SITE BASED STORMWATER MANAGEMENT PLAN

FOR THE PROPOSED MIXED-USE PROJECT

LOCATED AT
46 WEST STREET & 400 MILES PLATTING ROAD
ROCHEDALE

PREPARED FOR
KINSTONE GROUP

BORNHORST + WARD

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1. INTRODUCTION

Bornhorst and Ward has been commissioned to investigate and report on the stormwater requirements pertaining to the proposed Mixed-Use Project located at 46 West Street & 400 Miles Platting Road, Rochedale (Lot 2 on SP269191 & Lot 4 on SP259806). The proposal consists of constructing two buildings and a multi-level basement carpark. Refer to Arkhefield architectural drawings for further details of the proposed development.

This document reports on the existing and proposed stormwater infrastructure required as part of the proposed development as well as the stormwater quantity and quality management required for the site. The engineering requirements for this proposal shall be in accordance with Engineering Best Management Practices, Brisbane City Council Planning Scheme 2014, the Queensland Urban Drainage Manual (QUDM 2017) and the State Planning Policy (2017).

This report outlines the preliminary design methodology and calculations in support of a Development Application and should be read in conjunction with other documents issued by the consultant team.

2. SITE CHARACTERISTICS

2.1 LOCATION AND EXISTING FEATURES

The development site, located at 46 West Street & 400 Miles Platting Road has the following existing characteristics:

- The site is bound by Miles Platting Road to the south, West street to the east, a watercourse (Miles Platting Road Drain) tributary to Bulimba Creek to the west and Emerging Communities zoned allotments to the north;
- The development site comprises of a residential dwelling in the south-eastern corner of the site;
- The total area of the site is approximately 4.01 ha. The area of the stage 1 development is approximately 0.785ha;
- The remaining site area consists of grass cover with a scattering of trees across the site and bushland within the watercourse on the western side of the site;
- There is current vehicle and pedestrian access into each lot via driveway crossovers;
- The site currently contains multiple easements on the site, refer to locality plan.

Refer to Figure 1 for locality details.

Figure 1: Site Locality Plan

2.2 PROPOSED DEVELOPMENT

The following points outline the extent of works for the proposed development:

- The proposed development is for a Material Change of Use and Reconfiguration of Lot;
- It is proposed to construct two buildings and a multi-level basement carpark;
- It is proposed to provide access to the site via West Street.

Refer to Arkhefield architectural drawings for further details of the proposed development.

2.3 TOPOGRAPHY AND CATCHMENT CHARACTERISTICS

The topography and catchment characteristics are as follows:

- The high point of the existing site is RL 47.5m AHD located on the eastern side of the site;
- The development falls from the high point at an approximate grade of 6.0% to a low point of RL 38.0m AHD in the in the north western corner of the site before there is another 4m fall into the existing watercourse;
- During major and minor storm events, runoff from the site discharges as overland flow to the watercourse to the west of the site;
- West Road diverts all upstream catchments either north or south around the site.

See the existing site information in Appendix C for more information.

2.4 EXISTING FLOODING CONDITIONS AND FREEBOARD REQUIREMENTS

Information obtained from the Brisbane City Councils Floodwise Property Report for the site indicates that the site is subject to flooding from Creek/Waterway flooding. Characteristics of the flooding are as follows:

- 1% AEP flood level of 40.3m AHD;
- The site is affected by the Creek/waterway, overland flow and waterway corridor overlay areas;
- The waterway corridor is tributary to Bulimba Creek (Mile Platting Road Drain);

Please refer to the Brisbane City Council's Floodwise Property Report in Appendix C and the Flood Overlay Map in Figure 2 below for more details.

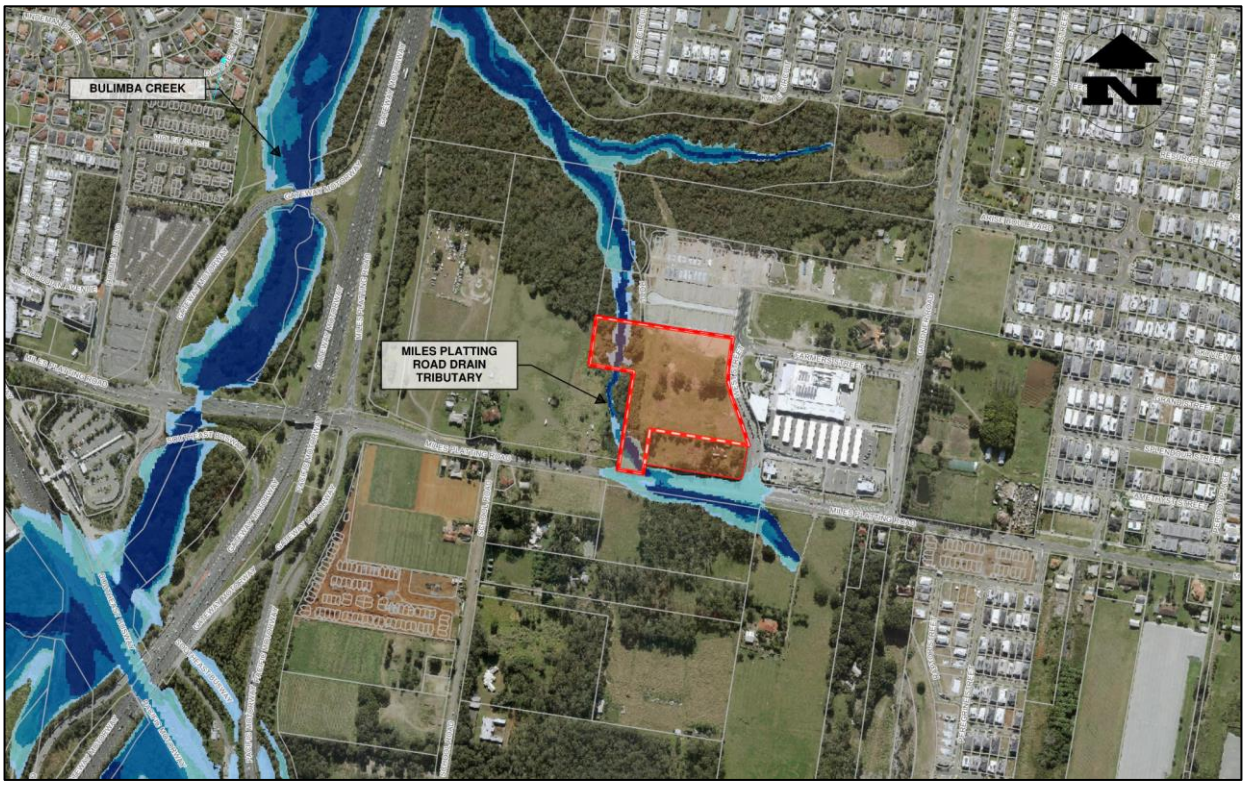


Figure 2: Brisbane City Council Interactive Flood Map

Design levels for the building must comply with the flood immunity standards specified by Brisbane City Council's City Plan (2014). The development will be assessed against the flood levels determined from our investigations. In accordance with the Brisbane City Council City Plan (2014), the minimum flood freeboard requirements would therefore be in order of:

Table 1: Flood Freeboard Requirements

Development Area	Council Categories of Flood Planning Levels	Council Required Development Level (AHD)	Development Level (m AHD)
Building Floor level	Category C	40.3	42.5
Basement entry	Category C	40.3	46.25
Essential services (including lifts)*	Category A	40.8	38.0*

*The essential services located on level P5 of the development is not required to achieve the minimum flood immunity level as the proposed development is located outside the council's 1% AEP flood extent (Ultimate Scenario). The council's flood result file has been overlayed on the development plan (see figure 3) which shows the adjacent flood level at RL 39.5. The existing level at the point of the development is RL 42.0. The basement levels of the development are located on land approximately 2.5m above the flood level and therefore provides sufficient freeboard from the 1% AEP flood level.

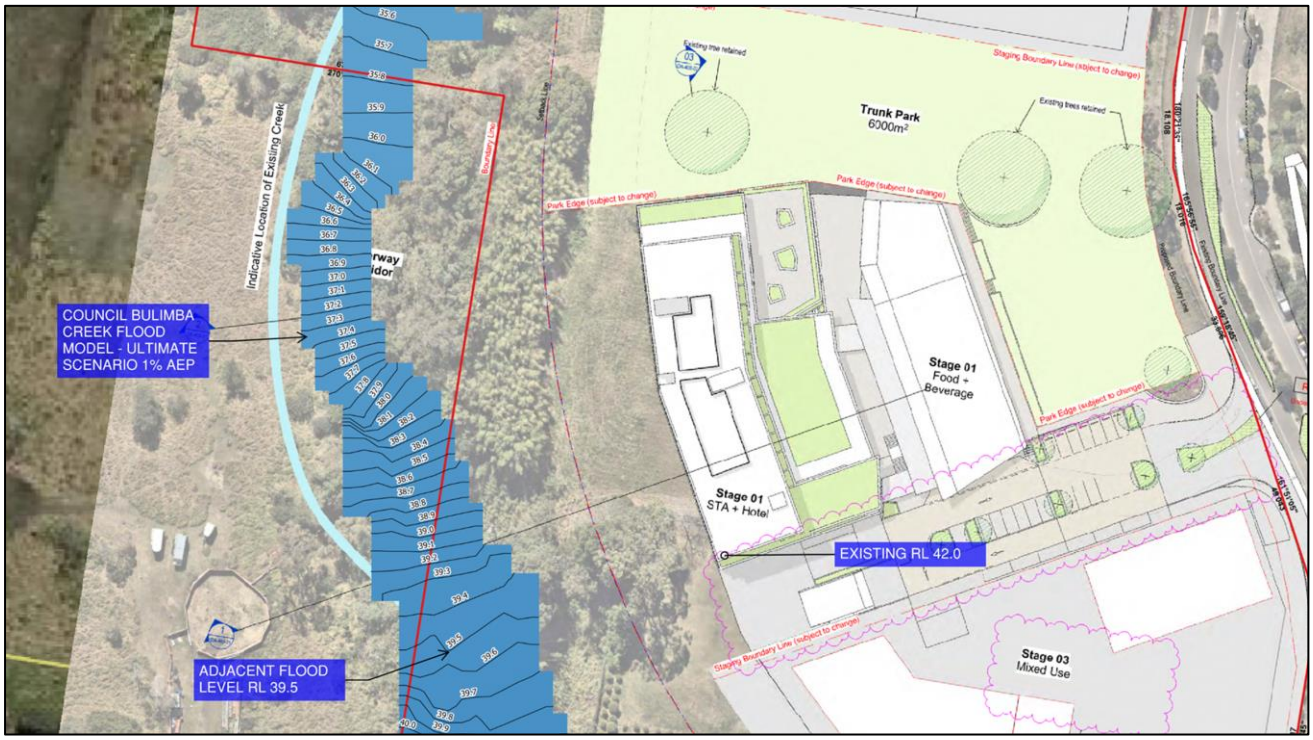


Figure 3: Council Bulimba Creek Study flood extent

3. EXISTING AND PROPOSED STORMWATER INFRASTRUCTURE

3.1 EXISTING INFRASTRUCTURE

A Before You Dig Investigation has been completed of the site and its surrounding area. The following stormwater infrastructure was noted:

- An existing 1200mm dia. and 1350mm dia. stormwater pipe are located within the Miles Platting Road reserve and ultimately outlet to the watercourse located to the south west of the site;
- Multiple gully pits are located within Miles Platting Road to the south of the site and West Street to the east of the site;
- Stormwater from the site currently discharges as overland flow to the watercourse.

Before You Dig of the existing stormwater infrastructure can be found in Appendix C of this report.

3.2 PROPOSED STORMWATER DRAINAGE

The following points outline the proposed stormwater infrastructure for the development site:

- Major and minor events will be collected by an internal hydraulic stormwater piped network and conveyed to a treatment tank located on the western side of the building;
- As the site will result in an increase in impervious area, stormwater detention is required. It is proposed to provide stormwater detention in the tank on the western side of the building;
- Considering the development works area is greater than 2,500m^2 stormwater quality treatment measures will be required for the site;
- Following stormwater quantity and quality treatment by the tank, stormwater will be discharged via headwall to the waterway corridor to the west.

Refer to the Engineering drawings located in Appendix B.

4. STORMWATER QUANTITY ANALYSIS

4.1 EXISTING WATERWAY CORRIDOR FLOOD ASSESSMENT – XP STORM

The hydrological modelling has been undertaken in XP Storm for the 100-year ARI (1% AEP) storm event and 2-year ARI (39% AEP) storm event using AR&R 87 IFD as per the BCC Planning Scheme Policy. The following table outlines the IFD Parameters used for the analysed storm durations.

Table 2: IFD Parameters

Storm Duration (mins)	Intensity (mm/hr)	
	2-Year ARI (39% AEP)	100 Year ARI (1% AEP)
20	85	193
25	76	174
30	70	160
45	59	129
60	47	110
90	36	85
120	29	71
180	22	53

To establish the catchments contributing to runoff flowing through the waterway corridor, DEM data was derived from the QLD Government's Queensland LiDAR Data, in addition to detailed survey data. Catchment boundaries were then determined based on the LiDAR & survey contours, and a review of the existing piped stormwater network of surrounding area.

Table 3 below outlines the input parameters for each catchment within the model. The impervious fraction for each catchment has been determined based on review of aerial imagery. For pervious areas within each catchment, an initial loss of 14mm and a continuing loss of 1.7mm/hr was adopted, as per information obtained from the Australian Rainfall and Runoff (ARR) Data Hub. No areal reduction factors have been applied to this local assessment. A catchment plan for the waterway catchment adjoining the development site can be found in Appendix D.

Table 3: XP Storm Existing Waterway Catchment Model Parameters

Catchment	Area (ha)	Impervious (%)	Slope (%)	Mannings 'n'	Initial Loss (mm)	Continuing Loss (mm/hr)
Waterway Corridor Catchment	87.531	0	2.4	0.03	14	1.7
	48.209	100		0.013	0	0

The storm durations listed in Table 4 were simulated in XP Storm for each catchment detailed within Table 3 to determine the critical storm duration for each catchment. Determining the critical storm for each catchment allows the maximum critical flow to be modelled in the hydraulics scenario, resulting in the maximum flow path along the waterway corridor.

The following table highlights the peak flows for the waterway corridor catchment adjoining the development site frontage. It is noted that the Brisbane City Council Flood Maps should be referred to for a holistic assessment of the flooding experienced downstream of the development site along the waterway corridor, and for all flood immunity development levels, per Section 2.4 above.

Table 4: Existing Waterway Scenario Critical Peak Flow Runoff (m^3/s)

Catchment	Peak Flow (m^3/s)		Peak Water Level Along Development Frontage (m AHD)	
	2-Year ARI (39 % AEP)	100-Year ARI (1% AEP)	2-Year ARI (39 % AEP)	100-Year ARI (1% AEP)
Waterway Corridor Catchment	18.779	46.516	39.80	40.15

The results of the waterway corridor flood assessment can be found in Appendix D, with the catchment plan for the waterway catchment adjoining to and upstream of the development site.

4.2 DETAILED HYDRAULIC MODELLING – XP STORM – DETENTION SIZING

A detailed hydrologic and hydraulic analysis using XP Storm software has been undertaken to accurately model the stormwater flow characteristics of the site.

XP Storm is a hydraulic modelling software tool that utilises detailed hydrograph flow analysis to provide an effective representation of urban stormwater systems. Hydrographs are calculated using the Laurenson Method for runoff routing in conjunction with the Uniform Loss model for determining catchment losses. XP Storm has been used to demonstrate non-worsening on downstream properties through comparison of the results obtained for existing and developed mitigated scenarios.

4.2.1 Existing Scenario Model

Initially the existing XP Storm model was built using the catchment parameters outlined in Table 5. The initial and continuing loss properties were assumed from site investigations and recent experience with stormwater modelling in the subject area.

Table 5: XP Storm Existing Model Parameters

Parameter	Site	
	Pervious Data	Impervious Data
Area (ha)	0.785	N/A
Slope (%)	5.00	0
Mannings 'n'	0.045	0
Initial Loss (mm)	14	1.5
Continuing Loss (mm/hr)	1.7	0
Laurenson 'n'	-0.285	-0.285

4.2.2 Results for Existing Scenario

Table 6 indicates the existing total peak discharge rate for the site as proposed by XP storm. The peak flow rate indicated is the flow for the site. The critical storm duration for the existing catchment was determined by simulating all storm events from the Q1 - Q100 year ARI (63% - 1% AEP) for 20, 25, 30, 45, 60, 90, 120 and 180 minute durations. The critical storm events can be seen within the table below.

Table 6: XP Storm Existing Peak Flow Results (m^3/sec)

Storm Duration (min)	ARI (Years) / AEP (%)						
	Q1 / 63	Q2 / 39	Q5 / 18	Q10 / 10	Q20 / 5	Q50 / 2	Q100 / 1
20	0.046	0.104	0.172	0.238	0.289	0.388	0.446
25	0.064	0.120	0.188	0.248	0.330	0.399	0.463
30	0.073	0.121	0.178	0.232	0.310	0.384	0.447
45	0.084	0.129	0.183	0.238	0.288	0.371	0.425
60	0.095	0.153	0.229	0.281	0.354	0.414	0.476
90	0.103	0.154	0.211	0.246	0.291	0.324	0.365
120	0.090	0.131	0.196	0.231	0.272	0.295	0.341
180	0.086	0.123	0.168	0.200	0.232	0.251	0.285
Critical	0.103	0.154	0.229	0.281	0.354	0.414	0.476
Critical Event	90	90	60	60	60	60	60

Discharge hydrographs for the existing model have been included in Appendix E.

4.2.3 XP Storm and Rational Method Comparison

Before utilising data from XP storm, a comparison of results from XP Storm and the Rational Method was undertaken to ensure that the XP Storm model was functioning correctly. Peak discharge rates from the site in the existing case were compared ("site" catchment defined in Table 5). The comparison is outlined in Table 7. Detailed Rational Method calculations can be reviewed in Appendix E.

Table 7: Comparison of Rational Method & XP Storm Existing Peak Flows (m^3/sec)

ARI (Years) / AEP (%)	Rational Method Result (m^3/s)	XP Storm Result (m^3/s)
Q1 / 63	0.110	0.103
Q2 / 39	0.151	0.154
Q5 / 18	0.213	0.229
Q10 / 10	0.255	0.281
Q20 / 5	0.308	0.354
Q50 / 2	0.398	0.414
Q100 / 1	0.463	0.476

As indicated, the XP Storm peak discharge results are of the same magnitude as the results initially estimated using the Rational Method. It was therefore concluded that the existing XP Storm model was functioning correctly.

4.2.4 Developed Scenario Model

A developed scenario model was then created with internal catchments and parameters modified from the existing model to suit the proposed development as outline in Table 8.

Table 8: XP Storm Developed Model Parameters

Parameter	Site	
	Pervious Data	Impervious Data
Area (ha)	N/A	0.785
Slope (%)	0.01	0.01
Mannings 'n'	0.03	0.013
Initial Loss (mm)	14	0.0
Continuing Loss (mm/hr)	1.7	0
Laurenson 'n'	-0.285	-0.285

4.2.5 Detention Tank Design

For the developed mitigated scenario, a storage node representing the proposed detention tank was included in the model. Flows from the site catchment were routed to the detention tank and discharging to the existing waterway corridor to the west of the development. The tank was modelled as 1.0m deep as outlined in Table 9 below.

Table 9: XP Storm Developed Model Hydraulic Routing

Depth (m)	Area (m^2)	Approximate Volume (m^3)
0	110	0
2.0	110	220

Outlets to the detention basin were modelled as below:

- Low-flow outlet: 250mm dia. circular orifice at tank invert level;
- Mid-flow outlet: 300mm dia. circular orifice 1.15m above tank invert level;
- Mid-flow outlet 2: 150mm x 600mm rectangular orifice 1.55m above tank invert level;
- High-flow outlet: 10m long weir with a crest height of 1.8m above tank invert level.

4.2.6 Results for Developed Scenario

Table 10 indicates the developed total peak discharge rate as outputted by XP storm. The peak flow rate indicated is the flow for the site catchment. To determine the critical storm event for the developed mitigated case, the Q1 - Q100 year ARI (63% - 1% AEP) for 20, 25, 30, 45, 60, 90, 120 and 180 minute durations were simulated in the model. From these simulations it was determined that the critical duration for the Q1 to Q100 year ARI storm events was the 25 minute storm. The 25 minute storm duration results will therefore be compared against the existing scenario discharges as identified in 4.1.2.

Table 10: XP Storm Developed Mitigated Peak Flow Results (m^3/sec)

Storm Duration (min)	ARI (Years) / AEP (%)						
	Q1 / 63	Q2 / 39	Q5 / 18	Q10 / 10	Q20 / 5	Q50 / 2	Q100 / 1
20	0.087	0.109	0.175	0.224	0.281	0.354	0.417
25	0.091	0.115	0.197	0.251	0.319	0.366	0.453
30	0.088	0.111	0.179	0.236	0.298	0.362	0.425
45	0.086	0.108	0.167	0.218	0.270	0.333	0.390
60	0.092	0.121	0.209	0.255	0.329	0.380	0.476
90	0.088	0.109	0.188	0.235	0.283	0.320	0.376
120	0.083	0.101	0.162	0.210	0.255	0.285	0.335
180	0.073	0.092	0.130	0.184	0.226	0.244	0.278
Critical	0.092	0.121	0.209	0.255	0.329	0.380	0.476
Critical Event	60	60	60	60	60	60	60

Further details of the outputs for the critical events have been located within Appendix E.

4.2.7 Hydraulic Impacts on Downstream Waterway Corridor

A comparison of critical peak flows for the existing and developed mitigated scenarios has been included in Table 11. The hydraulic modelling undertaken has demonstrated that the proposed development will not cause a worsening impact downstream of the site in the Q1 - Q100 year ARI (63% - 1% AEP) and that the tank has been adequately sized. **Therefore, the required detention volume for the site in the 1% AEP storm event is 220m^3.**

Discharge hydrographs for the detention tank and associated XP Storm outputs have been included in Appendix E of this report to demonstrate the performance of the proposed detention system.

Table 11: XP Storm Existing and Developed Mitigated Peak Discharge Comparison (m^3/sec)

ARI (Years) / AEP (%)	Existing Critical Discharge	Developed Critical Discharge	Discharge Difference
Q1 / 63	0.103	0.092	-0.011
Q2 / 39	0.154	0.121	-0.033
Q5 / 18	0.229	0.209	-0.020
Q10 / 10	0.281	0.255	-0.026
Q20 / 5	0.354	0.329	-0.025
Q50 / 2	0.414	0.380	-0.034
Q100 / 1	0.476	0.476	0.000

5. STORMWATER QUALITY

5.1 CONSTRUCTION PHASE

The development works are considered high risk with respect to the contaminants generated during the construction phase. A comprehensive Erosion and Sediment Control Plan including the construction process will be prepared during the detailed design. This is to be kept on site during the construction phase and will be in accordance with the State Planning Policy (2017) and Brisbane City Council City Plan (2014).

Refer to the Erosion Hazard Assessment form in Appendix H for further information.

5.2 OPERATIONAL PHASE

The following extract from the document describes when a development is considered high risk, under Table 9.4.9.3.A of the Brisbane City Plan (2014):

a) A material change of use for an urban purposes which involves greater than 2,500m^2 of land that:
  i. Will result in an impervious area greater than 25% of the net developable area, or
  ii. Will result in 6 or more dwellings.
b) Reconfiguring a lot for urban purposes that involves greater than 2,500m^2 of land and will result in 6 or more lots;
c) Operational works for an urban purpose which involves disturbing greater than 2,500m^2 of land.

As the site is for a material change for an urban purpose which involves greater than 2,500m^2 of land and will result in an impervious area greater than 25% of the net developable area, stormwater quality treatment will be required.

5.2.1 Pollutants of Concern

The key pollutants to be targeted and the minimum reductions in mean annual loads described in the State Planning Policy for the South East Queensland Region area outlined in Table 12.

Table 12: South East Queensland Water Quality Objectives

Pollutant	Reduction in Mean Annual Load
Total Suspended Solids (TSS)	80%
Total Phosphorus (TP)	60%
Total Nitrogen (TN)	45%
Gross Pollutants (GP)	90%

5.2.2 Modelling/Assessment Approach

A quantitative assessment of stormwater runoff quality was considered for the catchments ultimate developed scenario.

The predicted reductions in mean annual loads of key pollutants have been identified using the "Model for Urban Stormwater Improvement Conceptualisation" (MUSIC), Version 6 (6.3.0). MUSIC is a stormwater quality modelling program that provides estimates of stormwater pollution generation and the performance of stormwater management measures used in series or parallel to form a 'treatment train'.

5.2.3 Meteorological Data

The first step in creating the MUSIC model was to select the appropriate meteorological data set (period and time step) to be used as the basis for the runoff algorithms. Section 3.1 – Meteorological Data and Section 3.2 – Modelling Period and time-step, of the MUSIC Modelling Guidelines details the Rainfall Data and Time Step process requirements of the model, respectively.

The time step used for the MUSIC modelling process was: Brisbane Regional Office 6 Minutes.

5.2.4 Source Nodes

The second step taken in creating the MUSIC models was to define 'Source Nodes' or Sub-Catchments. Source nodes for modelling these catchments were based on the Water by Design reference material: Music Modelling Guidelines. The MUSIC model uses the split catchment approach and consists of residential source nodes.

Table 13: Source Node Information

Node type	Area (ha)	Fraction Impervious
Commercial Road	0.239	100%
Commercial Roof	0.283	100%
Commercial Ground	0.263	100%

The input parameters used are listed in Appendix F.

5.2.5 Treatment Nodes

The MUSIC model consisted of one treatment nodes as detailed in Table 14. Treatment node input parameters were sourced directly from Atlan and Ocean Protect. Two supplier options for treatment, Ocean Protect and Atlan, have been evaluated. The final selection will be confirmed during the later stages of the design process.

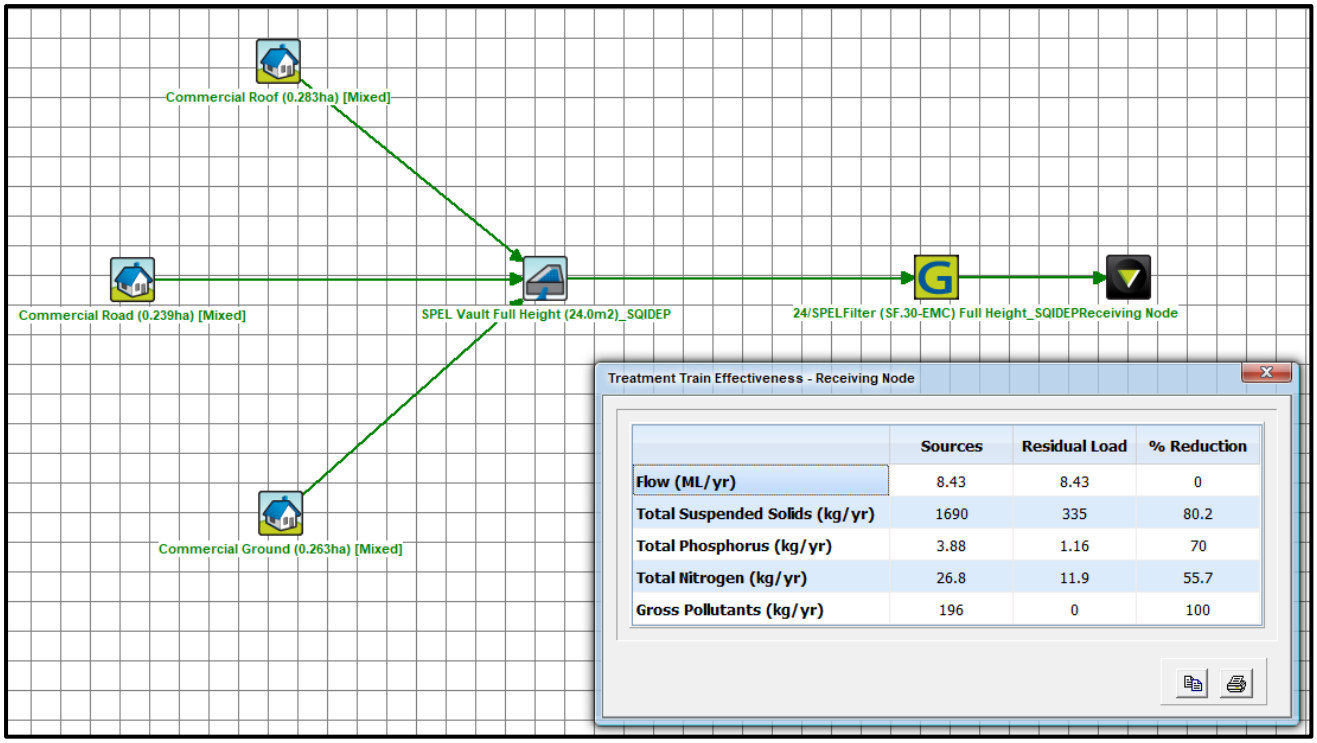
Table 14: Selected Stormwater Quality Treatment Devices

Treatment Device	Discussion
Tertiary Treatment Device AtlanFilter	The AtlanFilter is a proprietary device containing cartridge filtration designed to remove nutrients and sediments from stormwater runoff. The total number of Cartridges required is 24 (Minimum)
Tertiary Treatment Device Ocean Protect	Psorb StormFilter devices are designed to remove nutrients and sediments from stormwater runoff – discussed for each supplier option below. The total number of Cartridges required is 45 (Minimum)

Refer to the MUSIC information attached in Appendix F for further details.

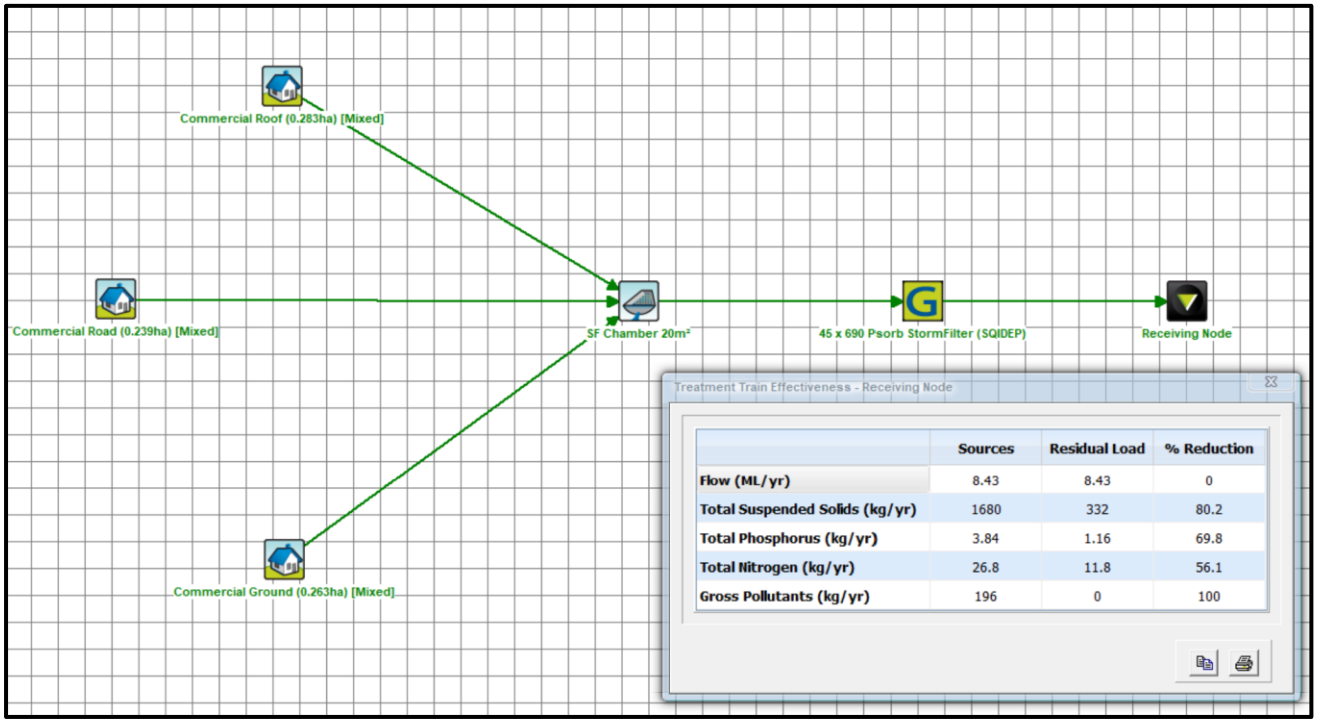
5.2.6 Proposed Treatment Train

A 'Treatment Train' was developed to target each of the pollutants of concern to be incorporated into the development site layout. This treatment train is illustrated in Figure 4 and Figure 5.



	Sources	Residual Load	% Reduction
Flow (ML/yr)	8.43	8.43	0
Total Suspended Solids (kg/yr)	1690	335	80.2
Total Phosphorus (kg/yr)	3.88	1.16	70
Total Nitrogen (kg/yr)	26.8	11.9	55.7
Gross Pollutants (kg/yr)	196	0	100

Figure 4: Proposed Treatment Train – Atlan Filter



	Sources	Residual Load	% Reduction
Flow (ML/yr)	8.43	8.43	0
Total Suspended Solids (kg/yr)	1680	332	80.2
Total Phosphorus (kg/yr)	3.84	1.16	69.8
Total Nitrogen (kg/yr)	26.8	11.8	56.1
Gross Pollutants (kg/yr)	196	0	100

Figure 5: Proposed Treatment Train – Ocean Protect

5.2.7 Results

The pollutant reductions for the ultimate developed phase of the site, with the inclusion of the detailed treatment train, as obtained from the MUSIC model and analysis are summarised in Table 15 and 16.

Table 15: Pollutant Removal Rates Discharge - Atlan

Pollutant	TSS (%)	TP (%)	TN (%)	GP (%)
Treatment Train Effectiveness	80.2	70	55.7	100.0
WQOs	80.0	60.0	45.0	90.0

Table 16: Pollutant Removal Rates Discharge – Ocean Protect

Pollutant	TSS (%)	TP (%)	TN (%)	GP (%)
Treatment Train Effectiveness	80.2	69.8	56.1	100.0
WQOs	80.0	60.0	45.0	90.0

As indicated in the table above, the removal rates for the target pollutants; total suspended solids (TSS), total phosphorus (TP), total nitrogen (TN) and gross pollutants (GP) are all above the water quality objectives stipulated in the State Planning Policy. Therefore, the proposed treatment train for these areas will yield satisfactory pollutant removal.

6. BRISBANE CITY COUNCIL CODES

The relevant Brisbane City Council Codes with respect to engineering aspects for assessment of the Development Application have been addressed. The codes will assist in assessing operational works requirements. The codes addressed in this report include:

- Filling and Excavation Code
- Infrastructure Design Code
- Stormwater Code
- Flood Overlay Code

The completed codes can be found attached in Appendix G of this Report.

7. SUMMARY

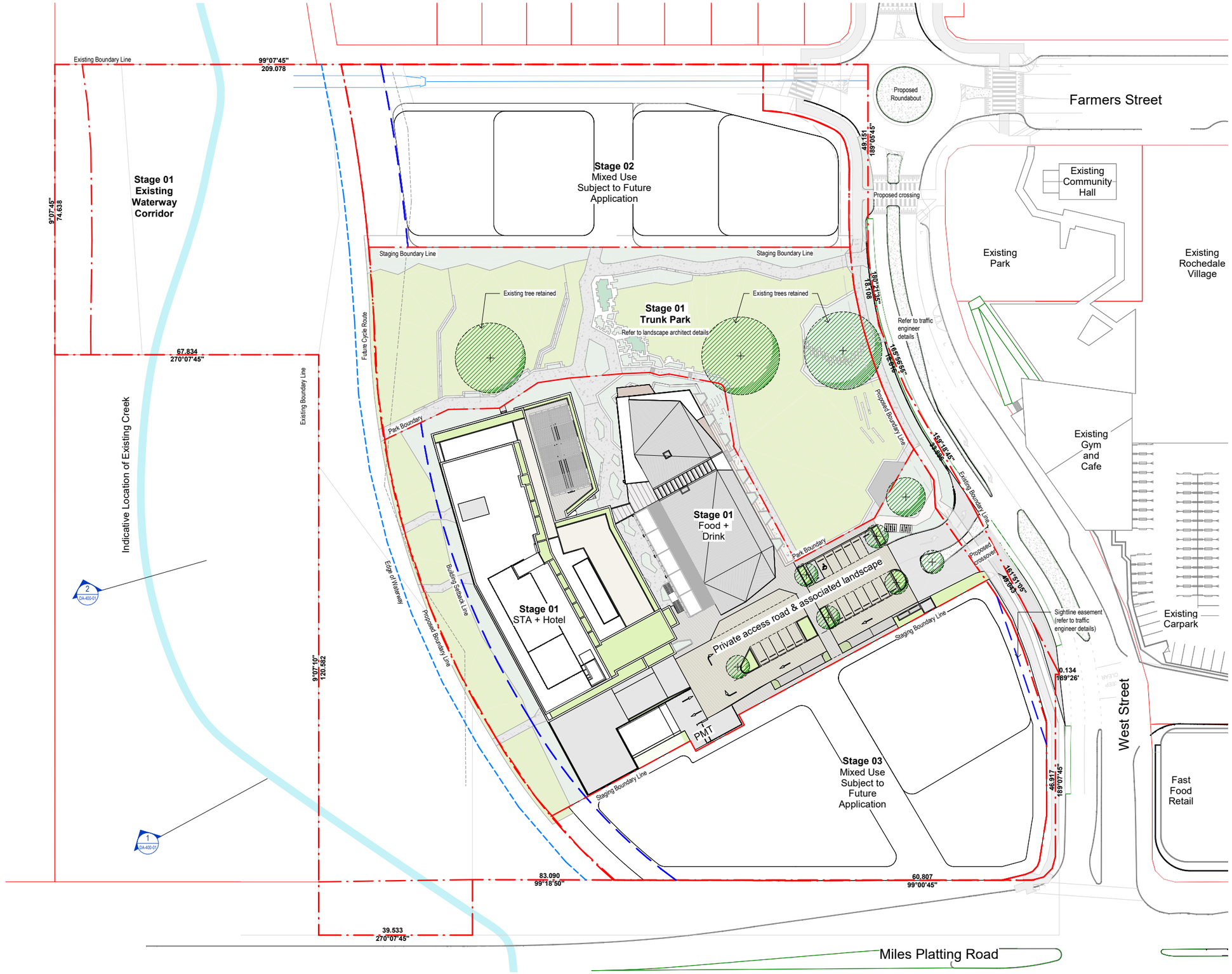
This Engineering Report has demonstrated that the proposed development located at 46 West Street & 400 Miles Platting Road, Rochedale, can be developed in accordance with Engineering Best Management Practice, Brisbane City Council guidelines, QUDM (2017) and the State Planning Policy (2017). The following points summarise the findings and recommendations:

- The development site has flood flags in the form of a Creek/Waterway Corridor, however, it is located outside of the BCC flood mapping areas.
- It is proposed that stormwater is discharged to the waterway corridor as per existing conditions. Minor and major flows will be captured via internal stormwater pipe system;
- There will be an increase in peak stormwater runoff as a result of the development, therefore detention will be required;
- As the site is for a material change for an urban purpose which involves greater than 2,500m2 of land and will result in an impervious area greater than 25% of the net developable area, stormwater quality treatment will be required.

APPENDIX A

DEVELOPMENT DRAWINGS

Development Approval



DRAWN	CHECKED	APPROVED
JS	AG	AG

REV.	DATE	DESCRIPTION	DRW.	CHK.	APRV.
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K	15.07.2025	Revised Issue for Development Approval	JS	AG	AG
L	21.07.2025	Revised Issue for Development Approval	JS	AG	AG
M	07.08.2025	Revised Issue for Development Approval	JS	AG	AG

PROJECT
Rochedale Terrace
46 West Street & 400 Miles Platting Rd, Rochedale QLD 4123
STAGE 1
ROCHEDALE TERRACE

CLIENT
Kinstone Group
KINSTONE GROUP

DRAWING NAME
Proposed Site Plan

Arkhefield
418 ADELAIDE ST
BRISBANE QLD 4000
P. 07 3831 8150
W. ARKHEFIELD.COM.AU
E. MAIL@ARKHEFIELD.COM.AU

DISC.	PHASE	DWG NO.	REV.
A	DA	DA-100-03	M

A1
PROJECT NO. 3765
SCALE 1 : 500

7/08/2025 12:07:55 PM

Development Approval

Note: Internal layouts indicative only

1 DA - GA Plan - Ground Level Food and Drink, Hotel, STA Lobby

1 : 250

DRAWN	CHECKED	APPROVED	REV.	DATE	DESCRIPTION	DRW.	CHK.	APRV.
JS	AG	AG	F	28.08.2024	Revised Issue for Development Approval			
			G	11.09.2024	Revised Issue for Development Approval			
			H	15.07.2025	Revised Issue for Development Approval	JS	AG	AG
			J	07.08.2025	Revised Issue for Development Approval	JS	AG	AG

PROJECT: Rochedale Terrace
46 West Street & 400 Miles Platting Rd, Rochedale QLD 4123
STAGE 1
ROCHEDALE TERRACE

CLIENT: Kinstone Group
KINSTONE GROUP

DRAWING NAME: GA Plan - Food and Drink, Hotel and STA Lobby - Ground Level

Arkhefield
418 ADELAIDE ST
BRISBANE QLD 4000
P. 07 3831 8150
W. ARKHEFIELD.COM.AU
E. MAIL@ARKHEFIELD.COM.AU

DISC.	PHASE	DWG NO.	REV.
A	DA	DA-200-00	J

A1
PROJECT NO. 3765
SCALE 1 : 250

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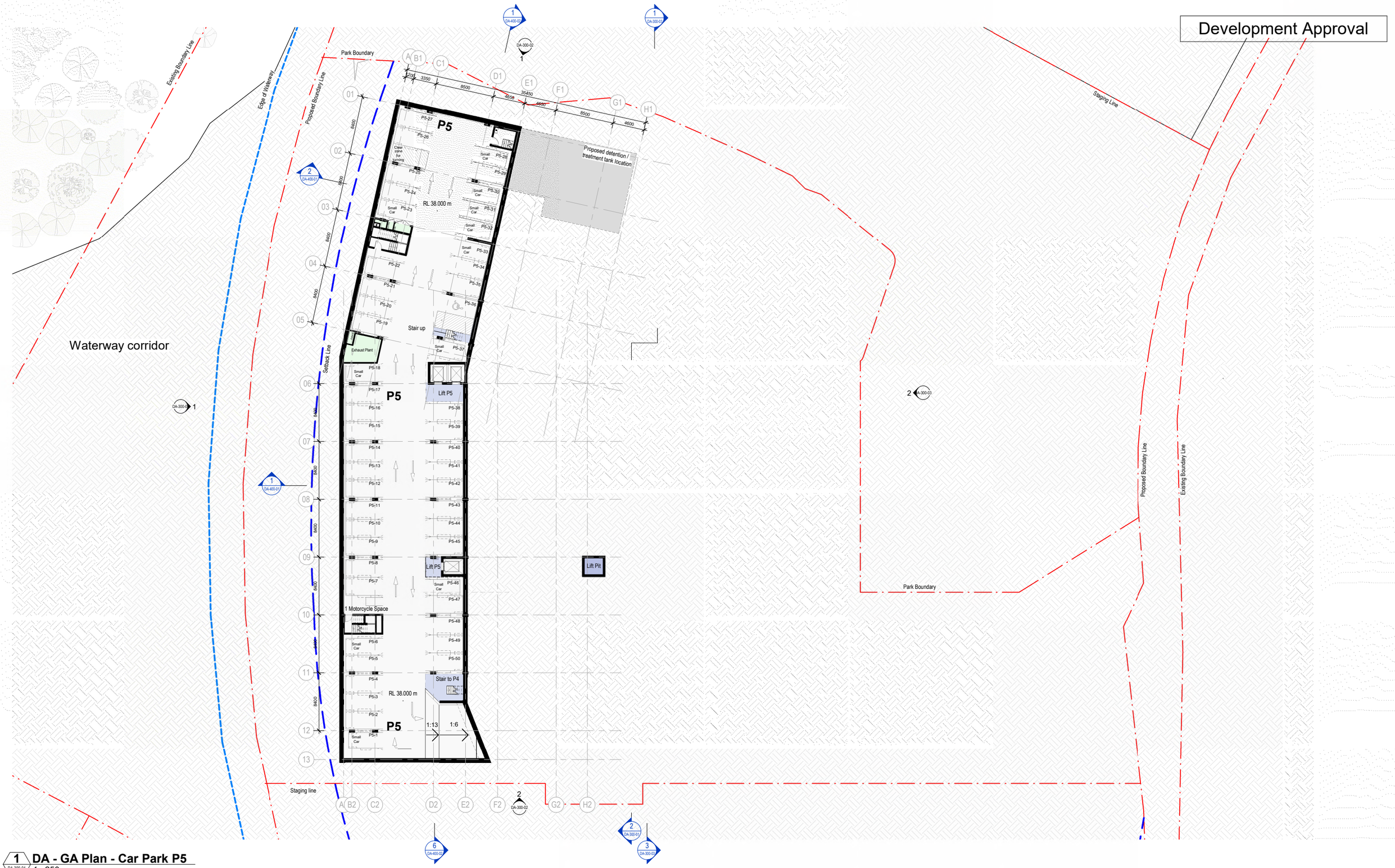
Development Approval



1 DA - GA Plan - Car Park P5

DA-300-01 | 1 : 250

DRAWN	CHECKED	APPROVED
JS	AG	AG

REV.	DATE	DESCRIPTION	DRW.	CHK.	APRV.
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G	11.09.2024	Revised Issue for Development Approval			
H	15.07.2025	Revised Issue for Development Approval	JS	AG	AG
J	07.08.2025	Revised Issue for Development Approval	JS	AG	AG

PROJECT: Rochedale Terrace
46 West Street & 400 Miles Platting Rd, Rochedale QLD 4123
STAGE 1

CLIENT: Kinstone Group

DRAWING NAME: GA Plan - Car Park Level P5

Arkhefield
418 ADELAIDE ST
BRISBANE QLD 4000
P. 07 3831 8150
W. ARKHEFIELD.COM.AU
E. MAIL@ARKHEFIELD.COM.AU

DISC.	PHASE	DWG NO.	REV.
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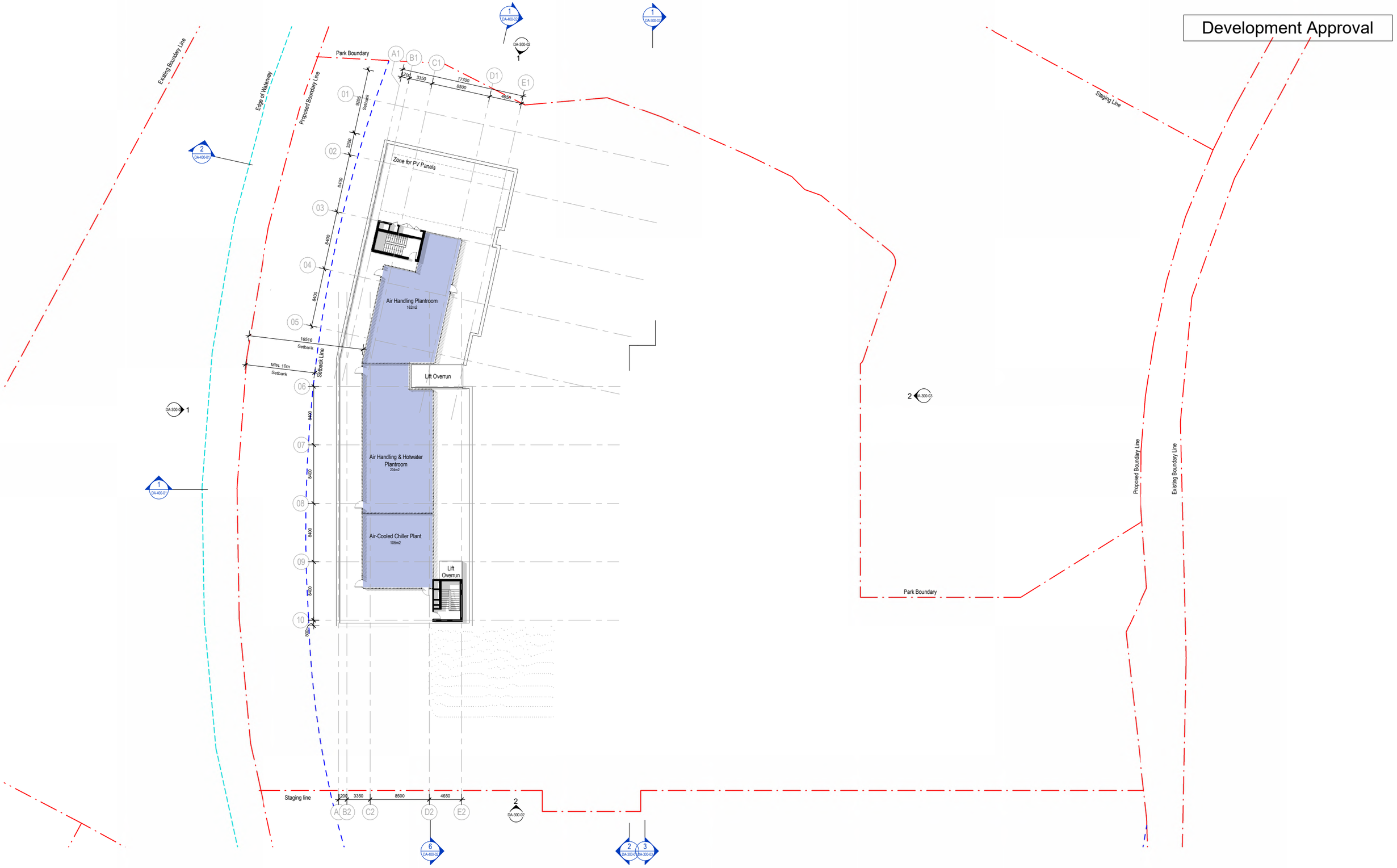
A1
PROJECT NO. 3765
SCALE 1 : 250

7/08/2025 12:07:38 PM

Development Approval



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JS	AG	AG

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G	15.07.2025	Revised Issue for Development Approval	JS	AG	AG
H	07.08.2025	Revised Issue for Development Approval	JS	AG	AG

PROJECT
Rochedale Terrace
46 West Street & 400 Miles Platting Rd, Rochedale QLD 4123
STAGE 1
ROCHEDALE TERRACE

CLIENT
Kinstone Group
KINSTONE GROUP

DRAWING NAME
Roof Plan
General Arrangement

Arkhefield
418 ADELAIDE ST
BRISBANE QLD 4000
P. 07 3831 8150
W. ARKHEFIELD.COM.AU
E. MAIL@ARKHEFIELD.COM.AU

DISC.	PHASE	DWG NO.	REV.
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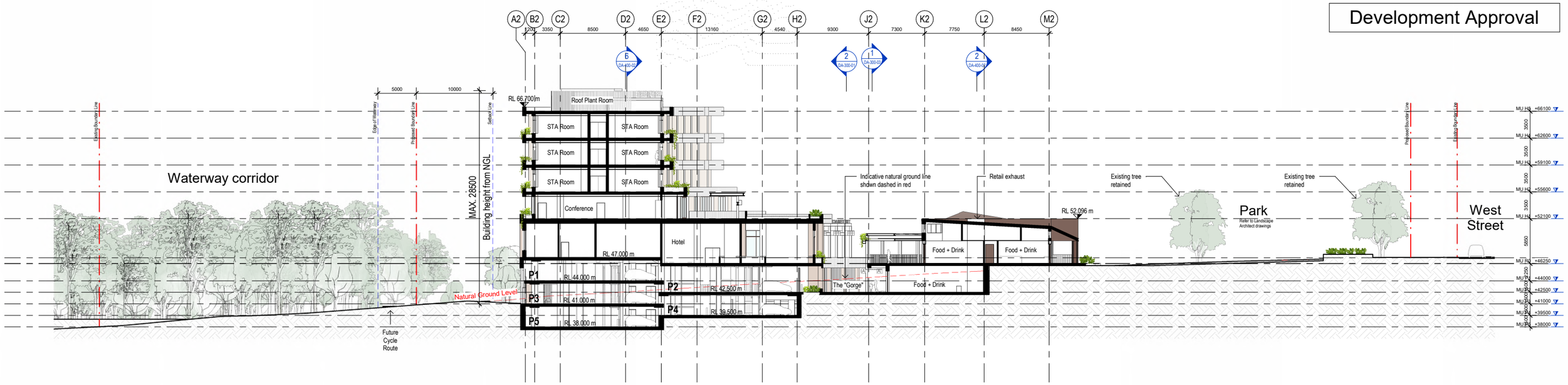
Development Approval



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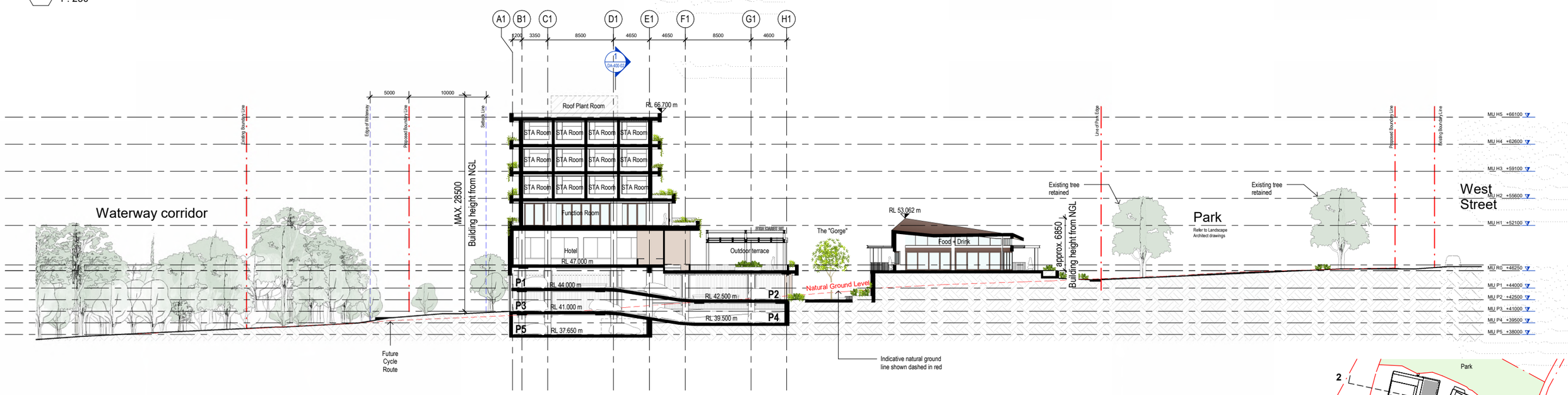

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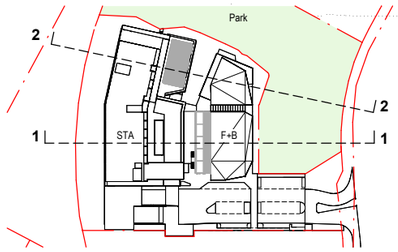

Key Plan

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			H	15.07.2025	Revised Issue for Development Approval	JS	AG	AG
			J	07.08.2025	Revised Issue for Development Approval	JS	AG	AG

PROJECT: Rochedale Terrace
46 West Street & 400 Miles Platting Rd, Rochedale QLD 4123
STAGE 1
ROCHEDALE TERRACE

CLIENT: Kinstone Group
KINSTONE GROUP

DRAWING NAME: Section 01 + 02
Sectional General Arrangements

Arkhefield
418 ADELAIDE ST
BRISBANE QLD 4000
P. 07 3831 8150
W. ARKHEFIELD.COM.AU
E. MAIL@ARKHEFIELD.COM.AU

DISC.	PHASE	DWG NO.	REV.
A	DA	DA-400-01	J

A1
PROJECT NO. 3765
SCALE 1 : 250

7/08/2025 12:06:30 PM

Development Approval

1 DA-200-00 **Section 03**
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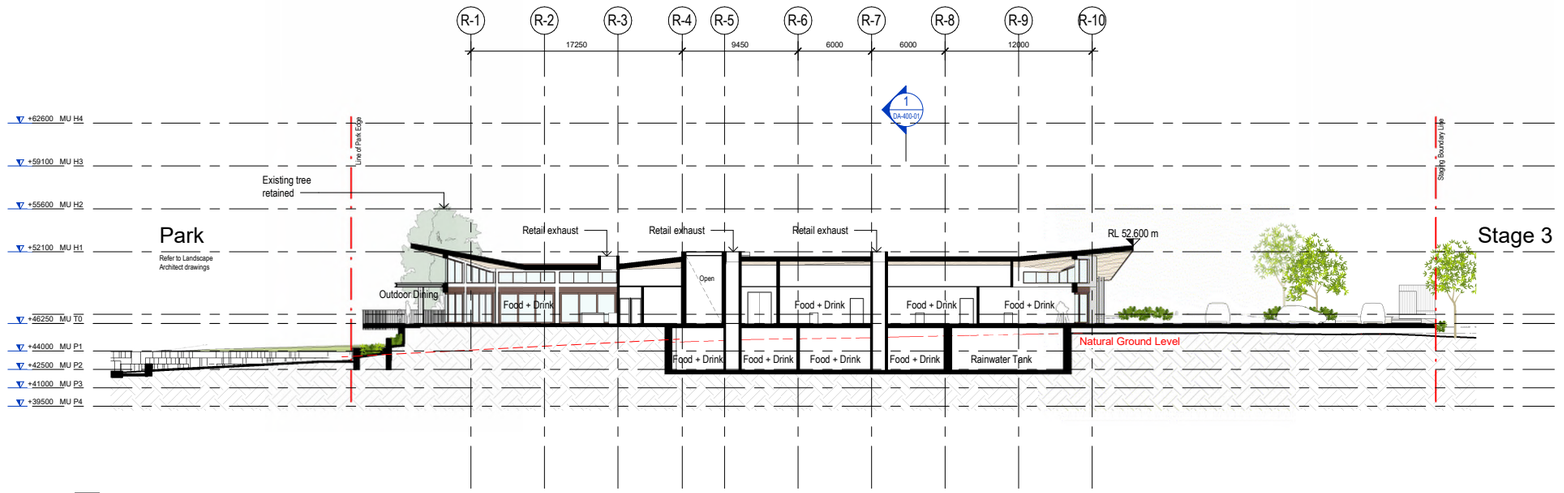

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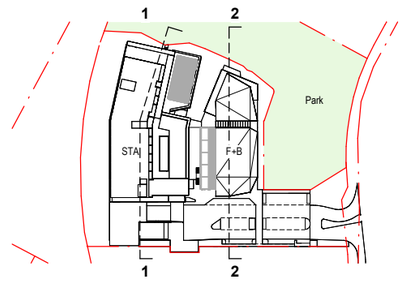

Key Plan

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			G	15.07.2025	Revised Issue for Development Approval	JS	AG	AG
			H	07.08.2025	Revised Issue for Development Approval	JS	AG	AG

PROJECT: Rochedale Terrace
46 West Street & 400 Miles Platting Rd, Rochedale QLD 4123
STAGE 1

CLIENT: Kinstone Group

DRAWING NAME: Section 03 + 04
Sectional General Arrangements

Arkhefield
418 ADELAIDE ST
BRISBANE QLD 4000
P. 07 3831 8150
W. ARKHEFIELD.COM.AU
E. MAIL@ARKHEFIELD.COM.AU

DISC.	PHASE	DWG NO.	REV.
A	DA	DA-400-02	H

A1
PROJECT NO. 3765
SCALE 1 : 250

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APPENDIX B

ENGINEERING DRAWINGS

PLAN
SCALE 1:500

EARTHWORKS

EXISTING	PROPOSED
	CUT
	FILL

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES — A1 UNREDUCED, A3 REDUCED

SCALES — UNREDUCED / REDUCED

0 5 10 15 20 25 m
1: 500 / 1: 1000

STATUS

DEVELOPMENT APPLICATION

SCAN QR CODE TO CONFIRM CURRENT DRAWING REVISION
http://docs.bornhorstward.com.au/revision/

REV	DATE	DESCRIPTION	DWN	DES	CHK	APP
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H	17.07.25	PARK LAYOUT AMENDED FOR RFI RESPONSE	SG	SG	NR	NR
G	03.06.25	AMENDED FOR SARA RESPONSE	SG	SG	NR	NR
F	13.09.24	DA IR RESPONSE	SG	SG	NR	NR
E	29.08.24	ISSUE FOR INFORMATION	SG	SG		

ASSOCIATED CONSULTANTS

APPROVED
. . . . . RPEQ
DATE

CHECKED
DATE

BORNHORST +WARD
+61 (7) 3013 4699 www.bornhorstward.com.au

CLIENT: ROCHEDALE WEST DEVELOPMENT PTY LTD

PROJECT: ROCHEDALE MIXED USE DEVEOPMENT

SUBJECT: EARTHWORKS LAYOUT

PROJECT No. 23003

DRAWING No. DA-C010

REVISION J

ORIGINAL SIZE A1

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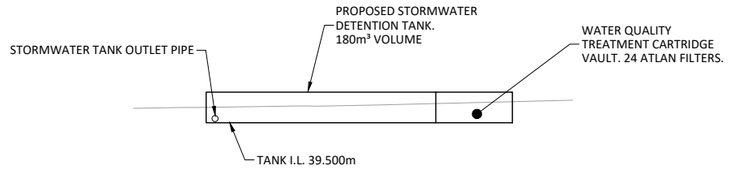

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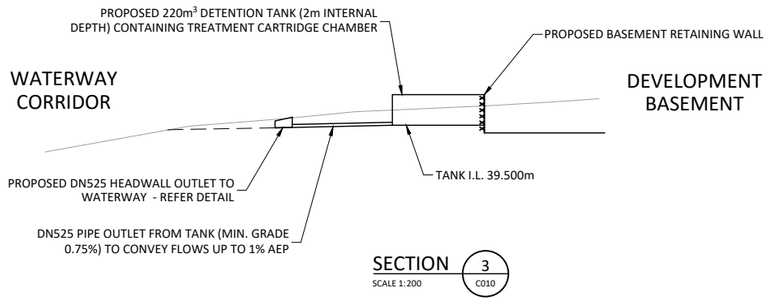
SCALE 1:200



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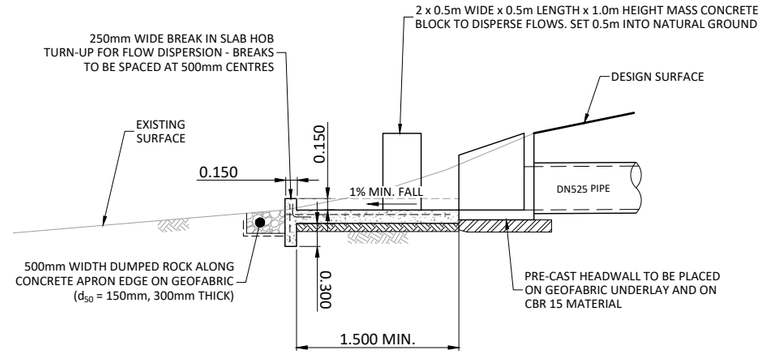
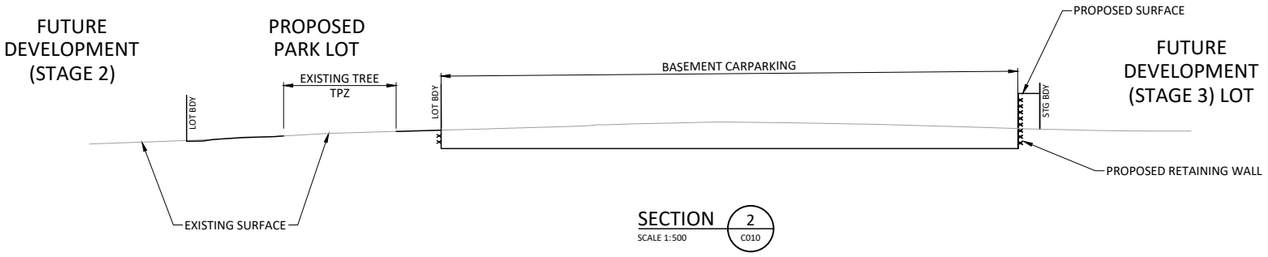


HEADWALL OUTLET DETAIL (SUBJECT TO DETAILED DESIGN)
SCALE 1:40



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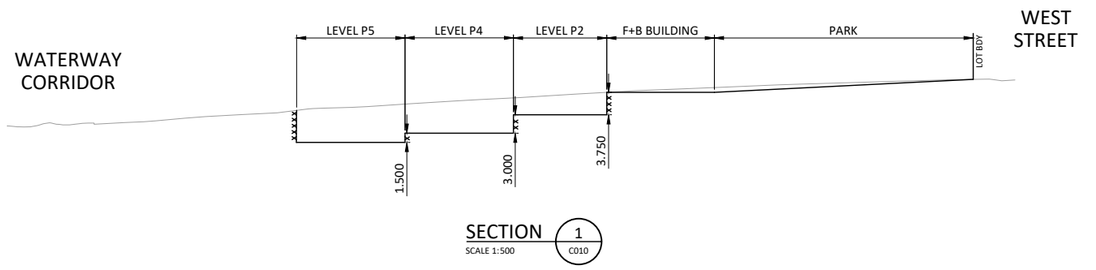

SECTION 1 — C010
SCALE 1:500

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES

A1 UNREDUCED
A3 REDUCED

SCALES — UNREDUCED / REDUCED

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0 2.0 4.0 6.0 8.0 10.0m — 1 : 200 / 1 : 400

STATUS

DEVELOPMENT APPLICATION

REV	DATE	DESCRIPTION	DWN	DES	CHK	APP
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E	17.07.25	PARK LAYOUT AMENDED FOR RFI RESPONSE	SG	SG	NR	NR
D	03.06.25	AMENDED FOR SARA RESPONSE	SG	SG	NR	NR
C	13.09.24	DA IR RESPONSE	SG	SG	NR	NR
B	08.04.24	ISSUE FOR APPROVAL	AJS	KB	JD	

SCAN QR CODE TO CONFIRM CURRENT DRAWING REVISION
http://docs.bornhorstward.com.au/revision/

ASSOCIATED CONSULTANTS

APPROVED
RPEQ
DATE

CHECKED
DATE

BORNHORST +WARD
+61 (7) 3013 4699 www.bornhorstward.com.au

CLIENT: ROCHEDALE WEST DEVELOPMENT PTY LTD

PROJECT: ROCHEDALE MIXED USE DEVEOPMENT

SUBJECT: EARTHWORKS SECTIONS

PROJECT No. 23003

DRAWING No. DA-C020

REVISION F

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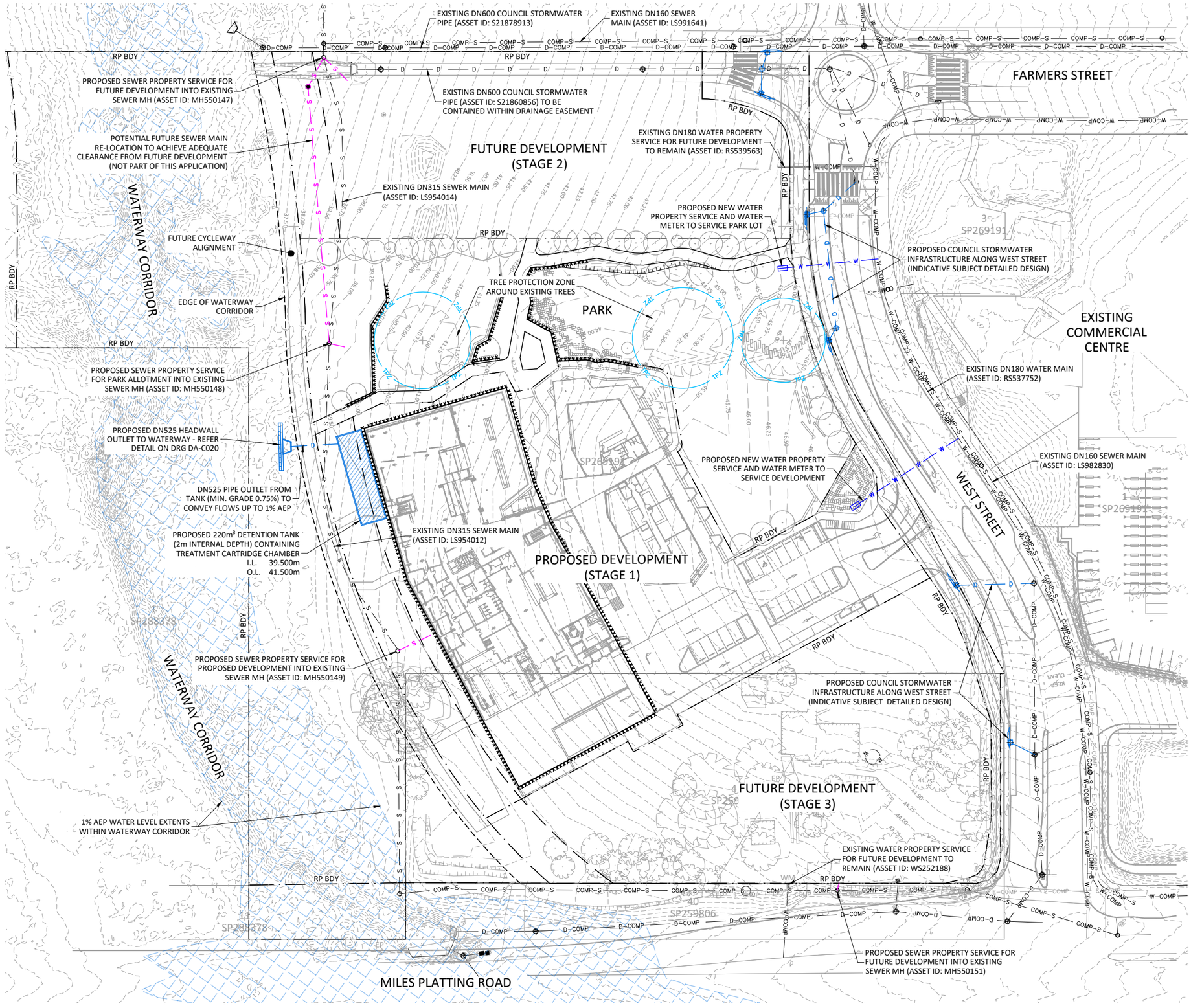

STORMWATER

EXISTING	PROPOSED	
	1.2	CATCHMENT NUMBER
		CATCHMENT BOUNDARY
		OPEN CHANNEL
RW RW	RW RW	ROOFWATER DRAINAGE
		STORMWATER DRAINAGE
D–COMP		STORMWATER DRAINAGE (FROM RECORDS)
		DIRECTION OF FLOW

SEWERAGE

EXISTING	PROPOSED	
S	S	SEWERAGE
COMP–S		SEWERAGE (FROM RECORDS)
	S	SEWERAGE PROPERTY CONNECTION

WATER

EXISTING	PROPOSED	
W	W	WATER
W–COMP		WATER (FROM RECORDS)

THIS DRAWING IS BEST VIEWED IN COLOUR AND ON AN ELECTRONIC DEVICE

PROJECT NORTH

DIMENSIONS IN METRES EXCEPT WHERE SHOWN OTHERWISE. CULVERT AND PIPE SIZES IN MILLIMETRES — A1 UNREDUCED, A3 REDUCED

SCALES — UNREDUCED / REDUCED

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1: 500 / 1: 1000

STATUS

DEVELOPMENT APPLICATION

SCAN QR CODE TO CONFIRM CURRENT DRAWING REVISION
http://docs.bornhorstward.com.au/revision/

REV	DATE	DESCRIPTION	DWN	DES	CHK	APP
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C	17.07.25	PARK LAYOUT AMENDED FOR RFI RESPONSE	SG	SG	NR	NR
B	03.06.25	AMENDED FOR SARA RESPONSE	SG	SG	NR	NR
A	13.09.24	DA IR RESPONSE	SG	SG	NR	NR

ASSOCIATED CONSULTANTS

APPROVED . . . . . RPEQ . . . . . DATE

CHECKED . . . . . DATE

BORNHORST +WARD
+61 (7) 3013 4699 www.bornhorstward.com.au

CLIENT: ROCHEDALE WEST DEVELOPMENT PTY LTD

PROJECT: ROCHEDALE MIXED USE DEVEOPMENT

SUBJECT: SITEWORKS AND DRAINAGE LAYOUT

PROJECT No. 23003

DRAWING No. DA-C030

REVISION D

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ORIGINAL SIZE A1

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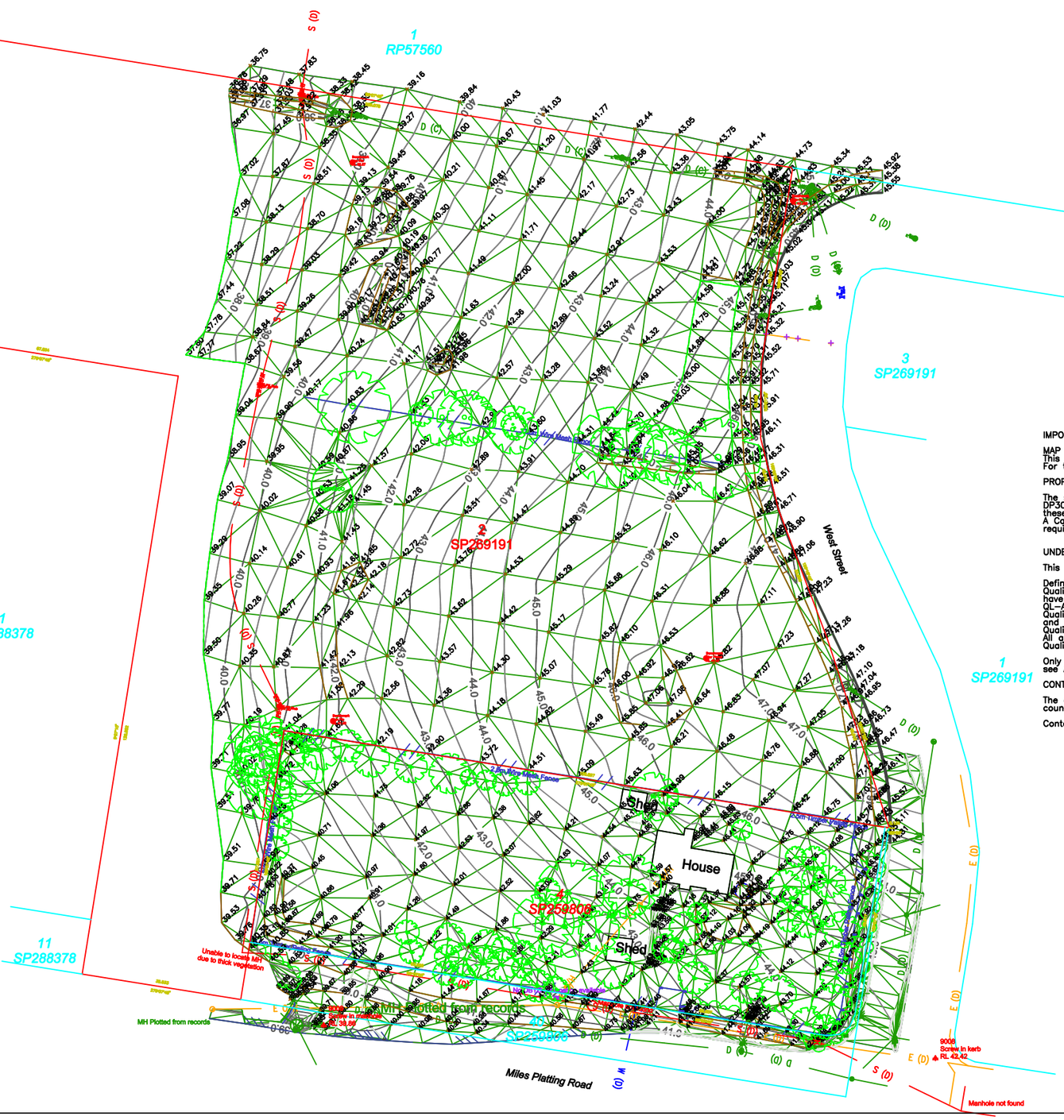
APPENDIX C

EXISTING SITE INFORMATION



IMPORTANT NOTES

MAP GRID OF AUSTRALIA
This plan is on GDA2020, MGA Zone 56 with ground distances.
For true MGA Zone 56 Coordinates, scale all data from PSM 72981 by 0.9995877078

PROPERTY BOUNDARIES

The subject lot boundaries and dimensions shown on this plan are compiled from original survey records DP309268, IS280987, SP288378, and SP269191. They are plotted with a surveying methodology that gives these boundaries a positional uncertainty of 30 millimetres and must not be used for detailed design.
A Cadastral Survey as defined by the Surveying and Mapping Infrastructure Act 2003 and Surveyors Act 2003 is required for accurate boundary positions and dimensions.

UNDERGROUND SERVICES

This plan generally complies with Australian Standard 54882013: Classification of Subsurface Utility Information (SUI).

Definitions:
Quality Level A (QL–A): Features or points on alignments that have been positively identified, measured directly and have a Horizontal and Vertical Positional Uncertainty of 50mm or less.
QL–A Features in this data include surface fittings, surveyed inverts and points potholed.
Quality Level B (QL–B): Points on alignments that have been remotely detected and these points have a horizontal Positional Uncertainty of 300mm or less.
Quality Level C (QL–C): Alignments are service providers records with their positioning enhanced by QL–A or QL–B points.
All alignments in this data should be considered QL–C unless otherwise noted.
Quality Level D (QL–D): Alignments that have been scaled or digitized from service providers records.

Only information with Quality Level A should be relied upon for detailed design. For more information see AS54882013.

CONTOURS

The contours shown on this plan may not be natural surface or ground level as defined by some local councils and should not be used as the reference surface when determining building height limits.

Contour Interval: 0.5 metres.

PROJECT:

CLIENT:
Kinstone Developments

TITLE :
West St, Rochedale
Detail Survey

Rev.	Reason for Issue or Amendment	Date	Surveyed	Drawn	Approved
B	Additional detail survey over Lot 4	20/12/2021	Mark Kranjec	Tim Droga	Bruce Williams
A	Original Issue	25-08-2020	B.Vincent		B.Williams

Scale: 1: 1200 at A3
Sheet: 1
Level Datum: 56.356 AHD
Origin: PSM191321
Co-ord System: MGA2020

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying

Wolter Consulting Group
ACN 147 343 084
ABN 61 147 343 084

Suite 2, Level 2
1 Breakfast Creek Road
Newstead QLD 4006

T (07) 3666 5200
F (07) 3666 5202

W wolterconsulting.com.au

Project Number: 18-0858S
Drawing Number: 001
Revision: B

Job # 35148918
Seq # 230225297
Provider: Brisbane City Council
Telephone: 07 3403 8888

Legend

BYDA Enquiry

Detailed map page

Caution: This map may contain the locations of abandoned underground asbestos pipes. Council gives no warranty to the completeness or accuracy of these records. Appropriate care needs to be taken in all cases.

In an emergency contact Brisbane City Council on 07 3403 8888

Index Sheet

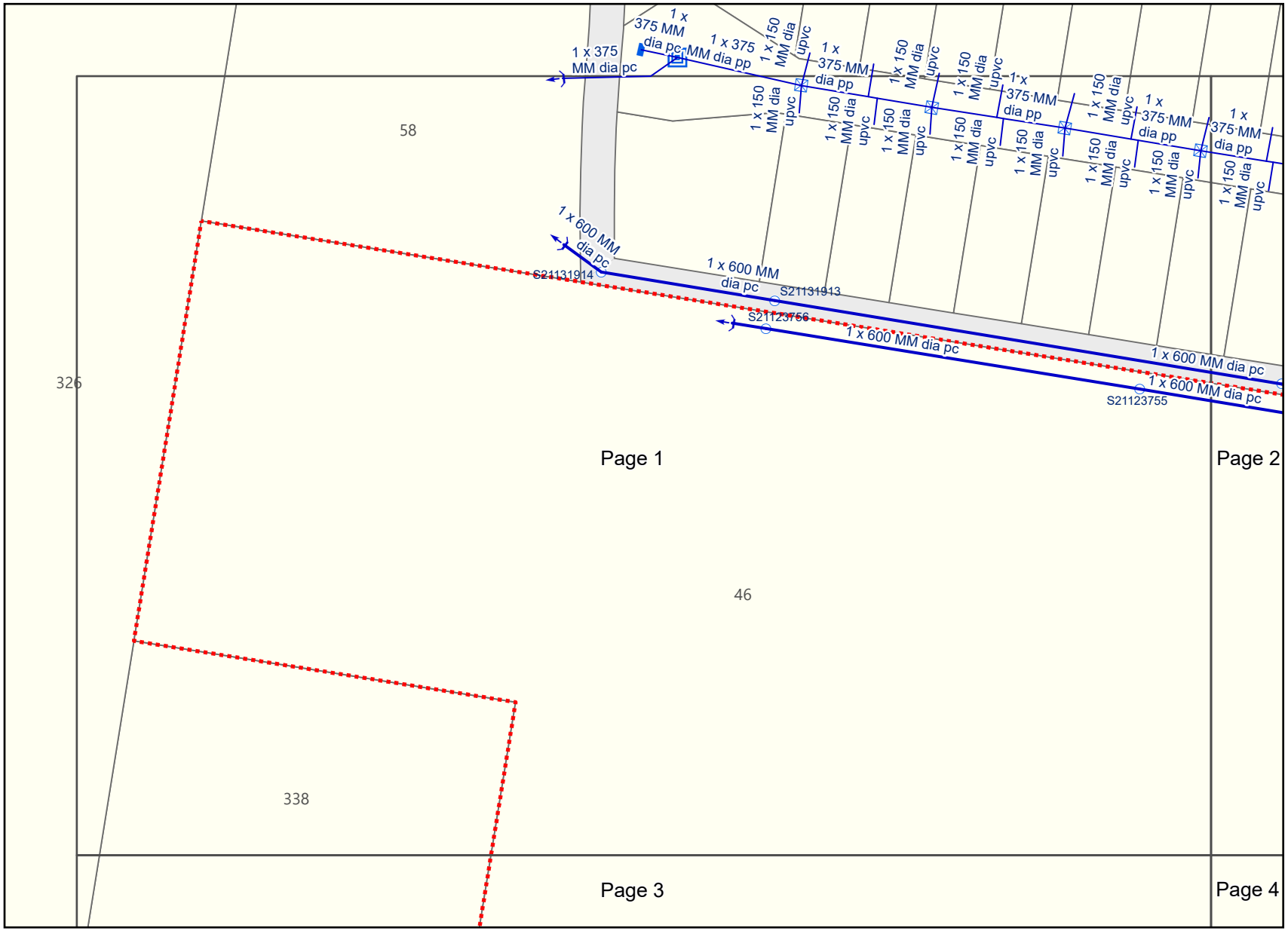
0 25 50 100 m

Scale 1:2,500

N

Plans generated by SmarterWX™ Automate

Job # 35148918
Seq # 230225297
Provider: Brisbane City Council
Telephone: 07 3403 8888



Legend

BYDA Enquiry

Stormwater Network

- Stormwater Drain
- Stormwater Gully / Roofwater Connection
- Stormwater Maintenance Hole
- Stormwater Gully Pit
- Stormwater Field Inlet
- Pipe End Outlet
- Stormwater Treatment Asset - Point

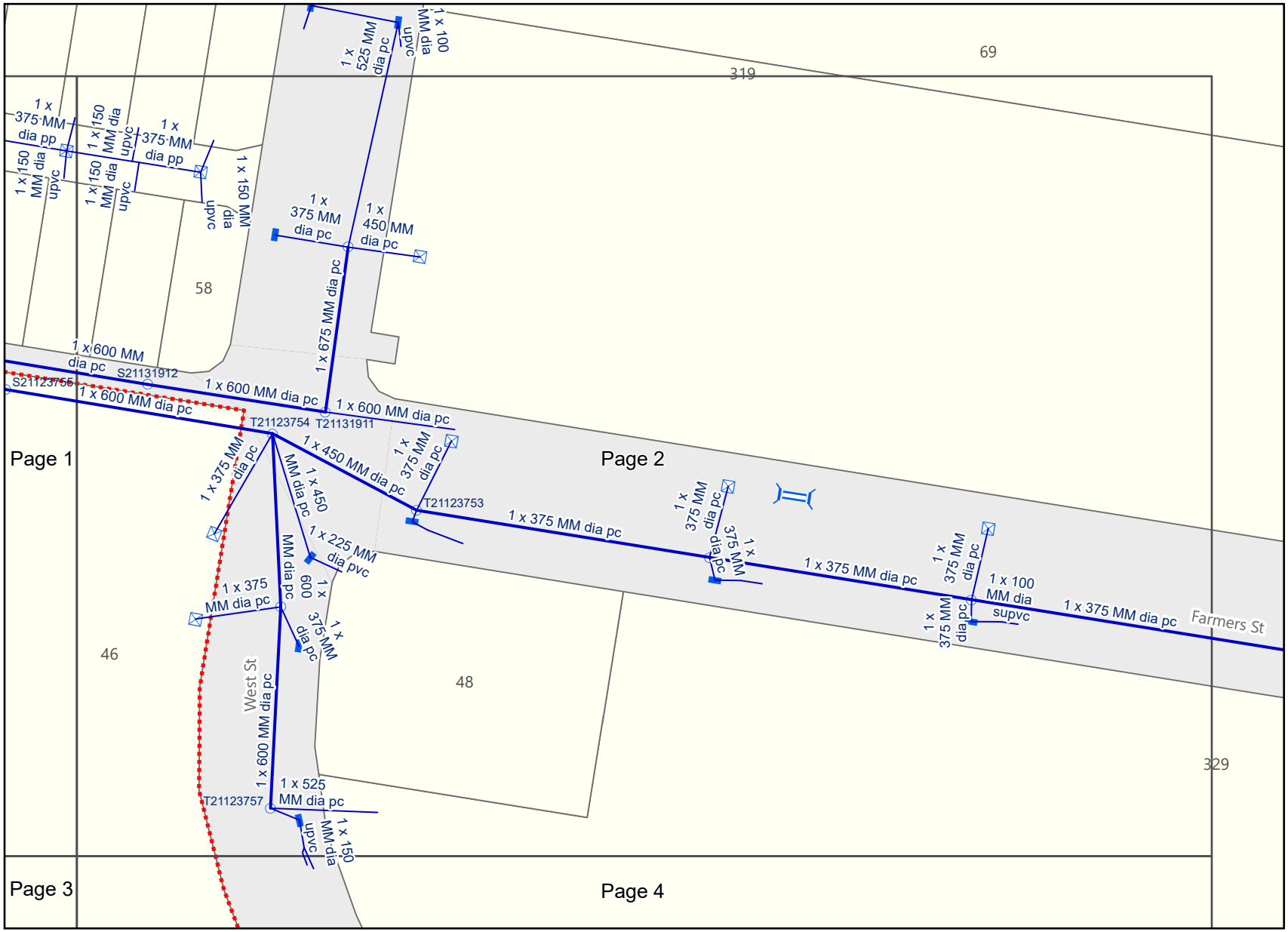
In an emergency contact Brisbane City Council on 07 3403 8888
28/09/23 (valid for 30 days)

0 10 20 40 m

Scale 1:1,000

Plans generated by SmarterWX™ Automate

Job # 35148918
Seq # 230225297
Provider: Brisbane City Council
Telephone: 07 3403 8888



Legend

BYDA Enquiry

Stormwater Network

- Stormwater Drain
- Stormwater Gully / Roofwater Connection
- Stormwater Maintenance Hole
- Stormwater Gully Pit
- Stormwater Field Inlet
- Stormwater Culvert

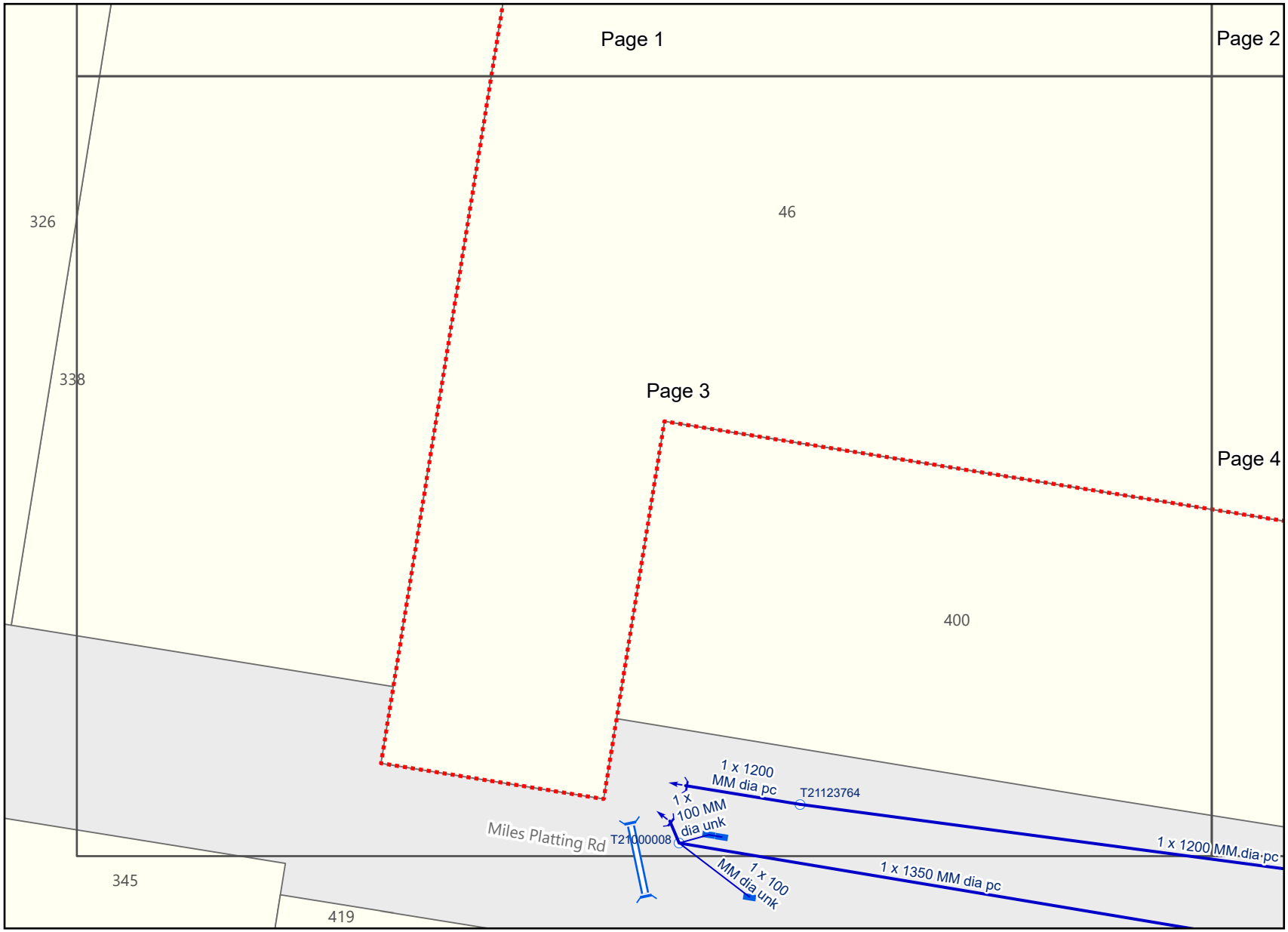
In an emergency contact Brisbane City Council on 07 3403 8888
28/09/23 (valid for 30 days)

0 10 20 40 m

Scale 1:1,000

Plans generated by SmarterWX™ Automate

Job # 35148918
Seq # 230225297
Provider: Brisbane City Council
Telephone: 07 3403 8888



Legend

- BYDA Enquiry

Stormwater Network

- Stormwater Drain
- Stormwater Gully / Roofwater Connection
- Stormwater Maintenance Hole
- Stormwater Gully Pit
- Stormwater Culvert
- Pipe End Outlet

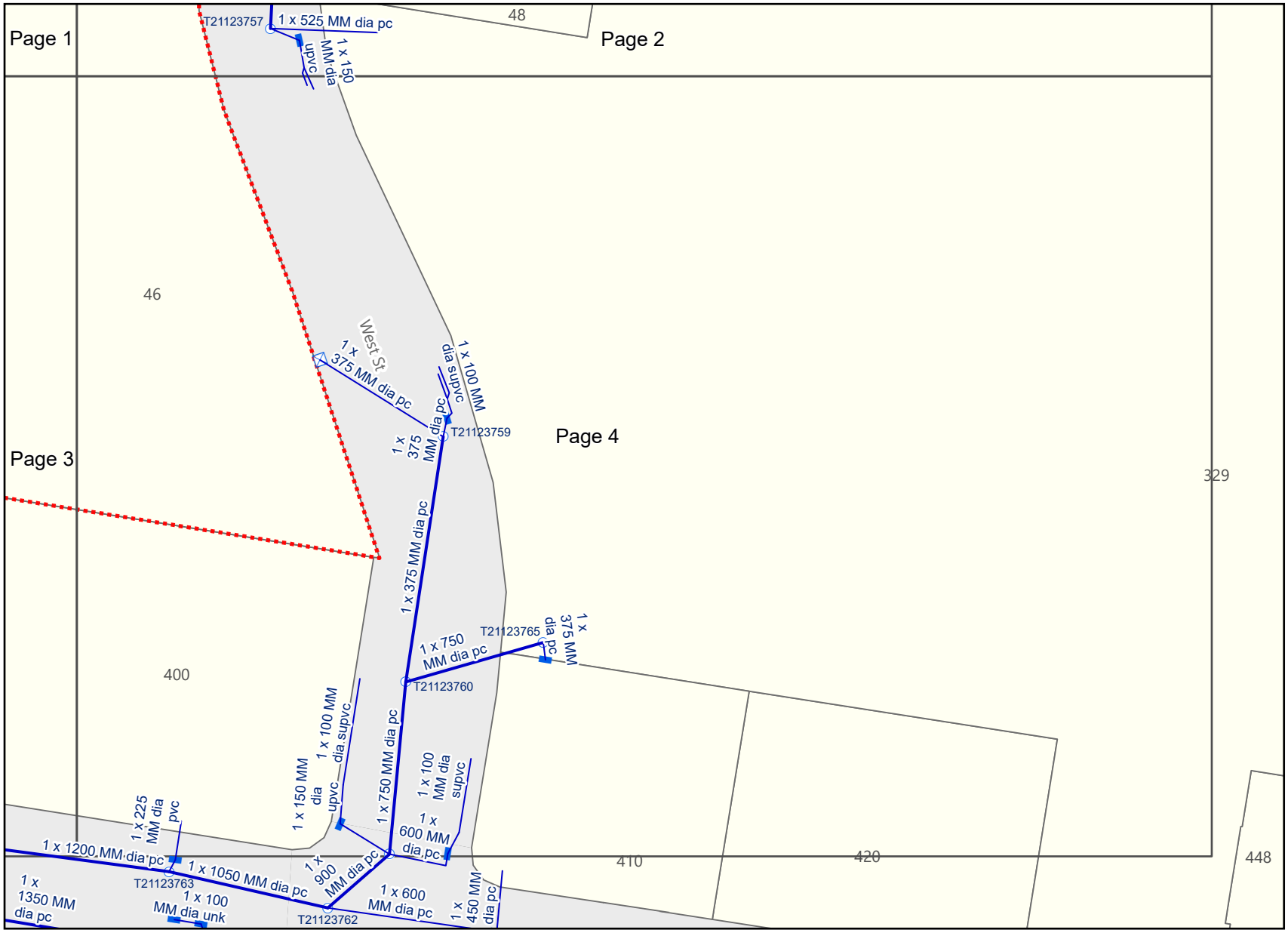
In an emergency contact Brisbane City Council on 07 3403 8888
28/09/23 (valid for 30 days)

0 10 20 40 m

Scale 1:1,000

Plans generated by SmarterWX™ Automate

Job # 35148918
Seq # 230225297
Provider: Brisbane City Council
Telephone: 07 3403 8888



Legend

BYDA Enquiry

Stormwater Network

- Stormwater Drain
- Stormwater Gully / Roofwater Connection
- Stormwater Maintenance Hole
- Stormwater Gully Pit
- Stormwater Field Inlet

In an emergency contact Brisbane City Council on 07 3403 8888

28/09/23 (valid for 30 days)

0 10 20 40 m

Scale 1:1,000

Plans generated by SmarterWX™ Automate

APPENDIX D

WATERWAY CORRIDOR FLOOD STUDY RESULTS

NOT TO SCALE

BORNHORST +WARD

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PROJECT

ROCHEDALE TERRACE

SUBJECT

WATERWAY & SITE CATCHMENT PLAN (NO CHANGE BETWEEN PRE- AND POST-DEVELOPMENT)

PROJECT No.

23003

DRAWING No.

DA-C035

REVISION

A

0 10 20 30 40 50

ORIGINAL SIZE A3

BORNHORST +WARD

+61 (7) 3013 4699 www.bornhorstward.com.au

PROJECT
ROCHEDALE TERRACE

SUBJECT
1% AEP DEPTH (m) & WSL (m)

PROJECT No.	SCALE
23003	1:2000

DRAWING No.	REVISION
DA-C080	A

BORNHORST +WARD

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PROJECT
ROCHEDALE TERRACE

SUBJECT
39% AEP DEPTH (m) & WSL (m)

PROJECT No.	SCALE
23003	1:2000

DRAWING No.	REVISION
DA-C081	A

APPENDIX E

XP STORM OUTPUTS

INITIAL PEAK FLOW ESTIMATE

Written by BB 31/10/08

Updated by DJK 25/05/20

BORNHORST + WARD

Job Number: **23003**
Job Name: **MIXED-USE PROJECT ROCHEDALE**

Designed: KB
Checked: JD

IFD Location: BCC IFD

TOTAL RUNOFF COEFF.

	Sub Catchment Area (Ha)		Fraction Impervious		Runoff Coeficients		Calculated C10	
No.	Existing	Proposed	Existing	Proposed	Existing	Proposed	Existing	Proposed
1	0.785	0.785	20%	100%	0.70	0.90		
2	0.000	0.000	0%	0%	0.00	0.00		
3	0.000	0.000	0%	0%	0.00	0.00		
4	0.000	0.000	0%	0%	0.00	0.00		
5	0.000	0.000	0%	0%	0.00	0.00		
	0.785	**0.785**					**0.70**	**0.90**

Raw IFD data has been obtained from the Bureau of Meteorology (BOM) website.

EXISTING TIME OF CONCENTRATION

	Std Inlet Time	
SHEET FLOW	Site Slope (%)	5
	Flow Length (m)	50
	Horton's "n"	0.035
	Travel Time (min)	10.00
CHANNEL/PIPE FLOW	Travel Length (m)	
	Fall (m)	
	Travel Time (min)	
	Multiplier	
	Travel Time (min)	0
	Total Time (Tc)	**10.0**

DEVELOPED TIME OF CONCENTRATION

	Std Inlet Time	5
SHEET FLOW	Site Slope (%)	0
	Flow Length (m)	0
	Horton's "n"	0
	Travel Time (min)	0.00
CHANNEL/PIPE FLOW	Travel Length (m)	0
	Fall (m)	0
	Travel Time (min)	0
	Multiplier	0
	Travel Time (min)	0
	Total Time (Tc)	**5.0**

PEAK RUNOFF CALCULATIONS

		Rainfall Intensity (mm/hr)		Coeficient of Runoff		Peak Runoff Rates (m^3/s)	
AEP Event %	ARI Event yr	Existing	Proposed	Existing	Proposed	Existing	Proposed
63%	1	90	117	0.56	0.72	**0.110**	**0.184**
39%	2	116	151	0.60	0.77	**0.151**	**0.252**
18%	5	147	191	0.67	0.86	**0.213**	**0.356**
10%	10	167	215	0.70	0.90	**0.255**	**0.422**
5%	20	192	248	0.74	0.95	**0.308**	**0.511**
2%	50	227	291	0.81	1.00	**0.398**	**0.635**
1%	100	253	325	0.84	1.00	**0.463**	**0.709**

PEAK FLOWS FOR FREQUENT EVENTS

ARI Event	% of Q1	Peak discharge (m^/s)	
yr		Existing	Proposed
1mth	25%	**0.027**	**0.046**
2mth	40%	**0.044**	**0.073**
3mth	50%	**0.055**	**0.092**
4mth	60%	**0.066**	**0.110**
6mth	75%	**0.082**	**0.138**
9mth	90%	**0.099**	**0.165**
12mth	100%	**0.110**	**0.184**

Figure 1: Existing Peak Flow (m^3/s)

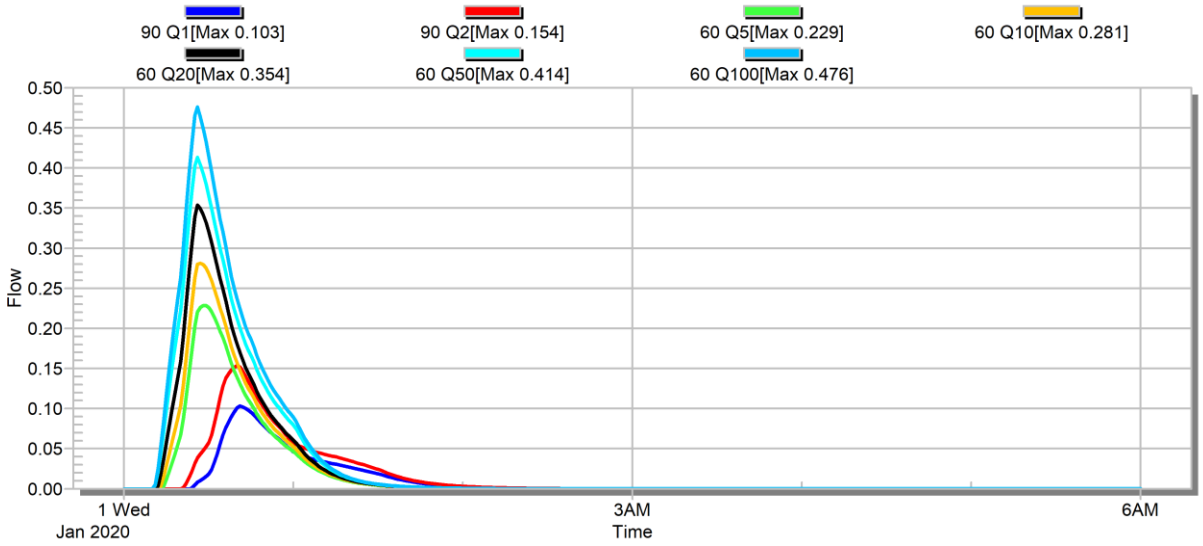


Figure 2: Developed (Unmitigated) Peak Flow (m^3/s)

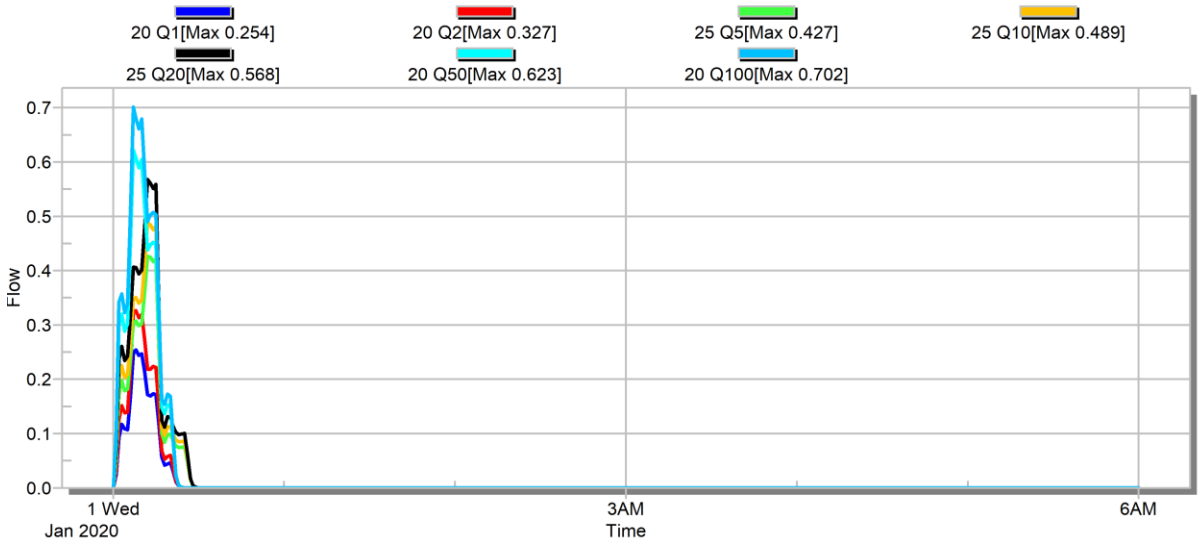


Figure 3: Developed Mitigated Peak Flow (m^3/s)

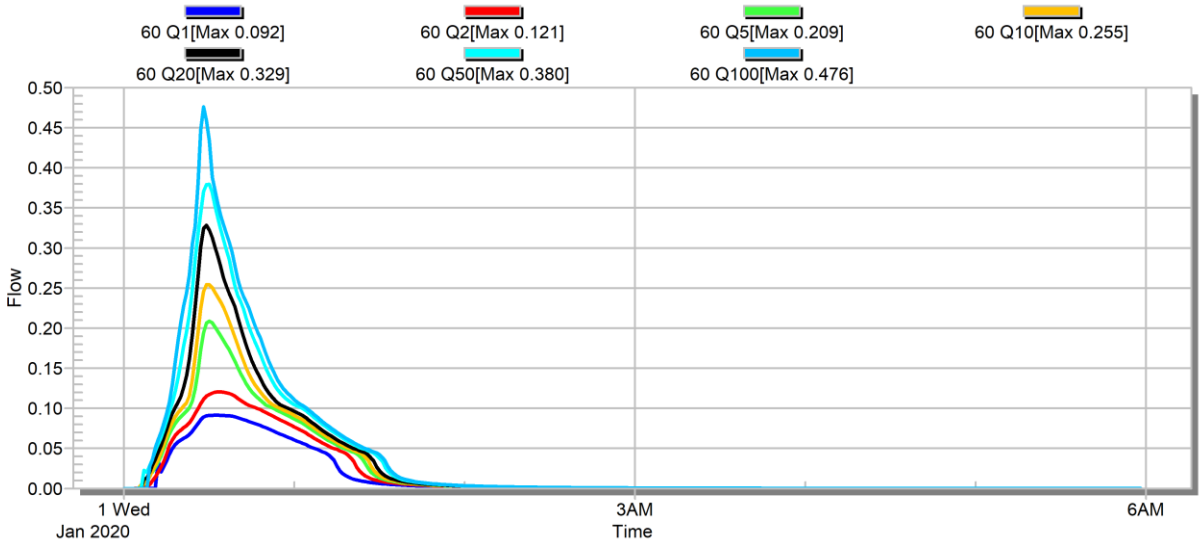


Figure 4: Developed Mitigated – Detention Basin Stage Graph (RL)

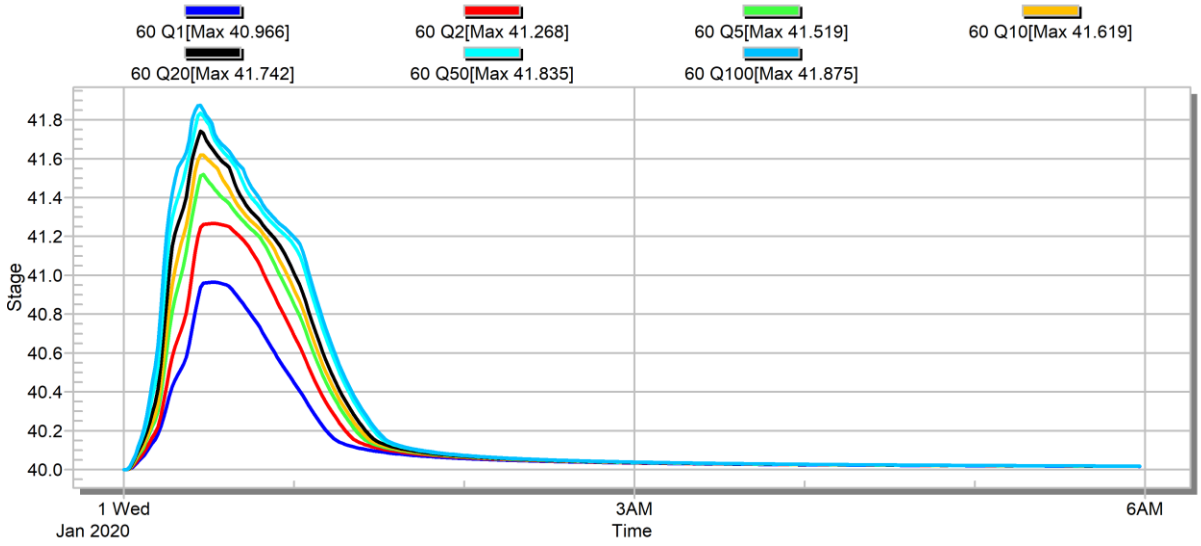


Figure 5: Detention Basin Discharge via Orifice 1 [250mm dia. orifice] (m^3/s)

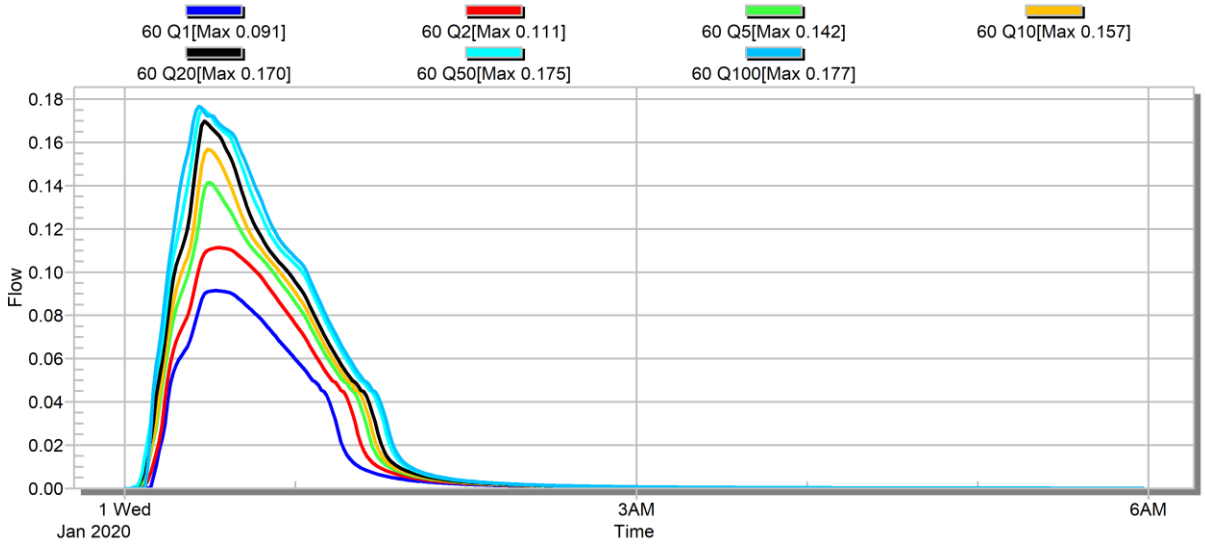


Figure 6: Detention Basin Discharge via Orifice 2 [300mm dia. orifice] (m^3/s)

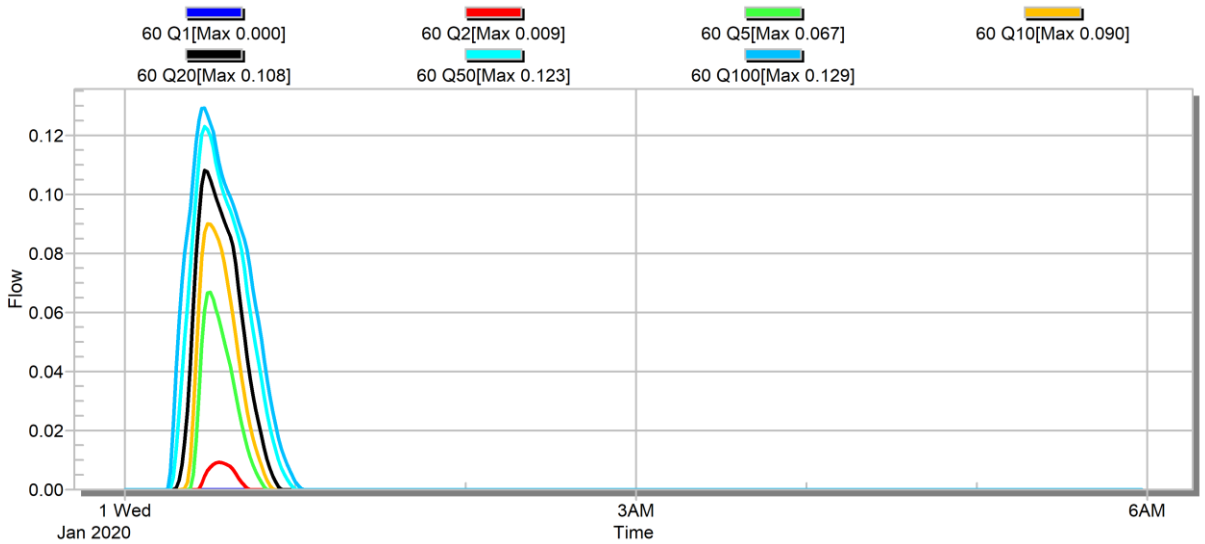


Figure 7: Detention Basin Discharge via Orifice 3 [150mm x 600mm orifice] (m^3/s)

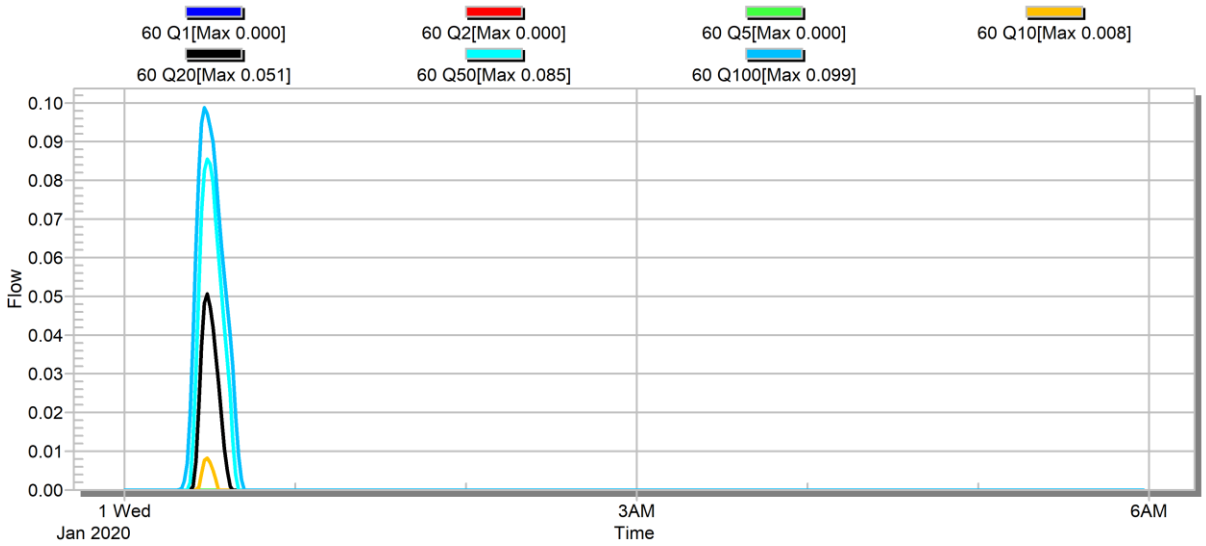
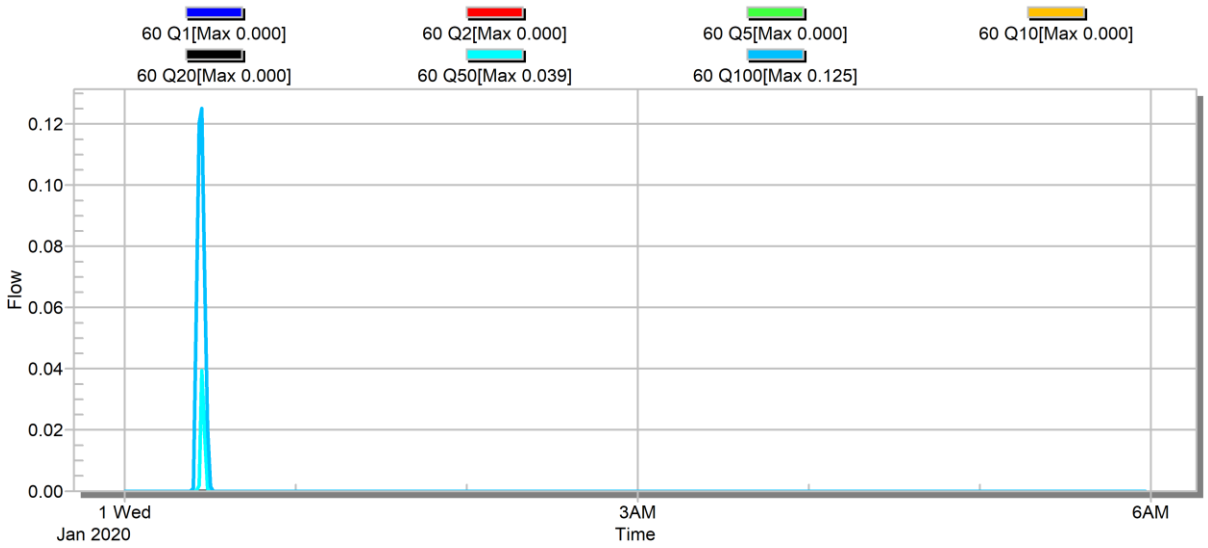


Figure 8: Detention Basin Discharge via Weir (m^3/s)



APPENDIX F

MUSIC DATA

Table 1: Recommended MUSIC Rainfall-Runoff Generation Parameters

Parameter	Commercial Residential
Rainfall Threshold (mm)	1
Soil Storage Capacity (mm)	18
Initial Storage (% capacity)	10
Field Capacity (mm)	80
Infiltration Capacity Coefficient a	243
Infiltration Capacity Exponent b	0.6
Initial Depth (mm)	50
Daily Recharge Rate (%)	0
Daily Baseflow Rate (%)	31
Daily Deep Seepage Rate (%)	0

Table 2: Music Base and Storm flow Concentration Parameters for Commercial Catchments

Flow Type	Surface Type	TSS log^{10} values		TP log^{10} values		TN log^{10} values	
		Mean	St. dev.	Mean	St. dev.	Mean	St. dev.
Commercial							
Baseflow Parameters	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Roads	0.78	0.39	-0.6	0.5	0.32	0.3
	Ground level	0.78	0.39	-0.6	0.5	0.32	0.3
Stormflow Parameters	Roof	1.30	0.38	-0.89	0.34	0.37	0.34
	Roads	2.43	0.38	-0.30	0.34	0.37	0.34
	Ground level	2.16	0.38	-0.39	0.34	0.37	0.34

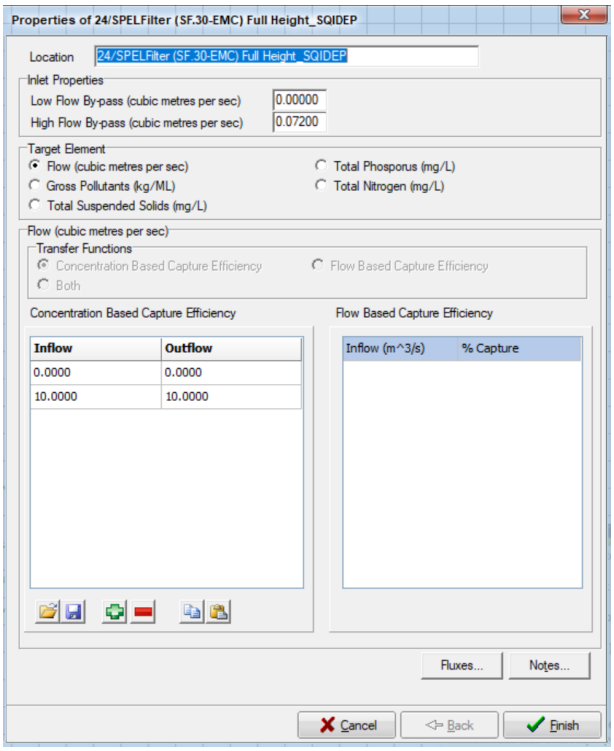


Figure 1: Treatment Device Input Parameters - Atlan

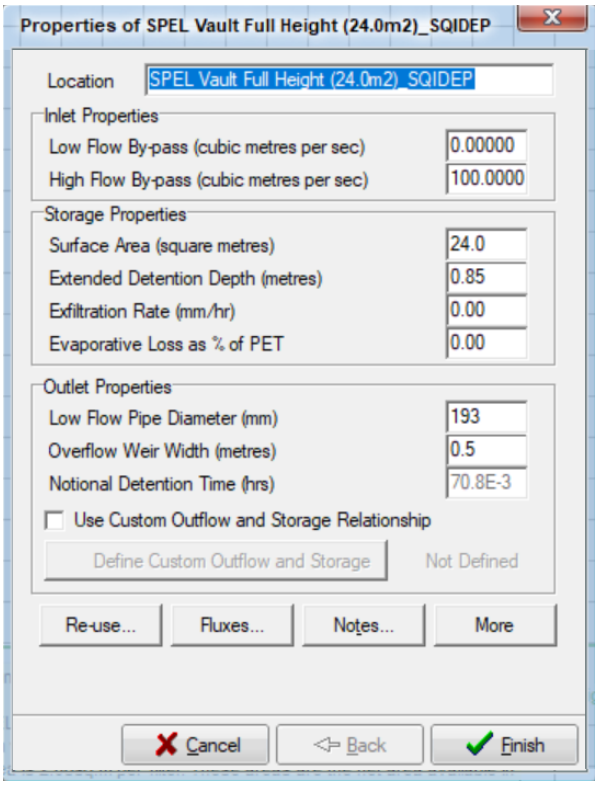
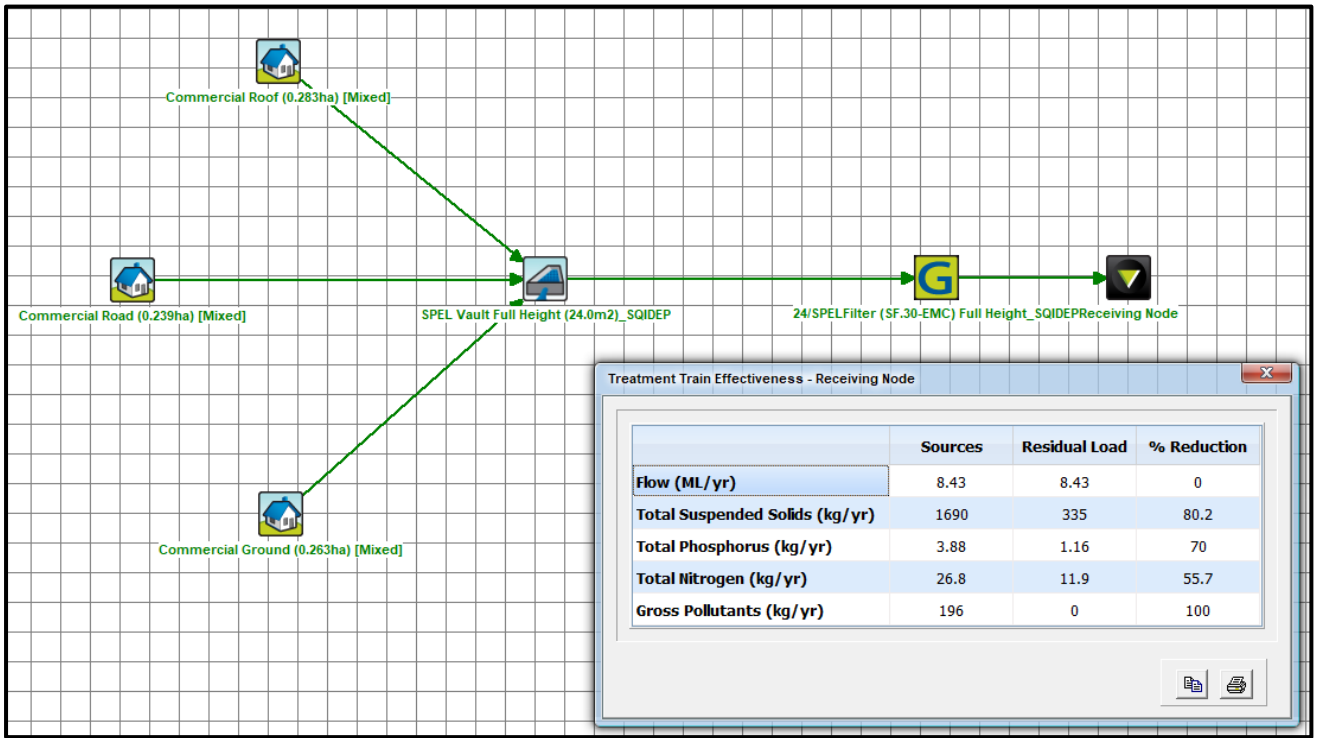


Figure 2: Atlan Vault input parameters



	Sources	Residual Load	% Reduction
Flow (ML/yr)	8.43	8.43	0
Total Suspended Solids (kg/yr)	1690	335	80.2
Total Phosphorus (kg/yr)	3.88	1.16	70
Total Nitrogen (kg/yr)	26.8	11.9	55.7
Gross Pollutants (kg/yr)	196	0	100

Figure 3: Treatment Train Effectiveness

Table 1: Recommended MUSIC Rainfall-Runoff Generation Parameters

Parameter	Commercial Residential
Rainfall Threshold (mm)	1
Soil Storage Capacity (mm)	18
Initial Storage (% capacity)	10
Field Capacity (mm)	80
Infiltration Capacity Coefficient a	243
Infiltration Capacity Exponent b	0.6
Initial Depth (mm)	50
Daily Recharge Rate (%)	0
Daily Baseflow Rate (%)	31
Daily Deep Seepage Rate (%)	0

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Commercial							
Baseflow Parameters	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Roads	0.78	0.39	-0.6	0.5	0.32	0.3
	Ground level	0.78	0.39	-0.6	0.5	0.32	0.3
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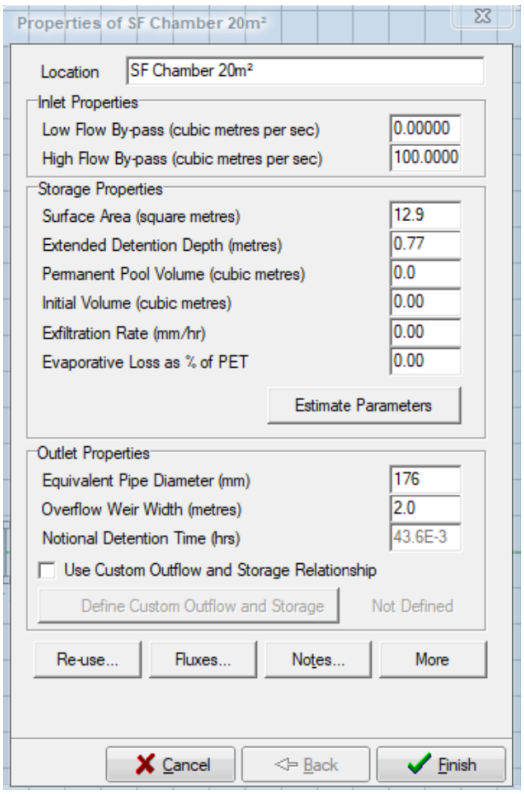

Figure 1: Ocean Protect Treatment Device Input Parameters

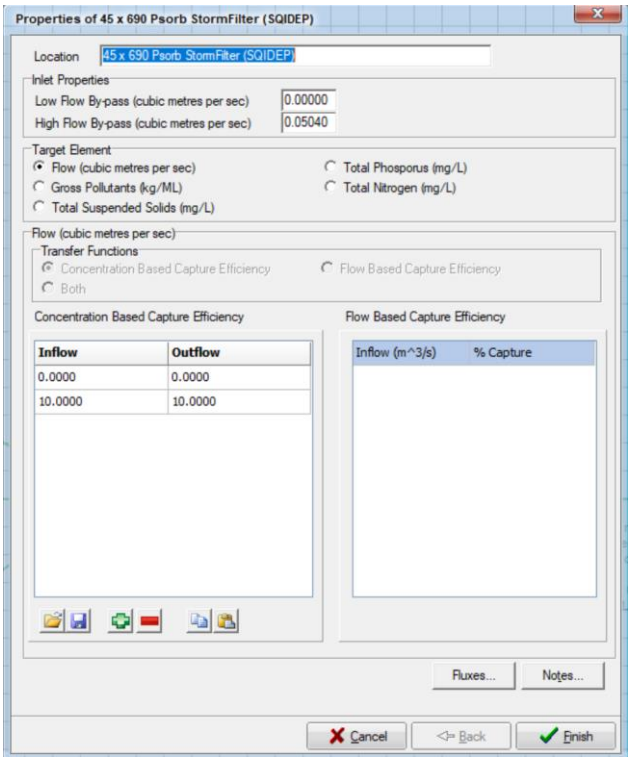

Figure 2: Ocean Protect StormFilter input parameters

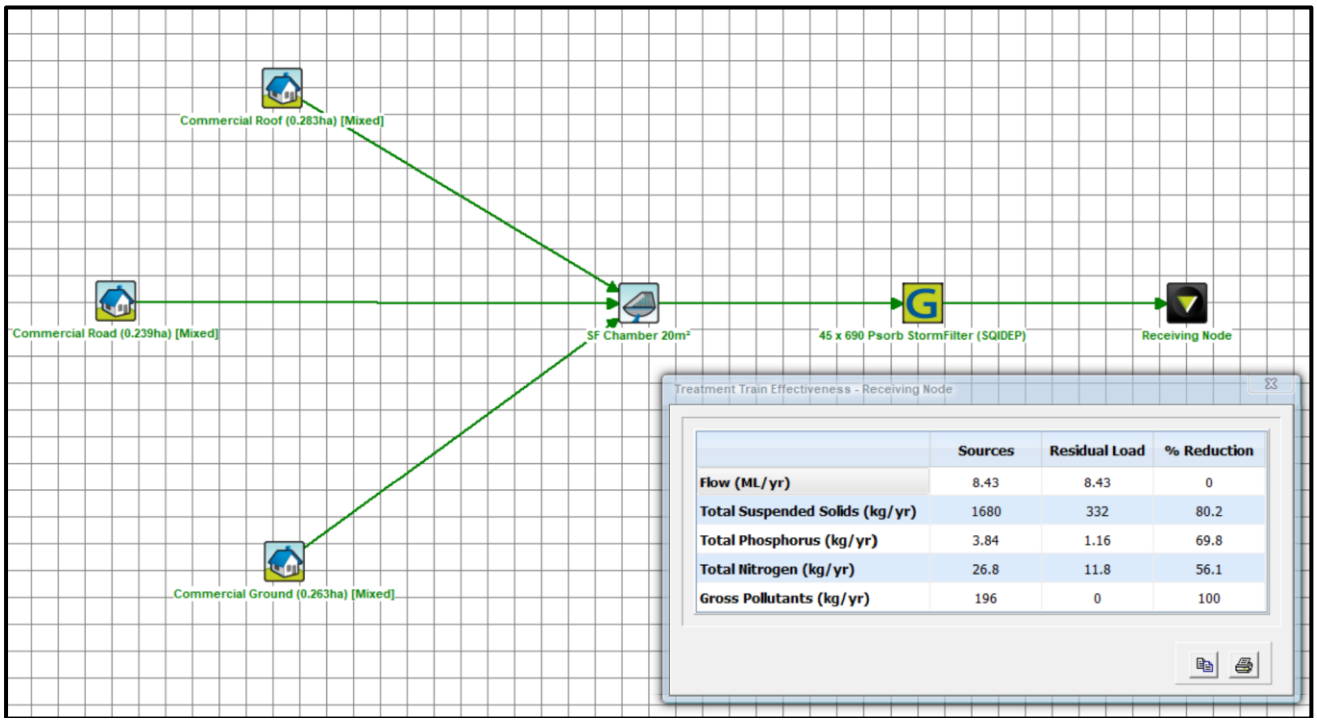

Figure 3: Treatment Train Effectiveness

COMMERCIAL GROUND 0.263 ha

COMMERCIAL ROAD 0.239 ha

COMMERCIAL ROOF 0.283 ha

Stage 02
Residential

Staging Boundary Line (subject to change)

Staging Boundary Line (sbject to change)

Existing tree retained

03
DA-400-02

Existing trees retained

Trunk Park
6000m²

Park Edge (subject to change)

Park Edge (subject to change)

Indicative Location of Existing Creek

Waterway Corridor

Stage 01
Food + Beverage

Stage 01
STA + Hotel

Stage 03
Mixed Use

Staging Boundary Line (subject to change)

Rev. B
Illustrative Development Outcome Only

Proposed Boundary Line

Existing Boundary Line

18.108
18°21'35"

155°55'55"
18.076

153°18'45"
33.896

161°51'05"
49.043

0.134
189°26'

46.917
189°07'45"

9°07'10"
120.582

83.090
99°18'50"

60.807
99°00'45"

Community Hall

Existing Park

Gym and Cafe

Rev. B
Under review by transport consultant

Existing Carpark

West Street

Fast Food Retail

Roch Vill

2
DA-400-01

1
DA-400-01

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PROJECT
46 WEST STREET, ROCHEDALE
COMMERCIAL DEVELOPMENT

SUBJECT
MUSIC CATCHMENTS

PROJECT No.
23003

DRAWING No.
SK - 003

REVISION
A

0 10 20 30 40 50

ORIGINAL SIZE A3

COMMERCIAL GROUND 0.263 ha

COMMERCIAL ROAD 0.239 ha

COMMERCIAL ROOF 0.283 ha

Stage 02
Residential

Staging Boundary Line (subject to change)

Staging Boundary Line (sbject to change)

Existing tree retained

03
DA-400-02

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Trunk Park
6000m²

Park Edge (subject to change)

Park Edge (subject to change)

Indicative Location of Existing Creek

Waterway Corridor

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Food + Beverage

Stage 01
STA + Hotel

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Mixed Use

Staging Boundary Line (subject to change)

Rev. B
Illustrative Development Outcome Only

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Existing Boundary Line

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155°55'55"
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153°18'45"
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49.043

0.134
189°26'

46.917
189°07'45"

9°07'10"
120.582

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99°18'50"

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99°00'45"

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Existing Park

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Under review by transport consultant

Existing Carpark

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Fast Food Retail

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2
DA-400-01

1
DA-400-01

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PROJECT
46 WEST STREET, ROCHEDALE
COMMERCIAL DEVELOPMENT

SUBJECT
MUSIC CATCHMENTS

PROJECT No.
23003

DRAWING No.
SK - 003

REVISION
A

0 10 20 30 40 50

ORIGINAL SIZE A3

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Field Capacity (mm)	80
Infiltration Capacity Coefficient a	243
Infiltration Capacity Exponent b	0.6
Initial Depth (mm)	50
Daily Recharge Rate (%)	0
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Daily Deep Seepage Rate (%)	0

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		Mean	St. dev.	Mean	St. dev.	Mean	St. dev.
Commercial							
Baseflow Parameters	Roof	N/A	N/A	N/A	N/A	N/A	N/A
	Roads	0.78	0.39	-0.6	0.5	0.32	0.3
	Ground level	0.78	0.39	-0.6	0.5	0.32	0.3
Stormflow Parameters	Roof	1.30	0.38	-0.89	0.34	0.37	0.34
	Roads	2.43	0.38	-0.30	0.34	0.37	0.34
	Ground level	2.16	0.38	-0.39	0.34	0.37	0.34

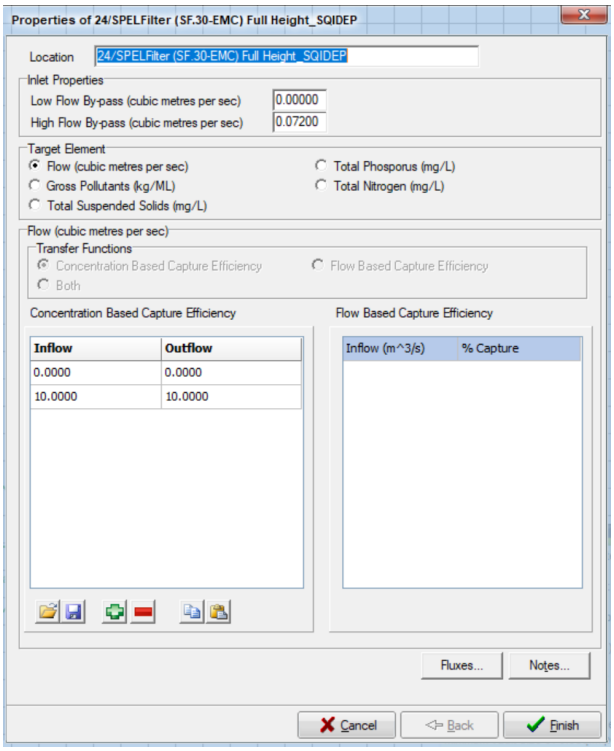

Figure 1: Treatment Device Input Parameters

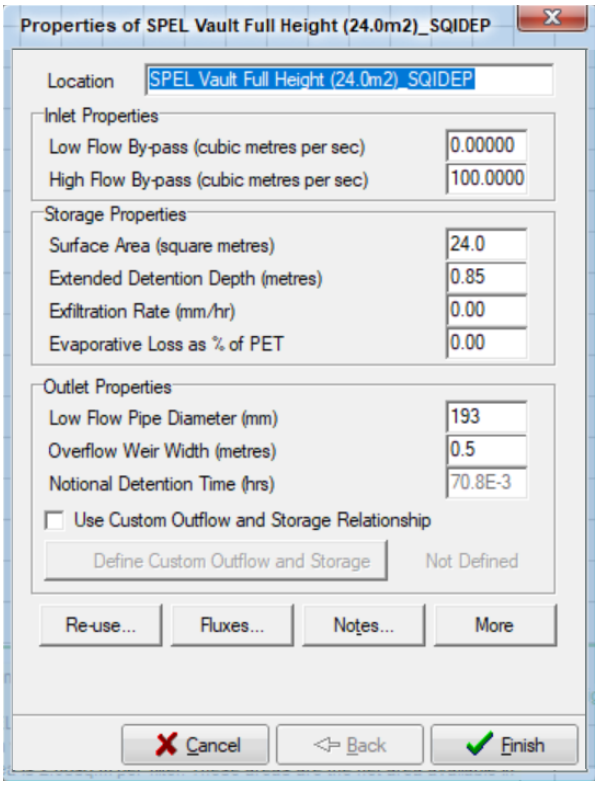

Figure 2: Atlan Vault input parameters

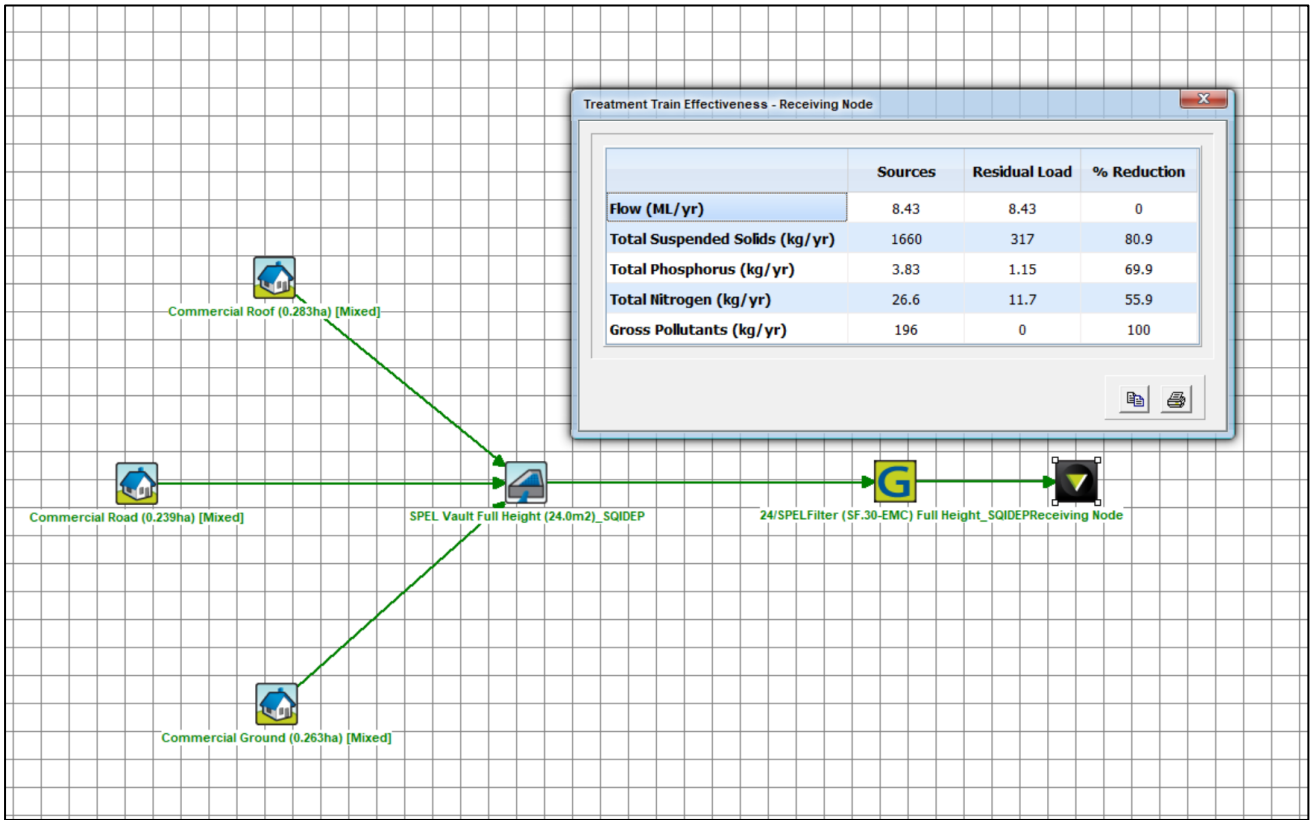

Figure 3: Treatment Train Effectiveness

APPENDIX G

COUNCIL CODES

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO1 Development for filling or excavation minimises visual impacts from retaining walls and earthworks.	AO1 Development ensures that the total height of any cut and fill, whether or not retained, does not exceed: a) 2.5m in a zone in the Industry zones category; b) 1m in all other zones, or if adjoining a sensitive zone.	✓	All earthworks and retaining walls that are proposed will not cause visual impacts and will not impact adversely on the stability of the land.	
PO2 Development of a retaining wall proposed as a result of filling or excavation: a) Is designed and constructed to be fit for purpose; b) Does not impact adversely on significant vegetation; c) Is capable of easy maintenance Editor's note—A retaining wall also needs to comply with the Building Regulation and embankment gradients will need to comply with the Building Regulation. Note—Guidance on the protection of	AO2.1 Development of a retaining structure, including footings, surface drainage and subsoil drainage: a) Is wholly contained within the site; b) If the total height to be retained is greater than 1m, then: 1) The retaining wall at the property boundary is not greater than 1m above the ground level; 2) all further terracing from the 1m high boundary retaining	✓	Retaining walls will be designed in accordance with the structures standards in the Infrastructure design planning scheme policy and certified by a Registered Professional Engineer Queensland.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
native vegetation is included in the Biodiversity areas planning scheme policy.	wall is 1 vertical unit:1 horizontal unit; 3) the distance between each successive retaining wall (back of lower wall to face of higher wall) is no less than 1m horizontally to incorporate planting areas. AO2.2 Development of a retaining wall over 1m in height protects significant vegetation on the site and on adjoining land and is designed and constructed in accordance with the structures standards in the Infrastructure design planning scheme policy and certified by a Registered Professional Engineer Queensland. AO2.3 Development provides a retaining wall finish that presents to adjoining land that is maintenance free if the setback is less than 750mm from the boundary.			

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	AO2.4 Development for filling only uses clean fill that does not include any construction rubble or debris.	N/A		
PO3 Development ensures that a rock anchor is designed and constructed to be fit for purpose.	AO3 Development ensures that a rock anchor: a) is constructed in accordance with the standards in the Infrastructure design planning scheme policy; b) where it extends beyond the property boundary, is supported by a letter of consent from the adjoining land and building owners.	✓	Development will ensure that a rock anchor is designed and constructed to be fit for purpose. This will be designed by the geotechnical engineer in the detailed design phase.	
PO4 Development protects all services and public utilities.	AO4 Development protects services and public utilities and ensures that any alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.	✓	Development will protect services and public utilities and will ensure that the alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO5 Development provides surface and sub-surface drainage to prevent water seepage, concentration of run-off or ponding of stormwater on adjacent land.	AO5 Development ensures all flows and subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	✓	Development will ensure all flows and subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	
PO6 Development ensures that the design and construction of all open drainage works is undertaken in accordance with natural channel design principles, being the development of a stormwater conveyance system for major flows, by using a vegetated open channel or drain that approximates the features and functions of a natural waterway to enhance or improve riparian values of those stormwater conveyance systems. Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines.	AO6 No acceptable outcome is prescribed.	**N/A**	Open channel not proposed for the site	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO7 Development for filling or excavation: a) does not degrade water quality or adversely affect environmental values in receiving waters; b) ensures site sediment and erosion control standards are best practice.	PO7.1 Development for filling or excavation provides water quality treatment that complies with the stormwater drainage section of the Infrastructure design planning scheme policy. PO7.2 Development provides erosion and sediment control standards that are in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	✓	An erosion and sediment control plan will be produced within the detailed design phase of the project and will be in accordance with Appendix E, Table A (construction phase) in the State Planning Policy and Brisbane City Councils stormwater drainage section of the Infrastructure design planning scheme policy.	
PO8 Development for filling or excavation is conducted such that adverse impacts at a sensitive use due to noise and dust are prevented or minimised. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO8.1 Development ensures that no dust emissions extend beyond the boundary of the site, including dust from construction vehicles entering and leaving the site. AO8.2 Development for filling or excavation activity only occurs between the hours of 6:30am and 6:30pm Monday to Saturday, excluding public holidays.	✓	Excavation is conducted such that adverse impacts due to noise and dust are minimised. Excavation activity will only occur between the hours of 6:30am and 6:30pm Monday to Saturday.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PO9 Development ensures that vibration generated by the filling or excavation operation does not exceed the vibration criteria in Table 9.4.3.3.D, Table 9.4.3.3.E, Table 9.4.3.3.F and Table 9.4.3.3.G. Note—A noise management report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO9 Development involving filling or excavation does not cause a ground-borne vibration beyond the boundary of the site.	✓	Vibration generated by excavation operation will not exceed the vibration criteria in Table 9.4.3.3.D, Table 9.4.3.3.E, Table 9.4.3.3.F and Table 9.4.3.3.G.	
PO10 Development ensures that heavy trucks hauling material to and from the site do not affect the amenity of established	AO10 Development ensures that heavy trucks hauling material to and from the site: a) occur for a maximum of 3 weeks;	✓	Heavy trucks hauling material to and from the site will not affect the amenity of established areas and will only use Major Roads. Hauling material to	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
areas and limits environmental nuisance impact on adjacent land.	b) use a major road to access the site; c) only use a minor road for the shortest-most-direct route that has the least amount of environmental nuisance if there is no major road alternative.		and from site will only occur a maximum of 3 weeks.	
PO11 Development for filling or excavation protects the environment and community health and wellbeing from exposure to contaminated land and contaminated material.	AO11 Development does not involve: a) excavation on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register; b) filling with material containing a contaminant.		The site is not on the Environmental Management Register, as such a Site Management Plan will not be needed. Excavation works are to be conducted in accordance with a Geotechnical report from a licensed and qualified Geotechnical Engineer.	
PO12 Development provides for: a) landscaping for water conservation purposes; b) water sensitive urban design measures which are employed within the landscape design to maximise stormwater use and to reduce any adverse impacts	AO12.1 Development provides landscaping which is designed using the standards in the Landscape design guidelines for water conservation planning scheme policy. AO12.2 Development ensures that the design and requirements for irrigation are in	✓ ✓		

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
on the landscape; c) stormwater harvesting to be maximised and any adverse impacts of stormwater minimised.	compliance with the standards in the Landscape design guidelines for water conservation planning scheme policy. AO12.3 Development provides areas of pavement, turf and mulched garden beds which are drained. Note—This may be achieved through the provision and/or treatment of swales, spoon drains, field gullies, sub-surface drainage and stormwater connections.			

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	COMMENTS
Section B—If accepted development subject to compliance with identified requirements (acceptable outcomes only) or assessable development other than for a dwelling house or reconfiguring a lot Note—If development that is accepted development subject to compliance with identified requirements complies with the acceptable outcomes of this part, no further assessment against this code is required.		
PO3 Development: a. is compatible with flood hazard in a defined flood event; b. minimises the risk to people from flood hazard; c. does not reduce the ability of evacuation resources including emergency services to access and evacuate the site in a flood emergency, with consideration to the scale of the development; d. minimises impacts on property from flooding; e. minimises disruption to residents, business or site operations and recovery time due to flooding; f. minimises the need to rebuild structures after a flood event greater than the defined flood event. Note—Where Table 8.2.11.3.C identifies that a flood risk assessment is required, compliance with this performance outcome can be achieved by submitting a flood risk assessment, which may be included within a flood study, addressing the criteria within this performance solution. Preparing flood risk assessments and flood studies is required to be in accordance with the Flood planning scheme policy. Note—An emergency management plan prepared in accordance with the Flood planning scheme policy, which sets out procedures for evacuation due to flooding may be used to demonstrate compliance with this performance outcome.	**AO3** Development for a material change of use is identified in Table 8.2.11.3.C as compatible with the flood hazard in the relevant flood planning area.	N/A Proposed development located outside all flood planning areas.
PO4 Development for a park ensures that the design of a park and location of structures and facilities responds to the flood hazard and balances the safety of intended users with: a. maintaining continuity of operations;	**AO4.1** Development involving a building or structure in a park complies with the flood planning levels specified in Table 8.2.11.3.D. **AO4.2**	**N/A**

b. impacts of flooding on asset life and ongoing maintenance costs; c. efficient recovery after flood events; d. recreational benefits to the city; e. availability of suitable land within the park.	Development involving a building or structure in a park where Table 8.2.11.3.D does not apply: a. is not located within the 20% AEP flood extent of any creek/waterway or overland flow path; or b. is located above the 20% AEP flood level of any creek/waterway or overland flow path.	
Section C—If for assessable development other than for a dwelling house		
PO5 Development is located and designed to: a. minimise the risk to people from flood hazard on the site; b. minimise flood damage to the development and contents of buildings up to the defined flood event; c. provide suitable amenity; d. minimise disruption to residents, recovery time and the need to rebuild structures after a flood event up to and including the defined flood event.	**AO5.1** Development complies with the flood planning levels specified in Table 8.2.11.3.D. Note—If located in an area with no Council-derived flood levels such as an overland flow path, a Registered Professional Engineer Queensland with expertise in undertaking flood studies is to derive the applicable flood level and certify that the development meets the required flood planning levels in Table 8.2.11.3.D. The study is to demonstrate that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy. **AO5.2** Development is: a. not located in the: i. Brisbane River flood planning area 1, 2a, or 2b sub-categories; ii. Creek/waterway flood planning area 1 or 2 sub-categories; iii. Overland flow flood planning area sub-category; or b. only located in these sub-categories if a Registered Professional Engineer Queensland with expertise in undertaking flood studies certifies that: i. the development design, siting and any mitigation measures will ensure the development is structurally adequate to resist hydrostatic, hydrodynamic and debris impact loads associated with flooding up to the defined flood event; and	N/A The proposed development is located outside the council's mapped 1% AEP (Ultimate Scenario) flood extent. The proposed development is located outside all council's mapped flood planning areas.

	ii. the risk to people is managed to an acceptable level.	
PO6 Development involving essential electrical services or a basement storage area is suitably located and designed to ensure public safety and minimise flood recovery and economic consequences of damage during a flood.	**AO6.1** Development ensures that: a. all areas containing essential electrical services comply with the flood planning levels in Table 8.2.11.3.D; or b. if a basement contains essential electrical services or a private basement storage area, the basement is a waterproof structure with walls and floors impermeable to the passage of water with all entry points and services located at or above the relevant flood planning level in Table 8.2.11.3.D. Note—A basement storage area does not include a bike storage room, change room, building maintenance storage and non-critical electrical services. **AO6.2** Development involving a basement that relies on a pumping solution to manage floodwater ingress or for dewatering after a flood provides a secondary pump system with a backup power source for the pump.	N/A The proposed development is located outside the council's mapped 1% AEP (Ultimate Scenario) flood extent.
PO7 Development does not directly or indirectly create a material adverse impact on flood behaviour or drainage on properties that are upstream, downstream or adjacent to the development.	**AO7.1** Development: a. does not block, or divert floodwaters for any area affected by creek/waterway or overland flow flooding, excluding storm-tide flooding and Brisbane River flooding sources; or b. does not result in a material increase in flood level or hydraulic hazard on upstream, downstream or adjacent properties. Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.	Development will ensure that it does not result in a material increase in flood level or hydraulic hazard on upstream, downstream or adjacent properties.

	AO7.2 Development retains existing overland flow paths and does not rely wholly on piped solutions to manage major flows.	
	AO7.3 Development which creates a new overland flow path or significantly modifies an existing overland flow path via earthworks does not materially worsen hydraulic hazard on the site from existing conditions. Note—Compliance with this acceptable solution can be demonstrated by the submission of a flood study by a Registered Professional Engineer of Queensland with expertise in undertaking flood studies demonstrating that the development and engineering design methods conform to the principles within the Flood planning scheme policy and the Infrastructure design planning scheme policy.	
PO8 Development for filling or excavation in an area affected by creek/waterway flooding does not directly, indirectly or cumulatively cause any material increase in flooding or hydraulic hazard or involve significant redistribution of flood storage from high to lower areas in the floodplain. Note—This can be demonstrated by undertaking earthworks in compliance with the Compensatory earthworks planning scheme policy. Note—This part of the code applies to all development other than a dwelling house and any secondary dwelling which involves filling or excavation, whether or not the development application comprises a separate development application for operational work involving filling or excavation.	**AO8** Development ensures that no filling or excavation greater than 100mm is located in the Creek/waterway flood planning area 1, 2 or 3 sub-categories if contained in the 5% AEP flood extent of any Creek/waterway flood planning area sub-category for which no waterway corridor has been mapped in the Waterway corridors overlay.	Earthworks are not proposed within the Creek/waterway flood planning areas.
PO9 Development ensures that the building and site design: a. maintains the conveyance capacity of existing overland flow paths and creek/waterways; b. ensures floodwaters and flood debris can pass predominantly unimpeded under a structure or building to minimise property or building damage, including for a flood larger than the defined flood event;	**AO9.1** Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub-category: a. complies with the minimum building undercroft clearance requirements in Table 8.2.11.3.E; b. not located directly above any part of a waterway corridor as mapped in the Waterway corridors overlay.	Development will comply with the minimum building undercroft clearance requirements in Table 8.2.11.3.E.

c. mitigates flood impacts by ensuring that filling, excavation and location of services are designed to allow for the conveyance of floodwater across the site. Note—The Flood planning scheme policy provides guidance on relevant considerations in determining minimum undercroft clearances and treatment of ground level in undercroft areas where floodwater conveyance is required underneath development.	**AO9.2** Development involving a building undercroft in the Creek/waterway flood planning area sub-categories or the Overland flow flood planning area sub category: a. has a ground level within the undercroft area that is free draining; b. does not involve excavation below ground level of more than 300mm within the undercroft area.	
PO10 Development for vulnerable uses, difficult to evacuate uses or assembly uses optimises vehicular access and efficient evacuation from the development to parts of the road network unaffected by flood hazard, in order to: a. protect safety of users and emergency services personnel; b. support efficient emergency services access and site evacuation with consideration to the scale of development. Note—A flood risk assessment may be required to address the performance outcomes or acceptable solutions which deal with evacuation and isolation arrangements, and the ability to take refuge. The Flood planning scheme policy provides information for undertaking flood risk assessments.	**AO10** Development for vulnerable uses, difficult to evacuate uses or assembly uses: a. is not isolated in any event up to the relevant flood planning level specified in Table 8.2.11.3.L; or b. has direct vehicle access to a critical route or interim critical route in the Critical infrastructure and movement network overlay for evacuation in a flood; or c. can achieve vehicular evacuation to a suitable flood-free location. Note—A suitable flood-free location is of a size and nature sufficient to provide for the size and characteristics of the population likely to need evacuation to that area.	Development will comply for vulnerable uses, difficult to evacuate uses or assembly uses by ensuring that the site is: a. is not isolated in any event up to the relevant flood planning level specified in Table 8.2.11.3.L; or b. has direct vehicle access to a critical route or interim critical route in the Critical infrastructure and movement network overlay for evacuation in a flood; or c. can achieve vehicular evacuation to a suitable flood-free location.
PO11 Development has access which, having regard to hydraulic hazard, provides for safe vehicular and pedestrian movement and emergency services access to adjoining roads.	**AO11.1** Development provides an access or driveway into the site which is: a. trafficable during the defined flood event; b. not located in the Creek/waterway flood planning area 1 sub-category; c. not located in the Overland flow flood planning area sub-category if the hydraulic hazard is unsafe in the defined flood event; d. the access or driveway is not inundated by a 10% AEP flood. **AO11.2**	Development provides an access that is trafficable during the defined flood event and is located in a flood-free area.

	Development located in the Creek/waterway flood planning area 1, 2, 3 or 4 sub-categories locates any disabled access in the highest part of the site. Note—explanation of hydraulic hazard provided in the Flood planning scheme policy.	
PO12 Development involving a new road, a bridge or culvert is designed to minimise impacts to flood behaviour, minimise disruption to traffic during a flood and allow for emergency access.	**AO12** Development involving a new road complies with the flood planning levels in Table 8.2.11.3.F.	N/A
PO13 Development for pedestrian and cyclist paths: a. provides a suitable level of trafficability; b. manages the impacts of flooding on asset life and ongoing maintenance costs; c. balances route availability with recreational and transport connectivity benefits to the city.	**AO13.1** Development for cyclist and pedestrian facilities other than on public roads, including those traversing through a park and adjacent to a watercourse and overland flow path, are located above the 39% AEP (2 year ARI) flood immunity from all flooding sources. Note—If the site is subject to more than one type of flooding, the requirement that affords the greatest level of protection will apply. **AO13.2** All new on-road cyclist and pedestrian facilities comply with the flood planning levels and trafficability standards for the applicable category of road in Table 8.2.11.3.F or Table 8.2.11.3.K.	N/A
PO14 Development which increases the residential population within the Brisbane River flood planning area sub-categories minimises the risk to people in all flood events with consideration to flood hazard, including warning time.	**AO14** Development in the Brisbane River flood planning area sub-categories in areas where the residential flood level is greater than 12.8m AHD involving: a. an increase in the number of residential dwellings; or b. additional residential lots is not subject to an unsafe hydraulic hazard in the 0.2% AEP flood event. Note—Explanation of a hydraulic hazard is provided in the Flood planning scheme policy.	N/A

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO1 Development provides roads, pavement, edging and landscaping which: (a) are designed and constructed in accordance with the road hierarchy; (b) provide for safe travel for pedestrians, cyclists and vehicles; (c) provide access to properties for all modes; (d) provide utilities; (e) provide high levels of aesthetics and amenity, improved liveability and future growth; (f) provide for the amelioration of noise and other pollution; (g) provide a high-quality streetscape; (h) provide a low-maintenance asset with a minimal whole-of-life cost. Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.	**AO1** Development provides roads and associated pavement, edging and landscaping which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	✓	Driveways, pavement and landscaping will be designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy. Services exist within the surrounding road reserves and will be connected to the proposed development.	
PO2 Development provides road pavement surfaces which: (a) are well designed and constructed; (b) durable enough to carry the wheel loads of the intended types and numbers	**AO2** Development provides road pavement surfaces which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme	✓	The development provides road pavement surfaces which are designed and constructed in compliance with the road corridor design standards in the infrastructure design planning scheme.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
of travelling and parked vehicles; (c) ensures the safe passage of vehicles, pedestrians and cyclists, the discharge of stormwater run-off and the preservation of all-weather access; (d) allows for reasonable travel comfort.	policy.			
PO3 Development provides a pavement edge which is designed and constructed to: (a) control vehicle movements by delineating the carriageway for all users; (b) provide for people with disabilities by allowing safe passage of wheelchairs and other mobility aids.	**AO3** Development provides pavement edges which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	✓	Development will provide pavement edges which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	
PO4 Development provides verges which are designed and constructed to: (a) provide safe access for pedestrians clear of obstructions and access areas for vehicles onto properties; (b) provide a sufficient area for public utility services; (c) be maintainable by the Council.	**AO4** Development provides verges which are designed and constructed in compliance with the road corridor design and streetscape locality advice standards in the Infrastructure design planning scheme policy.	✓	Development will provide verges which are designed and constructed in compliance with the road corridor design and streetscape locality advice standards in the Infrastructure design planning scheme policy.	
PO5 Development provides a lane or laneway identified in a neighbourhood plan which: (a) allows equitable access for all modes;	**AO5** Development provides a lane or laneway identified in a neighbourhood plan which is embellished in compliance with the	**N/A**		

1. Solution: ✓ = Acceptable Solution
   A/S = Alternative Solution
   N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
(b) is safe and secure; (c) has 24-hour access; (d) is a low-speed shared zone environment; (e) has a high-quality streetscape.	streetscape locality advice standards in the Infrastructure design planning scheme policy.			
PO6 Development of an existing premises provides at the frontage to the site, if not already provided, the following infrastructure to an appropriate urban standard: (a) an effective, high-quality paved roadway; (b) an effective, high-quality roadway kerb and channel; (c) safe, high-quality vehicle crossings over channels and verges; (d) safe, accessible, high-quality verges compatible and integrated with the surrounding environment; (e) safe vehicle access to the site that enables ingress and egress in a forward gear; (f) provision of and required alterations to public utilities; (g) effective drainage; (h) appropriate conduits to facilitate the provision of required street-lighting systems and traffic signals.	**AO6** Development of an existing premises provides at the frontage of the site, if not already existing, the following infrastructure to the standard that would have applied if the development involved new premises as stated in the road corridor design standards in the Infrastructure design planning scheme policy: (a) concrete kerb and channel; (b) forming and grading to verges; (c) crossings over channels and verges; (d) a constructed bikeway; (e) a constructed verge or reconstruction of any damaged verge; (f) construction of the carriageway; (g) payment of costs for required alterations to public utility mains, services or installations; (h) construction of and required alterations to public utility mains, services or installations; (i) drainage works; (j) installation of electrical conduits.	✓	Any works required within the adjacent road corridors will be to the standards stated in the Infrastructure design planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO7 Development provides both cycle and walking routes which: (a) are located, designed and constructed to their network classification (where applicable); (b) provide safe and attractive travel routes for pedestrians and cyclists for commuter and recreational purposes; (c) provide safe and comfortable access to properties for pedestrians and cyclists; (d) incorporate water sensitive urban design into stormwater drainage; (e) provide for utilities; (f) provide for a high level of aesthetics and amenity, improved liveability and future growth; (g) are a low-maintenance asset with a minimal whole-of-life cost; (h) minimise the clearing of significant native vegetation. Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.	**AO7** Development provides cycle and walking routes which are located, designed and constructed in compliance with the road corridor design and off-road pathway design standards in the Infrastructure design planning scheme policy.	✓	Development will provide walking routes which are located, designed and constructed in compliance with the road corridor design and off-road pathway design standards in the Infrastructure design planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
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PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO8 Development provides refuse and recycling collection, separation and storage facilities that are located and managed so that adverse impacts on building occupants, neighbouring properties and the public realm are minimised.	**AO8.1** Development provides refuse and recycling collection and storage facilities in accordance with the Refuse planning scheme policy. **AO8.2** Development ensures that refuse and recycling collection and storage location and design do not have any adverse impact including odour, noise or visual impacts on the amenity of land uses within or adjoining the development. Note—Refer to the Refuse planning scheme policy for further guidance.	✓	Development will provide refuse and recycling collection and storage facilities in accordance with the Refuse planning scheme policy and they will have no adverse impacts.	
PO9 Development ensures that: (a) land used for an urban purpose is serviced adequately with regard to water supply and waste disposal; (b) the water supply meets the stated standard of service for the intended use and fire-fighting purposes.	**AO9.1** Development ensures that the reticulated water and sewerage distribution system for all services is in place before the first use is commenced. **AO9.2** Development provides the lot with reticulated water supply and sewerage to a standard acceptable to the distributor–retailer.	✓	Development ensures that the reticulated water and sewerage distribution system for all services is in place before the first use is commenced. Connections will be provided as outline in Bornhorst and Ward's Engineering Serviceability Report and Site Based Stormwater Management Plan.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO10 Development provides public utilities and street lighting which are the best current or alternative technology and facilitate accessibility, easy maintenance, minimal whole-of-life costs, and minimal adverse environmental impacts.	**AO10.1** Development provides public utilities and street lighting which are located and aligned to: (a) avoid significant native vegetation and areas identified within the Biodiversity areas overlay map; (b) minimise earthworks; (c) avoid crossing waterways, waterway corridors and wetlands or if a crossing is unavoidable, tunnel-boring techniques are used to minimise disturbance, and a disturbed area is reinstated and restored on completion of the work. Note—Guidance on the restoration of habitat is included in the Biodiversity areas planning scheme policy. **AO10.2** Development provides compatible public utility services and street-lighting services which are co-located in common trenching for underground services. **AO10.3** Development provides public utilities and street lighting which are designed and constructed in compliance with the public utilities standards in the Infrastructure design planning scheme policy.	**N/A**		

1. Solution: ✓ = Acceptable Solution
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N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO11 Development ensures that land used for urban purposes is serviced adequately with telecommunications and energy supply.	**AO11** Development provides land with the following services to the standards of the approved supplier: (a) electricity; (b) telecommunications services; (c) gas service where practicable.	✓	The development has sufficient telecommunications and energy infrastructure located around it and will be serviced adequately to ensure supply of these services. This will be achieved with Energex and Telstra's coordination and approval. See Bornhorst and Wards Engineering Serviceability Report and Site Based Stormwater Management Plan for more information.	
PO12 Development ensures that major public projects promote the provision of affordable, high-bandwidth telecommunications services throughout the city.	**AO12** Development provides conduits which are provided in all major Council and government works projects to enable the future provision of fibre optic cabling, if: (a) the additional expense is unlikely to be prohibitive; or (b) further major work is unlikely or disruption would be a major concern, such as where there is a limited capacity road; or (c) there is a clear gap in the telecommunications network; or (d) there is a clear gap in the bandwidth available to the area. Editor's note—An accurate, digital 'as built' three-dimensional location plan is to be supplied for all infrastructure provided in a road.	**N/A**		

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PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO13 Development provides public art identified in a neighbourhood plan or park concept plan which: (a) is provided commensurate with the status and scale of the proposed development; (b) is sited and designed: (i) as an integrated part of the project design; (ii) as conceptually relevant to the context of the location; (iii) to reflect and respond to the cultural values of the community; (iv) to promote local character in a planned and informed manner.	**AO13** Development provides public art identified in a neighbourhood plan or park concept plan which is sited and designed in compliance with the public art standards in the Infrastructure design planning scheme policy.	**N/A**		
PO14 Development provides signage of buildings and spaces which promote legibility to help users find their way.	**AO14** Development provides public signage: (a) at public transport interchanges and stops, key destinations, public spaces, pedestrian linkages and at entries to centre developments; (b) which details the location of the key destinations, public spaces and pedestrian linkages in the vicinity, the services available within the development and where they are located. Editor's note—Signage is to be in accordance with Local Law Number 1	**N/A**		

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A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
	(Control of Advertisements Local Law).			
PO15 Development that provides community facilities which form part of the development is functional, safe, low maintenance, and fit for purpose.	**AO15** Development that provides community facilities which form part of the development is designed in compliance with the community facilities standards in the Infrastructure design planning scheme policy.	✓	Community facilities which form part of the development will be designed in compliance with the community facilities standards in the **Infrastructure design planning scheme policy.**	
PO16 Development provides public toilets which: (a) are required as part of a community facility or park; (b) are located, designed and constructed to be: (i) safe; (ii) durable; (iii) resistant to vandalism; (iv) able to service expected demand; (v) fit for purpose.	**AO16** Development that provides public toilets is designed and constructed in compliance with the public toilets standards in the Infrastructure design planning scheme policy.	**N/A**		
PO17 Development provides bridges, tunnels, elevated structures and water access structures that are designed and constructed using proven methods, materials and technology to provide for: (a) safe movement of intended users;	**AO17** Development that provides bridges, tunnels, elevated structures and water access structures is designed and constructed in compliance with the standards in the Infrastructure design planning scheme policy.	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
(b) an attractive appearance appropriate to the general surroundings and any adjacent structures; (c) functionality and easy maintenance; (d) minimal whole-of-life cost; (e) longevity; (f) current and future services. Note—All bridges and elevated and associated elements must be designed and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.				
PO18 Development provides culverts which are designed and constructed using proven methods, materials and technology to provide for: (a) safety; (b) an attractive appearance appropriate to the general surroundings; (c) functionality and easy maintenance; (d) minimal whole-of-life cost; (e) longevity; (f) future widening; (g) current and future services; (h) minimal adverse impacts, such as increase in water levels or flow velocities, and significant change of flood patterns. Note—All culverts and associated elements are to be designed and certified	**AO18** Development that provides culverts is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
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PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
by a Registered Professional Engineer Queensland in accordance with the applicable design standards.				
PO19 Development provides batters, retaining walls, and seawalls and river walls which are designed and constructed using proven methods, materials and technology to provide for: (a) safety; (b) an attractive appearance appropriate to the surrounding area; (c) easy maintenance; (d) minimal whole-of-life cost; (e) longevity; (f) minimal water seepage. Note—All retaining walls and associated elements are to be designed and certified by a Registered Professional Engineer Queensland in accordance with the applicable design standards.	**AO19** Development that provides batters, retaining walls, seawalls and river walls is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.	✓	Retaining walls and batters required for the development will be designed and constructed in compliance with the structures standards in the **Infrastructure design planning scheme policy.**	
If for development with a gross floor area greater than 1,000m^2				
PO20 Development ensures that construction is managed so that use of public spaces and movement on pedestrian, cyclist and other traffic routes is not unreasonably disrupted and existing landscaping is adequately protected from short- and long-term impacts.	**AO20** Development ensures that during construction: (a) the ongoing use of adjoining and surrounding parks and public spaces, such as malls and outdoor dining, is not compromised; (b) adjoining and surrounding	✓	Construction will be managed so that use of public spaces and movement on pedestrian, cyclist and other traffic routes is not unreasonably disrupted and existing landscaping is adequately protected from short- and long-term impacts.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
Note—The preparation of a construction management plan can assist in demonstrating achievement of this performance outcome. Note—The Transport, access, parking and servicing planning scheme policy provides advice on the management of vehicle parking and deliveries during construction.	landscaping is protected from damage; (c) safe, legible, efficient and sufficient pedestrian, cyclist and vehicular accessibility and connectivity to the wider network are maintained.			
PO21 Development ensures that construction and demolition activities are guided by measures that prevent or minimise adverse impacts including sleep disturbance at a sensitive use, due to noise and dust, including dust from construction vehicles entering and leaving the site. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.	**AO21.1** Development ensures that demolition and construction: (a) only occur between 6:30am and 6:30pm Monday to Saturday, excluding public holidays; (b) do not occur over periods greater than 6 months. **AO21.2** Development including construction and demolition does not release dust emissions beyond the boundary of the site. **AO21.3** Development construction and demolition does not involve asbestos-containing materials.	✓	Release of dust emissions beyond the boundary of the site will not occur during demolition and construction. These activities will only take place between 6:30am and 6:30pm Monday to Saturday, excluding public holidays and will not occur over periods greater than 6 months.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION[1]	COMMENTS	COUNCIL USE ONLY
PO22 Development ensures that: (a) construction and demolition do not result in damage to surrounding property as a result of vibration; (b) vibration levels achieve the vibration criteria in Table 9.4.4.3.B, Table 9.4.4.3.C, Table 9.4.4.3.D and Table 9.4.4.3.E. Note—A vibration impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	**AO22** Development ensures that the nature and scale of construction and demolition do not generate noticeable levels of vibration.	✓	Development ensures that the nature and scale of construction and demolition do not generate noticeable levels of vibration in accordance to the Brisbane City Councils vibration criteria.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
Section A - If for a material change of use, reconfiguring a lot, operational work or building work Note—Compliance with the performance outcomes and acceptable outcomes in this section should be demonstrated by the submission of a site-based stormwater management plan for high risk development only				
PO1 Development provides a stormwater management system which achieves the integrated management of stormwater to: (a) minimise flooding; (b) protect environmental values of receiving waters; (c) maximise the use of water sensitive urban design; (d) minimise safety risk to all persons; (e) maximise the use of natural waterway corridors and natural channel design principles. *Editor's note—The stormwater management system to be developed to address PO1 is not intended to require management of stormwater quality.*	**A01** Development provides a stormwater management system designed in compliance with the Infrastructure design planning scheme policy.	✓	The proposal complies with the **Infrastructure Design Planning Scheme Policy.**	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

P02 Development ensures that the stormwater management system and site work does not adversely impact flooding or drainage characteristics of premises which are up slope, down slope or adjacent to the site.	**AO2.1** Development does not result in an increase in flood level or flood hazard on up slope, down slope or adjacent premises. **AO2.2** Development provides a stormwater management system which is designed in compliance with the standards in the **Infrastructure design planning scheme policy.**	✓ ✓	The proposal meets the requirements of Council's **Infrastructure design planning scheme policy** and does not result in an increase in flood level or flood duration on upstream, downstream or adjacent properties.	
PO3 Development ensures that the stormwater management system does not direct stormwater run-off through existing or proposed lots and property where it is likely to adversely affect the safety of, or cause nuisance to properties.	**AO3.1** Development ensures that the location of the stormwater drainage system is contained within a road reserve, drainage reserve, public pathway, park or waterway corridor. **AO3.2** Development provides a stormwater management system which is designed in compliance with the standards in the **Infrastructure design planning scheme policy.** **AO3.3** Development obtains a lawful point of discharge in compliance with the standards in the **Infrastructure design planning scheme policy.**	✓ ✓ ✓	The design demonstrates that a drainage network will be provided that will comply with Council's **Infrastructure design planning scheme policy**. Conceptual drainage requirements for the proposal are identified in the SBSMP.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

	AO3.4 Where on private land, all underground stormwater infrastructure is secured by a drainage easement.	✓		
PO4 Development provides a stormwater management system which has sufficient capacity to safely convey run-off taking into account increased run-off from impervious surfaces and flooding in local catchments.	**AO4.1** Development provides a stormwater conveyance system which is designed to safely convey flows in compliance with the standards in the **Infrastructure design planning scheme policy.** **AO4.2** Development provides sufficient area to convey run-off which will comply with the standards in the **Infrastructure design planning scheme policy.**	✓ ✓	The design demonstrates that a drainage network will be provided that will comply with Council's **Infrastructure design planning scheme policy** which safely conveys runoff taking into account increased runoff and flooding in local catchments.	
P05 Development designs stormwater channels, creek modification works, bridges, culverts and major drains to protect and enhance the value of the waterway corridor or drainage path for fauna movement.	**AO5** Development ensures the design of stormwater channels, creek modifications or other infrastructure, permits terrestrial and aquatic fauna movement.	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PO6 Development ensures that location and design of stormwater detention and water quality treatment: (a) minimises risk to people and property; (b) provides for safe access and maintenance; (c) minimises ecological impacts to creeks and waterways.	**AO6.1** Development locates stormwater detention and water quality treatment: (a) outside of a waterway corridor; (b) offline to any catchment not contained within the development.	✓	Development locates detention and water quality treatment outside of a waterway corridor and offline to any catchment not contained within the development.	
PO7 Development is designed, including any car parking areas and channel works to: (a) reduce property damage; (b) provide safe access to the site during the defined flood event.	**AO7.1** Development (including any ancillary structures and car parking areas) is located above minimum flood immunity levels in Table 9.4.9.3.B, Table 9.4.9.3.C, Table 9.4.9.3.D,Table 9.4.9.3.E and Table 9.4.9.3.F. *Note—Compliance with this acceptable outcome can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels (as part of a site-based stormwater management plan).*	✓	The proposed development is located above the minimum flood immunity levels in Table 9.4.9.3.B, Table 9.4.9.3.C, Table 9.4.9.3.D,Table 9.4.9.3.E and Table 9.4.9.3.F.	
	AO7.2 Development including the road network provides a stormwater management system that provides safe pedestrian and	✓	The proposed development design provides a stormwater management system that ensures the safe pedestrian and vehicle access in accordance with the **Infrastructure design planning scheme policy.**	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

	vehicle access in accordance with the standards in the **Infrastructure design planning scheme policy.**			
PO8 Development designs stormwater channels, creek modification works and the drainage network to protect and enhance the environmental values of the waterway corridor or drainage path.	**AO8.1** Development ensures natural waterway corridors and drainage paths are retained. **AO8.2** Development provides the required hydraulic conveyance of the drainage channel and floodway, while maximising its potential to maximise environmental benefits and minimise scour. Editor's note—Guidance on natural channel design principles can be found in the Council's publication **Natural channel design guidelines.** **AO8.3** Development provides stormwater outlets into waterways, creeks, wetlands and overland flow paths with energy dissipation to minimise scour in compliance with the standards in the **Infrastructure design planning scheme policy.** **AO8.4** Development ensures that the design of modifications to the existing design of new stormwater channels, creeks and major drains is in compliance with the standards in the **Infrastructure design planning scheme policy.**	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PO9 Development is designed to manage run-off and peak flows by minimising large areas of impervious material and maximising opportunities for capture and re-use.	**AO9** No acceptable outcome is prescribed.	✓	The proposed development will not increase the peak flow discharge from the site and comply with the **Infrastructure design planning scheme policy.**	
PO10 Development ensures that there is sufficient site area to accommodate an effective stormwater management system. *Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only.*	**AO10** No acceptable outcome is prescribed.	**N/A**		
PO11 Development provides for the orderly development of stormwater infrastructure within a catchment, having regard to the: (a) existing capacity of stormwater infrastructure within and external to the site, and any planned stormwater infrastructure upgrades; (b) safe management of stormwater discharge from existing and future up-slope development;	**AO11.1** Development with up-slope external catchment areas provides a drainage connection sized for ultimate catchment conditions that is directed to a lawful point of discharge. **AO11.2** Development ensures that existing stormwater infrastructure that is undersized is upgraded in compliance with the **Priority infrastructure**	**N/A**		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

(c) implication for adjacent and down-slope development.	**plan** and the standards in the **Infrastructure design planning scheme policy.**			
PO12 Development provides stormwater infrastructure which: (a) remains fit for purpose for the life of the development and maintains full functionality in the design flood event; (b) can be safely accessed and maintained cost effectively; (c) ensures no structural damage to existing stormwater infrastructure.	**AO12.1** The stormwater management system is designed in compliance with the **Infrastructure design planning scheme policy.** **AO12.2** Development provides a clear area with a minimum of 2m radius from the centre of an existing manhole cover and with a minimum height clearance of 2.5m.	✓	The proposed development stormwater designs are in accordance with the **Infrastructure design planning scheme policy.**	
PO13 Development ensures that all reasonable and practicable measures are taken to manage the impacts of erosion, turbidity and sedimentation, both within and external to the development site from construction activities, including vegetation clearing, earthworks, civil construction, installation of services, rehabilitation, revegetation and landscaping to protect: (a) the environmental values and water quality objectives of waters; (b) waterway hydrology; (c) the maintenance and serviceability of stormwater infrastructure.	**AO13** No acceptable outcome is prescribed.	**A/S**	A detailed Erosion Sediment Control Plan will be prepared in accordance with Brisbane City Council Guidelines. The ESCP shall be prepared during the Operational Works phase of the development.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Note—The Infrastructure design planning scheme policy outlines the appropriate measures to be taken into account to achieve the performance outcome.				
PO14 Development ensures that: (a) unnecessary disturbance to soil, waterways or drainage channels is avoided; (b) all soil surfaces remain effectively stabilised against erosion in the short and long term.	**AO14** No acceptable outcome is prescribed	**A/S**	A detailed Erosion Sediment Control Plan will be prepared in accordance with Brisbane City Council Guidelines. The ESCP shall be prepared during the Operational Works phase of the development.	
PO15 Development does not increase: (a) the concentration of total suspended solids or other contaminants in stormwater flows during site construction; (b) run-off which causes erosion either on site or off site.	**AO15** No acceptable outcome is prescribed	**A/S**	A detailed Erosion Sediment Control Plan will be prepared in accordance with Brisbane City Council Guidelines. The ESCP shall be prepared during the Operational Works phase of the development.	
PO16 Development ensures that the entry and transport of contaminants into stormwater is avoided or minimised to protect receiving water environmental values.	**AO16** Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy.	✓	A detailed Erosion Sediment Control Plan will be prepared in accordance with Brisbane City Council Guidelines. This will minimize contaminants running into the water way corridor as much as possible	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PO17 Development ensures that: the discharge of wastewater to a waterway or external to the site is avoided; or if the discharge cannot practicably be avoided, the development minimises wastewater discharge through re-use, recycling, recovery and treatment.	**AO17** No acceptable outcome is prescribed.	**A/S**	A detailed Erosion Sediment Control Plan will be prepared in accordance with Brisbane City Council Guidelines. Runoff from the site will be detained and treated prior to being discharged into the waterway corridor This will minimize contaminants running into the water way corridor as much as possible	
PO18 Development protects stormwater infrastructure to ensure the following are not compromised: the long term infrastructure for the stormwater network in the Long term infrastructure plans; the existing and planned infrastructure for the stormwater network in the Local government infrastructure plan; the provision of long term, existing and planned infrastructure for the stormwater network which: is required to service the development or an existing and future urban development in the planning scheme area; or is in the interests of rational development or the efficient and orderly planning of the general area in which the site is situated.	Development protects stormwater infrastructure in compliance with the following: a. for long term infrastructure for the stormwater network, the Long term infrastructure plans; b. for existing and planned infrastructure for the stormwater network, the Local government infrastructure plan; c. the standards for stormwater drainage in the Infrastructure design planning scheme policy.	✓	The development is entirely located outside of the 1% AEP Creek/Waterway flood extents as described in this report. This ensures that's the long-term infrastructure for the stormwater network is left unaffected by the proposed development.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PO19 Development provides for the payment of extra trunk infrastructure costs for the following: for development completely or partly outside the priority infrastructure area in the Local government infrastructure plan; for development completely inside the priority infrastructure area in the Local government infrastructure plan involving: trunk infrastructure that is to be provided earlier than planned in the Local government infrastructure plan; long term infrastructure for the stormwater network which is made necessary by development that is not assumed future urban development; other infrastructure for the stormwater network associated with development that is not assumed future urban development which is made necessary by the development.	**AO19** No acceptable outcome is prescribed.	**N/A**	The waterway corridor is the truck infrastructure hence no modifications are proposed as part of the development.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

APPENDIX H

EROSION HAZARD FORM

BRISBANE CITY COUNCIL ABN 72 002 765 795

Erosion Hazard Assessment - June 2014

Brisbane City Council (BCC), *Erosion Hazard Assessment* form must be read in conjunction with the *Erosion Hazard Assessment- Supporting Technical Notes* (June 2014 or later version) for explanatory terms and Certification information.

What is an Erosion Hazard Assessment?
Soil erosion and sediment from urban development, particularly during construction activities, is a significant source of sediment pollution in Brisbane's waterways. The Erosion Hazard Assessment determines whether the risk of soil erosion and sediment pollution to the environment is 'low' , 'medium' or 'high'.

When is the EHA required?
An *Erosion Hazard Assessment* form must be completed and lodged with BCC for any Development Application (ie MCU or ROL) that will result in soil disturbance OR Operational Works or Compliance Assessment Application for 'Filling' or Excavation.

Failure to submit this form during lodgement of an application may result in assessment delays or refusal of the application.

Privacy Statement
The personal information collected on this form will be used by Brisbane City Council for the purposes of fulfilling your request and undertaking associated Council functions and services. Your personal information will not be disclosed to any third party without your consent, unless this is required or permitted by law.

Assessment Details

1 Please turn over and complete the erosion hazard assessment.

2 Based on the erosion hazard assessment overleaf, is the site:

☐ ***A 'low' risk site***

Best practice erosion and sediment control (ESC) must be implemented but no erosion and sediment control plans need to be submitted with the development application. Factsheets outlining best practice ESC can be found at http://www.waterbydesign.com.au/factsheets

☐ ***A 'medium' risk site***

If the development is approved, the applicant will need to engage a Registered Professional Engineer (RPEQ) or Certified Professional in Erosion and Sediment Control (CPESC) to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy.

☒ ***A 'high' risk site***

If the development is approved, the applicant will need to engage a RPEQ and CPESC to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy. The plans and program will need to be certified by a CPESC.

3 Site Information and Certification

Application number (if known)

Site address

46 West Street
Rochedale
QLD Postcode 4123

I certify that:

☒ I have made all relevant enquiries and am satisfied no matters of significance have been withheld from the assessment manager.

☒ I am a person with suitable qualifications and/or experience in erosion and sediment control.

☒ The Erosion Hazard Assessment was completed in accordance with the Erosion Hazard Assessment Supporting Technical Notes and the BCC Infrastructure Design Planning Scheme Policy.

☒ The Erosion Hazard Assessment accurately reflects the site's overall risk of soil erosion and sediment pollution to the environment.

☒ I acknowledge and accept that the BCC, as assessment manager, relies, in good faith, on this certification as part of its development assessment process and the provision of false or misleading information to the BCC constitutes an offence for which BCC may take punitive steps/ action against me/ enforcement action against me.

Certified by *Print name*

Jason Dang

Certifier's signature

Date

13 / 03 / 2024

Assessment Table

Table 1: Low Risk Test

		Yes	*No*
1.1	is the area of land disturbance > 1000 m^2	☒	☐
1.2	does any land disturbance occur in a BCC mapped waterway corridor	☐	☒
1.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 5%	☒	☐
1.4	does any land disturbance occur below 5 m AHD	☐	☒
1.5	does development involve endorsement of a staging plan	☒	☐
1.6	is there an upstream catchment passing through the site > 1 hectare	☒	☐

Have you answered 'yes' to any of the questions in Table 1?	*Yes*	*No*	
	☒	☐	**If '*No*' then site is <u>low risk</u> with respect to erosion and sediment control**

If '*Yes*' then proceed to Table 2

Table 2: Medium Risk Test

		Yes	*No*	
2.1	is the area of land disturbance > 1 hectare	☒	☐	**If '*No*' then site is <u>medium risk</u> with respect to erosion and sediment control**

If '*Yes*' then proceed to Table 3

Table 3: High Risk Test

		Yes	*No*
3.1	is there an upstream catchment passing through the site > 1 hectare	☒	☐
3.2	does any land disturbance occurs in a BCC mapped waterway corridor	☐	☒
3.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 15%	☒	☐

Have you answered 'yes' to any of the questions in Table 3?	*Yes*	*No*	
	☒	☐	**If '*No*' then site is <u>medium risk</u> with respect to erosion and sediment control**

If '*Yes*' then site is <u>high risk</u> with respect to erosion and sediment control