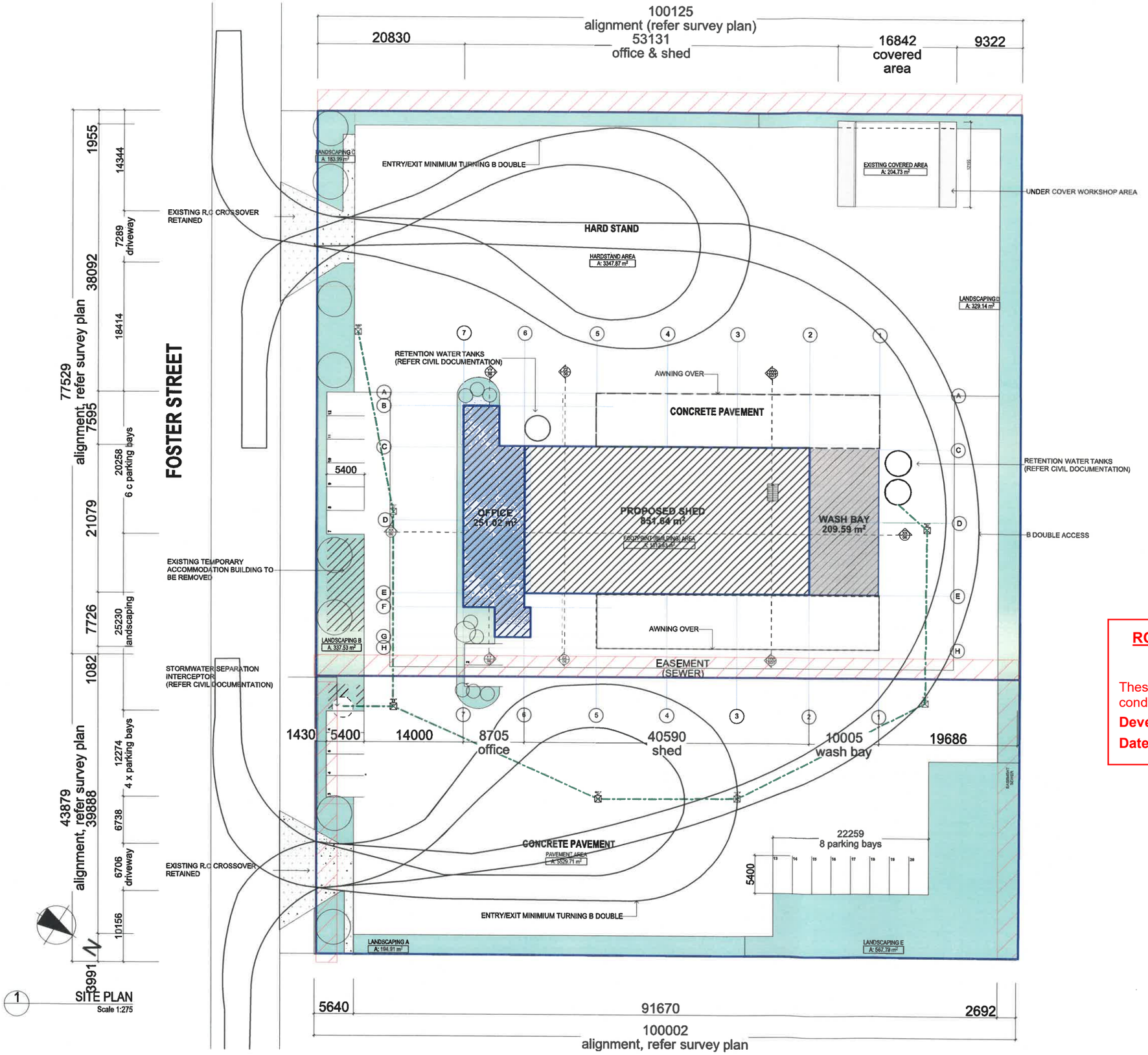
SKETCH DESIGN

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



1 SITE PLAN
Scale 1:275

SITE AREAS	
NAME	Measured Area
EXISTING COVERED AREA	204.73
FOOTPRINT (BUILDING) AREA	1312.83
HARDSTAND AREA	3347.87
LANDSCAPING A	194.91
LANDSCAPING B	337.53
LANDSCAPING C	183.99
LANDSCAPING D	329.14
LANDSCAPING E	567.78
PAVEMENT AREA	5529.71
	12008.49 m²

DEVELOPMENT SCHEDULE

GFA MORE THAN 1000M2, CODE ASSESSABLE

PARKING
1/100M2 MEDIUM INDUSTRY
1300M2 (EXCLUDE WASH BAY)
14 REQUIRED
20 PROVIDED.

LANDSCAPING
REQUIRED 1195 M2 (10%)
PROVIDED 1611 M2 (13.4 %)

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/117-2021

Dated: 30 November 2021

R.P.D
LOT 18 SP206688 & LOT 12 RP604012
153 FOSTER ST GRACEMERE QLD 4702
ROCKHAMPTON REGIONAL COUNCIL
AREA, 12025 M2

REV	D		
A	25/08/2021	MCU ISSUE	

SK Drafting building designs
P 07 4127 7444 M 0419 788 081
E. sk.admin@skdrafting.com.au
www.skdrafting.com.au
Shop 2-14 Canning Street, Rockhampton Qld 4700
BSA LIC No 0p1429

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
ESSJAY CONTRACTING
AT
153 FOSTER ST GRACEMERE QLD 4702

APPROVED		
CHECKED	-	
DRAWN	AMF	
DESIGN	AMF	

JOB No. **SKD 21-010**
DWG/REV. **SD/02** **1**

LEGEND

AC	AIR CONDITIONER
CPD	CUPBOARD
C.TILES	CERAMIC TILES
DP	DOWNPIPE
DW	DISHWASHER
HB	HAND BASIN
MSB	MAIN SWITCH BOARD
MV	MECHANICAL VENT
RD	GARAGE DOOR
REF	REFRIDGERATOR
SA	SMOKE ALARM
SD	SLIDING GLASS DOOR
SHW	SHOWER
SSS	STAINLESS STEEL SINK
SW	SLIDING WINDOW
SUAC	SPLIT AIR CONDITIONER
TR	TOWEL RAIL
TRH	TOILER ROLL HOLDER
WC	TOILET SUITE
VB	VANITY BASIN
VFL	VINYL FLOOR FINISH
D1	DOOR NUMBER 1
W8	WINDOW NUMBER 8

SKETCH DESIGN

FOR TOWN PLANNING APPLICATION ONLY
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OUTDOOR AREA
LUNCH RM A: 18.72 m²
TOILETS A: 13.16 m²
TOILETS A: 8.72 m²
OFFICE 2 A: 13.79 m²
OFFICE A: 70.72 m²
OFFICE 1 A: 13.88 m²
FILING A: 5.63 m²
PASSAGE A: 8.29 m²
MEETING RM A: 24.71 m²
RECEPTION A: 6.37 m²
WAITING A: 9.97 m²
ENTRY
WATER TANK
50MM SETDOWN FOR WET AREAS
CONCRETE APRON
Line of Skillion Canopy
6mW x 6mH Electric Shutter Door
SHED DOCUMENTATION AS PER MANUFACTURERS DETAILS INCLUDING PORTAL FOOTINGS.
SLAB AND FOOTINGS, SITE DRAINAGE AND CIVIL WORKS AS PER STRUC ENGINEERS DETAILS (PATCOL)
BAY 1
BAY 2
BAY 3
BAY 4
WASH BAY
REFUSE BAY
GULLY PIT
IO TO SURFACE (O/S WHEEL TRACK LINE)
PIT 1900 DEPTH REFER STRUC ENG DETAILS
Fall 1%
WATER TANK
WATER TANK
PA Door
EXIT

FLOOR AREA	
NAME	Measured Area
FOYER	22.11
MEZZANNINE	208.28
OFFICES GROUND FLR	198.34
SHED GFA	843.46
WASH BAY	207.46
	1479.65 m²

GRID: 8700 | 10300 | 10000 | 10000 | 10300 | 9800
OVERALL: 59300
WALLS: 43845
OPENINGS: 5015 | 8690 | 8310 | 1000 | 3000 | 6000 | 4000 | 6000 | 4000 | 6000 | 2310 | 9800
WALLS: 5085 MEETING ROOM | 3335 RECEPTION | 40270 SHED BAYS 1-4 | 9800 WASH BAY
OVERALL: 59300
GRID: 5100 | 3600 | 10300 | 10000 | 10000 | 10300 | 10000

ROCKHAMPTON REGIONAL COUNCIL
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Dated: 30 November 2021

2 GROUND FLOOR PLAN
Scale 1:100

REV ID	Issue Date	DESCRIPTION
A	25/08/2021	MCU ISSUE

SK Drafting building designs
P 07 4927 7444 M 0419 788 551
E scott@skdrafting.com.au
www.skdrafting.com.au
Shop 2-14 Canning Street, Rockhampton Qld 4700
BSA LIC No 1249429

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
ESSJAY CONTRACTING
AT
153 FOSTER ST GRACEMERE QLD 4702

APPROVED		JOB No.	SKD 21-010
CHECKED	-	DWG/REV.	SD/03
DRAWN	AMF		1
DESIGN	AMF		

LEGEND

AC	AIR CONDITIONER
CPD	CUPBOARD
C.TILES	CERAMIC TILES
DP	DOWNPIPE
HB	HAND BASIN
MSB	MAIN SWITCH BOARD
MV	MECHANICAL VENT
REF	REFRIDGERATOR
SA	SMOKE ALARM
SD	SLIDING GLASS DOOR
SHW	SHOWER
SSS	STAINLESS STEEL SINK
SW	SLIDING WINDOW
S/AC	SPLIT AIR CONDITIONER
TR	TOWEL RAIL
TRH	TOILER ROLL HOLDER
WC	TOILET SUITE
WM	WASHING MACHINE
VB	VANITY BASIN
VYL	VINYL FLOOR FINISH
D1	DOOR NUMBER 1
W8	WINDOW NUMBER 8

SKETCH DESIGN

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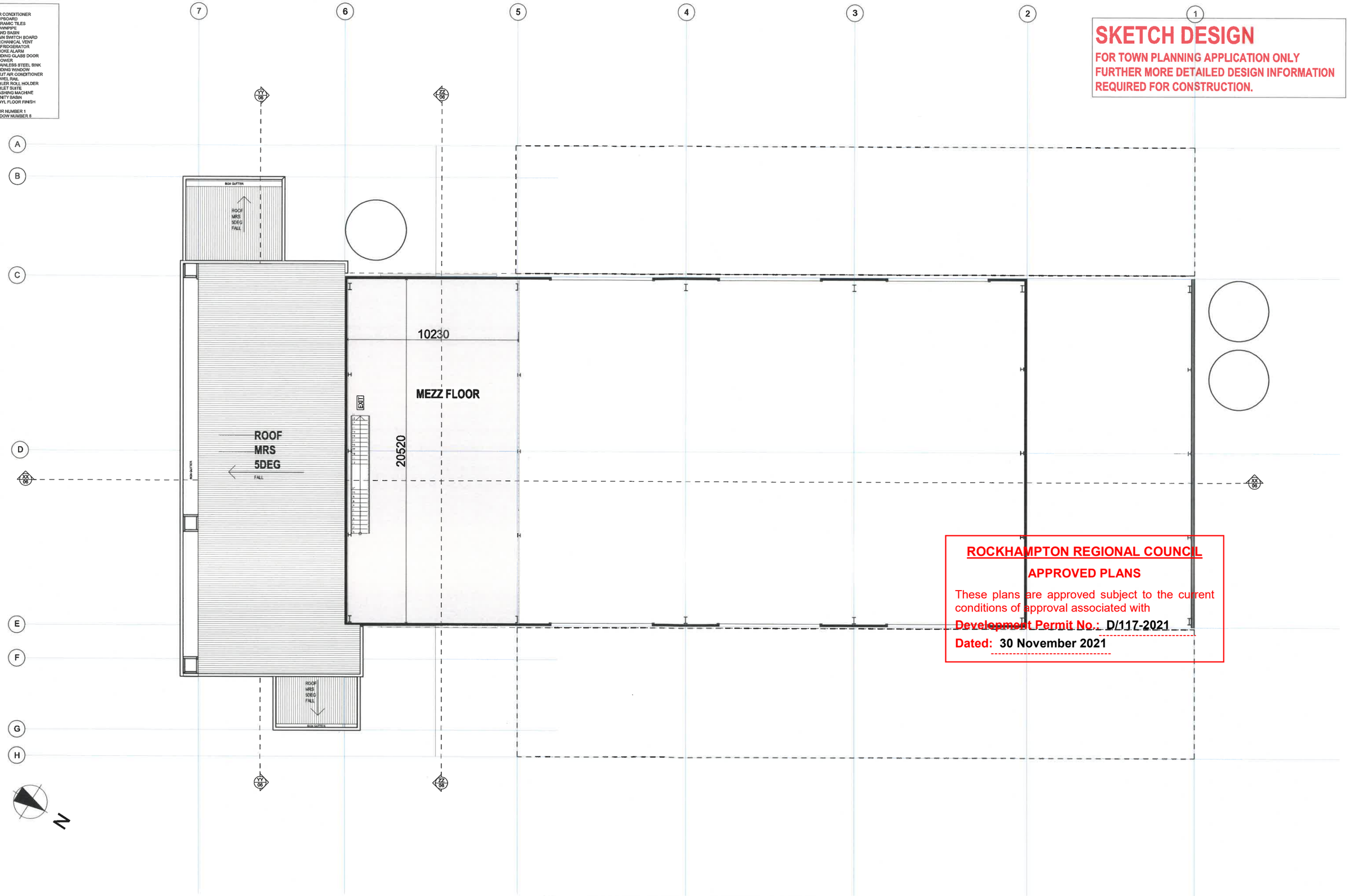

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/117-2021

Dated: 30 November 2021

3. MEZZANINE FLOOR PLAN & ROOF PLAN OFFICE
Scale 1:100

REV ID	Issue Date	DESCRIPTION
A	25/08/2021	MCU ISSUE

SK Drafting building designs
P 0427 7484 M 0419 768 831
E. austin@skdrafting.com.au
www.skdrafting.com.au
Shop 2-3 41 Canning Street, Rockhampton Qld 4700
BBA UC no 64429

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
ESSJAY CONTRACTING
AT
153 FOSTER ST GRACEMERE QLD 4702

APPROVED		JOB No.	SKD 21-010
CHECKED	-		
DRAWN	AMF	DWG/REV.	SD/04
DESIGN	AMF	1	

Legend

BC	BARGE CAPPING
DP	DOWNPIPE
DP/S	DOWNPIPE WITH SPREADER
EG	EAVES GUTTERING
HC	HIP CAPPING
MRS	METAL ROOF SHEETING
PC	PARAPET CAPPING
RC	RIDGE CAPPING
V	VALLEY FLASHING

SKETCH DESIGN

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

7 6 5 4 3 2 1

A B C D E F G H

YY 06 ZZ 06 WW 3D7

AWNING ROOF
METAL ROOF SHEETING
(REFER MANUFACTURERS DETAILS)

OFFICE ROOF
METAL ROOF SHEETING
5 DEG

SHED ROOF
METAL ROOF SHEETING
(REFER MANUFACTURERS DETAILS)

AWNING ROOF
METAL ROOF SHEETING
(REFER MANUFACTURERS DETAILS)

XX 06

N

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/117-2021

Dated: 30 November 2021

4 **ROOF PLAN**
Scale 1:100

REV ID	Issue Date	DESCRIPTION
A	25/08/2021	MCU ISSUE

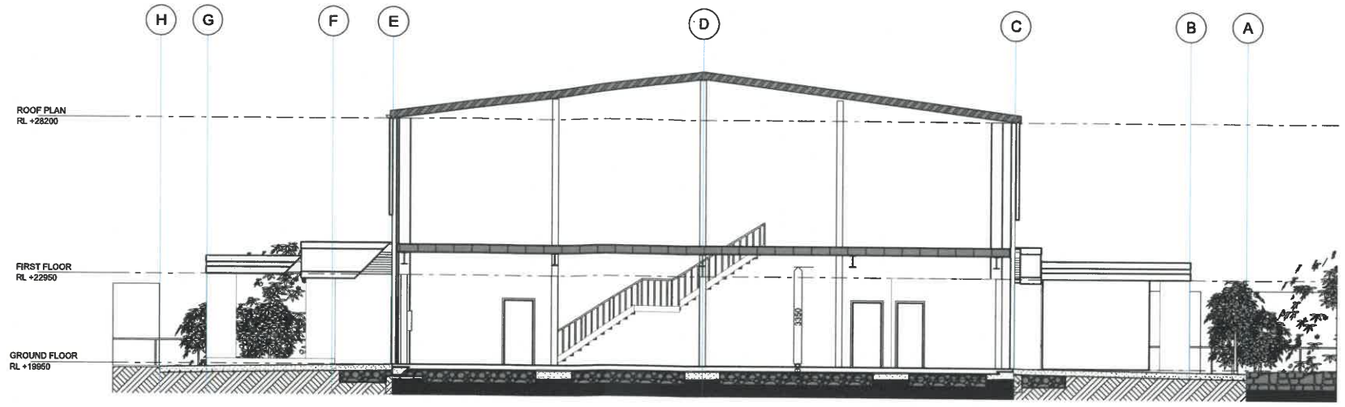
SK Drafting building designs
P 07 4927 7464 M 0419 769 081
E skdrafting@bigpond.com
www.skdrafting.com.au
Shop 2 149 Lawrence Street, Rockhampton Qld 4700
BSA LIC No 1249429

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
ESSJAY CONTRACTING
AT
153 FOSTER ST GRACEMERE QLD 4702

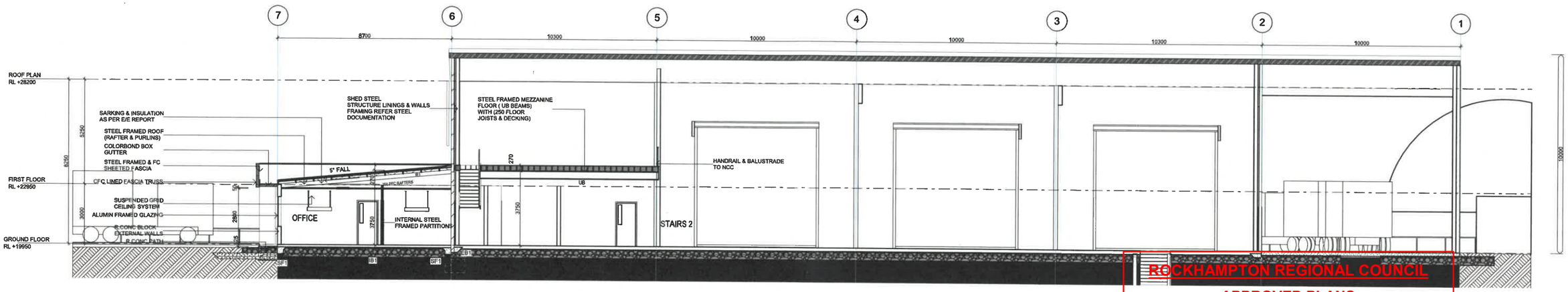
APPROVED	
CHECKED	-
DRAWN	AMF
DESIGN	AMF

JOB No. **SKD 21-010**
DWG/REV. **SD/05** 1

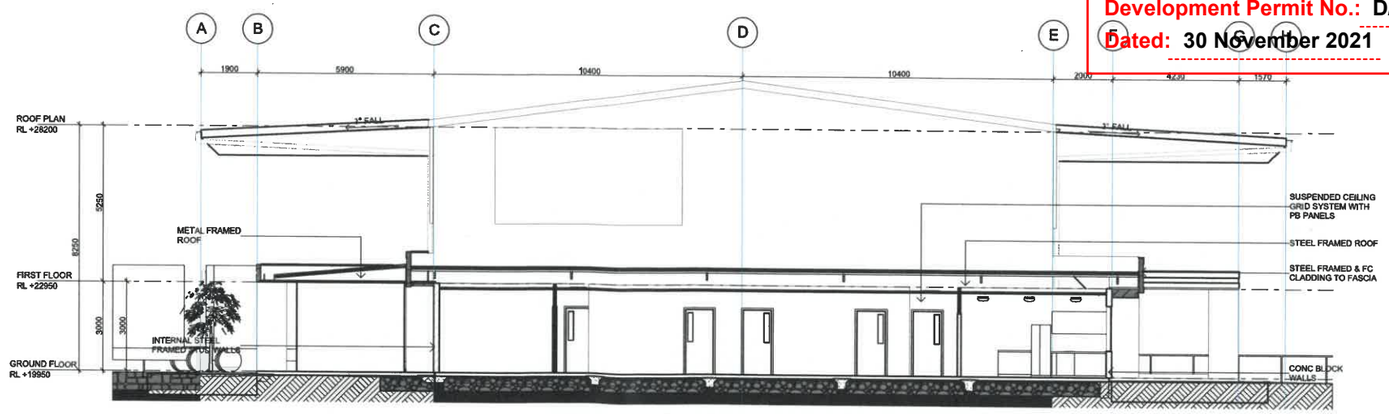
BIMCloud: smfbuildingdesign - BIMCloud as a Service/21419_153 Foster St_SD/AMF 21419_Foster St_SKD_21-010 20721



ZZ Typical Section
Scale 1:100



XX Typical Section
Scale 1:100



YY Typical Section
Scale 1:100

SKETCH DESIGN

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

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/117-2021

Dated: 30 November 2021

REV	ID	Issue Date	DESCRIPTION
A		25/06/2021	MCU ISSUE

SK Drafting building designs
P 07 4927 7444 M 0419 765 881
E. sasdrafting@bigpond.com.au
www.skdrafting.com.au
Shop 2-1 49 Canning Street, Rockhampton Qld 4700
BSA LIC No 1241429

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
ESSJAY CONTRACTING
AT
153 FOSTER ST GRACEMERE QLD 4702

APPROVED		JOB No.	SKD 21-010
CHECKED	-		
DRAWN	AMF	DWG/REV.	SD/06
DESIGN	AMF	1	

SKETCH DESIGN

FOR TOWN PLANNING APPLICATION ONLY
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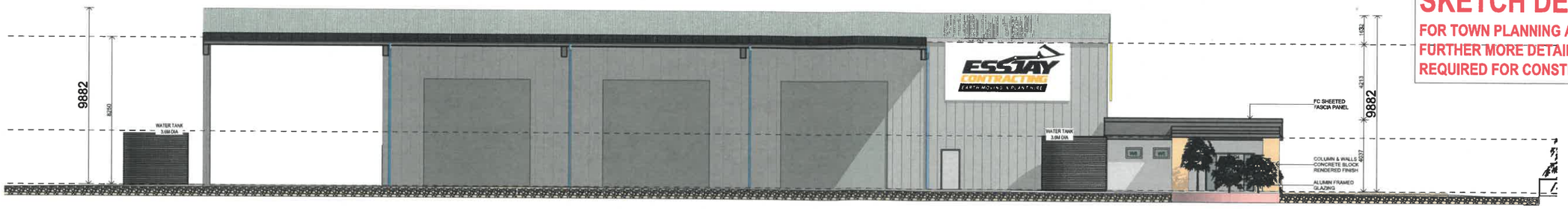
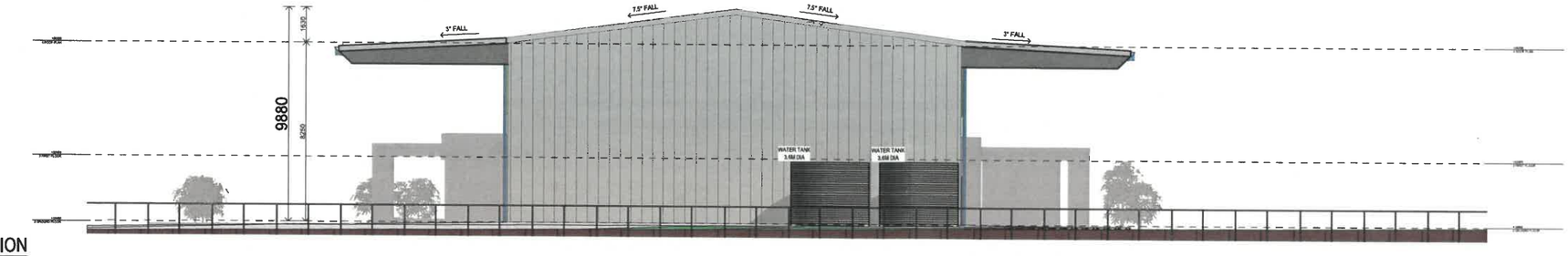
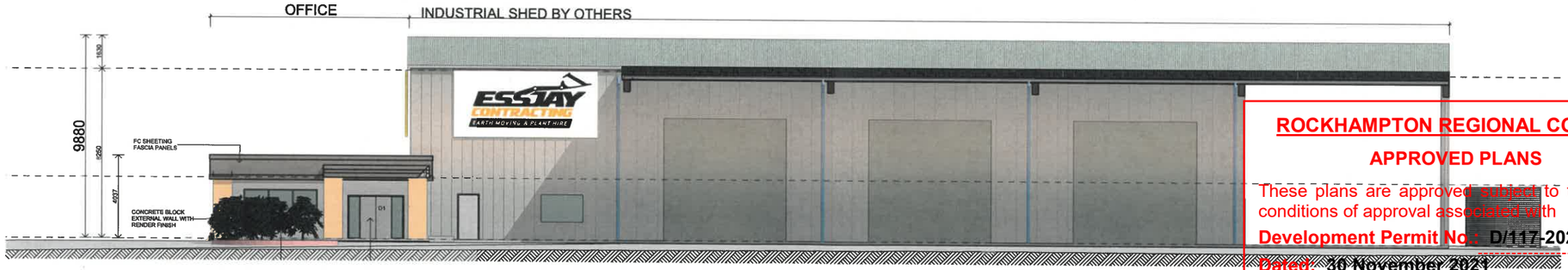


2 **SOUTH ELEVATION**
Scale 1:125



3 **WEST ELEVATION**
Scale 1:125



1 **NORTH ELEVATION**
Scale 1:125

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/117-2021
Dated: 30 November 2021

2 **EAST ELEVATION**
Scale 1:125

REV	ID	Issue Date	DESCRIPTION
A		25/08/2021	MCU ISSUE

SK Drafting building designs
P 07 4127 7444 M 0419 788 051
E sean@skdrafting.com.au
www.skdrafting.com.au
Shop 2-14A Canning Street, Rockhampton Qld 4700
BSA LIC No 0m429

PROJECT
PROPOSED INDUSTRIAL SHED
FOR
ESSJAY CONTRACTING
AT
153 FOSTER ST GRACEMERE QLD 4702

APPROVED		JOB No.	SKD 21-010
CHECKED	-		
DRAWN	AMF	DWG/REV.	SD/07
DESIGN	AMF	1	

Patcol Group Pty Ltd
ABN 98 620 245 598
www.patcol.com.au

PLANNING REPORT
INDUSTRIAL DEVELOPMENT

Project Name:	Proposed Transport Depot at 153 Foster St, Gracemere		
Project Number:	21-094		
Project Address:	153 Foster St, Gracemere		
Client:	SK Drafting		
Client Contact:	Scott Matveyeff		
Dated:	11.08.21	**Rev:**	C

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: **D/117-2021**

Dated: **30 November 2021**

Revision	Revision	Issue Date
Original Issue	A	30.07.21
Stormwater Quality Specification Added	B	11.08.21
Amended for Information Request Response	C	19.10.21

1.0 Introduction

1.1 Project Overview

Patcol Group Pty Ltd have been engaged by SK Drafting to carry out an engineering assessment on various aspects of a proposed development. The intention of this report is to form part of a proposal to be submitted to the Local Government Authority in support of the development approval.

It is proposed that the current un-developed site at 153 Foster St, Gracemere 4702 be developed for use as a transport depot facility and office complex for use by a civil construction company. To achieve this, the below construction scope has been proposed:

- Workshop shed 50m (L) x 20.78m (W) x 8.25m (H);
- Office 22.78m (L) x 8.69m (W) x 3m (H);
- 2x 4-person accommodation units;
- Approx. 5483m^2 of concrete paved hardstand area;
- 30x parking spaces;
- Miscellaneous landscaping and site works.

The scope of this report is to address the required provisions of the Rockhampton Regional Council Planning Scheme.

1.2 Methodology

The project methodology is as follows:

1. Identify catchments for the pre-development case and quantify peak discharge from the site with respect to catchment parameters, local rainfall intensities and other hydrologic properties. XP-STORM utilising the Laurenson runoff routing method was used to achieve this.
2. Identify the critical storm durations for the required AEP event.
3. Identify catchments for the post-development case and quantify peak discharge from the site similar to item 1.
4. Identify measures required to achieve no net change to stormwater quantity and quality discharged from the site as a result of the proposed development.

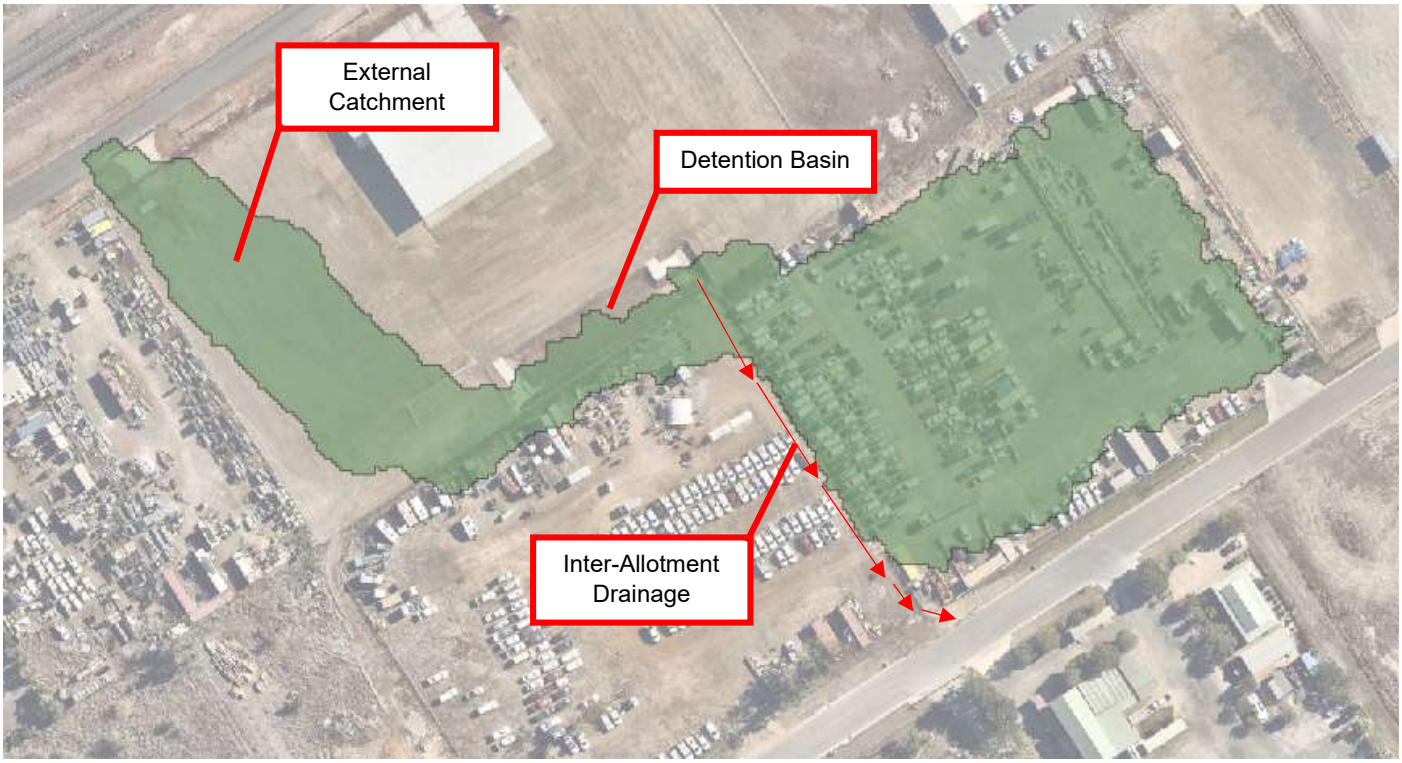
Data sources for the project include:

1. Australian Rainfall & Runoff data hub for Intensity-Frequency-Duration data and temporal patters.
2. Rockhampton Regional Council GIS data.
3. Survey completed by Vision Surveys.
4. Preliminary site layouts completed by SK Drafting.

2.0 Hydrology

2.1 External Catchments

Catchments upstream of the site have been identified using an upslope area analysis taking Council's 2015 LiDAR data as the primary input and setting a pour-point at the south-eastern corner of the site. The below image shows the resulting upstream catchment:



The upslope external catchment shown in 35-51 Somerset Dr to the north-west has been developed since this LiDAR data was taken, with site grading and drainage added including a detention basin where indicated. This basin drains via and inter-allotment drain to the RGU on Foster St south-west of the proposed site. As such, we believe this external catchment has been effectively removed from discharging to 153 Foster St and instead diverts to the road drainage network on Foster St, hence no need to accommodate discharging waters.

2.2 Pre-Development Case

The pre-development catchment presents as a large, relatively flat hardstand of well compacted gravel. It's use prior to the development associated with this report appears to have been as an industrial storage facility for cars and shipping containers as identified via historical aerial imagery. The condition and underlying assumptions made around this have been confirmed onsite.

Table 1 presents the relevant pre-development sub-catchment parameters.

Table 1 - Pre-development sub-catchment parameters

		Pre-Development Case	
		Pervious	Impervious
Area (ha)		0.607	.607
Percent Impervious (%)		0	100
Slope (%)		0.7	0.7
Manning's 'n'		0.03	0.015
Infiltration	Initial Loss (mm/hr)	0	0

	Continuing Loss (mm/hr)	1.5	0
Pre-Development Fraction Impervious		0.5	

For the pre-development case, a fraction impervious (whole site) was taken as 50% on request from Council. Values for the initial and continuing loss model applied are taken from Australian Rainfall Runoff guidelines around urban catchment hydrology. The overall peak discharges for the site are shown in Figure 1, Figure 2 and Figure 3 in the form of box-and-whisker plots of the mean peak flow for a range of storm durations for the design storm events.

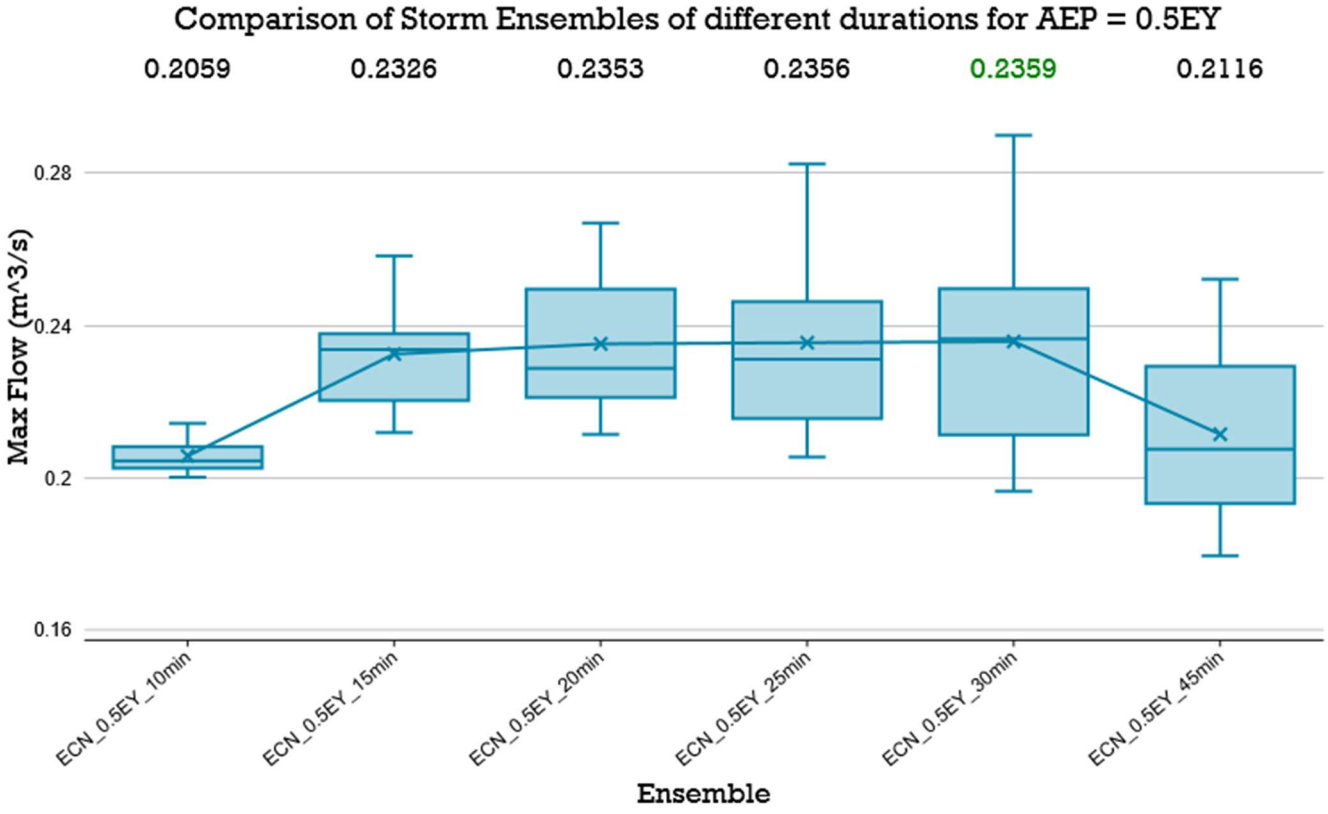


Figure 1 - Pre-development 0.5EY box-and-whisker plot

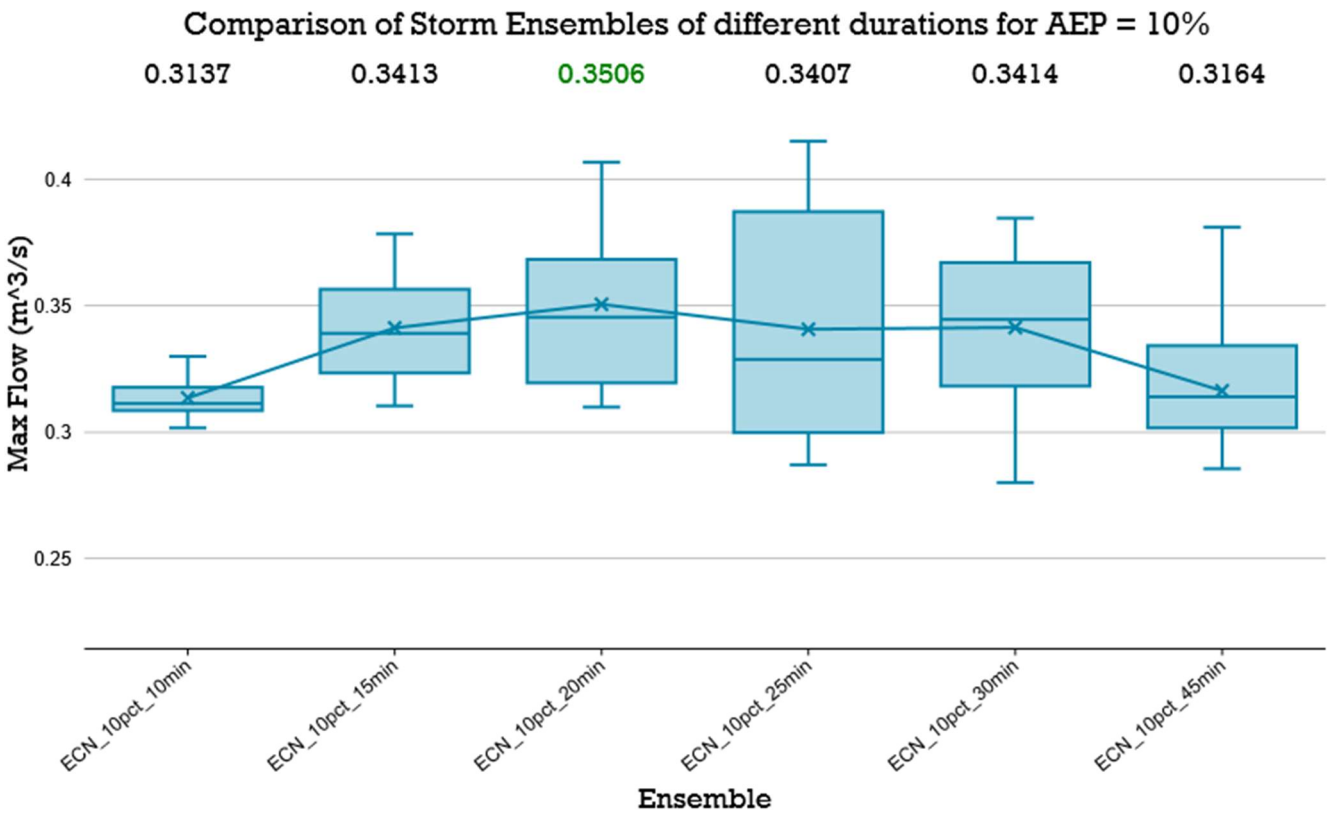


Figure 2 - Pre-development 10% AEP box-and-whisker plot

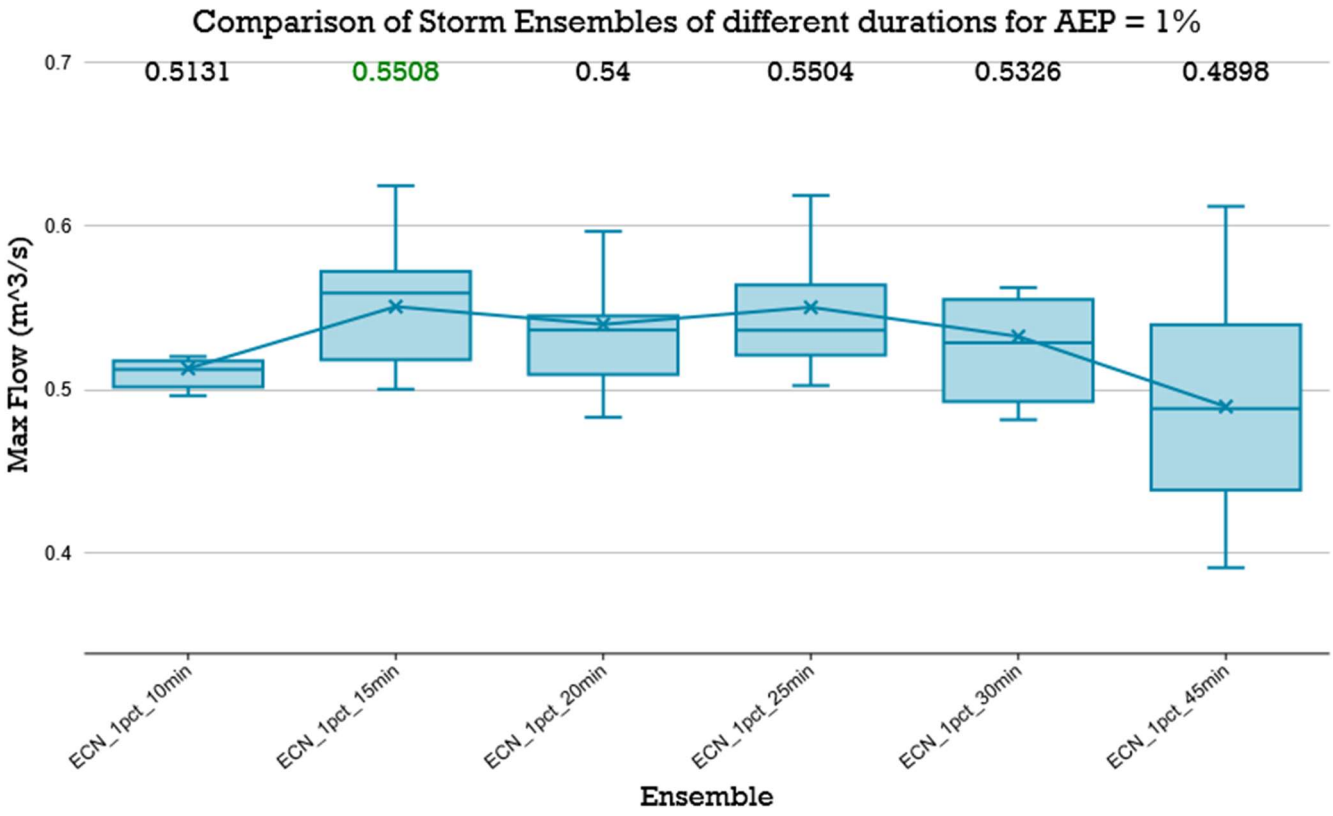


Figure 3 - Pre-development 1% AEP box-and-whisker plot

Summarising, the below Table 2 shows the peak discharges for each design storm, as well as the corresponding storm duration and design rainfall ID.

Table 2 - Pre-development peak discharges & storms for design purposes

	Pre-Development Case		
	Max Flow (m^3/s)	Storm Duration (mins)	Design Rainfall ID
0.5 EY (m^3/s)	0.2359	15	ECN_0.5EY_30min_9
10% AEP (m^3/s)	0.3506	15	ECN_10pct_20min_4
1% AEP (m^3/s)	0.5508	15	ECN_1pct_15min_9

2.3 Post-Development Case

Table 3 presents the relevant post-development sub-catchment parameters.

Table 3 - Post-development sub-catchment parameters

		Post-Development Case	
		Pervious	Impervious
Area (ha)		0.316	0.898
Percent Impervious (%)		0	100
Slope (%)		1	1
Manning's 'n'		0.03	0.015
Infiltration	Initial Loss (mm/hr)	0	0
	Continuing Loss (mm/hr)	1.5	0
Post-Development Fraction Impervious		0.74	

Figure 1, Figure 2 and Figure 3 present the box-and-whisker plots of the mean peak flow for a range of storm durations for the design storm events.

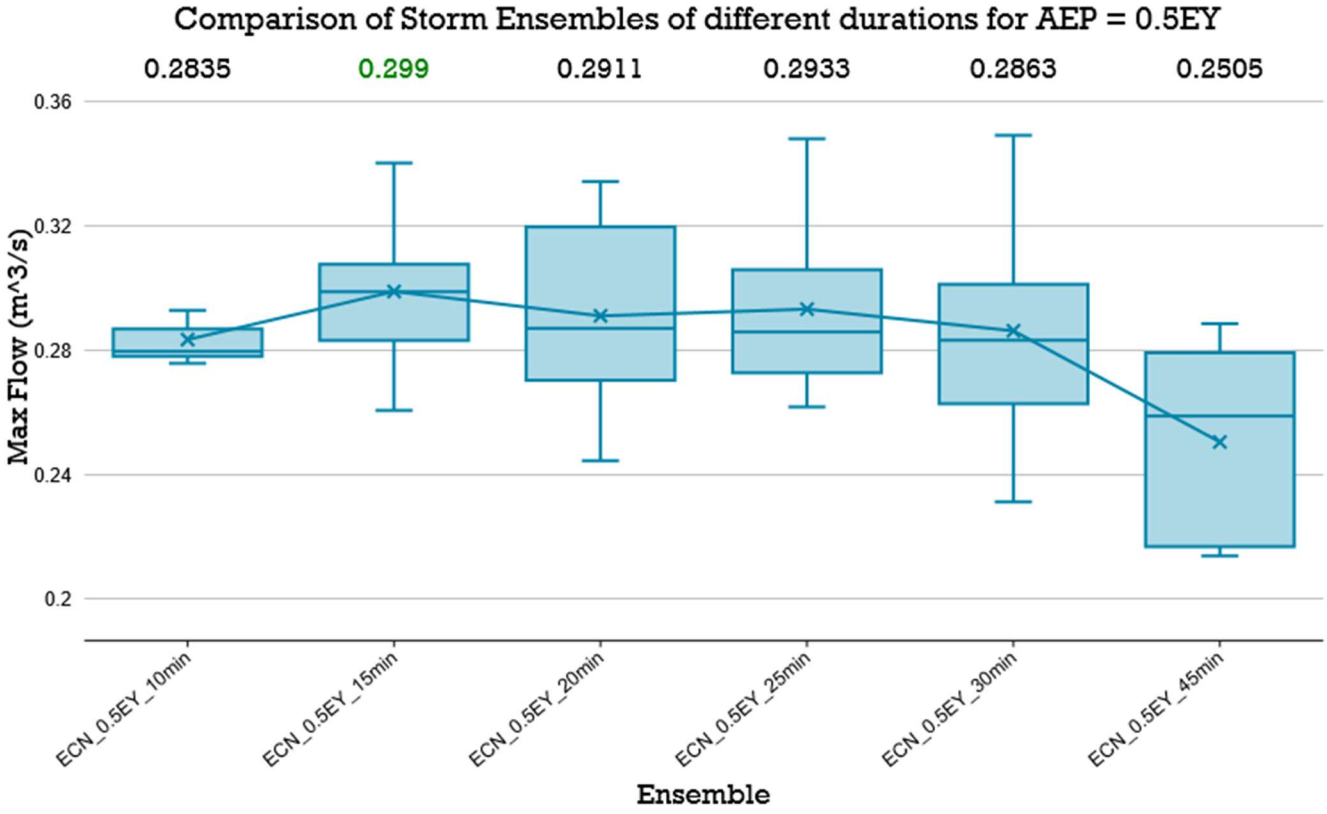


Figure 4 - Post-development 0.5EY box-and-whisker plot

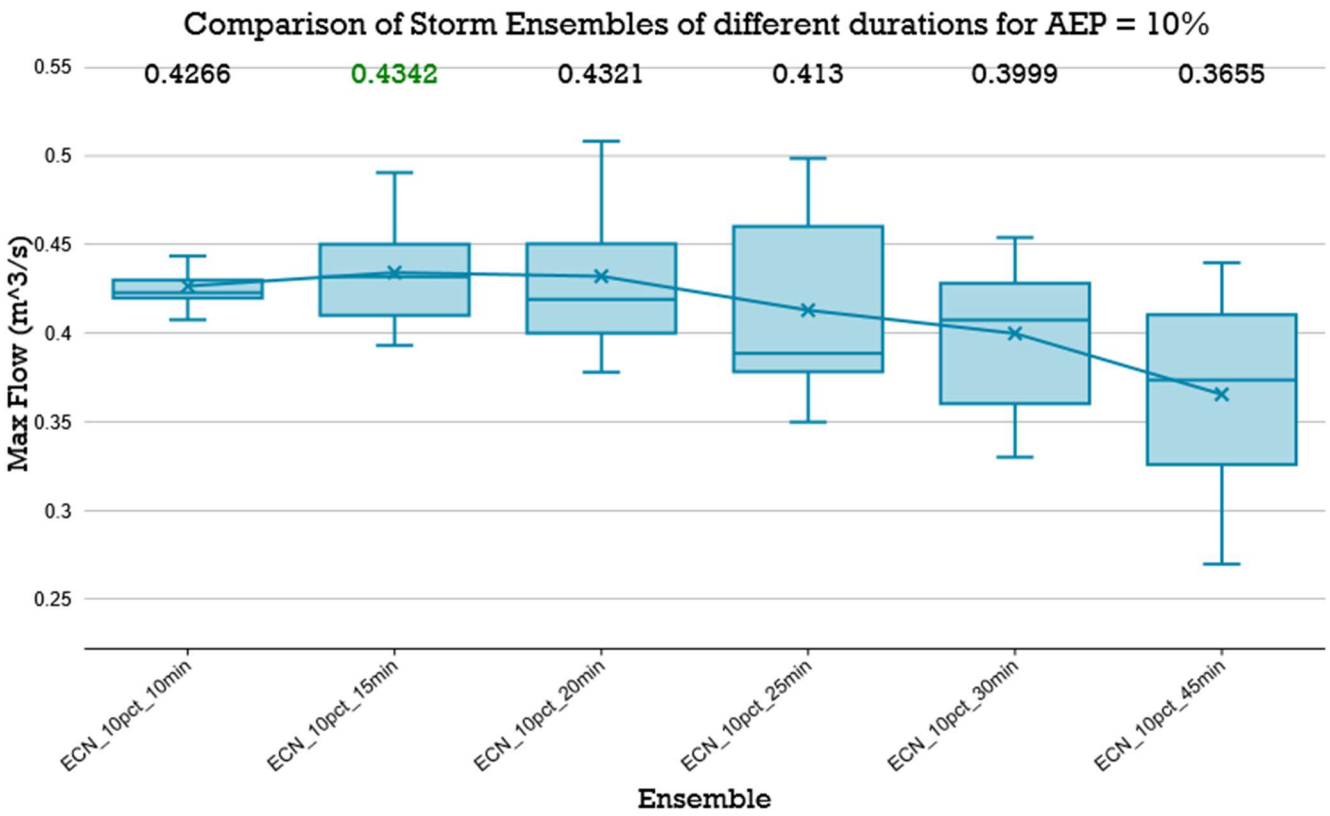


Figure 5 - Post-development 10% AEP box-and-whisker plot

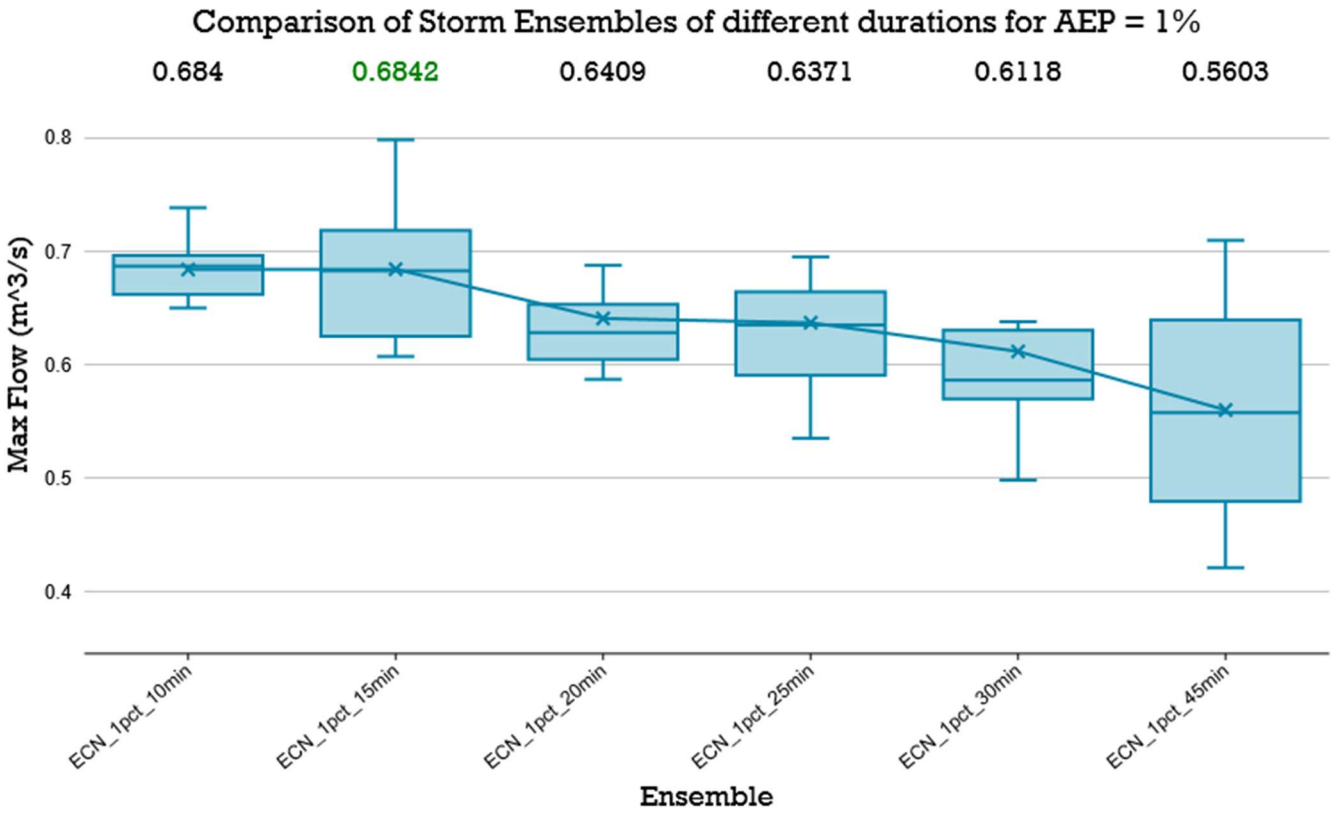


Figure 6 - Post-development 1% AEP box-and-whisker plot

Table 4 - Post-development peak discharges & storms for design purposes

	Post-Development Case		
	Max Flow (m^3/s)	Storm Duration (mins)	Design Rainfall ID
0.5 EY (m^3/s)	0.299	15	ECN_0.5EY_15min_6
10% AEP (m^3/s)	0.4342	15	ECN_10pct_15min_8
1% AEP (m^3/s)	0.6842	10	ECN_1pct_15min_9

The post-development case was assessed using realistic estimates of the impervious fraction taken from Autocad and survey data. The as shown in Table 3, it was predicted that the site slope would be slightly increased to 1% as part of the operational works design to facilitate surface water drainage. This, coupled with an overall reduction in Manning's 'n' for the site, has resulted in increases in the design flows, as presented below.

Table 5 - Comparison of pre and post development flows

	Pre-Development Max Flow (m^3/s)	Post-Development Max Flow (m^3/s)	Change (m^3/s)	Change (%)
0.5 EY (m^3/s)	0.2359	0.299	0.0631	26.75%
10% AEP (m^3/s)	0.3506	0.4342	0.0836	23.84%
1% AEP (m^3/s)	0.5508	0.6842	0.1334	24.22%

3.0 Hydraulics

3.1 Scope

The hydraulic assessment of this report has been carried out using XPSTORM (Version 2021.1) and the hydrologic inputs developed in Section 0 with the aim to demonstrate a suitable method of attenuating the peak flows produced as a result of the proposed development.

3.2 Stormwater Management Strategy

The proposed stormwater management strategy is to incorporate a 46kL surge tank in-line with a bioretention/detention basin that will take the majority of the roofwater/concrete hardstand flows. The basin will have an inlet control structure to attenuate flows, and will drain to the kerb inlet by a pipe network to be designed at Operational Works stage. The remainder of the gravelled hardstand, along with some concrete hardstand and roof areas will drain directly to the kerb inlet via the pipe network. Refer to Appendix A for the site general arrangement which shows the proposed site stormwater management strategy.

The 46kL (4.5m diameter, 3.2m usable height) surge tank was modelled with a 25mm diameter orifice at ground level. Details of the bioretention/detention basin is provided below:

Table 6 - Basin Parameters

Base Level	18.6m
Effective Crest Level	19.1m
Detention Volume	$51.65m^3$
Outlet Structure	900x900 Field Inlet 2x "letterbox" opening 750(w) x 150(h), invert at 18.9m

Figure 7 shows the mitigated flow rates from the site to the lawful point of discharge, which is at the kerb inlet on Foster St. Table 1 presents a comparison between pre-development and mitigated max flows.

Table 7 - Comparison of pre and mitigated flows

	Pre-Development Max Flow (m^3/s)	Mitigated Max Flow (m^3/s)	Change (m^3/s)	Change (%)
0.5 EY (m^3/s)	0.2359	0.164	-0.0719	-30.48
10% AEP (m^3/s)	0.3506	0.264	-0.0866	-24.70
1% AEP (m^3/s)	0.5508	0.495	-0.0558	-10.13

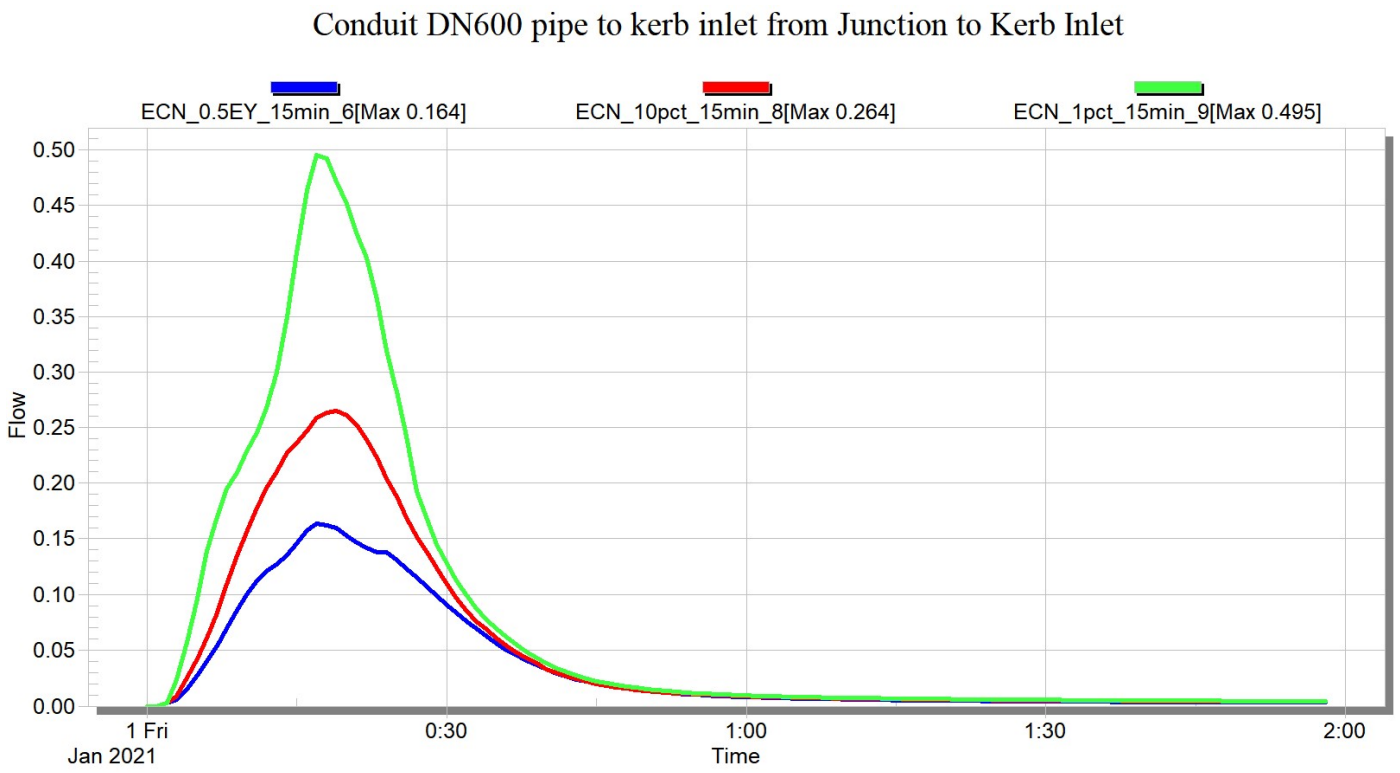


Figure 7 - Site to RRC kerb inlet discharge

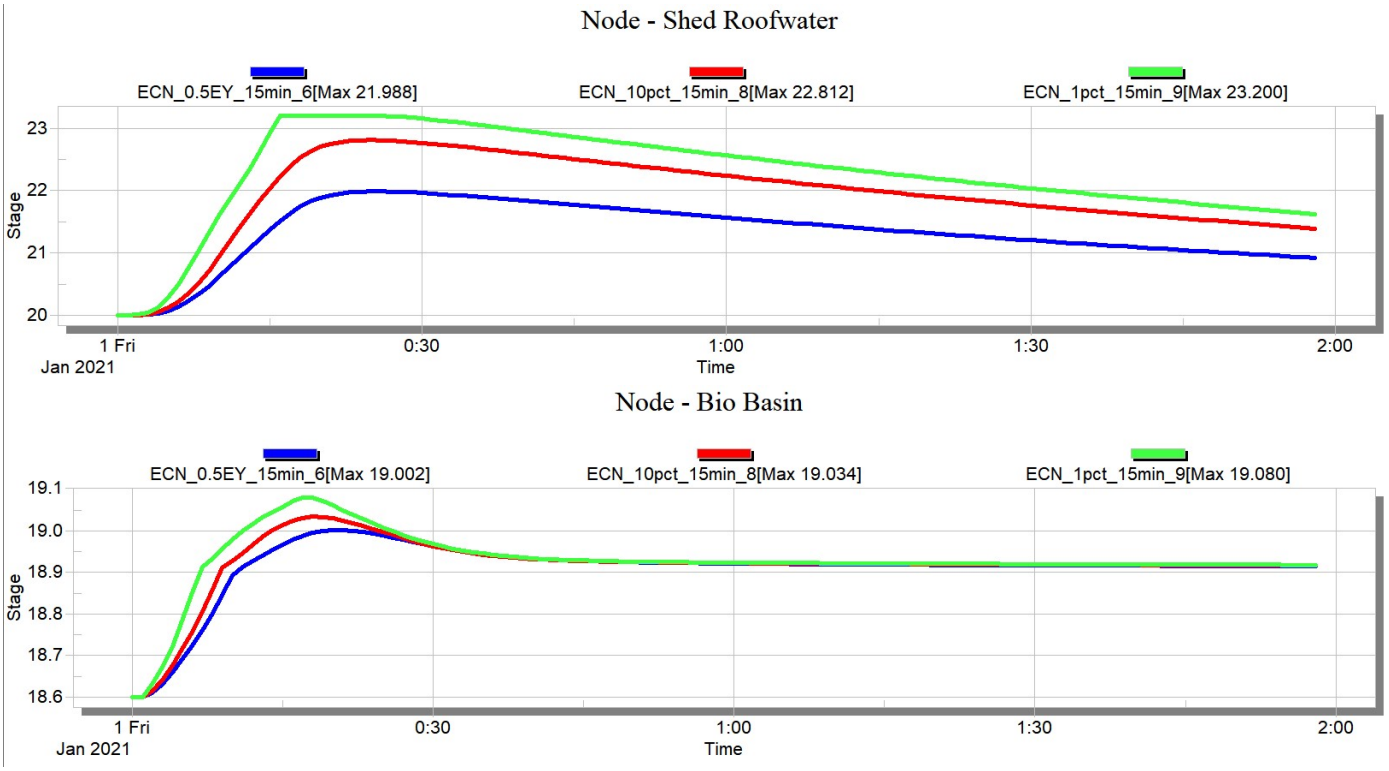


Figure 8 - Stage curves for storage nodes

Figure 8 shows the stage curves for the storage nodes.

Overall the proposed design results in no net increase in discharged flows from the site.

4.0 Stormwater Quality

4.1 Scope

The development being larger than 2500m^2 triggers the need to address the stormwater quality provisions of the State Planning Policy 2017 (SPP 2017). This section aims to address the potential for an increase in pollutant loads during operational works and for the ongoing use of the development.

4.2 During Operational Works

The main risk of increased pollutant loads during construction is likely to be from erosion and sediment loss from disturbing the site. The following are the key pollutants that must be addressed during construction:

Table 8 - Key Pollutants During Construction

Pollutant	Sources
Litter	Paper, construction packaging, food packaging, cement bags, material offcuts etc.
Sediment	Exposed soil and stockpiled soil/gravel.
Hydrocarbons	Fuel and oils.
Toxic Materials	Cement, asphaltic materials, solvents, cleaning agents etc.
Acids or Alkaline Materials	Acid sulphate soils, cement.

Erosion and sediment control devices will be the main hard-control to lower pollutant loads during construction. At operational works design stage an Erosion & Sediment Control Plan (ESCP) will be provided detailing the controls required, however the below provides high-level measures that will be implemented.

Pre-Construction:

- Site personnel are to be informed and made aware of the ESCP and it's requirements around implementation, maintenance and decommissioning;
- Sediment fences to all areas requiring bulk earthworks will be installed;
- Major flowpaths (kerb and channel, formalised drains etc.) will have erosion & sediment control devices installed upstream;
- The site access/s will have rumble pads installed to limit soil material tracked off-site by vehicles;
- Topsoil (if any) will be stripped and stockpiled to be reinstated after construction. Stockpiled topsoil will be bunded off.

During Construction:

- All bulk earthworks to be kept tidy with batters and stockpiles ironed to minimise erosion by wind and rain;
- Areas of bulk filling to be bunded off during construction;
- Erosion and sediment control devices are to be monitored and maintained for the duration of construction;
- Appropriate waste disposal facilities are to be provided onsite – e.g. skip bins.

Post-Construction:

- Areas to be revegetated to have topsoil reinstated prior to placement of turf or hydromulching;
- Sediment fencing to remain in place until revegetation has occurred.

4.3 Water Quality Objectives

The SPP 2017 provides target pollutant load reduction objectives for new development as shown below.

Table 9 - Pollutant Load Reduction Targets

	Total Suspended Solids (kg/yr)	Total Phosphorus (kg/yr)	Total Nitrogen (kg/yr)	Gross Pollutants (kg/yr)
Load Reduction Target	85%	60%	45%	90%

4.4 MUSICX Model

Per Council requirements, a MUSICX model has been developed to model the development's pollutant load generation and determine appropriate measures to effectively reduce the loads per the targets provided by the SPP 2017.

The music model has been developed in accordance with Water By Design MUSIC Modelling Guidelines 2018. All non-standard treatment nodes have been modelled using information from the specific manufacturer. All meteorologic data has been sourced from the Bureau of Meteorology for the site location, and a 10 year period from 01/01/1990 to 01/01/2000 has been modelled at a six minute timestep.

The below shows the schematic layout of the model.

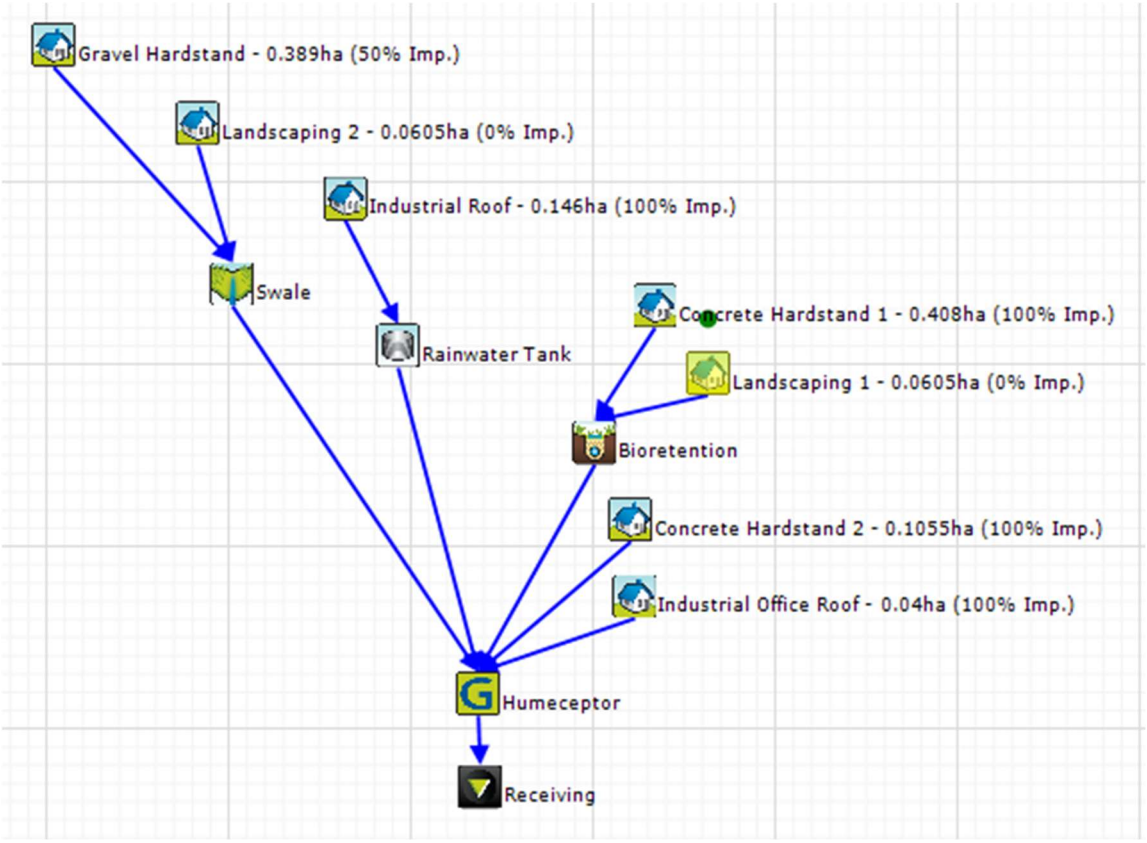


Figure 9 - MUSICX Model Treatment Train

The following assumptions have been made:

1. Rainwater re-use has been assumed to be 2.42kL/day for irrigation use only. This has been calculated for landscaping areas at the rate prescribed by the MUSIC Modelling Guidelines (730mm/yr).

4.5 MUSICX Analysis

The treatment train show has resulted in the below reductions of pollutants:

	Total Suspended Solids (kg/yr)	Total Phosphorus (kg/yr)	Total Nitrogen (kg/yr)	Gross Pollutants (kg/yr)
Load Reduction Target	85%	60%	45%	90%
Removal Efficiency at Receiving Node	90.99%	65.97%	53.72%	99.69%

As shown, the load reduction targets set out in the SPP 2017 have been successfully met.

Refer to the attached MUSICX model for all inputs and results.

5.0 Sewer Reticulation

The site is serviced by a DN150 sewer main located through the centre of the lot as shown below.

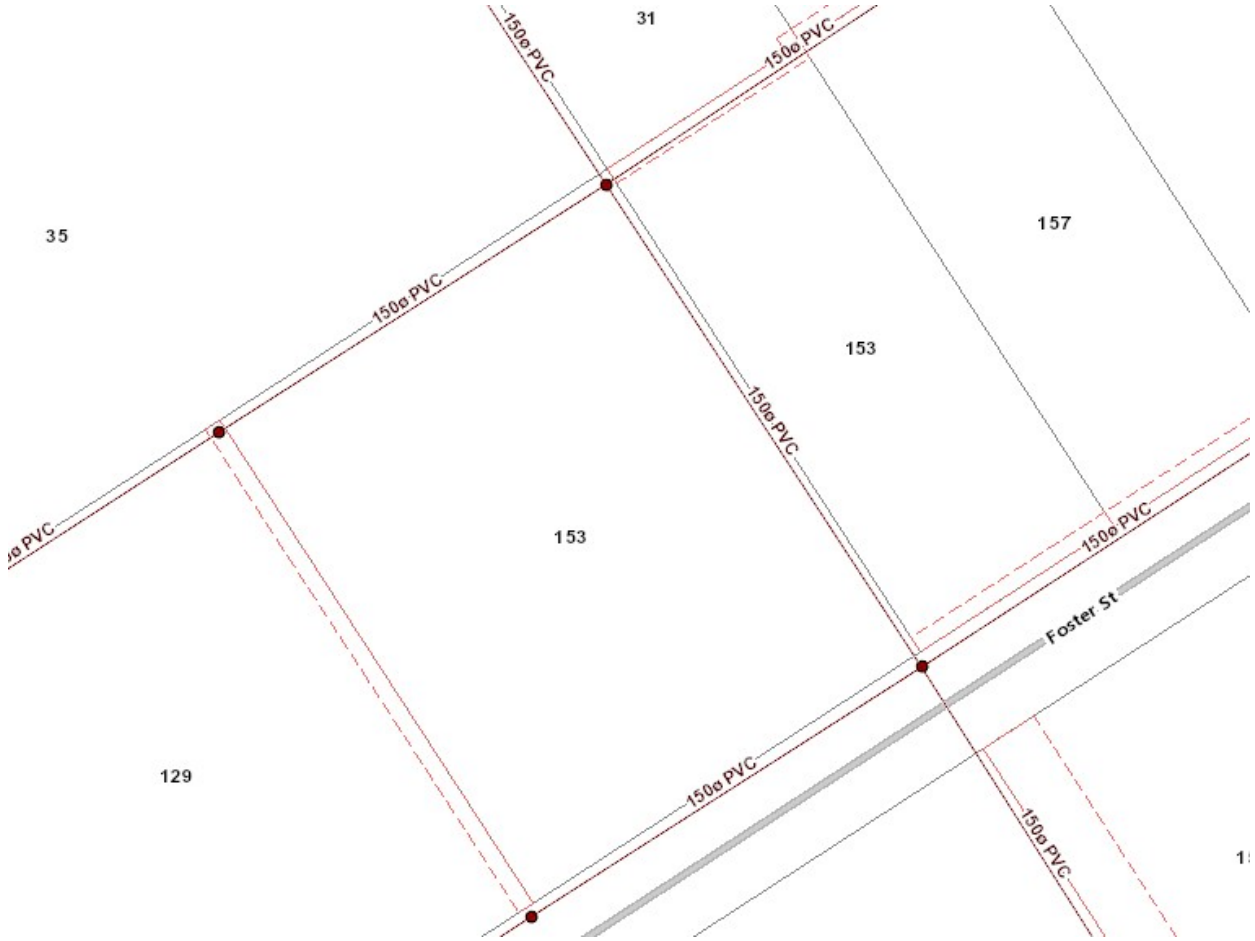


Figure 10 - Existing sewer infrastructure

An assessment of the sites current sewer infrastructure's capacity is presented below.

	Use Case	Gross Floor Area (m^2)	Equivalent Persons	ADWF (L/day)
Existing	Industrial	12071.54	56 per gross hectare	33800.31
Proposed	Industrial	11945.197	56 per gross hectare	33446.55
	Offices	198.34	1 per 90m^2 GFA	1101.89
	*Accommodation		*1 per dwelling unit	4000

* Note: equivalent persons reduced from 3.5 to 1 due to each accommodation unit being suitable for 1 person only and having no potential to be increased above this level in it's lifetime.

From the above, the proposal represents a 14.4% increase in demand from it's pre-development case. This equates to roughly 4748L/day or 0.06L/s, which from a volumetric perspective is negligible. It is seen that the existing sewer infrastructure is sufficient to service the proposed development.

6.0 Waste Management

The development aims to address the relevant provisions of the Waste Management Code in accordance with the following:

1. Waste bins will be stored in a screened area near the office/shed to allow for ease of access while maintaining visual amenity. Bins will be moved to the kerbside on collection days. When emptied they will be moved back into the screened area. The exact location and details of the screened area will be provided in the Operational Works design.
2. Waste bins will be located on the kerbside during collection days with a one metre separation.
3. Waste not collected by the council (e.g. refuse oils from vehicle maintenance activities) will be stored within the shed until collection by a specialist waste management contractor. Storage areas

will be self-bunded with spill kits located nearby, and will be in excess of 2m from any property boundary.

4. Waste storage areas will be designed for ease of maintenance by providing impervious flooring and bunding where required.
5. Waste storage areas will have dedicated water supply points to allow for cleaning, and wash down drains will be drained to the sewerage system. The layout of these areas will be provided in the Operational Works design.

It is seen that the proposal addresses the 'acceptable' and 'performance' outcomes of the code, and therefore meets the overall outcomes of the code.

7.0 Conclusion

The effects of the proposed development at 153 Foster St, Gracemere on the existing infrastructure network and surrounding lots have been demonstrated to be successfully managed through use of relevant controls.

Further enquiries should be directed to the below signed if required.

Yours sincerely,

Scott Thomas

Manager – B. Eng (Civil/Structural) RPEQ 16203

Appendix A – Drawings

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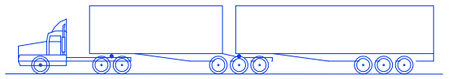
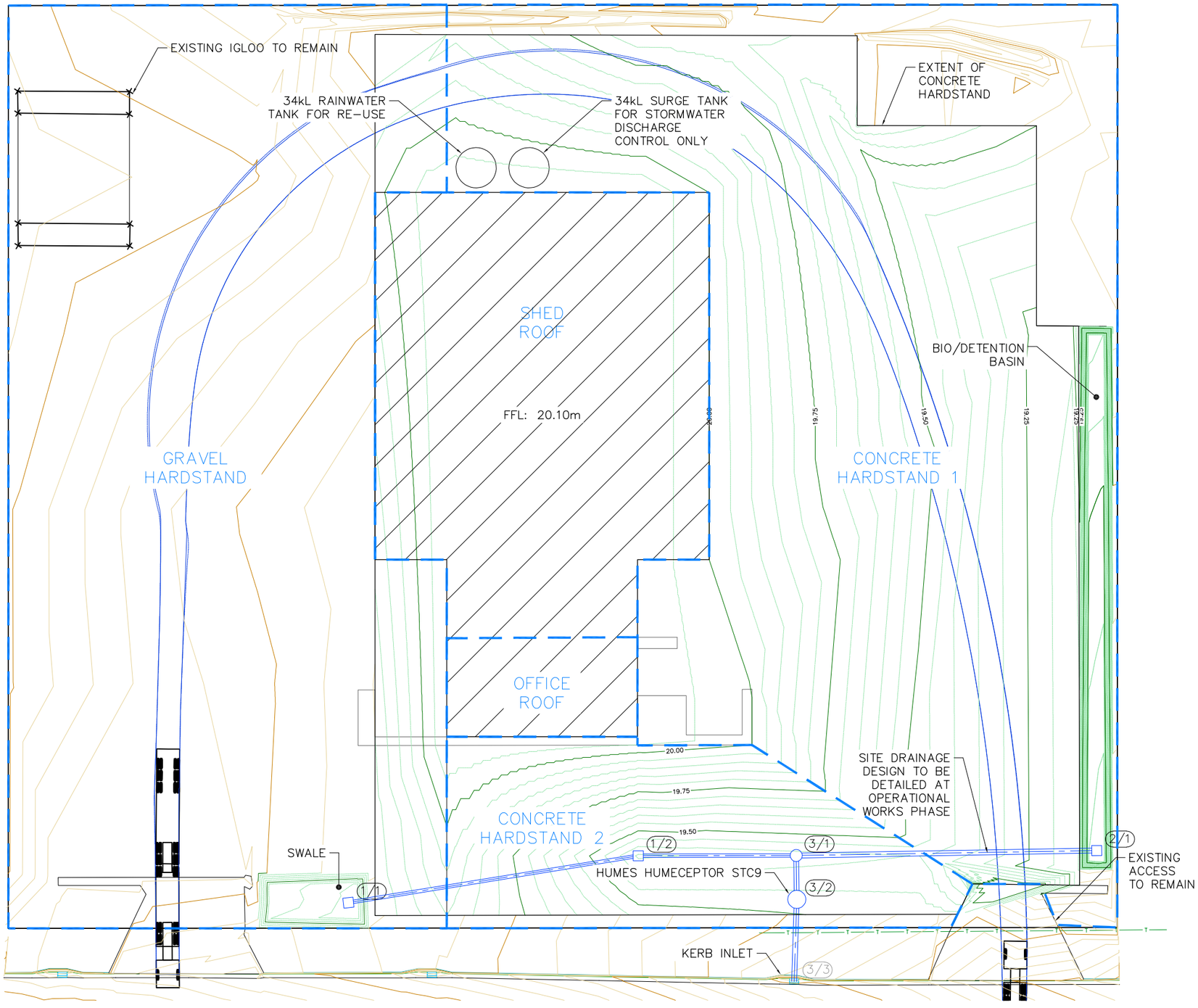


OVERALL LENGTH	26.000m
OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	4.300m
MIN BODY GROUND CLEARANCE	0.540m
TRACK WIDTH	2.500m
LOCK–TO–LOCK TIME	6.00s
WALL TO WALL TURNING RADIUS	15.000m
MAX ARTICULATION (HORIZ./VERT.)	72°/6°

B–DOUBLE VEHICLE DETAIL

SCALE 1:200



REV	DESCRIPTION	BY	CHKD.	APP'VD	DATE
C	ISSUED FOR INFORMATION	T.A.L	S.M.T.	S.M.T.	19.10.21
B	ISSUED FOR INFORMATION	T.A.L	S.M.T.	S.M.T.	14.10.21
A	ISSUED FOR INFORMATION	T.A.L	S.M.T.	S.M.T.	30.07.21

REVISION SCHEDULE

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HORIZ: GDA94 ZONE: 56 VERT: AHD

0 0.25 0.5 0.75 1.0 1:50
TYPICAL SECTION

SCALES m. FULL SIZE A1

REGISTERED PROFESSIONAL ENGINEER QUEENSLAND

RPEQ NO: 16203

SIGNATURE: .....

DATE:

DRAWN	T.A.L	26.07.21
DESIGNED	T.A.L	26.07.21
CHECKED	S.M.T.	26.07.21
APPROVED	S.M.T.	26.07.21

NOT FOR CONSTRUCTION

PATCOL GROUP

info@patcol.com.au : www.patcol.com.au

ESSJAY CONTRACTING (SK DRAFTING)
INDUSTRIAL SHED AT 153 FOSTER ST, GRACEMERE
STORMWATER MANAGEMENT & SITE ACCESS PLAN

DRAWING No. 21–094/SK01

REV C