	m	m	m	
M5/9	0.160	1.43	0.229			1.43	0.229	0.26	0.128			13.045 12.545	13.313 13.185	13.542		13.542	14.391	M5/9
M4/9	0.308	1.33	0.411			1.33	0.411	0.50	0.249			12.525 12.275	12.774 12.525	13.185		13.185	14.119	M4/9
M3/9	0.369	0.60	0.222			0.60	0.222	0.60	0.299			12.255 12.005	12.303 12.005	12.525		12.525	13.993	M3/9
M2/9	0.420	0.46	0.193	CHART 33 Angle 0 S/Do 2.5 Du/Do 1.00 Qg/Qo 0.06 K 0.36 S/Do 1.52 cor 0.07 Ku 0.46 Kw 0.46 K vals step pipes as pipe flow Ku 0.46 Kw 0.46		0.46	0.193	0.68	0.339			10.896 10.646	11.340 11.001	11.533		11.533	13.903	M2/9
M1/9	0.438	0.34	0.149			0.34	0.149	0.71	0.341			10.626 10.385	10.852 10.511	11.001		11.001	13.979	M1/9
GPT/9	0.438	0.31	0.135			0.36	0.159	0.71	0.035			10.365 10.341	10.376 10.341	10.511		10.535	11.227	GPT/9

CALCULATIONS TABLE

ROCKHAMPTON REGIONAL COUNCIL
These plans are approved subject to the current conditions of approval associated with Development Permit No. D/2008-1282
Dated 22/7/2009

FOR APPROVAL

Rv.	DATE	REVISIONS	REC.	APPR.
4	10.07.09	FURTHER STORMWATER AMENDMENTS	A.Sk	CWS
3	14.05.09	STORMWATER SYSTEM AMENDED	A.Sk	CWS
2	03.03.09	STORMWATER DETENTION ADDED	A.Sk	CWS
1	03.12.08	FOR APPROVAL	PTM	CWS
0	12.08.08	OPERATIONAL WORKS SUBMISSION	CWS	CGF
A	10.01.08	FIRST ISSUE	SH	CS

DRAWN: E. BEATTIE
DESIGNED: P. MOORE
CHECKED: C SHIELDS
A1 DATUM:
R1128-01-01-029 STORMWATER CALCULATION TABLE.dwg

RECOMMENDED: PROJECT MANAGER C. SHIELDS
APPROVED: PROJECT DIRECTOR STUART DOAK RPEQ 3222

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KELE BROS. PTY LTD
INDUSTRIAL SUBDIVISION
JOHNSON STREET, PARKHURST
STORMWATER CALCULATION TABLE
SHEET 2 OF 2

DATE: 10/01/08
DRAWING No: R1128-01-01-029
Rv. A 0 1 2 3 4