ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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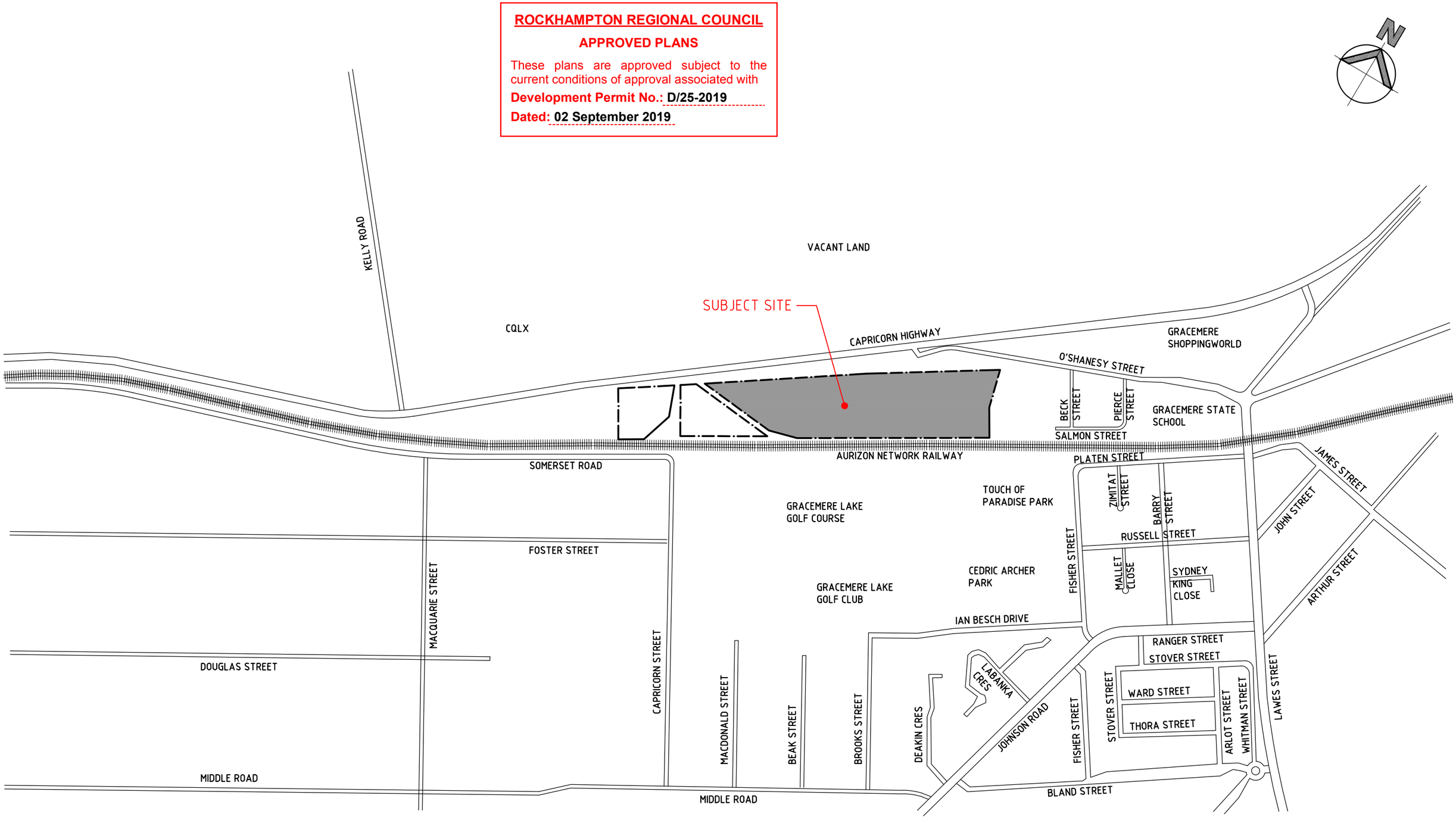
Dated: 02 September 2019



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REV	DATE	BY	DESCRIPTION	CHK
A	15.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	
C	22.05.19	DGC	SUBJECT SITE EXTENT REVISED	

PROJECT DETAILS

PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE

SITE LOCALITY PLAN

STATUS

DA ISSUE

DRAWN	APPROVED
DGC	L.M
DATE CREATED	**A1 SCALE** / **A3 SCALE**
15.02.19	NTS

DRAWING NO	REV
18294-D01	C

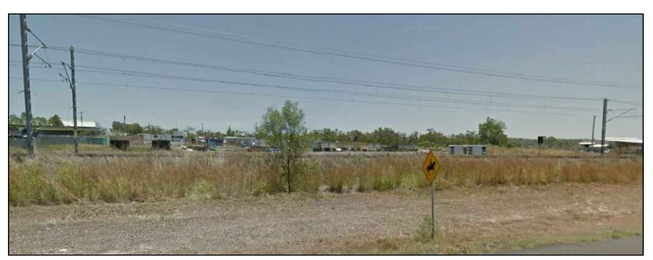
VIEW 'A'

VIEW 'B'

VIEW 'C'

VIEW 'D'

VIEW 'E'



VIEW 'F'

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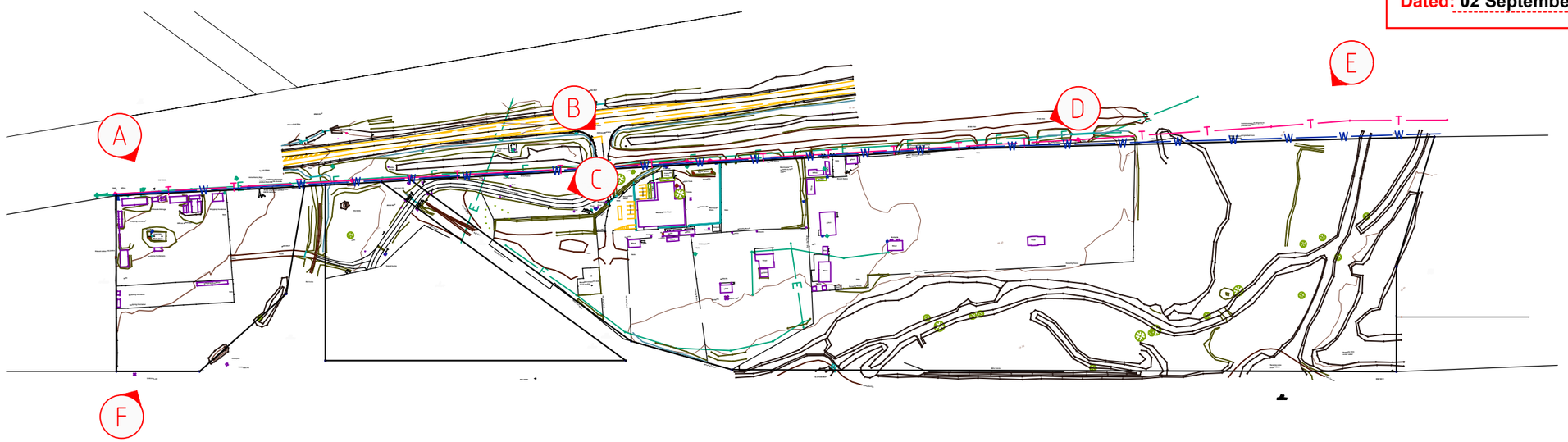

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REV	DATE	BY	DESCRIPTION	CHK
A	18.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
EXISTING SITE VIEWS

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR

DATE CREATED	A1 SCALE	A3 SCALE
18.02.19		NTS

DRAWING NO	REV
18294-D02	B

ROCKHAMPTON REGIONAL COUNCIL

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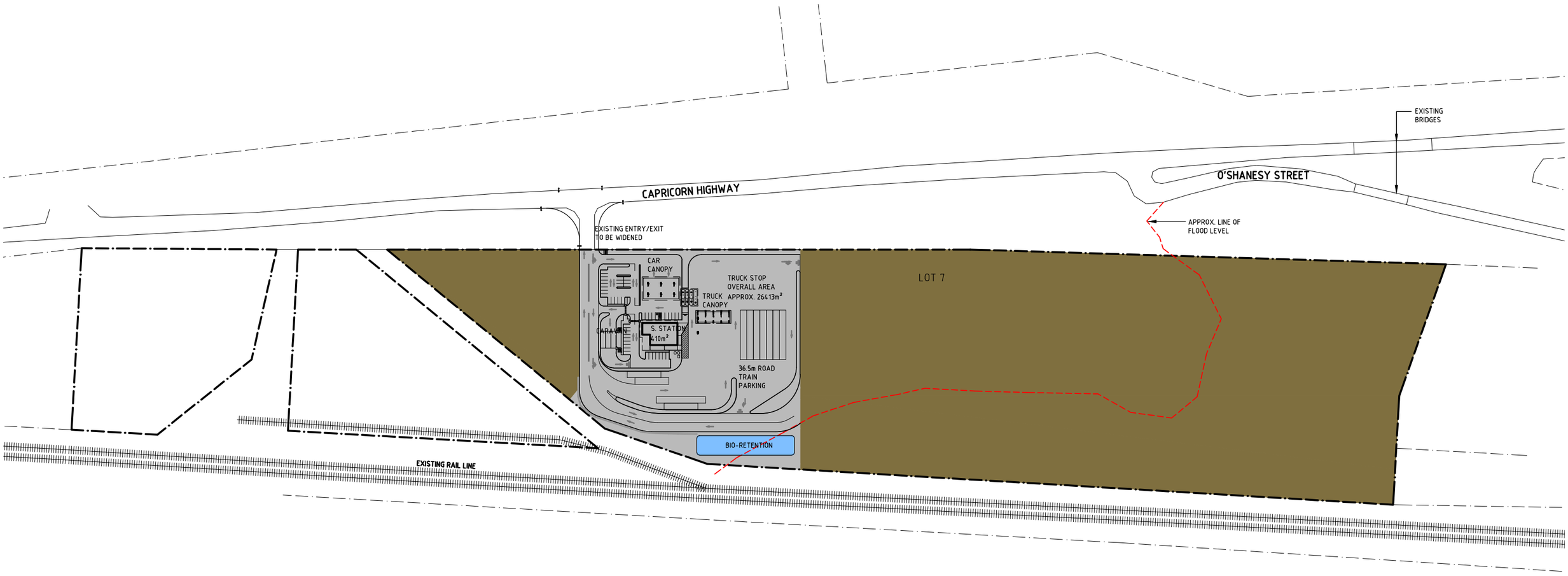
NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.
2. 26m B-DOUBLE PATH SHOWN FOR REFUELLING.

RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119500m²



50 25 0 25 50 75 100 150

Millimetres

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REV	DATE	BY	DESCRIPTION	CHK
A	18.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	
C	18.06.19	DGC	REMOVE REF. TO LOT 5 & 8 & FUTURE ACCESS	

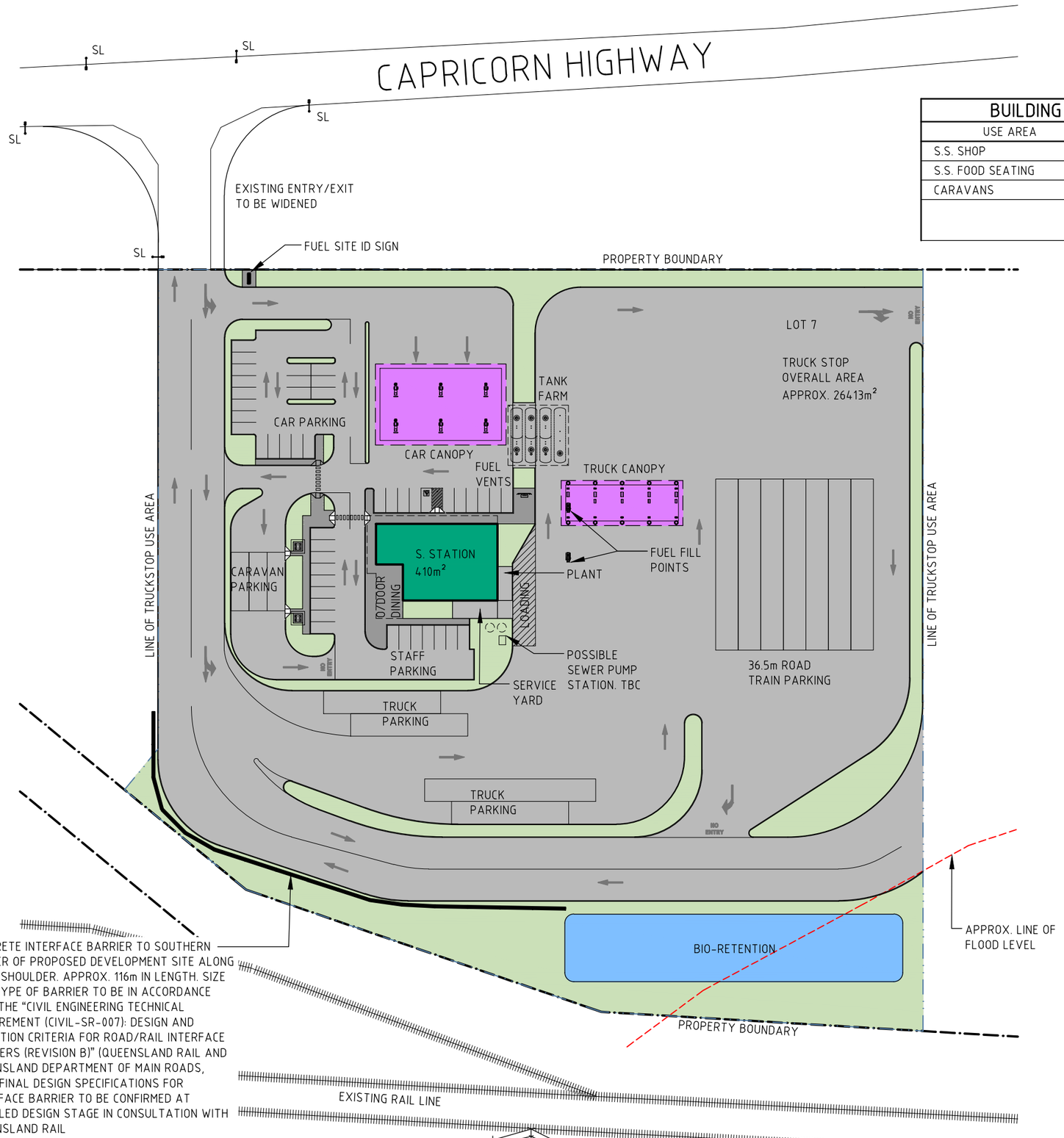
PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
PROPOSED OVERALL SITE PLAN

STATUS
DA ISSUE

DRAWN	APPROVED	
DGC	L.M	
DATE CREATED	A1 SCALE	A3 SCALE
18.02.19		1:3000

DRAWING NO	REV
18294-D03	C



RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON
REGIONAL COUNCIL
TOTAL AREA: 119500m²

BUILDING GFA & CAR PARKING SCHEDULE			
USE AREA	GFA	PARKING RATE	QTY
S.S. SHOP	335m²	1/25 sqm GFA	13.4 CARS
S.S. FOOD SEATING	147m²	1/15 sqm GFA	9.8 CARS
CARAVANS			3 CARS
		PROVIDED CARS & CARAVANS	49 CARS

TRUCK PARKING SCHEDULE	
USE AREA	QTY
ROAD TRAIN 36.5m	8 TRUCKS
B-DOUBLE 26m	3 TRUCKS
	11 TRUCKS

LEGEND:

SL - PROPOSED STREET LIGHTS TO ILLUMINATE MODIFIED ENTRY/EXIT CROSSOVER. TO BE CONFIRMED WITH RELEVANT AUTHORITIES.

NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.
2. SITE FEATURES ARE APPROXIMATE ONLY & SUBJECT TO CHANGE BASED ON DETAIL SITE DRAWINGS.
3. LINEMARKING SHOWN INDICATIVE ONLY - SUBJECT TO CHANGE AT DETAIL DESIGN BY TRAFFIC ENGINEER.
4. CARPARKING & ROAD AISLES TO BE IN ACCORDANCE WITH AS2890.1 & 2890.6.
5. STANDARD PARKING BAYS PROVIDED AT 5.4m x 2.6m.
6. DISABLED PARKING BAYS PROVIDED AT 5.4m x 2.4m WITH 5.4m x 2.4m SHARED ZONE ADJACENT.
7. ROADWORKS EXTERNAL TO SITE TO BE DESIGNED BY OTHERS AND DOES NOT FORM PART OF THIS APPROVAL.

SITE COVERAGE		
DEFINED EXTENT	AREA	%
SERVICE STATION TENANCY	410m²	1.5%
OUTDOOR DINING	72m²	.3%
CAR CANOPY	522m²	2.0%
TRUCK CANOPY	270m²	1.0%
LANDSCAPING	4397m²	16.7%
BIO-RETENTION	1120m²	4.2%
SERVICE YARD	40m²	0.2%
PLANT YARD	24m²	0.1%
PATHWAYS	351m²	1.3%
PAVEMENT (EXCLUDING CANOPY)	19207m²	72.7%
TOTAL TRUCKSTOP AREA	26413m²	100%

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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10 0 10 20 30 40 50m
Metres

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A	18.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	
C	18.06.19	DGC	FUTURE ACCESS REMOVED	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
PART PROPOSED
SITE PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	L.M
DATE CREATED	A1 SCALE / A3 SCALE
18.02.19	1:1000
DRAWING NO	REV
18294-D04	C

2000
27000
2000
9000
6000
2000
17000
3975
6000
11025
9950

BIN
BIN
BIN
BIN
ENTRY
ENTRY
OIL CAGE
ICE BOX
LPG BOTTLE CAGE

1 D06
2 D06
3 D07
4 D07

INTERNAL DINING AREA
54m² APPROXIMATE

PUBLIC AMENITIES
39m² APPROXIMATE

SALES AREA
127m² APPROXIMATE

PUBLIC EXTERNAL DINING AREA
36m² APPROX.

TRUCKERS AMENITIES
18m² APPROXIMATE

TRUCKERS LOUNGE
21m² APPROXIMATE

CASHIER/BACK OF HOUSE
151m² APPROXIMATE

TRUCKERS EXTERNAL DINING AREA
36m² APPROXIMATE

SERVICE YARD / BIN STORE
40m² APPROXIMATE

MECH PLANT ON GROUND
22m² APPROXIMATE

RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119,500m²

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
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REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	
C	21.06.19	SEL	LOT DETAILS UPDATE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
PROPOSED BUILDING FLOOR PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
SLM	LMG
DATE CREATED	A1 SCALE / A3 SCALE
28.02.19	1 : 100
DRAWING NO	REV
18294 D05	C

21/06/2019 2:02:15 PM

ROCKHAMPTON REGIONAL COUNCIL

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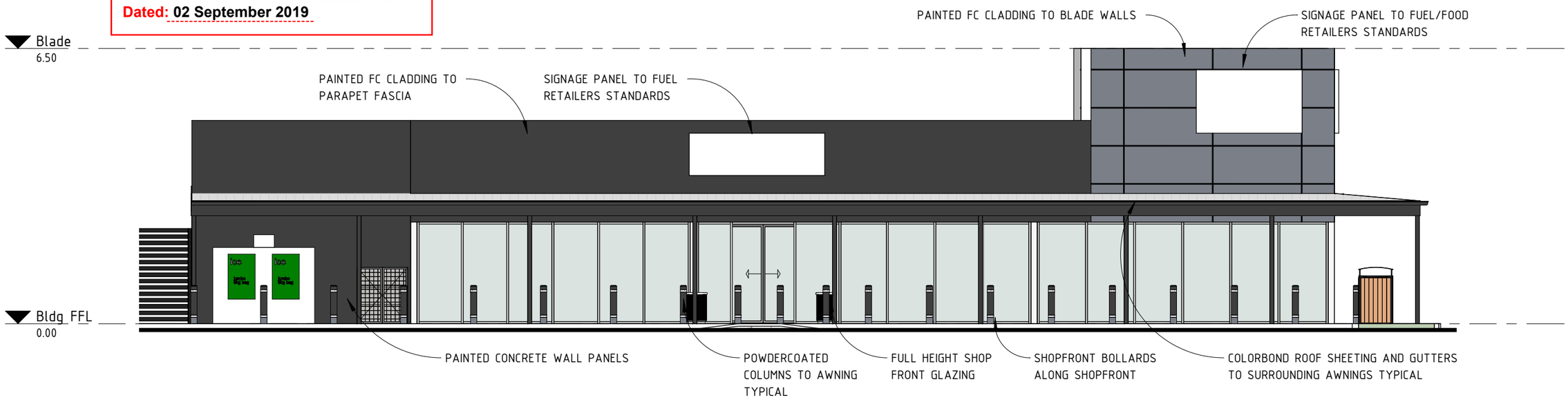
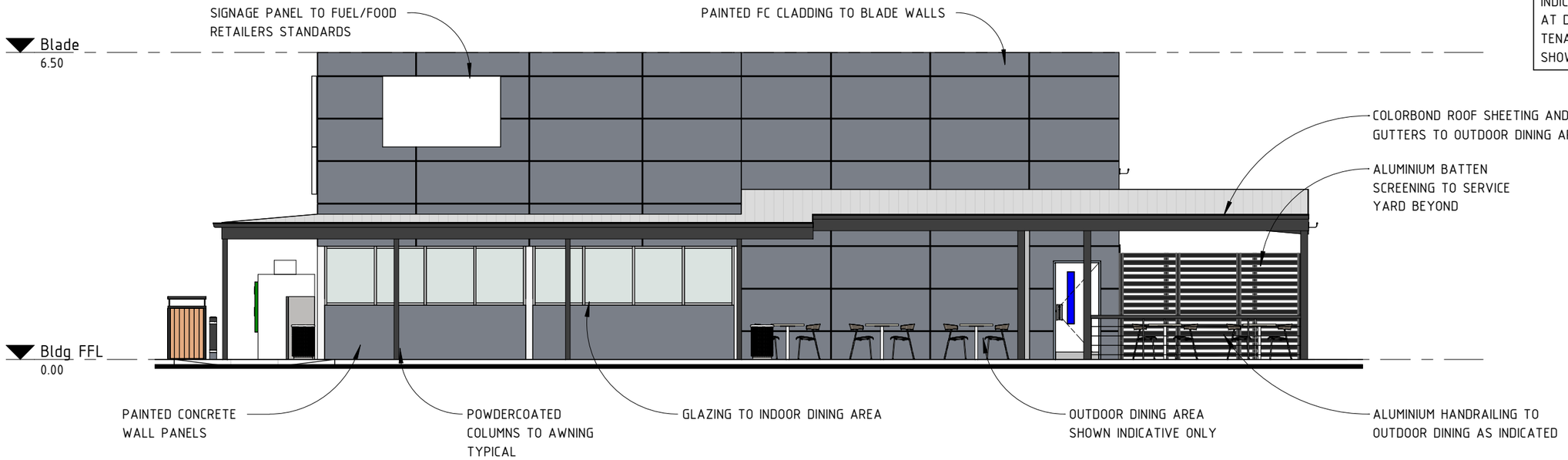
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119,500m²



1 / D05 NORTH WEST ELEVATION
1 : 100



2 / D05 SOUTH WEST ELEVATION
1 : 100

NOTE:
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REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	
C	21.06.19	SEL	LOT DETAILS UPDATE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT
for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
BUILDING ELEVATIONS SHEET 1

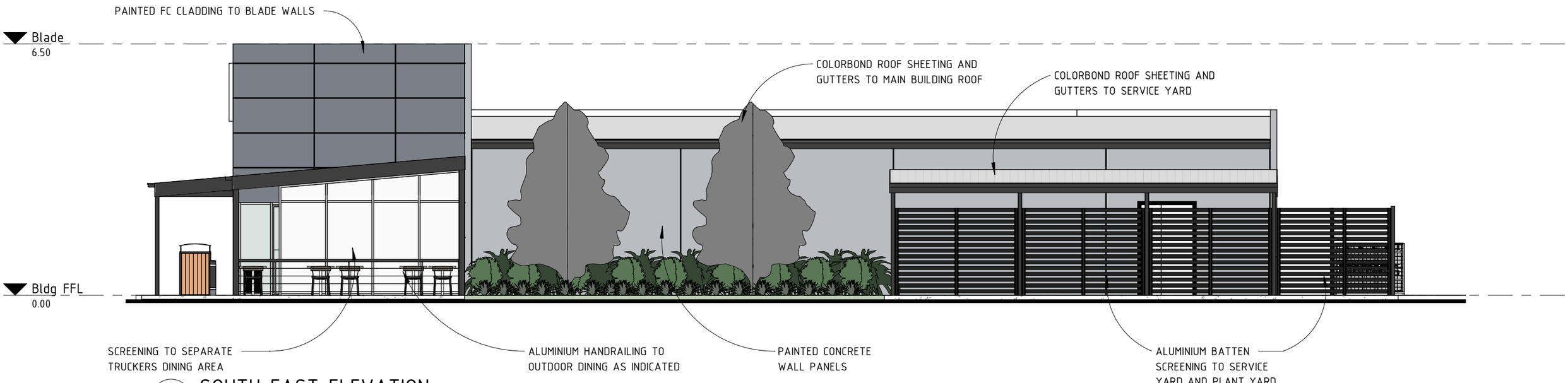
STATUS
DA ISSUE

DRAWN	APPROVED
DGC	LMG
DATE CREATED	A1 SCALE / A3 SCALE
00.00.16	1 : 100

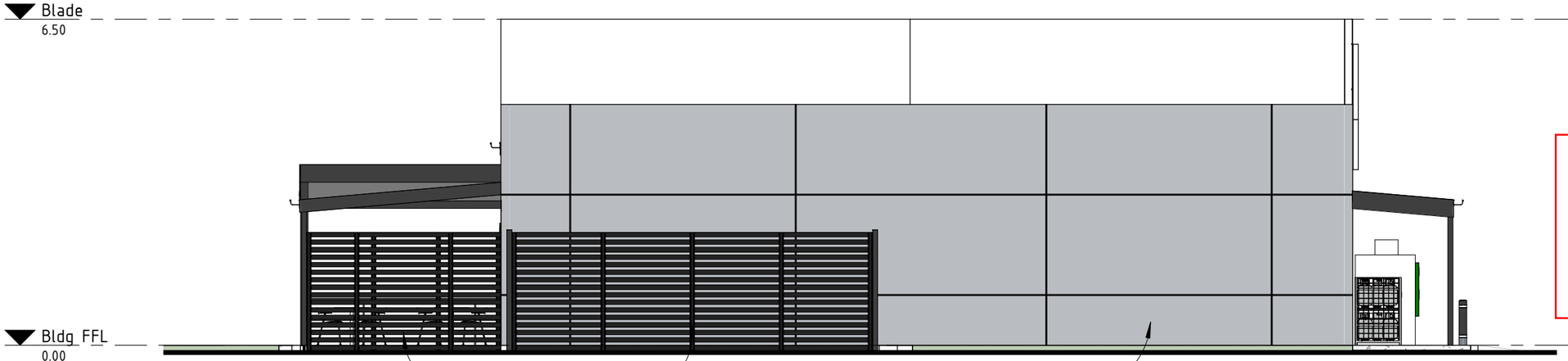
DRAWING NO 18294 D06 REV C

21/06/2019 2:02:19 PM

RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119,500m²



4 / D05 SOUTH EAST ELEVATION
1 : 100



3 / D05 NORTH EAST ELEVATION
1 : 100

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REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	
C	21.06.19	SEL	LOT DETAILS UPDATE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT
for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

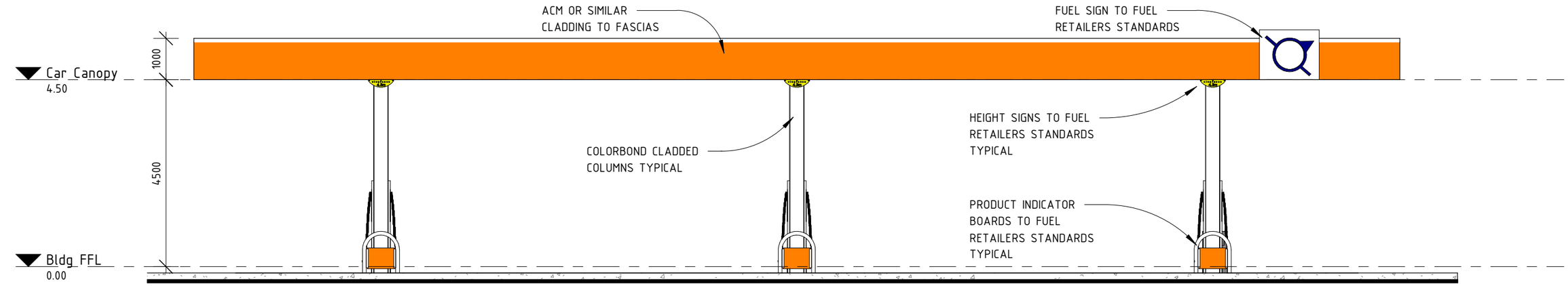
DRAWING TITLE
BUILDING ELEVATIONS SHEET 2

STATUS
DA ISSUE

DRAWN	APPROVED	
DGC	LMG	
DATE CREATED	A1 SCALE	A3 SCALE
28/02/19		1 : 100

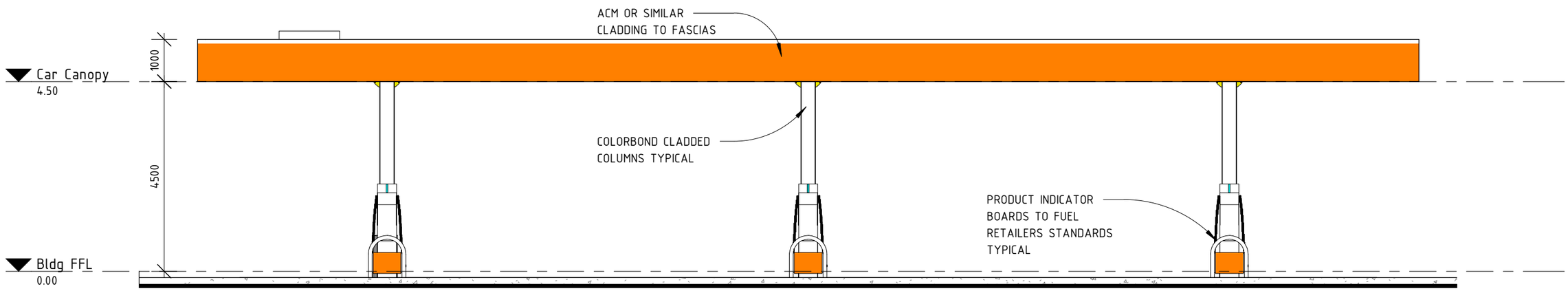
DRAWING NO: 18294 D07
REV: C

21/06/2019 2:02:28 PM



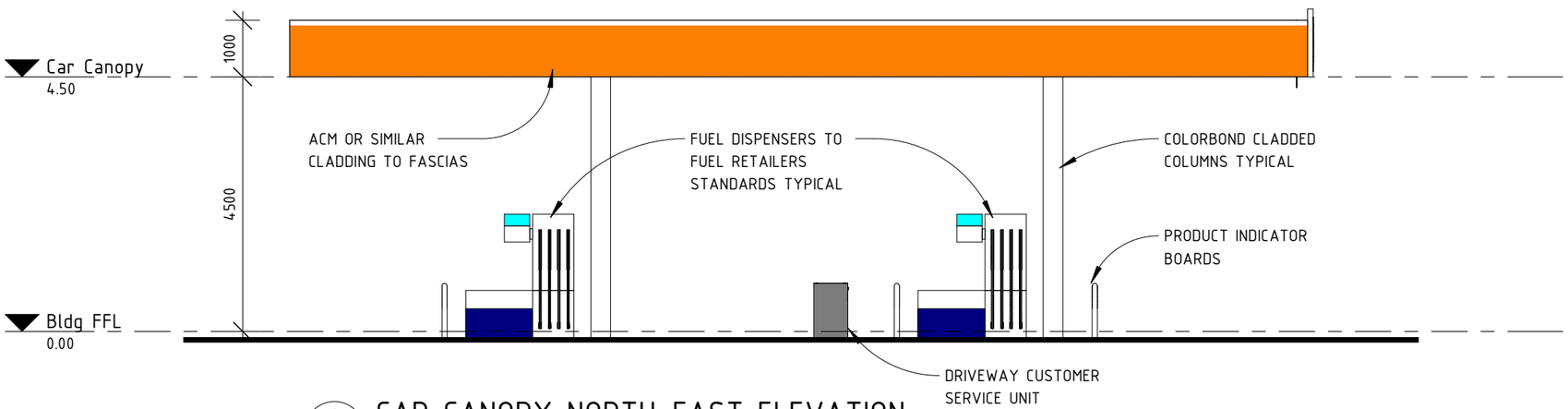
11 CAR CANOPY NORTH-WEST ELEVATION

1 : 100



3 CAR CANOPY SOUTH-EAST ELEVATION

1 : 100



1 CAR CANOPY NORTH-EAST ELEVATION

1 : 100

CAR CANOPY SOUTH-WEST ELEVATION MIRRORED

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PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

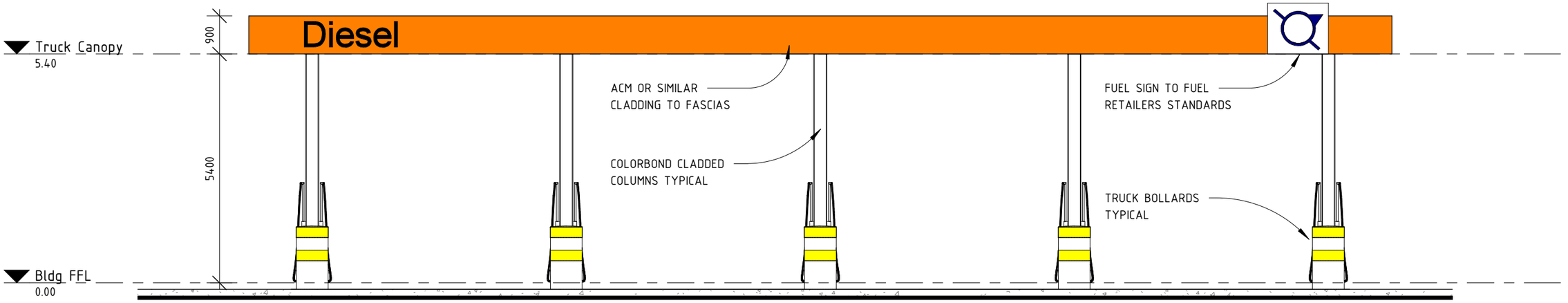
DRAWING TITLE
CAR CANOPY ELEVATIONS

STATUS
DA ISSUE

DRAWN	APPROVED	
	JR	
DATE CREATED	A1 SCALE	A3 SCALE
28.02.19		1 : 100

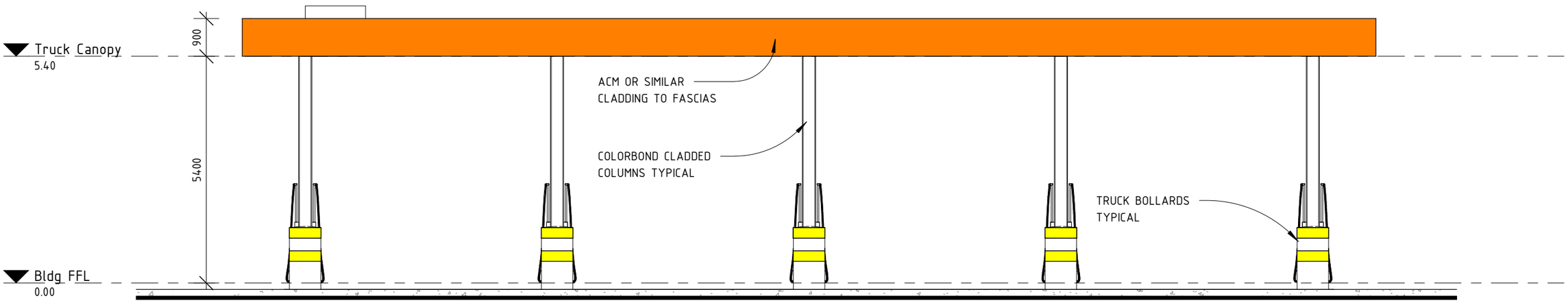
DRAWING NO		REV
18294	D08	B

8/03/2019 12:56:59 PM



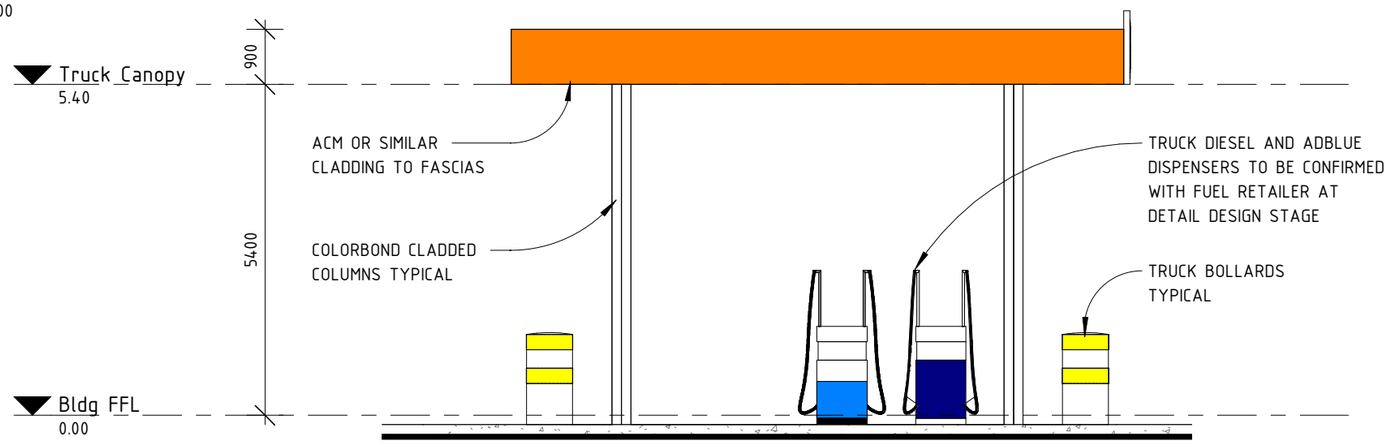
1 TRUCK CANOPY NORTH-WEST ELEVATION

1 : 100



2 TRUCK CANOPY SOUTH-EAST ELEVATION

1 : 100



3 TRUCK CANNOPY NORTH-EAST ELEVATION

1 : 100 TRUCK CANOPY SOUTH-WEST ELEVATION MIRRORED

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PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
TRUCK CANOPY ELEVATIONS

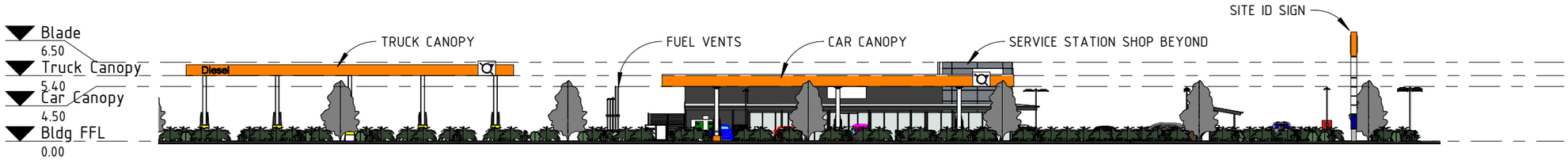
STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR

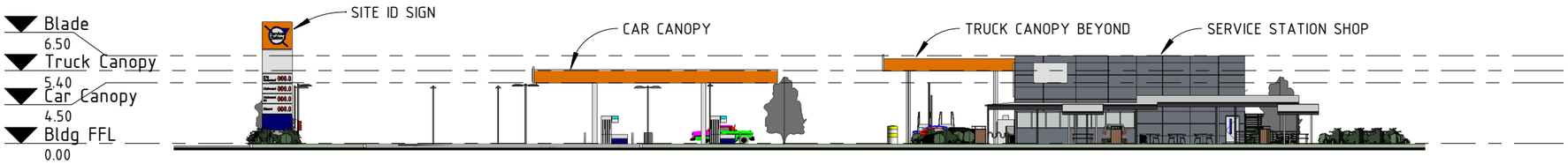
DATE CREATED	A1 SCALE	A3 SCALE
28.02.19		1 : 100

DRAWING NO	REV
18294 D09	B

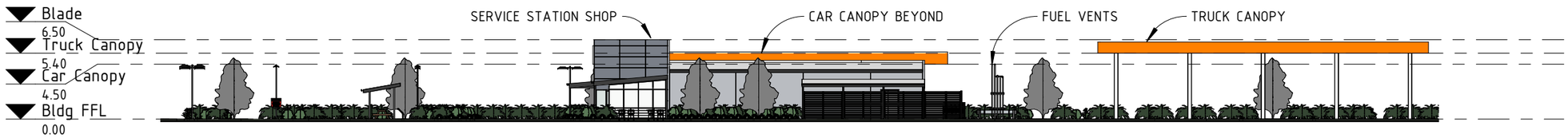
8/03/2019 12:57:04 PM



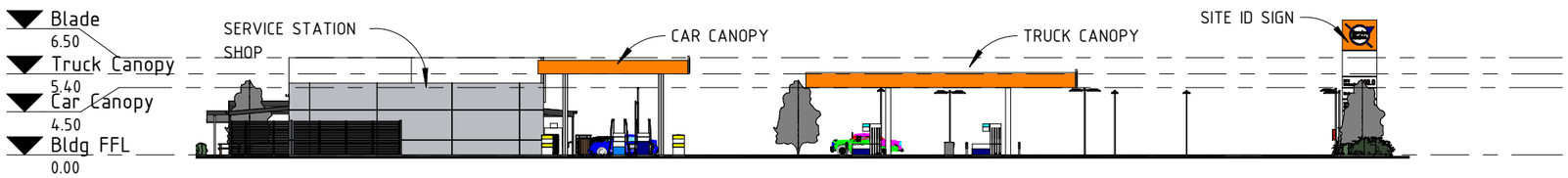
1 NORTH-WEST SITE ELEVATION
1 : 400



2 SOUTH-WEST SITE ELEVATION
1 : 400



3 SOUTH-EAST SITE ELEVATION
1 : 400



4 NORTH-EAST SITE ELEVATION
1 : 400

RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119,500m²

NOTE:
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ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
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A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	
C	21.06.19	SEL	LOT DETAILS UPDATE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT
for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
OVERALL SITE ELEVATIONS

STATUS
DA ISSUE

DRAWN	APPROVED	
DGC	LMG	
DATE CREATED	A1 SCALE	A3 SCALE
28.02.19		1 : 400

DRAWING NO		REV
18294	D10	C

21/06/2019 2:02:49 PM

1 PERSPECTIVE VIEW FROM CAPRICORN HWY

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/25-2019

Dated: 02 September 2019

NOTE:
COLOURS AND FINISHES SHOWN ARE INDICATIVE ONLY. SUBJECT TO CHANGE AT DETAIL DESIGN STAGE TO SUIT TENANCY REQUIREMENTS. SIGNAGE SHOWN INDICATIVE ONLY.

2 PERSPECTIVE VIEW FROM ENTRY

PROJECT MANAGERS | PLANNERS
DESIGNERS | ENGINEERS

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enquiry@tfa.com.au

REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
PERSPECTIVE VIEWS - SHEET 1

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR
DATE CREATED	A1 SCALE	A3 SCALE
28/02/19		

DRAWING NO		REV
18294	D11	B

8/03/2019 12:58:31 PM

1 PERSPECTIVE VIEW TO BUILDING

NOTE:
COLOURS AND FINISHES SHOWN ARE INDICATIVE ONLY. SUBJECT TO CHANGE AT DETAIL DESIGN STAGE TO SUIT TENANCY REQUIREMENTS. SIGNAGE SHOWN INDICATIVE ONLY.

2 PERSPECTIVE VIEW TO OUTDOOR DINING

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Dated: 02 September 2019

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A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
PERSPECTIVE VIEWS - SHEET 2

STATUS
DA ISSUE

DRAWN	APPROVED	
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DATE CREATED	A1 SCALE	A3 SCALE
28/02/19		

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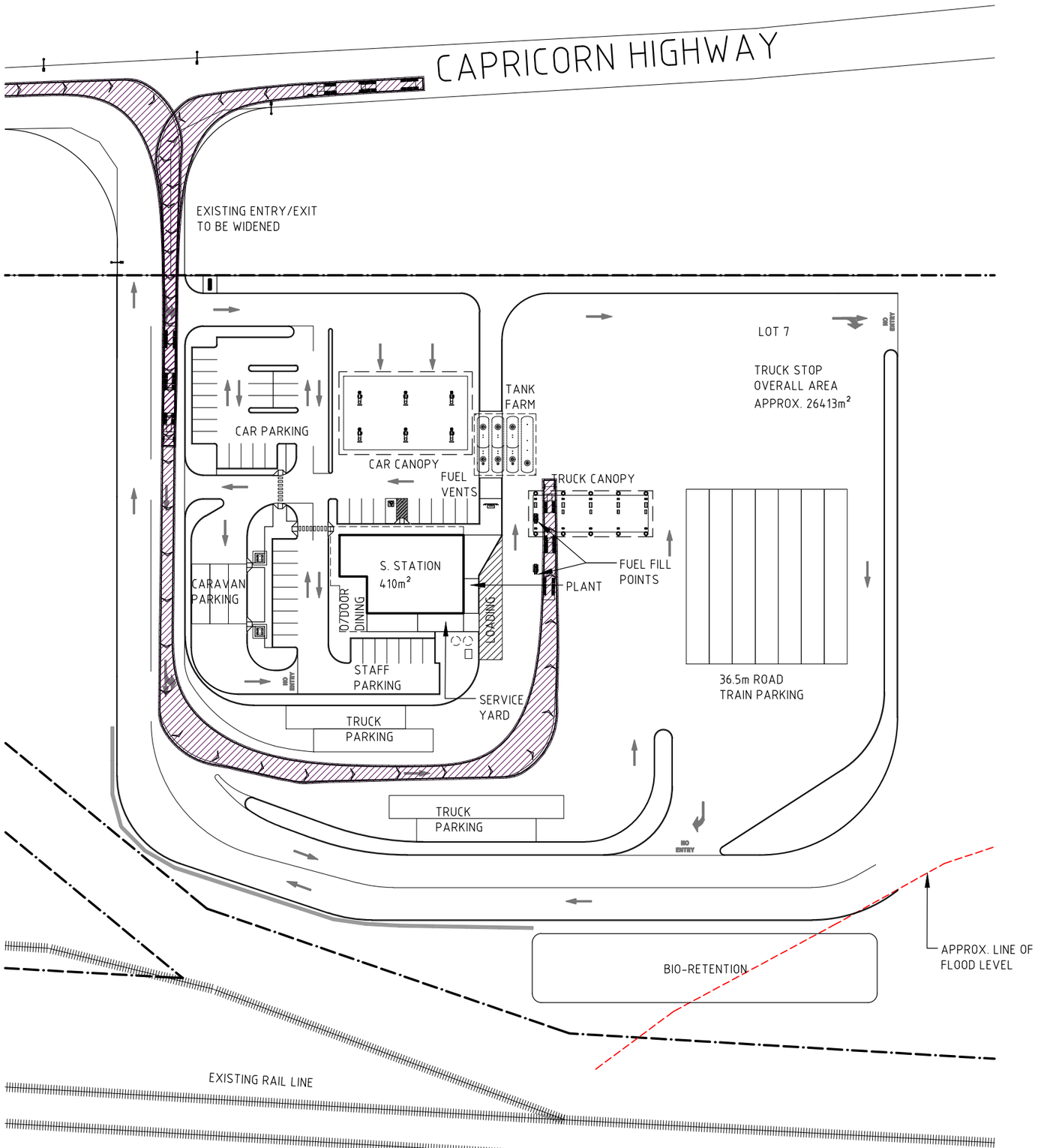
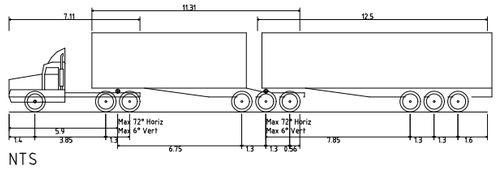


NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.
2. 26m B-DOUBLE PATH SHOWN FOR REFUELLING.

RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119500m²



NTS

B-Double (26.0m)	
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
Curb to Curb Turning Radius	15.000m

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/25-2019
Dated: 02 September 2019

10 0 10 20 30 40 50m
Metres

PROJECT MANAGERS | PLANNERS
DESIGNERS | ENGINEERS

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B	07.03.19	DGC	DA ISSUE	
C	22.05.19	DGC	REMOVE FUTURE ACCESS	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
TANKER UNLOADING PATH

STATUS
DA ISSUE

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DGC	L.M
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DRAWING NO	REV
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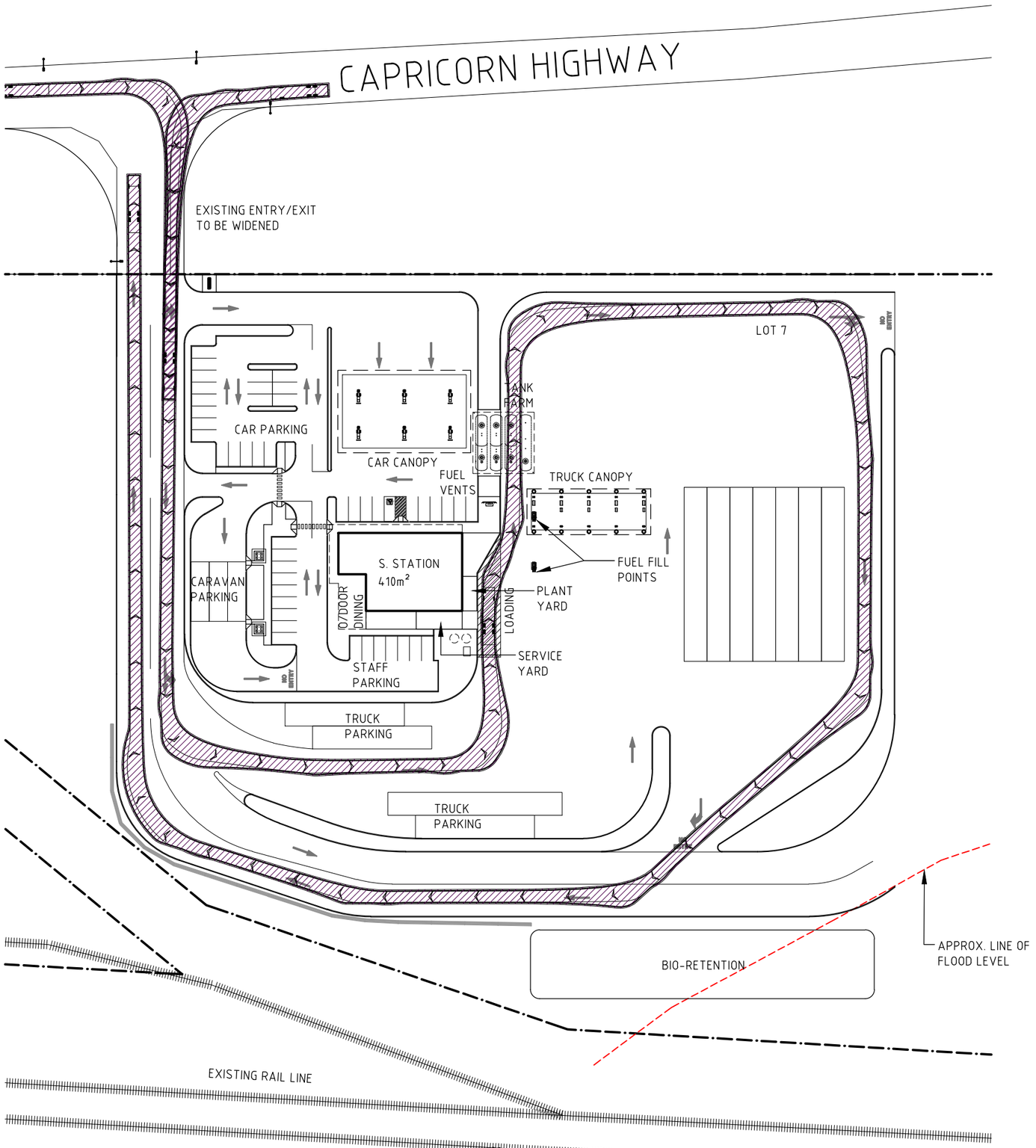

NOTES:

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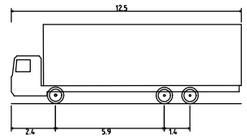
RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119500m²



NTS

HRV - Heavy Rigid Vehicle	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
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10 0 10 20 30 40 50m
Metres

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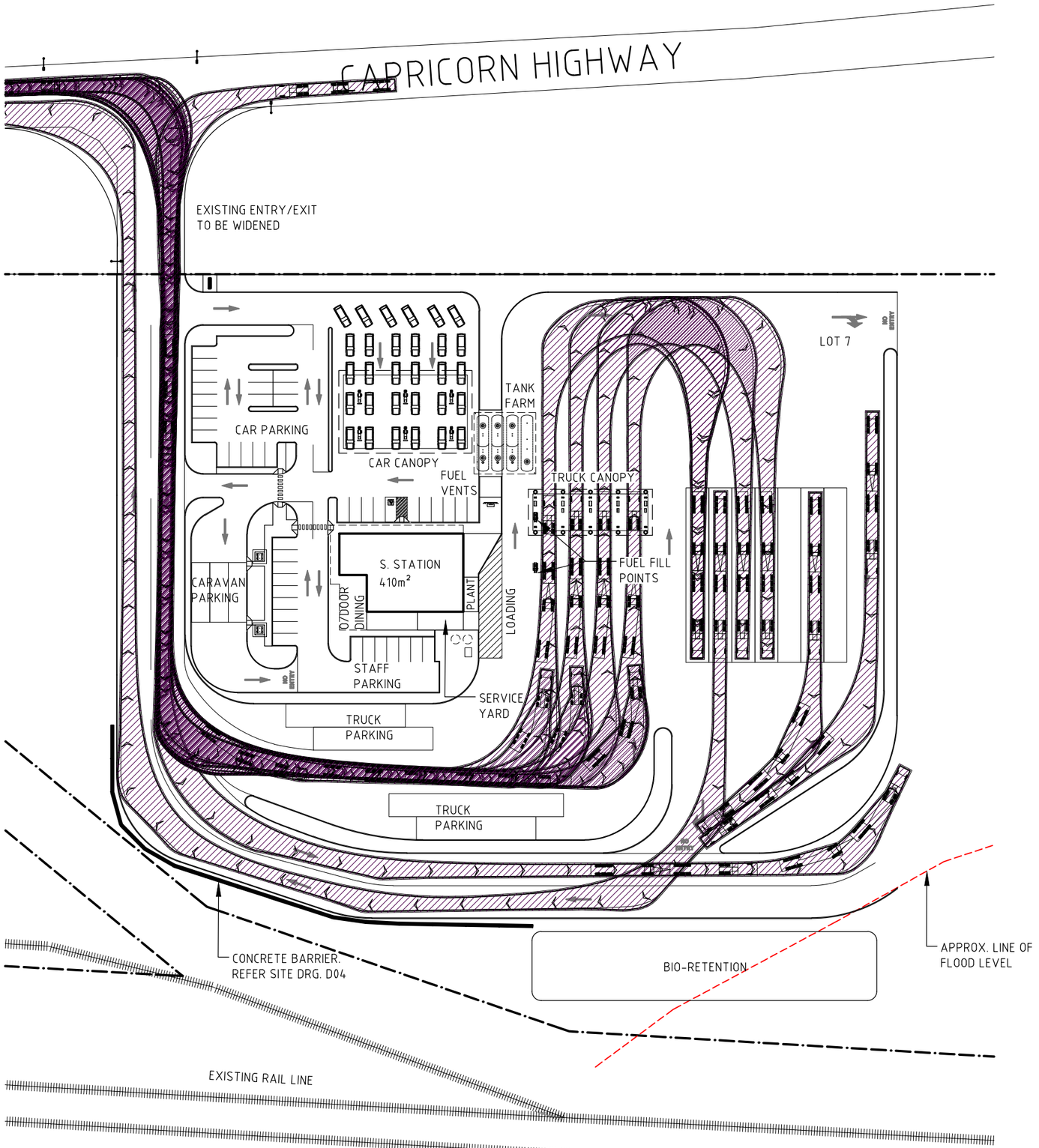
B	07.03.19	DGC	DA ISSUE	
C	22.05.19	DGC	REMOVE FUTURE ACCESS	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
DELIVERY/ REFUSE PATH

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	L.M
DATE CREATED	A1 SCALE / A3 SCALE
19.02.19	1:1000
DRAWING NO	REV
18294-D14	C



NOTES:

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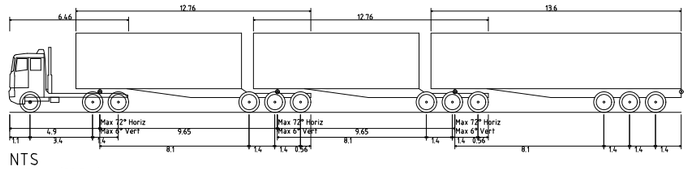
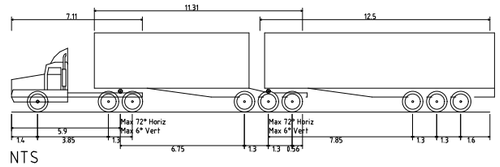
RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119500m²



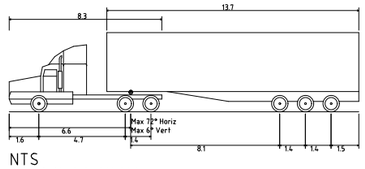
NTS
B-Triple (36.5 m)

Overall Length	36.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.455m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m



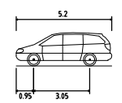
NTS
B-Double (26.0m)

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
Curb to Curb Turning Radius	15.000m



NTS
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



NTS
Passenger vehicle (5.2 m)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.300m

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/25-2019
Dated: 02 September 2019

PROJECT MANAGERS | PLANNERS
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A	19.02.19	DGC	DA ISSUE	
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C	22.05.19	DGC	REMOVE FUTURE ACCESS	

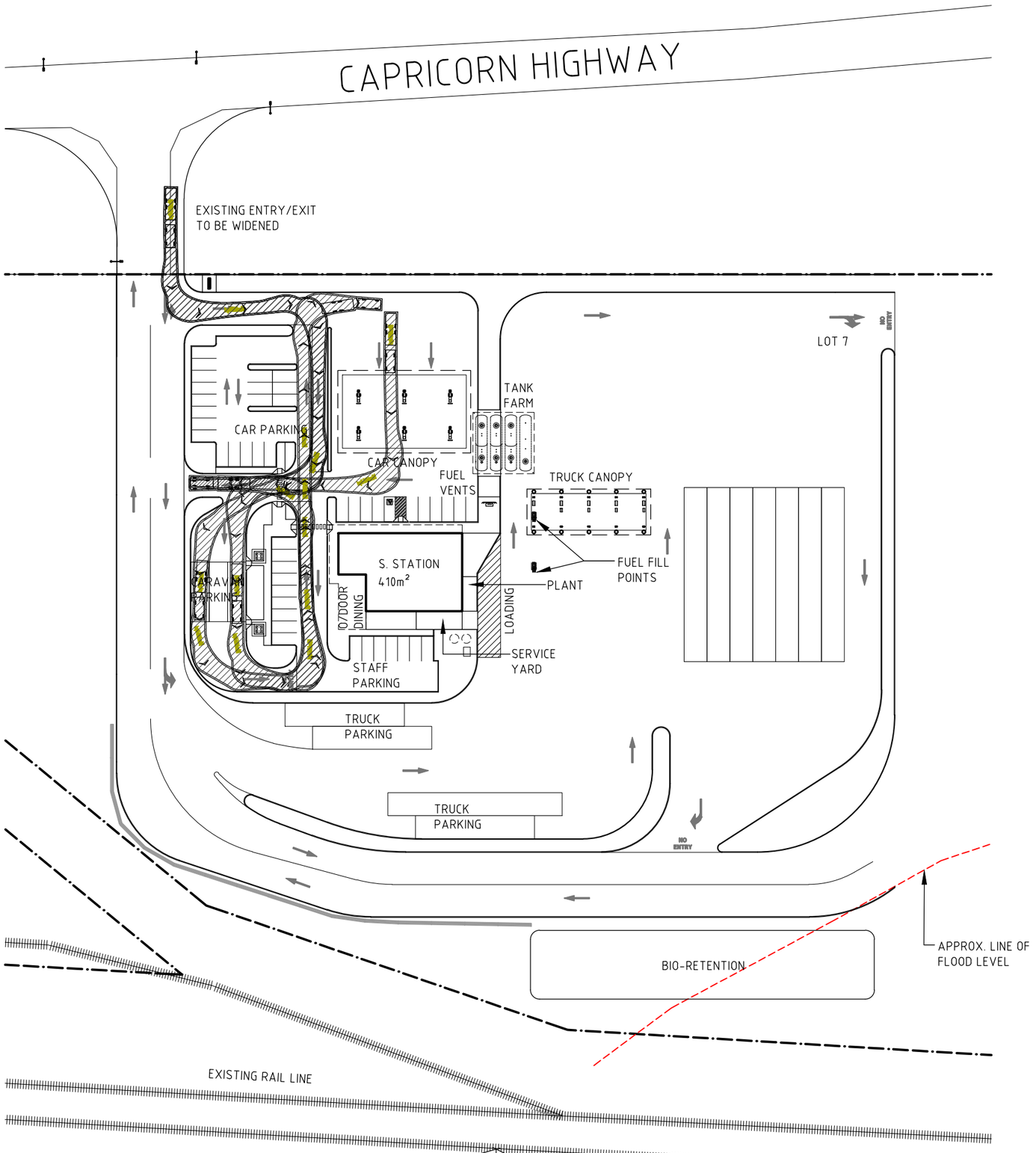
PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
VEHICLE QUEUING PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	L.M
DATE CREATED	A1 SCALE / A3 SCALE
19.02.19	1:1000

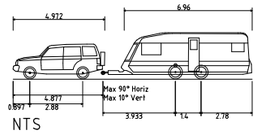
DRAWING NO: 18294-D15 REV: C



NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.

RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119500m²



NTS

Luxury 4x4 +Twin Axle Caravan (2006)	
Overall Length	12.990m
Overall Width	2.286m
Overall Body Height	2.524m
Min Body Ground Clearance	0.251m
Max Track Width	2.130m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.800m

ROCKHAMPTON REGIONAL COUNCIL
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10 0 10 20 30 40 50m
Metres

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DESIGNERS | ENGINEERS

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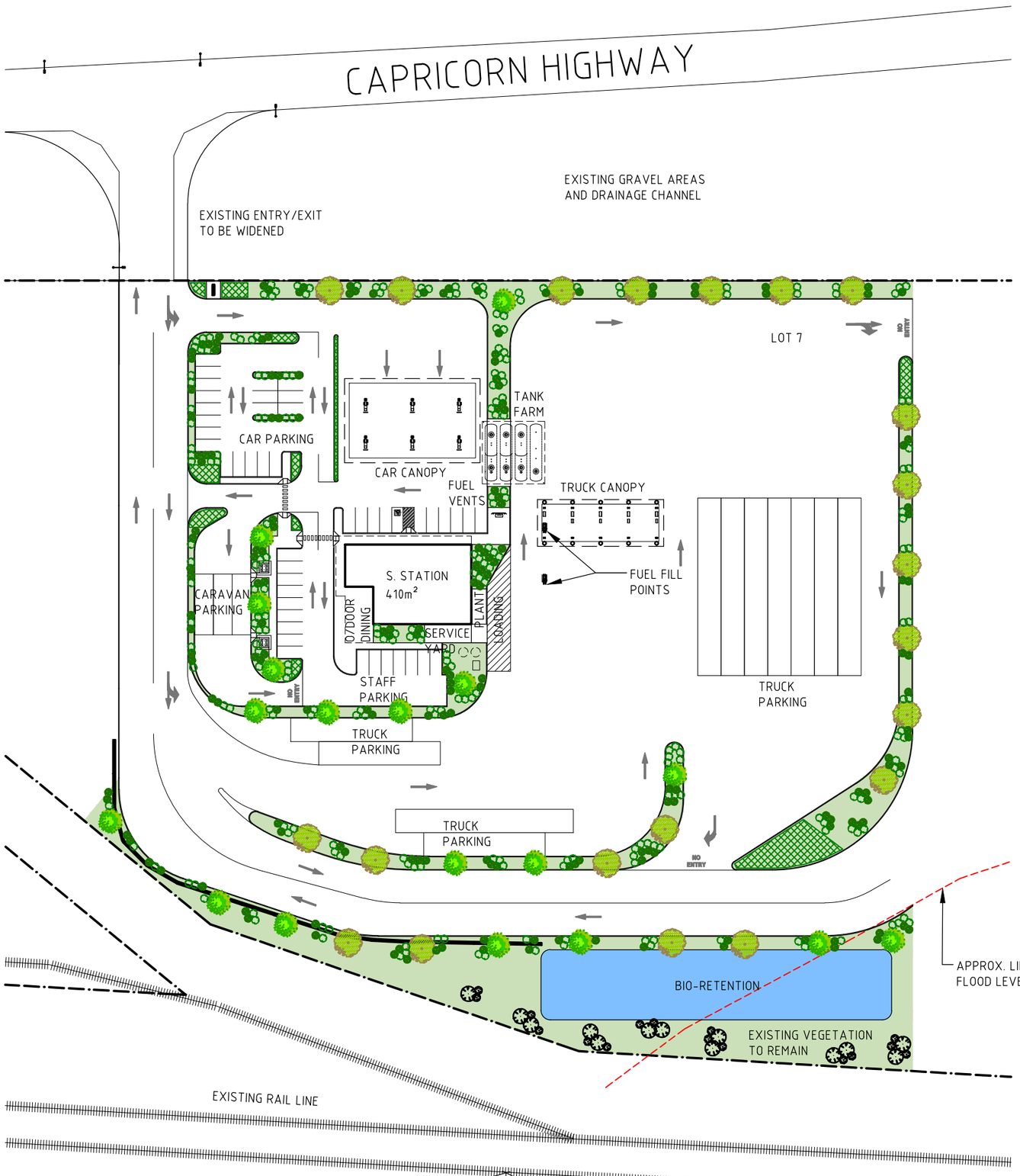
PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
CARAVAN PATH

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	K.M
DATE CREATED	A1 SCALE / A3 SCALE
19.02.19	1:1000
DRAWING NO	REV
18294-D16	C



NOTES:

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2. 26m B-DOUBLE PATH SHOWN FOR REFUELLING.

RPD
LOT 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 119500m²

LEGEND

- EXISTING LARGE ESTABLISHED TREES TO NEIGHBOURING PROPERTIES & SUBJECT SITE TO REMAIN
- FEATURE TREES
- SHRUB PLANTING AREA.
- GROUNDCOVER PLANTING.
- LANDSCAPED MULCH AREA

NOTES:
THE SITE CONTAINS NO SIGNIFICANT VEGETATION

AREAS AROUND ENTRANCES & EXITS TO CONSIST OF LOW SHRUBS & GROUND COVERS TO ENABLE GOOD VISIBILITY FOR SAFE MOVEMENT OF VEHICLES.

LANDSCAPE PLANTINGS TO BE VERIFIED WHEN DETAILED DESIGN LOCATES PROPOSED UNDERGROUND SERVICE LINES, WITH AN EMPHASIS ON DROUGHT HARDY SPECIES.

ALL PAVEMENT AREAS TO HAVE 150mm CONTINUOUS CONCRETE BARRIER TO LANDSCAPE AREAS.

THIS DRAWING IS INTENDED AS A LANDSCAPE CONCEPT DRAWING ONLY. AT THE OPERATIONAL WORKS STAGE, A FULLY DETAILED LANDSCAPE PLAN WILL BE SUBMITTED, ALONG WITH ALL RELEVANT DETAILS & PLANT SPECIES.

LOCAL NATIVE SPECIES WILL BE SELECTED WHERE APPROPRIATE.

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
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Dated: 02 September 2019

10 0 10 20 30 40 50m
Metres

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PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
CONCEPT LANDSCAPING PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	L.M
DATE CREATED	A1 SCALE	A3 SCALE
18.02.19		1:1000

DRAWING NO 18294-D17 REV C

mcmurtrie
CONSULTING ENGINEERS

Traffic Impact Assessment Report

Proposed Gracemere Roadhouse Service Station
715 Capricorn Highway (Lot 7 SP108697), Gracemere, QLD

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/25-2019

Dated: 02 September 2019

Prepared For: Aurizon Property Pty Ltd

Job No. 049-18-19
March 2019
Revision A

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North Rockhampton Q 4701

Traffic Impact Assessment Report

Rev.	Description	Signature	Date
B	Final	-	11.03.19
A	Draft for Client Comment	-	08.03.19

CONTENTS

Traffic Impact Assessment Report

Gracemere Roadhouse Service Station, 715 Capricorn Highway (Lot 7 SP108697), Gracemere QLD

1.0 INTRODUCTION

1.1. PROJECT BACKGROUND

Aurizon Property Pty Ltd are proposing to establish a roadhouse service station on their existing property at 715 Capricorn Highway (Lot 7 on SP108697) in Gracemere, Queensland. The service station is expected to predominantly cater for passing traffic on the adjacent section of the Capricorn Highway, and provides refueling and parking facilities for both light and heavy vehicles.

1.2. SCOPE AND STUDY AREA

McMurtrie Consulting Engineers (MCE) have been commissioned by Aurizon Property Pty Ltd to undertake a Traffic Impact Assessment (TIA) for the proposed Gracemere Roadhouse Service Station, located at 715 Capricorn Highway (Lot 7 on SP108697) in Gracemere.

This Traffic Impact Assessment (TIA) was carried out to determine the level of potential impacts of both the construction and operational phases of the Project on the operation of the surrounding road network. The outcomes of the TIA will be used in support of the Development Application which will be assessed by Department of Transport and Main Roads (TMR) and Rockhampton Regional Council (RRC).

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

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

As outlined above, the adopted methodology centers on establishing a background, “without development” traffic scenario for the identified transport routes and comparing this with a scenario including the Project-generated traffic, i.e. the “with development” scenario.

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

1.2.1 STUDY AREA

As previously identified, the proposed service station is proposed to be 715 Capricorn Highway, Gracemere, on the land parcel formally described as Lot 7 on SP108697. The site is located 5.7 kilometers south-west of Rockhampton and approximately 1.5 kilometers south-west of the access to the township of Gracemere (via McLaughlin Street) on the Capricorn Highway, as shown in Figure 1 below.

Figure 1 Study Area – 715 Capricorn Highway, Gracemere Qld [Source: Qld Globe]

1.3. PRE LODGEMENT MEETING MINUTES

As previously mentioned, traffic related queries regarding the Project were raised in the pre-lodgement meeting for the Project held with officers from both the Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) and the Department of Transport and Main Roads (DTMR) on 19 December 2018. This TIA has been prepared in response to the traffic items raised in the subsequent pre-lodgment meeting record received on 2 January 2019, a copy of which have been included for reference as Appendix A.

The key traffic items identified within the received pre-lodgement meeting record is summarised below:

DTMR – State-controlled roads

4. Information required for assessment of a future development application will include:
    - Traffic Impact Assessment (TIA) prepared in accordance with the Guide to Traffic Impact Assessment (GTIA). The TIA and intersection form should be developed with future uses of the balance areas of the site in mind.
    - Confirmation of the design vehicle. Whilst DTMR has no objection to the site access and turning paths being shown as a 26m B-double, currently this section of the Capricorn Highway is only designated for use by up to 25m B-double vehicles.
5. Any proposed extensions to the Type 1 Road Train Route along the Capricorn Highway will need to be made to the National Heavy Vehicle Regulator (NHVR). This should be determined prior to submission of a formal Development Application.
6. Swept vehicle turn paths will be required for all movements.
7. The access to balance land (northern and southern) should be via existing access point via internal roads/easements. DTMR is not supportive of allowing any new accesses from the State-controlled Road (SCR).
8. Lot 7 has an existing access along the northern property boundary located within the SCR reserve. At the current stage (and with the current operations on site) DTMR has no issues with Aurizon using and maintaining this access trip. However, should the use over the site change/densify, then this access trip must be removed from the SCR reserve.
9. Sight visibility at the location of the existing intersection appears reasonable (300m plus) in both directions.
10. Lighting of the intersection will be required.

1.4. DATA SOURCES

The following sources of data have been used for the purpose of this assessment:

- Queensland Globe (https://qldglobe.information.qld.gov.au), for crash data in the vicinity of the site.
- Queensland Government Traffic Generation Data—2006–2018 (https://data.qld.gov.au/dataset/traffic-generation-data-2006-2018), for development trip generation.

In addition, reference has been made to the following background traffic data provided by TMR, with raw traffic count data utilised for this assessment included for reference as Appendix B:

TMR AADT Road Segment Reports

- Capricorn Highway (Rockhampton to Duaringa) – 16A (2017).

TMR Weekly Volume Report

- Site 60010 – Capricorn Highway (16A) 3km West of Gracemere.

2.0 EXISTING CONDITIONS

2.1. LAND USE AND ZONING

As shown in Figure 2 below, the lot forming the development (Lot 7 on SP108697) is currently identified as low impact industry zoning under Rockhampton Regional Council's Planning Scheme (2015). A copy of the relevant planning scheme zoning map has also been included for reference as Appendix C.

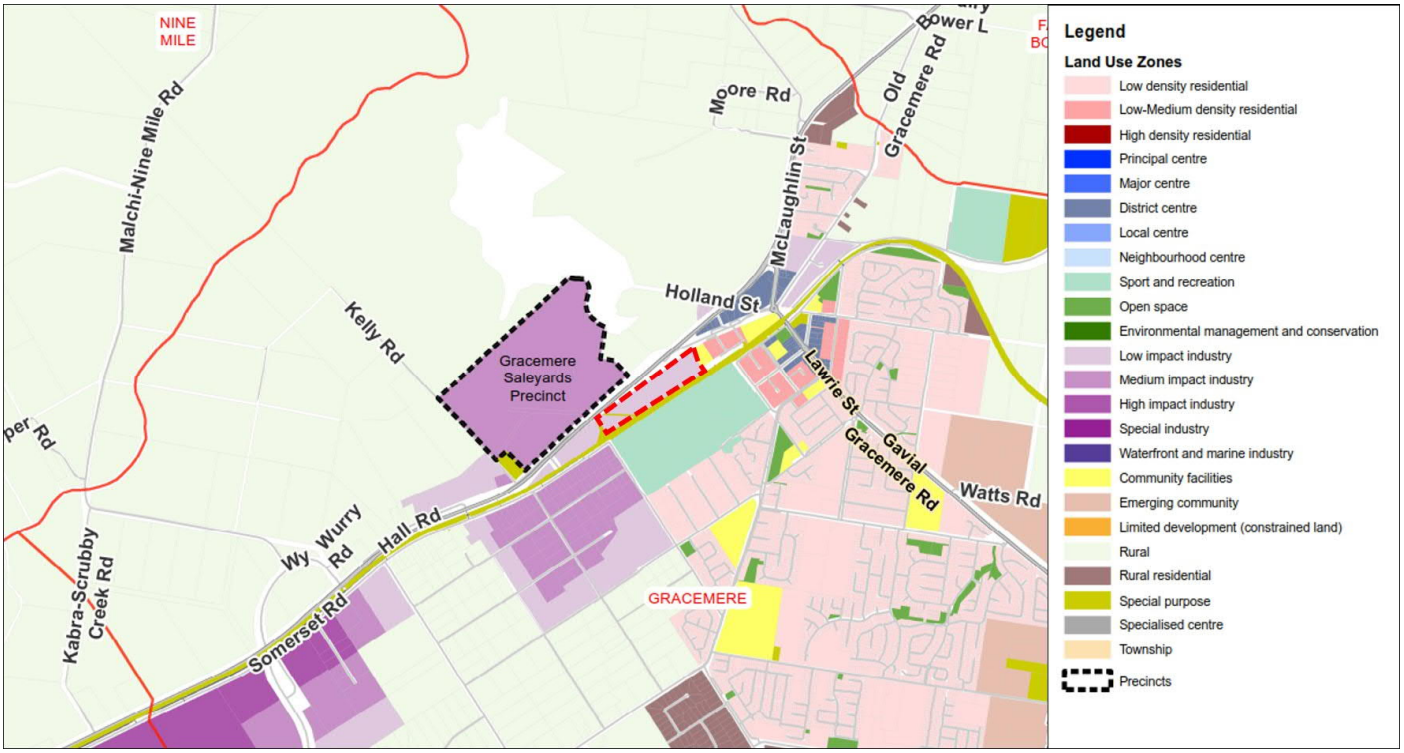


Figure 2 Land Use Zoning – Lot 7 on SP108697 [Source: RRC Online Mapping]

2.2. ADJACENT LAND USE / APPROVALS

As shown in Figure 2 above, the adjacent land parcel to the west is also currently zoned as "low impact industrial" under RRC's Planning Scheme (2015), with the adjacent parcel to the east is zoned as "community facilities". In addition, the subject site is bound by the Capricorn Highway to the north and the Blackwater System rail line to the south.

Further to this, no development approvals are understood to be currently held over adjacent lots that would be relevant to the proposed service station development.

2.3. SURROUNDING ROAD NETWORK DETAILS

2.3.1 ROAD LINKS

Capricorn Highway (Rockhampton-Duaringa) – 16A

The Capricorn Highway links the city of Rockhampton with western Queensland, including the Central Highlands. Travelling approximately 575km, this link is the primary east-west road transport route for both passenger and road freight vehicles within Central Queensland. The highway is typically a two-way, two lane road with a posted speed limit of 100-110km/h, except through the sections in built up areas through townships.

In the vicinity of the proposed development site, the speed limit on the Highway is 80km/hr and the link is currently and approved 23m and 25m B-Double route as shown on the TMR Multi Combination Vehicle (MCV) mapping included for reference as Appendix D. It is however understood that the applicant is currently in discussions with the Department of Transport and Main Roads to extend the approved Type 1 Road Train route approximately 390m from its current end point at the Gracemere Saleyards to the west to the proposed service station development. This proposed extension is indicatively shown in Figure 3 below.

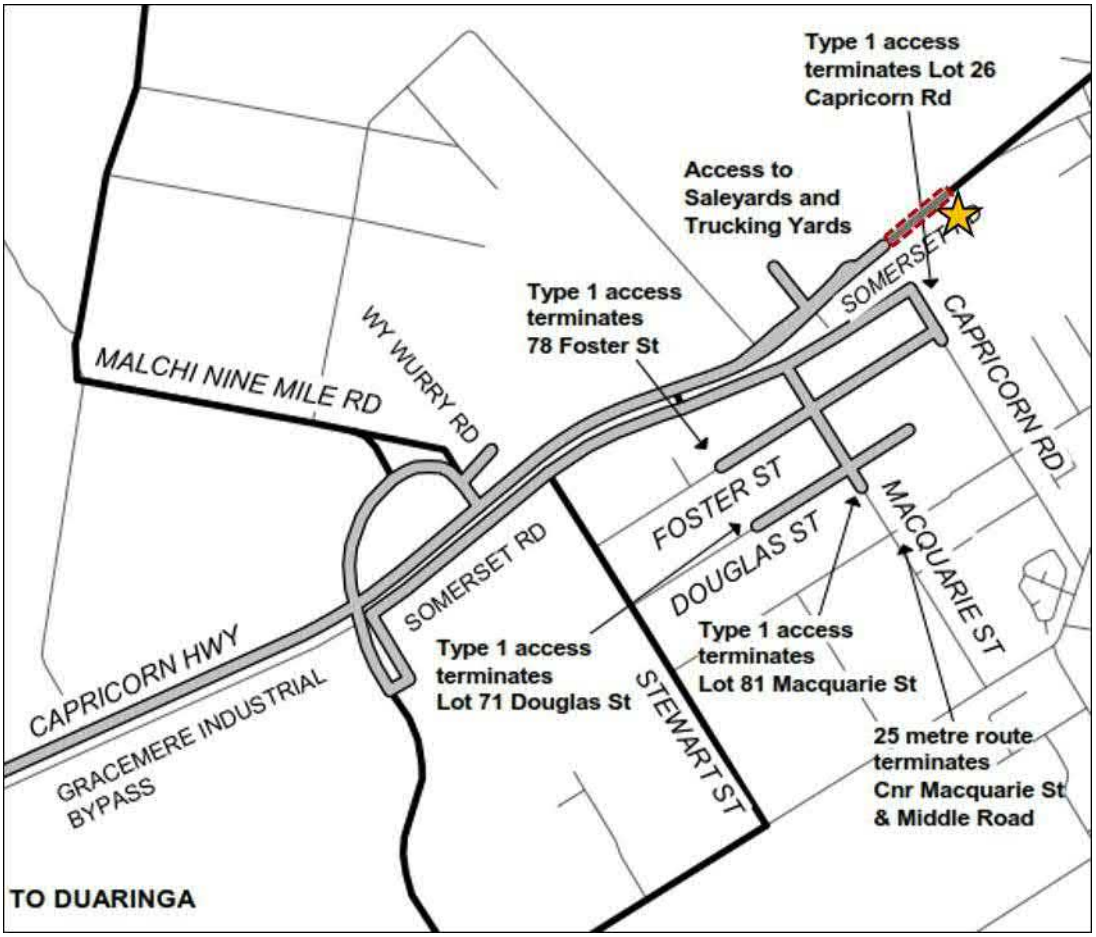


Figure 3 Capricorn Highway Gracemere – Proposed Road Train Route Extension [Source: TMR MCV Mapping]

Wheatboard Road (Site Access Road)

Wheatboard Road is an informal road that forms the site access for the current Aurizon operations on the proposed development site. It currently operates as a two-way, two lane carriageway providing a minimum of 6m sealed road width, with the initial 50m section of the access road deemed relevant to the proposed service station development.

2.3.2 INTERSECTIONS

In addition to the road links described above, the Capricorn Highway / Wheatboard Road (Site Access) intersection was also identified to be relevant to the Project as it will cater for the main turning movements to/from the Capricorn Highway for vehicles associated with the proposed Gracemere Roadhouse service station.

The site access intersection currently operates as a three-way priority-controlled (give-way sign) intersection, with priority given to the major Capricorn Highway approaches, as shown in Figure 4 below. One lane in each direction of travel is provided on all approaches, with a short (125m) left turn lane provided on the eastern Capricorn Highway approach. A short length (approx. 150m) of additional width is also provided for eastbound movements on the Capricorn Highway through the access intersection, forming an additional traffic lane for through vehicles to pass vehicles propped to turn right turn into site access (similar arrangement to previous AUR turn treatment).

Figure 4 Capricorn Highway / Wheatboard Road (Site Access) Existing Configuration [Source: Qld Globe]

Further to this, Figure 5 and Figure 6 below identify the current configuration and the available sight distances for vehicles exiting the Wheatboard Road (Site Access) approach to the intersection.

Figure 5 Capricorn Highway / Wheatboard Road (Site Access) Intersection – Looking West

Figure 6 Capricorn Highway / Wheatboard Road (Site Access) Intersection – Looking East

2.4. TRAFFIC VOLUMES

2.4.1 ROAD LINK VOLUMES

The background traffic volumes for the relevant section of the state-controlled road network were established using the available 2017 AADT segment traffic count data provided by TMR (refer Appendix B). Using these established traffic volumes for each section of the road links, the current (2019) daily traffic volumes on the network were established assuming a conservative 1% background traffic growth rate on the link (actual average 10 year growth rate was identified to be 0.19%).

A summary of the forecast background traffic volumes for each of the relevant road segments for the current year (2019) is provided in Table 1.

Table 1 Forecast Future Background AADT Traffic Volumes

Site ID	AADT Segment		Base Data Year	Base Year (2017) AADT				10 Yr. GR %	Background AADT (2019)			
	Start (km)	End (km)		Gaz	% HV	A-Gaz	% HV		Gaz		A-Gaz	
									Total	HV	Total	HV
Capricorn Highway – 16A												
60010	5.690	7.190*	2017	2,547	21.48	2,391	23.50	1.00#	2,598	558	2,439	573
	7.190*	13.370	2017	2,547	21.48	2,391	23.50	1.00#	2,598	558	2,439	573

Assumed growth rate of 1.0% has been adopted for purpose of analysis / * Approximate Chainage Wheatboard Road (Site Access) intersection.

2.4.2 INTERSECTION VOLUMES

The intersection volumes for the Capricorn Highway / Wheatboard Road (site access) intersection were established using provided data regarding the current vehicle movements on site from the proponent (Aurizon Property Pty Ltd) and the identified directional through volumes in both directions on the Capricorn Highway as per the Weekly Volume Report for AADT Site 60010 (2017) provided by DTMR (included for reference in Appendix B), with relevant growth rates applied to forecast the movement volumes for current (2019) conditions. A summary of the estimated AM and PM peak hour volumes are shown in Figure 7 and Figure 8 respectively, with the relevant calculations completed to establish these volumes provided for reference in Appendix E.

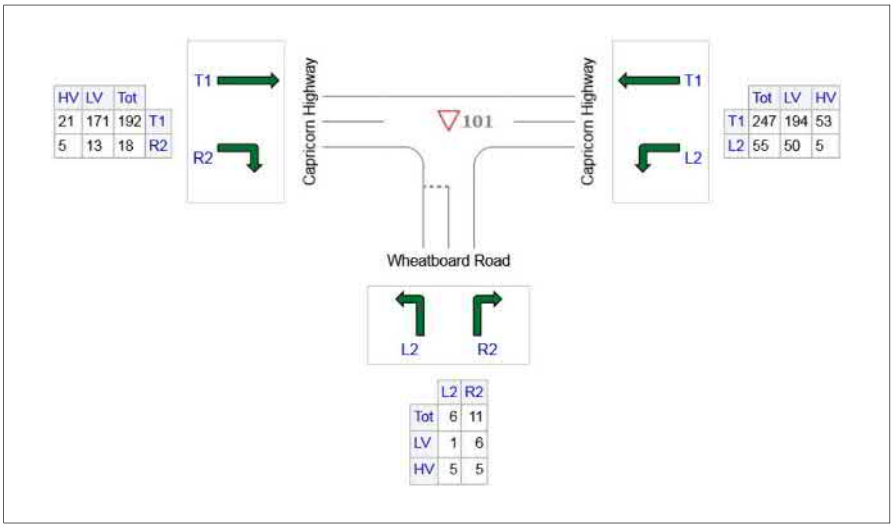


Figure 7 2019 AM Background Volumes
Capricorn Highway / Wheatboard Road (Site Access) Intersection (Estimated)

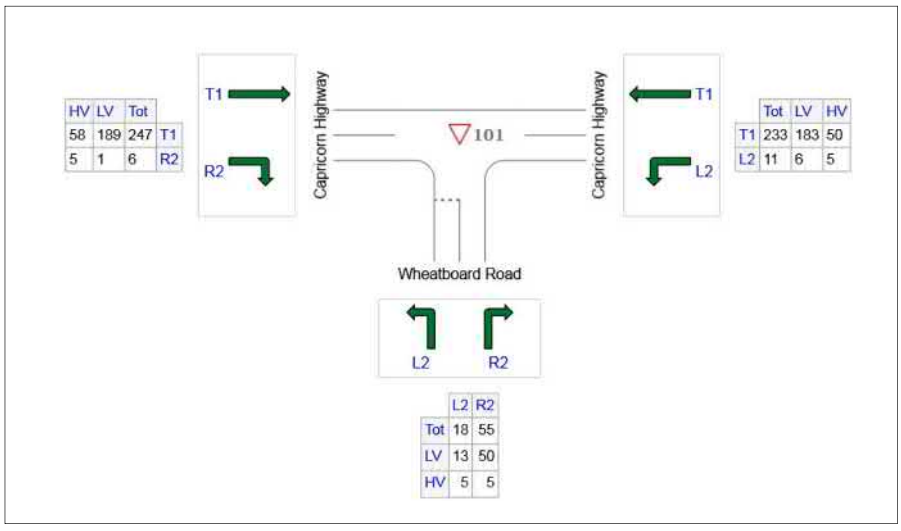


Figure 8 2019 AM Background Volumes
Capricorn Highway / Wheatboard Road (Site Access) Intersection (Estimated)

2.5. INTERSECTION AND NETWORK PERFORMANCE

2.5.1 ROAD LINKS

Based on the daily traffic volumes identified in Table 1 above, it is anticipated that all relevant sections of the Capricorn Highway can be considered to be currently operating satisfactorily and within capacity, as the existing mid-block traffic volumes identified are considered well within the capacity of a two-way sealed rural road / highway.

2.5.2 INTERSECTIONS

The background traffic volumes established for the intersection in Section 2.4.2 above were utilised to undertake a preliminary analysis (using SIDRA software) to establish the operational performance of the current configuration of the intersection under current (2019) traffic conditions.

A summary of the results of the analysis undertaken is provided in Table 2 below, with further detailed results included for reference in Appendix F.

Table 2 SIDRA Results – Capricorn Highway / Wheatboard Road Intersection

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Intersection Average Delay (sec)	Maximum 95% Back of Queue Length (m)
Pre Development (Existing Conditions)				
2019 AM Peak	0.150	LOS B	1.4	1.9
2019 PM Peak	0.146	LOS B	1.6	4.3

** LOS value identified is for worst movement at the intersection, not the overall intersection.

The results above indicate that the existing configuration of the Capricorn Highway / Wheatboard Road (Site Access) intersection is expected to operate satisfactorily under the current (2019) traffic conditions. The satisfactory operation of the intersection is demonstrated by all values for DOS, LOS, average delay and vehicle queueing calculated being well within acceptable limits of operation for a priority-controlled intersection.

2.6. ROAD SAFETY ISSUES

2.6.1 EXISTING SITE CONDITIONS

A site inspection of the existing traffic conditions on the relevant road network was undertaken by Andrew Barrie (RPEQ / Senior Road Safety Auditor) on Monday 18 February 2019. As part of this inspection a number of road safety considerations regarding the operation of the existing road network were identified, including:

1) Current AUR Turn Treatment Linemarking for Right Turn into Wheatboard Road (Site Access)

As noted previously, the existing configuration of the Capricorn Highway / Wheatboard Road (Site Access) intersection provides widening on the LHS of the intersection (eastbound) which forms an auxiliary right turn (AUR) treatment to allow vehicles travelling through the intersection to pass vehicles propped to turn right into the site via Wheatboard Road.

While the provision of this AUR treatment is expected to improve the safety of vehicle movements at the intersection, the use of this particular type of right turn treatment is no longer recommended, with the more formal channelised / short channelised right turn treatments now preferred as the travel paths for vehicles through the intersection are more clearly defined, reducing potential for rear end crashes. It is also noted that AUR treatments are typically able to be converted to short channelized right (CHRs) turn treatments though the provision of minor linemarking works.

Notwithstanding this, based on the low traffic volumes expected to be currently undertaking the relevant right turn movement into Wheatboard Road and the relatively low opposing traffic volumes on the Capricorn Highway, it is expected that the risk of a rear-end incident occurring at this intersection would be considered unlikely.

2) Proximity of Eastern Site Access to Capricorn Highway Intersection

It was noted that an unsealed access road is provided for internal vehicle movements to the east of the site access, namely to the existing storage yard area. It is noted that this eastern access road connects to Wheatboard Road in close proximity to the intersection with the Capricorn Highway with only approximately 20m separation provided, as shown in Figure 9 below.

Figure 9 Eastern Internal Access Road [Source: Qld Globe]

Based on the current arrangements provided at the intersection of the eastern internal access road and the main site access (Wheatboard Road) and the limited separation to the Capricorn Highway, there is potential for large vehicles (>20m) turning into the site to be propped due to internal movements, requiring them to be partly stored in the adjacent traffic lanes of the Highway. Notwithstanding this, as the internal traffic movements on this access road are expected to be extremely low and the volume of traffic currently accessing the site access are also low, the risk of vehicle conflict and the formation of queuing that would impact the adjacent Capricorn Highway traffic lanes is also anticipated to be extremely low.

Further assessment of these identified road safety items, including the completion of a road safety assessment of the existing and "post development" traffic volumes, can be seen within Section 5.2 of this report.

2.6.2 ROAD CRASH HISTORY REVIEW

A review of the road crash history of the section of the Capricorn Highway 500m either side of the proposed access point was undertaken using the road crash data available from the Queensland Globe database, with the assessment completed for the available data range (2002-2018).

The results of this assessment identified 5 crashes in the nominated extents within this timeframe, with the approximate location of the recorded crashes shown in Figure 10 below, while a summary of the details of the road crash data is provided in Table 3.

Figure 10 Road Crash Locations – Capricorn Highway / Proposed Site Access Intersection [Source: QLD Globe]

Table 3 Summary of Road Crash History (2002-2018)

Crash Ref. No.	Crash Year	Crash Severity	Crash Type	DCA Description	Crash Description
Bruce Highway / Marlborough-Sarina Road Intersection					
39621	2002	Property Damage Only	Multi-Vehicle	Veh's Adjacent Approach: Thru-Right	Intersection from adjacent approaches
130678	2006	Medical Treatment	Other	Pass & Misc: Load Hit Vehicle	Vehicle struck by external load
151390	2007	Property Damage Only	Single Vehicle	Off Path-Curve: Other	Hit Object
152474	2007	Property Damage Only	Multi-Vehicle	Veh's Same Direction: Right Turn S/Swipe	Parallel lanes turning
175307	2008	Property Damage Only	Multi-Vehicle	Veh's Adjacent Approach: Thru-Right	Intersection from adjacent approaches

The results above indicate that no one traffic movement can be considered a specific safety risk, with only 5 crashes recorded along the section of the Capricorn Highway in the vicinity of the access over the last 16 years (2002-2018). Further to this, it is noted that no crashes were recorded at the existing access intersection to the site (Wheatboard Road), while four were located at adjacent intersections (three at Gracemere Saleyards and one at Oshanesy Street).

Notwithstanding this, as the majority of the crashes recorded along the section were multi-vehicle crashes between turning vehicles on adjacent approaches, it is recommended that appropriate turn treatments be provided at the access intersection as part of the site access arrangements for the proposed development.

2.7. SITE ACCESS

As previously identified, access to the site is currently provided via the three-way, priority controlled (give-way sign) intersection of the Capricorn Highway / Wheatboard Road which is located on the LHS of the highway (gazettal/westbound) at approximate DTMR Ch. 7.190km (16A).

The access intersection is understood to cater for vehicles up to a B-Double and currently provides AUR / AUL(s) turn treatments for movements into the site, as shown in Figure 4 and Figure 9 above. Further to this, as identified in Section 2.3.2 above, the site access intersection (Wheatboard Road) is located as such that adequate sight distances are provided to/from the access in both directions.

3.0 PROPOSED DEVELOPMENT DETAILS

3.1. OPERATIONAL DETAILS

The proposed development is a service station, which will occupy the central portion of the subject site as shown in the site plan included as Appendix G and the extract provided as Figure 11 below. The balance of the lot is to remain operating as per its existing use under the proposed development.

The development will provide six (6) bowsers for cars (i.e. twelve (12) refueling positions), and five (5) bowsers for heavy vehicles/trucks. Vehicular access is proposed via the existing access intersection with the Capricorn Highway, while the largest design vehicle anticipated to require access to the site is a 36.5m long Type 1 Road Train combination vehicle.

The proposed service station building has an area of 410m² GFA, with parking bays provided for cars and caravan parking in close proximity to the building and truck parking areas provided to the south and east of the main service station area.

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

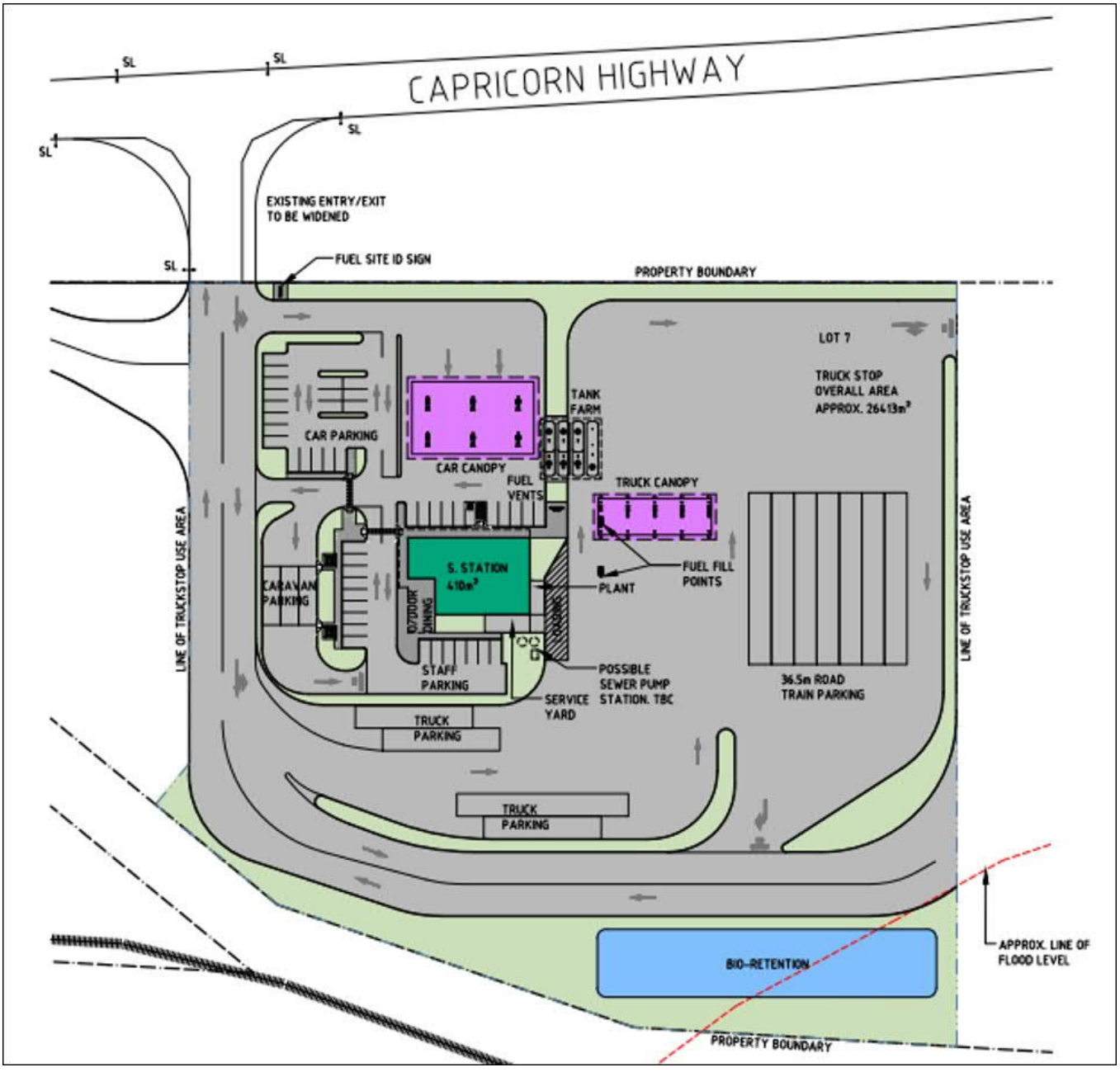


Figure 11 Extract from Site Layout Plan (Dwg. 18294-D04 Rev A) [Source: TfA Group Pty Ltd]

3.2. PROPOSED ACCESS AND PARKING

3.2.1. SITE ACCESS

As previously identified, vehicular access to the service station development is proposed to be provided via the existing Capricorn Highway / Wheatboard Road (site access) intersection located at approximate TMR Ch. 7.190km (16A).

Currently the intersection provides AUR / AUL(s) turn treatments for movements to the site, however as part of the proposed service station development, the intersection is proposed to be upgraded to provide CHR / AUL(s) turn treatments, as well as minor widening of the side access road to accommodate the swept path of the larger 36.5m Type 1 Road Train. Further details of the assessment of the required configuration of the access intersection for the proposed development are provided in Section 5.3 of this report.

Finally, it is also noted that provision has been made within the proposed site layout for the roadhouse service station to maintain access to the existing uses on the lot adjacent to the development site. This access is provided in the form of two lane, two way internal circulation roadways, with a connection to the western portion of the parcel provided approximately 50m from the Capricorn Highway intersection, and the connection to the eastern portion of Lot 7 on SP108697 provided along the rear boundary of the development site.

3.2.2 INTERNAL SITE FACILITIES

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

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

3.2.2.1 CAR PARKING

Table 9.3.1.3.2 of RRC's Access, Parking and Transport Parking Code stipulates a car parking requirement of 1 space per 25m² GFA for the relevant shop area and 1 space per 15m² GFA for food seating area of a service station. Given the proposed service station includes approximately 360m² GFA of shop area and 120m² GFA of food seating area, the recommended parking provision for the development is therefore 23 parking spaces (minimum).

As shown in the site plan Dwg. 18294-D04 Rev A (included within Appendix G), a total of 46 parking spaces are proposed on site, including 1 PWD Bay for Persons with Disabilities and 6 designated staff bays at the rear of the service station shop area.

In addition, the proposed layout includes an additional 3 parking spaces for caravans to the west of the service station building and 3 truck and 8 parking spaces for road trains in the truck stop area at the rear and on the eastern side of the service station site. As such it can be seen that the proposed parking provision on site is well in excess of the parking requirements under RRC's planning scheme and can therefore be deemed acceptable.

All parking spaces proposed for light vehicles (cars) are generally 5.4m long and 2.6m wide and are accessed by a parking aisle exceeding 6.6m width, which meets the requirements stipulated in AS2890.1 for short term, high turnover parking, while the provision of 1 PWD bay for the proposal aligns with the general PWD bay provision rate of between 1-2% of the overall parking bays on site.

3.2.2.2 QUEUING AND VEHICLE CIRCULATION

As shown in Dwg. 18294-D04 Rev A (refer Appendix G) the proposed site layout nominates one-way traffic flow (clockwise) for vehicles through the petrol pump lanes in the vicinity of the service station, with the vehicle access to the pump area located off the main central access road, approximately 40m from the Capricorn Highway intersection. In addition, the layout also nominates one-way traffic flow (anti-clockwise) through the nominated caravan parking area to the west of the service station building, while the remaining vehicle movements in the main parking area are adequately serviced by two-way two-lane circulation roads, with appropriate linemarking provided to control the vehicle movements in the main parking area. Vehicle swept paths have also been undertaken which confirm the ability of a car and caravan combination to travel through the site as required, with a copy of the relevant swept paths for the proposal included for reference in Appendix G (refer Dwg. 18294-D16 Rev A).

The proposed site layout plan also identifies the connection to the adjacent use areas on the site, with a connection to the west provided via a three way priority controlled intersection with the main access road approximately 50m from

the Capricorn Highway, while the connection to the eastern balance parcel of the site is provided from the main access road with a two-way, two-lane circulation roadway provided at the rear of the site.

Further to this, it is also noted that access to the truck stop area to the east of the service station building is provided of the rear circulation roadway, with one-way flow nominated through the truck pump lanes and then through the parking area back to the circulation roadway. As per the access intersection for the site, the circulation roads, maneuvering and parking areas and pump configurations have been designed to accommodate the swept paths of a 36.5m Type 1 Road Train, with the relevant swept paths provided in Appendix G (refer Dwg. 18294-D15 Rev A).

3.2.2.3 SERVICE VEHICLE ACCESS, CIRCULATION AND LOADING

RRC's Access, Parking and Transport Parking Code does not stipulate any specific requirement for servicing at service station developments. Notwithstanding this, a service vehicle bay is proposed to the east of the building, and the swept paths shown on Dwg. 18294-D14 Rev A (refer Appendix G) demonstrates satisfactory access to and egress from this loading bay by a service vehicle up to a 12.5m Heavy Rigid Vehicle for servicing and/or refuse collection.

Finally, it is also understood that the fuel tanker which expected to be used for regular refueling of the service station tanks will be a B-Double configuration vehicle. The swept path for the proposed refueling activities on site are shown on Dwg. 18294-D13 Rev A (refer Appendix G), which clearly indicates that the B-Double can easily access the proposed fuel fill points within the truck stop area. Based on the egress of this area being able to cater for the movements of larger Type 1 Road Train vehicles, the tanker is therefore also expected to be able to traverse the site without issue.

4.0 DEVELOPMENT TRAFFIC

4.1. TRAFFIC GENERATION

In order to determine the traffic generation of the proposed service development, reference has been made to the Traffic Generation Data—2006–2017 recently published on the Queensland Government website (https://data.qld.gov.au/dataset/traffic-generation-data-2006-2018) which includes the recorded weekday trip generation rates for 10 separate service stations locations in Queensland.

A summary of the relevant service station data is provided in Table 4 below, which reveals an average trip generation rate of 29.32 trips / 100m² GFA for service stations which are less than 1,000m² GFA. Applying this rate to the identified service station tenancy area (410m² GFA) would equate to a peak hour trip generation for the proposed development site of 120 trips (entry and exit).

Table 4: Summary of Trip Generation Data (Service Stations)

Year	Land use	Suburb	Variable Units	Variable Value	Start Date	End Date	Weekday Peak Hour Start	Weekday Peak Hour End	Weekday Peak Volume	Average Weekday Peak Hour Trip Generation Rate
2009	Service Station	MORAYFIELD	GLFA	3521	9/05/2009	15/05/2009	13:30:00	14:30:00	584	16.59
2009	Service Station	BURPENGARY EAST	GLFA	3246	9/05/2009	15/05/2009	9:00:00	10:00:00	535	16.48
2009	Service Station	CARSELDINE	GLFA	1772	9/05/2009	15/05/2009	15:00:00	16:00:00	423	23.87
2009	Service Station	STAPYLTON	GLFA	2273	9/05/2009	15/05/2009	12:30:00	13:30:00	577	25.38
2009	Service Station	UPPER COOMERA	GLFA	2396	9/05/2009	15/05/2009	5:30:00	6:30:00	759	31.68
2009	Service Station	COLLEGE VIEW	GLFA	796	9/05/2009	15/05/2009	13:30:00	14:30:00	355	44.60
2011	Service Station	WOODRIDGE	GLFA	332	14/03/2011	20/03/2011	5:30:00	6:30:00	156	46.99
2011	Service Station	SUNNYBANK HILLS	GLFA	542	14/03/2011	20/03/2011	15:00:00	16:00:00	93	17.16
2011	Service Station	MACGREGOR	GLFA	529	23/03/2011	29/03/2011	14:45:00	15:45:00	117	22.12
2011	Service Station	ELANORA	GLFA	793	8/04/2011	14/04/2011	7:45:00	8:45:00	125	15.76
									AVERAGE	29.32

Source: https://data.qld.gov.au/dataset/traffic-generation-data-2006-2018/resource/73079dc1-c34e-44cf-9e9a-8acb13591c1b

It is considered that this calculated rate is more appropriate for the site than the standard trip generation rates recommended in the DTMR's Road Planning and Design Manual (Chapter 3) and the RTA Guide to Traffic Engineering Developments of 66 trips / 100m² GFA in the peak hour. This is because the adoption of this rate for the development would equate to a peak hour generation of 271 trips for the site, which is considered to be excessive when compared to the hourly traffic on the adjacent section of the Capricorn Highway (approx. 450 vph). While the main use of the service station is expected to be "drop-in" trips by vehicles passing on the Highway, it is not considered reasonable to assume that up to a third of the passing vehicles would utilise the service station development.

As such the adoption of the calculated rate from the Queensland Government's Traffic Generation Data—2006–2017 of 29.32 trips / 100m² for service stations under 1,000m² GFA is considered acceptable, which equates to a peak hour traffic generation of 127 trips during the AM and PM periods.

4.2. TRAFFIC DISTRIBUTION

Given the proposed development is a service station with no fast food or ancillary retail services, it is anticipated that the vast majority of trips generated by the proposed development will be undiverted "drop-in" trips undertaken by vehicles travelling past on the Capricorn Highway.

However with a view to maintaining a conservative approach, it has been assumed that 20% of trips generated by the service station during the peak hours will be destination (i.e. new) trips, with a summary of the expected distribution of traffic from the development provided in Table 5 below. It is noted that the directional splits nominated for the "drop in" trips are in accordance with the directional traffic splits for the AM and PM peak hours identified in the Weekly Volume Report for the relevant section of the Capricorn Highway (refer Appendix B).

Table 5 Proposed Development Traffic Distribution

AM PEAK	PM PEAK
ARRIVAL / DEPARTURE SPLIT	
• 50% traffic inbound to development; and • 50% traffic outbound from development.	• 50% traffic inbound to development; and • 50% traffic outbound from development.
"NEW" TRIP DISTRIBUTION (20% Overall Trips)	
INBOUND • 75% from Capricorn Highway (East). • 25% from Capricorn Highway (West). OUTBOUND • 75% to Capricorn Highway (East) • 25% to Capricorn Highway (West)	INBOUND • 75% from Capricorn Highway (East). • 25% from Capricorn Highway (West). OUTBOUND • 75% to Capricorn Highway (East) • 25% to Capricorn Highway (West)
"DROP-IN" TRIP DISTRIBUTION (80% Overall Trips)	
INBOUND • 52% from Capricorn Highway (East). • 48% from Capricorn Highway (West). OUTBOUND • 48% to Capricorn Highway (East) • 52% to Capricorn Highway (West)	INBOUND • 49% from Capricorn Highway (East). • 51% from Capricorn Highway (West). OUTBOUND • 51% to Capricorn Highway (East) • 49% to Capricorn Highway (West)

4.3. DEVELOPMENT TRAFFIC VOLUMES ON THE NETWORK

Based on the information outlined above and the conservative assumptions applied, an estimate of the additional development traffic volumes at the key site access intersection of the Capricorn Highway with Wheatboard Road were established, with a summary of the resultant AM and PM peak hour development traffic volumes provided in Figure 12 to Figure 17 below, noting that 20% of the development traffic is assumed to be heavy vehicles. Further details of the calculations undertaken to establish the development traffic volumes on the network are provided in for reference in Appendix H.

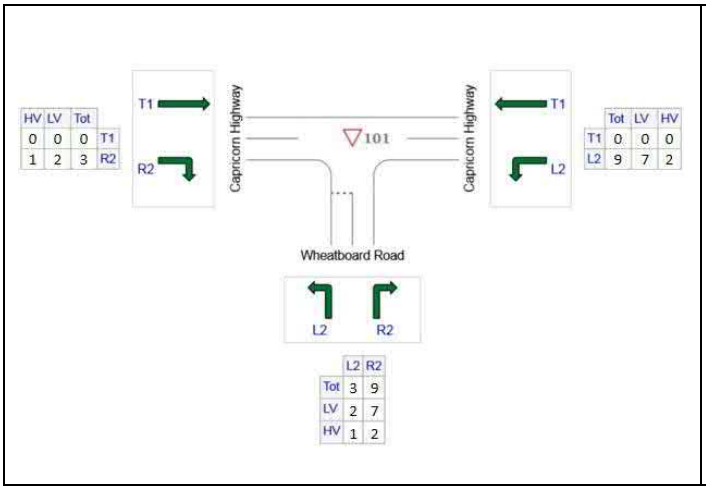


Figure 12 "New Trip" Development Volumes AM Peak Capricorn Highway / Wheatboard Road

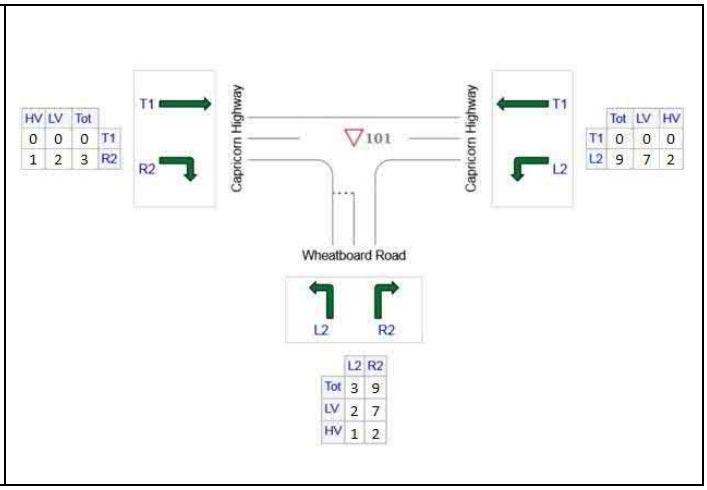


Figure 13 "New Trip" Development Volumes PM Peak Capricorn Highway / Wheatboard Road

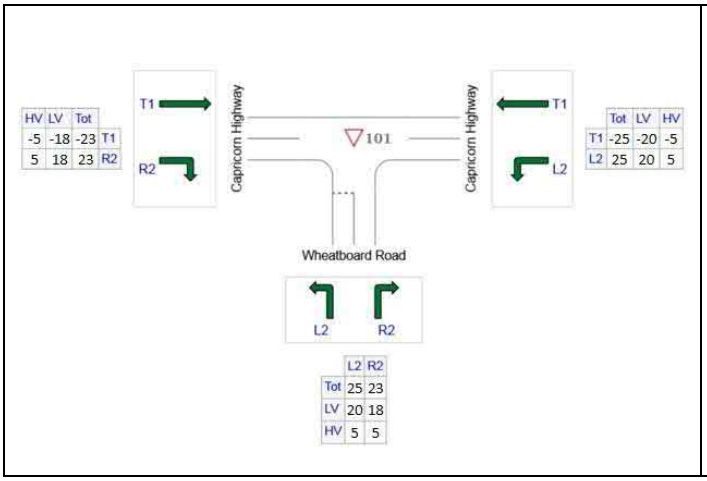


Figure 14 "Drop In" Development Volumes AM Peak
Capricorn Highway / Wheatboard Road

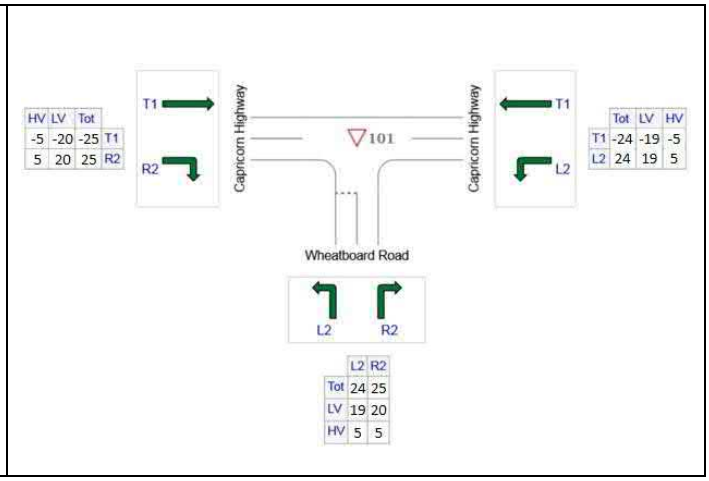


Figure 15 "Drop In" Development Volumes PM Peak
Capricorn Highway / Wheatboard Road

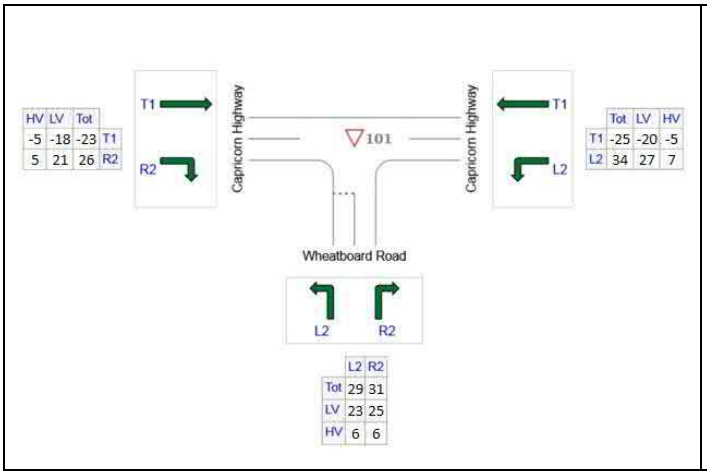


Figure 16 Total Development Traffic Volumes AM Peak
Capricorn Highway / Wheatboard Intersection

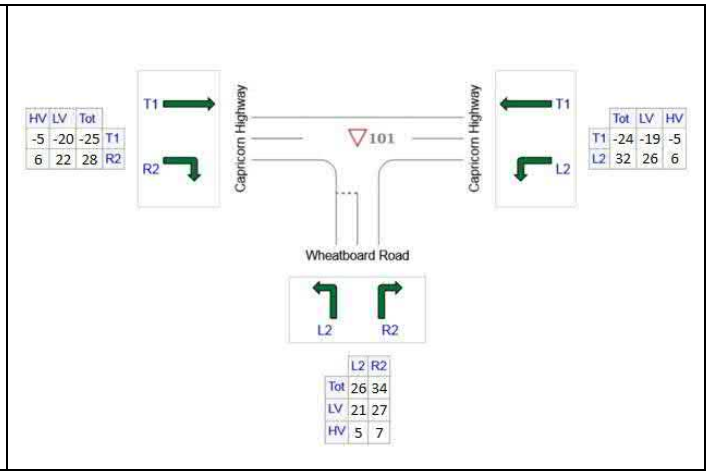


Figure 17 Total Development Traffic Volumes PM Peak
Capricorn Highway / Wheatboard Road

5.0 IMPACT ASSESSMENT AND MITIGATION

Based on the information provided above, it was determined that the critical elements of the surrounding road network in terms of the potential impact of the proposed Gracemere Roadhouse service station development was the Capricorn Highway / Wheatboard Road intersection, which is expected to be utilised as the main access to the site.

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

5.1. WITH AND WITHOUT DEVELOPMENT TRAFFIC VOLUMES

5.1.1 ROAD LINK VOLUMES

As previously discussed, given the proposed development is a service station (with no fast food or ancillary retail services it is anticipated that the vast majority of trips generated by the proposed development will be undiverted drop-in trips.

Whilst the development is predicted to generate in the order of 120 vehicle trips (entry and exit) in the AM and PM peak hours, at least 80% of these trips are expected to be undiverted drop-in trips by vehicles travelling past the site on the Capricorn Highway, which would have been on the road network even in the absence of the proposed development. Accordingly, the impact of the proposed development upon existing road link volumes is anticipated to be negligible.

5.1.2 INTERSECTION VOLUMES

The post development traffic volumes at the key Capricorn Highway / Wheatboard Road (site access) intersection were established by combining the forecast background traffic volumes with the calculated development traffic volumes identified in Section 4.3. Post development traffic volume estimates were developed for the intersection at both the assumed year of completion for the development (2019) and the nominated 10 year design horizon (2029), with the resultant volumes shown in Figure 18 to Figure 21 below.

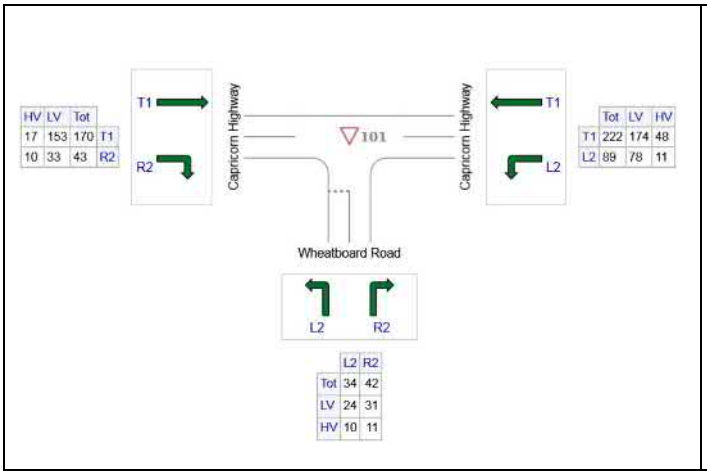


Figure 18 Post Development Traffic Volumes Capricorn Highway / Wheatboard Intersection 2019 AM Peak

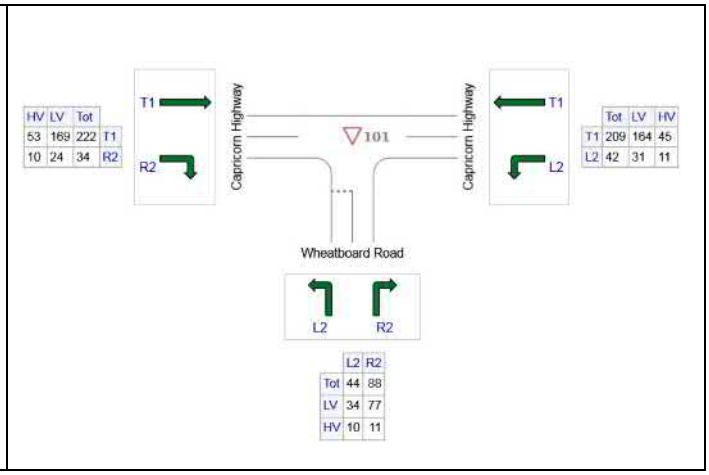


Figure 19 Post Development Traffic Volumes Capricorn Highway / Wheatboard Intersection 2019 PM Peak

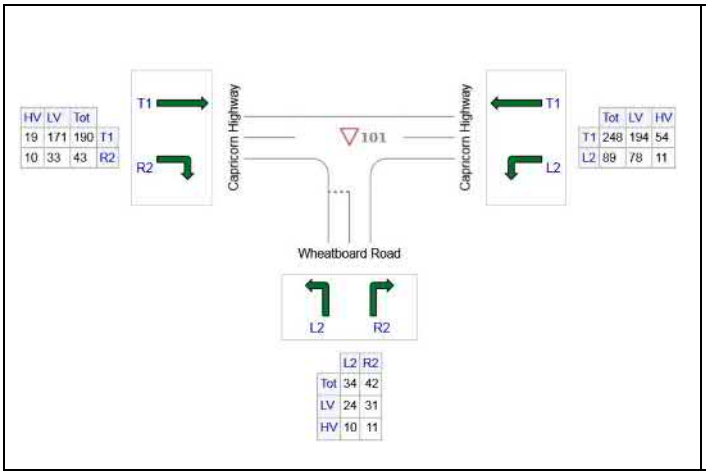


Figure 20 Post Development Traffic Volumes Capricorn Highway / Wheatboard Intersection 2029 AM Peak

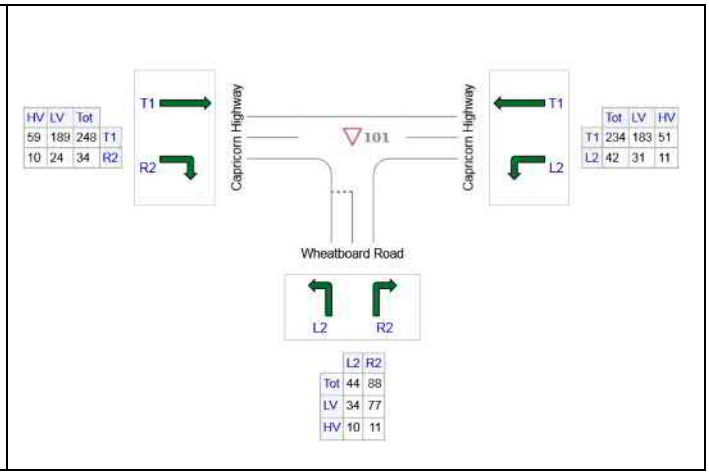


Figure 21 Post Development Traffic Volumes Capricorn Highway / Wheatboard Intersection 2029 PM Peak

5.2. ROAD SAFETY IMPACT ASSESSMENT AND MITIGATION

Based on the road environments (<8,000 vpd) of the relevant sections of the surrounding road network, it was determined that the completion of a lower order road safety assessment would be sufficient to establish the existing and post development road safety risks relevant to the proposed Gracemere Roadhouse service station development.

To establish the level of risk regarding the road safety considerations identified in Section 2.6.1 above, a safety risk score matrix as shown in Figure 22 was utilised, with the results of the road safety risk assessment summarised in Table 9.

Figure 9.3.2(a) – Safety risk score matrix

Potential likelihood	Potential consequence: Property only (1)	Minor injury (2)	Medical treatment (3)	Hospitalisation (4)	Fatality (5)
Almost certain (5)	M	M	H	H	H
Likely (4)	M	M	M	H	H
Moderate (3)	L	M	M	M	H
Unlikely (2)	L	L	M	M	M
Rare (1)	L	L	L	M	M

L: Low risk
M: Medium risk
H: High risk

Figure 22 Adopted Risk Score Matrix [Source: TMR GTIA]

Table 6 Road Safety Assessment – Proposed Gracemere Roadhouse Service Station

	Existing / Pre-Development			Post Development				Post Development & Mitigation		
Risk Item	Likelihood	Consequence	Risk Score	Likelihood	Consequence	Risk Score	Mitigation Measure	Likelihood	Consequence	Risk Score
The main site access intersection (Capricorn Highway / Wheatboard Road) currently provides an AUR turn treatment, which has potential for rear end accidents between right turning vehicles into the site and eastbound through traffic on the Highway.	Unlikely	Hospitalisation	Medium	Unlikely	Hospitalisation	Medium	A full CHR turn treatment is to be provided at the main site access intersection (Capricorn Highway / Wheatboard Road) as part of the proposed development works, which will enable vehicles turning right into the site to store in a designated turn lane clear of eastbound through traffic.	Rare	Medical Treatment	Low
The limited separation (20m) provided between the eastern internal access road and the Capricorn Highway has the potential to lead to large vehicles (>20m) turning into the site to be propped due to internal movements, requiring them to be partly stored in the adjacent traffic lanes of the Highway, potentially conflicting with through traffic on the Highway.	Unlikely	Hospitalisation	Medium	Unlikely	Hospitalisation	Medium	The existing eastern internal access road is being removed as part of the proposed Gracemere Roadhouse service station development, with the internal access road to the eastern balance area to be provided at the rear of the block. Further to this, a minimum separation of 40m has been proposed between the intersection with the Capricorn Highway to any internal intersection point to ensure that all vehicles accessing the site can store clear of the adjacent traffic lanes on the Highway.	Rare	Medical Treatment / Hospitalisation	Low / Medium

5.3. ACCESS AND FRONTAGE IMPACT ASSESSMENT AND MITIGATION

A turn warrants assessment was undertaken for the current site access intersection with the Capricorn Highway based on the forecast 2029 post development traffic volumes from the proposed Gracemere Roadhouse service station as identified in Figure 20 and Figure 21 above. The assessment was completed using Figure 2.26b of Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings, which depicts the turn warrants graph for design speeds between 70km/h and 100km/h.

The resultant graph from the assessment for the post development (2029) traffic conditions is provided in Figure 23 below, while further details of the turn warrants assessment calculations are provided for reference in Appendix I.

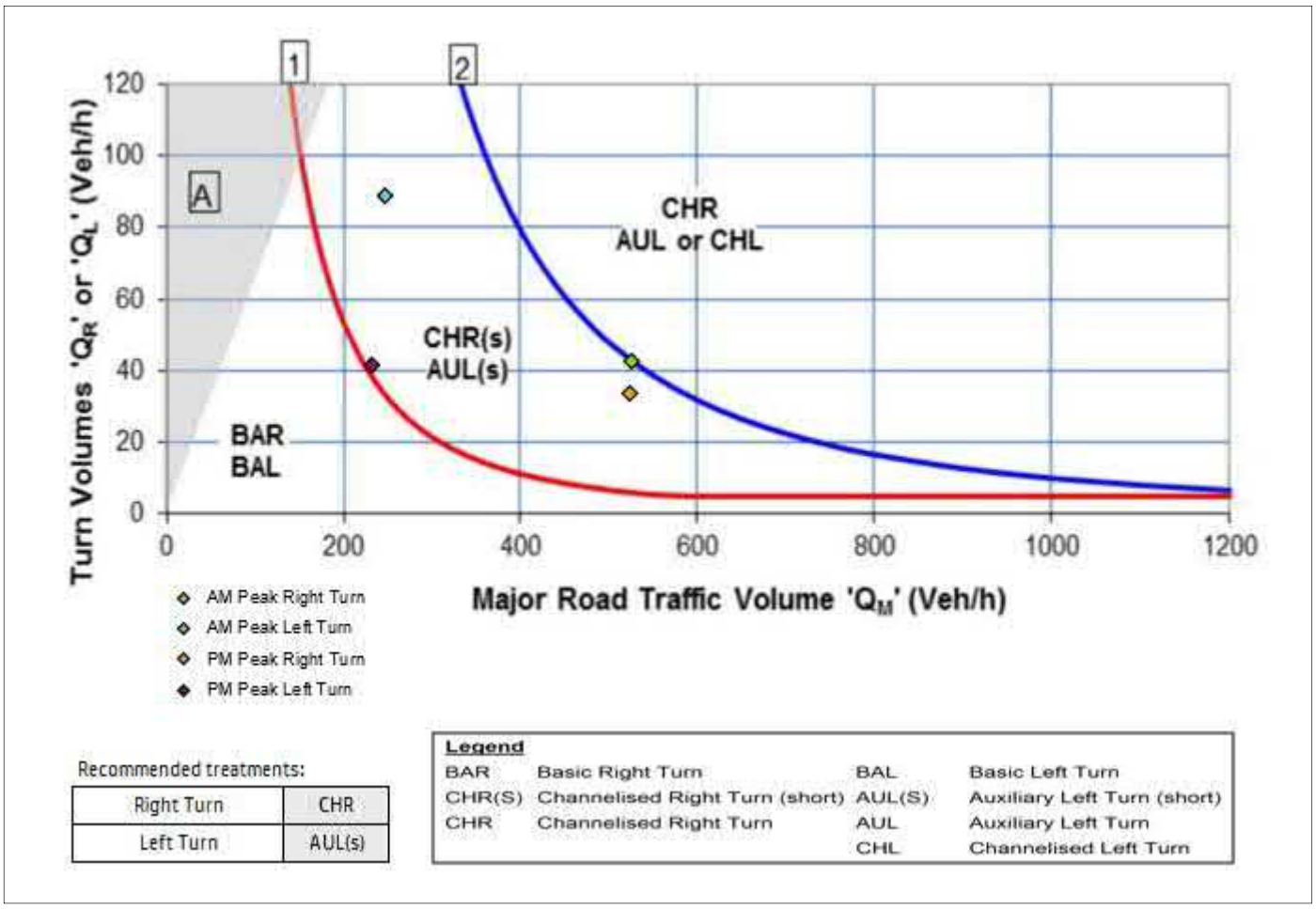


Figure 23 Turn Warrants Graph (70-100km/hr) – Post Development Traffic Volume Scenario (2029)

The results of the turn warrants assessment indicate that the recommended turn treatments at the site access intersection of the Capricorn Highway / Wheatboard Road for the post development traffic volume scenario of the proposed Gracemere Roadhouse service station were a CHR and AUL(s) treatments.

As previously identified in Section 2.3.2 above, the current configuration of this intersection provides turn treatments generally in accordance with AUR and AUL(s) arrangements. As such to mitigate the impacts to the intersection as a result of the proposed service station development, it is recommended that upgrade works be undertaken at the intersection to provide the required CHR turn treatment.

As such a functional layout plan for the upgrade works to the Capricorn Highway / Wheatboard Road intersection proposed as part of the Gracemere Roadhouse service station has been developed. This layout (refer Appendix J) identifies the expected works required at the intersection including the provision of the required CHR turn treatment, in addition to the minor widening works to the minor Wheatboard Road (site access) approach to the intersection required to accommodate the vehicle swept path of a Type 1 Road Train.

Further to this, at the pre-lodgement meeting TMR noted that lighting would be required at the proposed site access intersection. As such an assessment of the warrants for road lighting has been undertaken in accordance with Figure 17.1 of TMR's Road Planning and Design Manual, adopting estimates of the daily traffic volumes on both the Capricorn Highway and the site access road (estimated to be approximately 10% of peak hour volume calculated).

The results of this assessment are shown in Figure 24 below and identify that based on the estimated traffic flows at the intersection, that Category V3 road lighting is required to be provided at the Capricorn Highway / Wheatboard Road intersection as part of the proposed upgrade works associated with the proposed service station development.

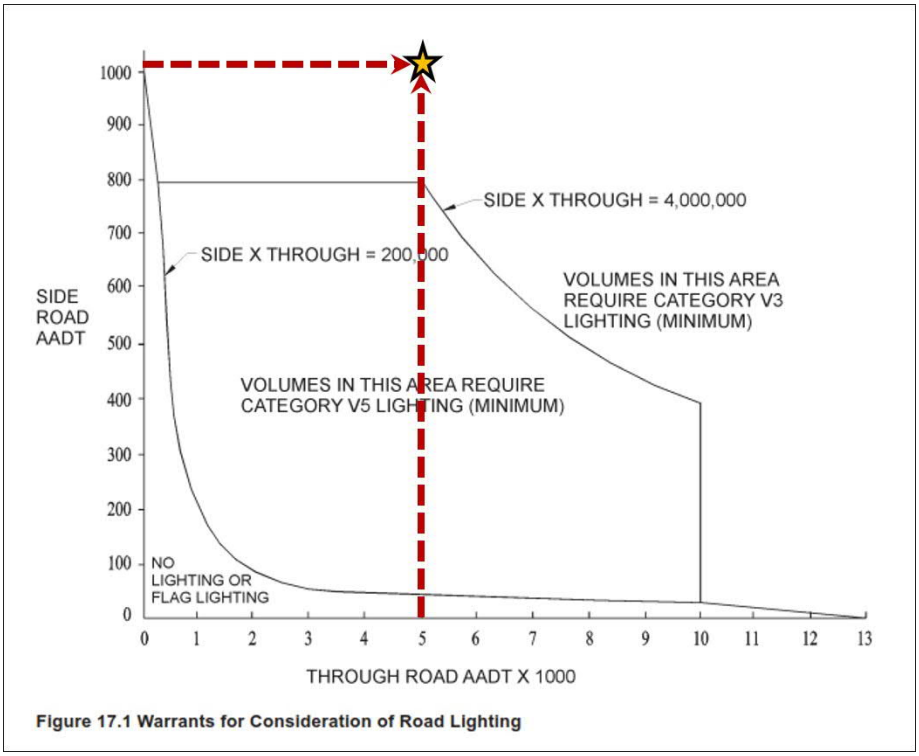


Figure 24 Road Lighting Warrants Assessment – Post Development Traffic Volumes

5.4. INTERSECTION DELAY IMPACT ASSESSMENT AND MITIGATION

In addition to the turn warrants assessment completed, the estimated post development traffic volumes for the intersection were utilised to undertake detailed intersection analysis (using SIDRA software) to establish the operational performance of the proposed upgraded configuration of the Capricorn Highway / Wheatboard Road (site access) intersection.

A summary of the results of the analysis of the post development traffic conditions at the intersection is provided in Table 7 below, with further detailed results included for reference in Appendix K.

Table 7 SIDRA Results – Upgraded Capricorn Highway / Wheatboard Road Intersection (Post Development)

Analysis Scenario	Intersection Degree of Saturation	Level of Service**	Intersection Average Delay (sec)	Maximum 95% Back of Queue Length (m)
Post Development				
2019 AM Peak	0.146	LOS B	2.7	4.7
2019 PM Peak	0.253	LOS B	3.0	8.2
2029 AM Peak	0.157	LOS B	2.6	5.1
2029 AM Peak	0.275	LOS B	3.0	9.3

** LOS value identified is for worst movement at the intersection, not the overall intersection.

The results above indicate that the proposed upgraded configuration (CHR/AULs) of the Capricorn Highway / Wheatboard Road (Site Access) intersection is expected to operate satisfactorily under the all post development traffic conditions at both the expected year of completion (2019) and 10 year design horizon (2029). This satisfactory operation of the intersection is demonstrated by all values for DOS, LOS, average delay and vehicle queueing calculated being well within acceptable limits of operation for a priority-controlled intersection.

As such the proposed upgrade works to the access intersection (CHR/AULs) can be considered appropriate and deemed to adequately mitigate the impacts of the proposed Gracemere Roadhouse Service Station development.

5.5. ROAD LINK CAPACITY ASSESSMENT AND MITIGATION

As previously discussed, given the proposed development is a service station (with no fast food or ancillary retail services it is anticipated that the vast majority of trips generated by the proposed development will be undiverted drop-in trips.

Whilst the development is predicted to generate in the order of 120 vehicle trips (entry and exit) in the AM and PM peak hours, at least 80% of these trips are expected to be undiverted drop-in trips by vehicles travelling past the site on the Capricorn Highway, which would have been on the road network even in the absence of the proposed development. Accordingly, the impact of the proposed development upon existing road link volumes is anticipated to be negligible.

5.6. PAVEMENT IMPACT ASSESSMENT AND MITIGATION

Given the proposed development is a service station on a major arterial road and is not expected to generate a significant number of new heavy vehicle movements under typical operation, no pavement mitigation works are deemed warranted or required as a result of the proposal.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1. SUMMARY OF IMPACTS AND MITIGATION MEASURES PROPOSED

6.1.1 INTERNAL FACILITIES

The traffic elements of the proposed plan of development have been designed generally in accordance with the requirements of AS2890 and the Access, Parking and Transport Code within the Rockhampton Regional Council Planning Scheme.

The proposed on-site parking provision of 60 spaces, including 40 car parking spaces (including 1 PWD bay), 6 designated staff parking spaces, 3 caravan parking spaces, 3 truck spaces and 8 parking spaces for Road Trains is in excess of Council's requirements (23 spaces) and as such is considered adequate to cater for the parking demand expected to be generated by the development.

In addition, the proposed shop and petrol tank servicing and refuse collection arrangements for the service station development can be considered adequate, with the swept paths of all nominated service vehicles shown to comfortably be able to enter the site, access the required loading and servicing locations for the development and egress the site in a forwards gear.

6.1.2 TRAFFIC IMPACTS

The turn warrants assessment undertaken based on the estimated post development traffic volumes (2029) indicated that the recommended turn treatments for the site access intersection of the Capricorn Highway / Wheatboard Road were CHR and AUL(s) treatments. As the current configuration of this intersection only provides turn treatments generally in accordance with AUR and AUL(s) arrangements, it is recommended that upgrade works be undertaken at the intersection to provide the required CHR turn treatment to mitigate the impacts of the proposed Gracemere Roadhouse service station development.

These works are proposed to be completed generally in accordance with the functional layout plan for the intersection provided in Appendix J, which identifies the required CHR turn treatment and the minor widening works to the Wheatboard Road (site access) approach to the intersection required to accommodate the vehicle swept path of a Type 1 Road Train. In addition, it is noted that Category V3 lighting is expected to be required at the site access intersection, in accordance with the road lighting assessment undertaken.

Further detailed intersection analysis of the proposed upgraded configuration of the Capricorn Highway / Wheatboard Road (Site Access) intersection identified that the intersection was expected to operate satisfactorily under all post development traffic conditions at both the expected year of completion (2019) and 10 year design horizon (2029).

As such the proposed upgrade works to the access intersection (CHR/AULs) can be considered appropriate and deemed to adequately mitigate the impacts of the proposed Gracemere Roadhouse Service Station development.

6.1.3 RECOMMENDATIONS

In light of the information provided above, it is concluded that conditional to the provision of the identified upgrade works to the Capricorn Highway / Wheatboard Road (site access) intersection (including the provision of road lighting), the proposed development will have a minor impact on the adjacent road network and can therefore be recommended to be approved from a traffic engineering perspective.

6.2. CERTIFICATION STATEMENT AND AUTHORISATION

A copy of the RPEQ certification and authorisation statement covering this assessment of the proposed Gracemere Roadhouse Service Station development located at 715 Capricorn Highway (Lot 7 on SP108697) is included for reference as Appendix L.

APPENDIX A

Prelodgement Meeting Minutes

Queensland Government

Department of
State Development, Manufacturing, Infrastructure and Planning

Our reference: 1812-8800 SPL

2 January 2019

Aurizon Operations Limited
C/- Veris (Queensland Surveying Pty Ltd)
PO Box 177
Proserpine QLD 4800
planning.whitsundays@veris.com.au

Dear Sir/Madam,

Pre-lodgement meeting record

This pre-lodgement record provides a summary of the matters discussed at the pre-lodgement meeting in addition to providing additional advice prepared subsequent to the meeting. This record provides advice regarding the likely major issues relevant to the development proposal to assist in the timely processing of a development application and is valid for a period of 9 months, unless a change in legislation or policy occurs that affects the advice. While this advice is provided in good faith, if the proposal is changed from that which was discussed with the department during the pre-application meeting, this advice is not binding.

Reference information

Departmental role:	Referral agency
Departmental jurisdiction:	10.9.4.2.4.1 – State-controlled road and Railway
Pre-lodgement meeting date:	19 December 2018

Meeting attendees:

Name	Position	Organisation
Marcus Fossey	Senior Town Planner	Veris
Chris Ott		
Andrew Batts	Senior Adviser Environmental Planning & Approvals	Aurizon
Simon Daly		Aurizon
Chris Hewitt	Senior Civil Engineer	McMurtrie Engineers
Anton de Klerk	Principal Town Planner	Department of Transport & Main Roads (DTMR)
Chris Murphy	Senior Engineer	DTMR
Rebecca Kalianiotis	Manager (Rail & Public Transport Technical Advice	DTMR

Fitzroy/Central regional office
Level 2, 209 Bolsover Street,
Rockhampton
PO Box 113, Rockhampton QLD 4700

Carl Porter	A/Manager Planning	Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP)
Haidar Etemadi	Planning Officer	DSDMIP
Lauren Holden	Business Support Officer	DSDMIP

Location details

Street address:	715 Capricorn Highway, Gracemere
Real property description:	Lot 7 on SP108697 and Lot 5 on SP108697
Local government area:	Rockhampton Regional Council

Details of proposal

Development type:	Material change of use
Development description:	Service Station (Truck Stop)

Supporting information

Drawing/report title	Prepared by	Date	Reference no.	Version/issue
Concept Site Plan	TFA Project Group	10 December 2018	18294-SK01	3
Part Concept Site Plan	TFA Project Group	10 December 2018	18294-SK02	3
Proposed Layout Plan	McMurtrie Consulting Engineer	17 December 2018	0491819-SK-001	A

Meeting minutes

The proposal is for a potential future Material change of use (MCU) application for developing a Service Station and Road House (ancillary Food and Drink Outlet). The proposal may also seek to connect Lot 5 and Lot 8 on SP108697 via an internal road to the proposed access – encouraging only one access from the State-controlled road (SCR).

Department of Transport and Main Roads (DTMR) - Rail

1. Information required for assessment of a future development application will include:
    - Stormwater management plan including details of drainage, peak discharge and effect of drainage on railway
    - Detailed earthworks plans and how earthworks will impact stormwater plus highlighting all impervious areas
    - Site photos – particularly railway formation, grade and site detail contour plan
2. Should a connection/internal road be proposed to Lot 5, over Lot 8 (which is a QR Rail site), further approvals (owner's consent) will be required from DTMR/QR Rail. The road is not to compromise the integrity of rail by allowing any member of the public to access the site. Things like fencing might need to be considered (as an example).
3. Details on an application for owner's consent will be provided (refer additional advice).

DTMR – State-controlled roads

4. Information required for assessment of a future development application will include:
    - Traffic Impact Assessment (TIA) prepared in accordance with the Guide to Traffic Impact Assessment (GTIA). The TIA and intersection form should be developed with future uses of the balance areas of the site in mind.
    - Confirmation of the design vehicle. Whilst DTMR has no objection to the site access and turning paths being shown as a 26m B-double, currently this section of the Capricorn Highway is only designated for use by up to 25m B-double vehicles.
5. Any proposed extensions to the Type 1 Road Train Route along the Capricorn Highway will need to be made to the National Heavy Vehicle Regulator (NHVR). This should be determined prior to submission of a formal Development Application.
6. Swept vehicle turn paths will be required for all movements.
7. The access to balance land (northern and southern) should be via existing access point via internal roads/easements. DTMR is not supportive of allowing any new accesses from the State-controlled Road (SCR).
8. Lot 7 has an existing access along the northern property boundary located within the SCR reserve. At the current stage (and with the current operations on site) DTMR has no issues with Aurizon using and maintaining this access trip. However, should the use over the site change/densify, then this access trip must be removed from the SCR reserve.
9. Sight visibility at the location of the existing intersection appears reasonable (300m plus) in both directions.
10. Lighting of the intersection will be required.

It is considered that the above summary is an accurate record of the matters discussed at the pre-lodgement meeting.

Additional advice

The following information is provided as additional advice prepared subsequent to the meeting:

1. An application for owner's consent should be made to patrick.z.leys@tmr.qld.gov.au or by telephone 3066 7430. Further information on obtaining owner's consent from the DTMR is available at https://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Planning-and-development-assessment-under-the-Planning-Act/Assessable-development/Owners-consent-dept-land/Owners-consent-rail-corridor-land.

For further information please contact Haidar Etemadi, Planning Officer, on 49242915 or via email RockhamptonSARA@dsdmip.qld.gov.au who will be pleased to assist.

Yours sincerely

Anthony Walsh
Manager Planning

APPENDIX B

TMR Traffic Data

Traffic Analysis and Reporting System

AADT Segment Analysis Report (Complete)

Road Section 16A - CAPRICORN HIGHWAY (ROCKHAMPTON - DUARINGA)

Traffic Year 2017

Road Segments Summary - All Vehicles

Region	Segment Start Tdist	Segment End Tdist	Site	Site Tdist	Description	AADT			VKT (Millions)			Data Year	Page
						G	A	B	G	A	B		
404	0.000 km	5.690 km	60039	3.070 km	Capricorn Hwy 1.5Km West Bruce Hwy	9,054	8,948	18,002	18.80380	18.58365	37.38745	2017	2
404	5.690 km	13.367 km	60010	8.690 km	Capricorn Hwy 3km West Gracemere	2,547	2,391	4,938	7.13696	6.69983	13.83679	2017	3
404	13.367 km	17.856 km	61457	14.580 km	Capricorn Hwy WiM Site at Kabra	2,079	2,040	4,119	3.40641	3.34251	6.74892	2017	4
404	17.856 km	51.620 km	60040	44.000 km	Capricorn Hwy 1Km East of Westwood	1,629	1,607	3,236	20.07557	19.80444	39.88001	2017	5
404	51.620 km	73.350 km	60045	64.000 km	Capricorn Hwy at 41 Mile Ck	1,370	1,371	2,741	10.86609	10.87402	21.74010	2017	6
404	73.350 km	106.380 km	150050	92.220 km	Capricorn Hway 300m E of Int 16A/462	1,341	1,302	2,643	16.16703	15.69685	31.86388	2017	7
								Totals	76.45586	75.00130	151.45716		

Road Segments Summary - Heavy Vehicles only

VKT totals are calculated only if traffic class data is available for all sites.

Region	Segment Start Tdist	Segment End Tdist	Site	Site Tdist	Description	HV AADT						HV VKT (Millions)			Data Year	Page
						G		A		B						
						AADT	HV %	AADT	HV %	AADT	HV %	G	A	B		
404	0.000 km	5.690 km	60039	3.070 km	Capricorn Hwy 1.5Km West Bruce Hwy	993	10.97%	1,128	12.61%	2,121	11.78%	2.06231	2.34269	4.40500	2017	2
404	5.690 km	13.367 km	60010	8.690 km	Capricorn Hwy 3km West Gracemere	547	21.48%	562	23.50%	1,109	22.46%	1.53275	1.57478	3.10753	2017	3
404	13.367 km	17.856 km	61457	14.580 km	Capricorn Hwy WiM Site at Kabra	566	27.22%	582	28.53%	1,148	27.87%	0.92738	0.95360	1.88098	2017	4
404	17.856 km	51.620 km	60040	44.000 km	Capricorn Hwy 1Km East of Westwood	407	24.98%	411	25.58%	818	25.28%	5.01581	5.06511	10.08092	2017	5
404	51.620 km	73.350 km	60045	64.000 km	Capricorn Hwy at 41 Mile Ck	306	22.34%	356	25.97%	662	24.15%	2.42702	2.82360	5.25062	2017	6
404	73.350 km	106.380 km	150050	92.220 km	Capricorn Hway 300m E of Int 16A/462	348	25.95%	249	19.12%	597	22.59%	4.19547	3.00193	7.19740	2017	7
											Totals	16.16075	15.76170	31.92245		

Site 60010. Point 260000025. Capricorn Hwy(TC-60010)3km W of Gracemere.

8.69 km

The width of each Road Segment is proportional to its AADT.

5.69 km

Start Point 260000026. Capricorn Hwy to Duaring@Gavial-G'mere Rd.

13.37 km

End Point 260000027. Cap Hwy to Duaringa @ E Williams Rd.

This report shows Annual Average Daily Traffic values (AADTs). Because the AADT values are converted to whole numbers, there will be occasional inaccuracies due to rounding. These inaccuracies are statistically insignificant.

	Annual Segment Growth		
	Based on 1 year's data	Based on 5 years' data	Based on 10 years' data
G	1.72%	-0.84%	0.51%
A	1.14%	-1.60%	-0.14%
B	1.44%	-1.21%	0.19%

All Vehicles (00)

G	2,547	100%
A	2,391	100%
B	4,938	100%

Light Vehicles (0A)

G	2,000	78.52%
A	1,830	76.54%
B	3,830	77.56%

Heavy Vehicles (0B)

G	547	21.48%
A	562	23.50%
B	1,109	22.46%

Short Vehicles (1A)

G	2,000	78.52%
A	1,830	76.54%
B	3,830	77.56%

Trucks and Buses (1B)

G	309	12.13%
A	336	14.05%
B	645	13.06%

Articulated Vehicles (1C)

G	115	4.52%
A	114	4.77%
B	229	4.64%

Road Trains (1D)

G	123	4.83%
A	112	4.68%
B	235	4.76%

Short 2-Axle Vehicles (2A)

G	1,913	75.11%
A	1,750	73.19%
B	3,663	74.18%

Short Vehicles Towing (2B)

G	87	3.42%
A	80	3.35%
B	167	3.38%

2-Axle Trucks and Buses (2C)

G	247	9.70%
A	280	11.71%
B	527	10.67%

3-Axle Trucks and Buses (2D)

G	54	2.12%
A	48	2.01%
B	102	2.07%

4-Axle Trucks (2E)

G	8	0.31%
A	8	0.33%
B	16	0.32%

3-Axle Articulated (2F)

G	10	0.39%
A	11	0.46%
B	21	0.43%

4-Axle Articulated (2G)

G	17	0.67%
A	18	0.75%
B	35	0.71%

5-Axle Articulated (2H)

G	11	0.43%
A	10	0.42%
B	21	0.43%

6-Axle Articulated (2I)

G	77	3.02%
A	75	3.14%
B	152	3.08%

B Double (2J)

G	108	4.24%
A	99	4.14%
B	207	4.19%

Double Road Trains (2K)

G	15	0.59%
A	13	0.54%
B	28	0.57%

Triple Road Trains (2L)

G	0	0%
A	0	0%
B	0	0%

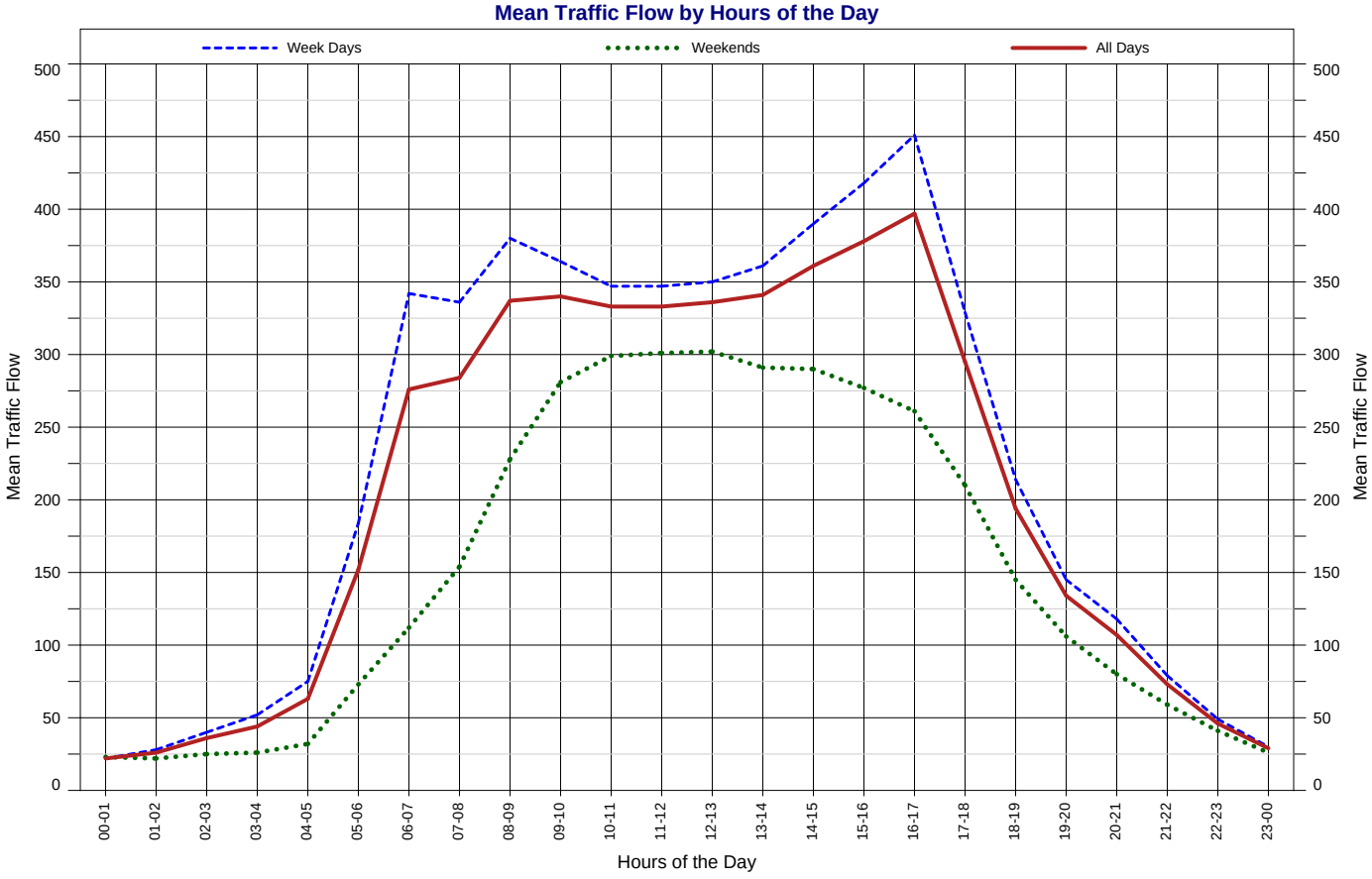
Traffic Analysis and Reporting System
Weekly Volume Report
Weeks 2017-W01 - 2017-W52 (52 weeks)

Area	404 - Fitzroy District
Road Section	16A - CAPRICORN HIGHWAY (ROCKHAMPTON - DUARINGA)
Site	60010 - Capricorn Hwy 3km West Gracemere
Thru Dist	8.69
Type	P - Permanent
Stream	TB - Bi-directional traffic flow
Traffic Class	00 - All Vehicles
Weeks	2017-W01 - 2017-W52 (52 weeks)
Date Range	Monday 02-Jan-2017 - Sunday 31-Dec-2017

Data Profile

	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays	Saturdays	Sundays
Days in Date Range	52	52	52	52	52	52	52
Days Included	49	49	51	51	51	51	50
Calendar Events	5	3	1	2	2	1	1

Mean Traffic Flow by Hours of the Day



Weekly Volume Report

Weeks 2017-W01 - 2017-W52 (52 weeks)

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Average Week Day		Average Weekend Day		Average Day	
00-01	20	0.4%	19	0.3%	26	0.5%	22	0.4%	22	0.4%	25	0.7%	21	0.6%	22	0.4%	23	0.6%	22	0.4%
01-02	28	0.5%	26	0.5%	32	0.6%	28	0.5%	27	0.5%	23	0.6%	21	0.6%	28	0.5%	22	0.6%	26	0.5%
02-03	46	0.9%	36	0.7%	43	0.8%	39	0.7%	36	0.6%	30	0.8%	19	0.5%	40	0.7%	25	0.7%	36	0.7%
03-04	76	1.5%	47	0.9%	52	0.9%	41	0.8%	42	0.7%	31	0.8%	20	0.6%	52	1.0%	26	0.7%	44	0.9%
04-05	104	2.0%	71	1.3%	71	1.3%	66	1.2%	63	1.1%	39	1.1%	24	0.7%	75	1.4%	32	0.9%	63	1.3%
05-06	214	4.1%	189	3.5%	185	3.4%	173	3.2%	160	2.8%	91	2.5%	54	1.5%	184	3.4%	73	2.0%	152	3.1%
06-07	339	6.5%	356	6.6%	362	6.6%	341	6.3%	313	5.5%	146	4.0%	78	2.1%	342	6.3%	112	3.1%	276	5.6%
07-08	342	6.6%	332	6.1%	359	6.5%	324	6.0%	323	5.7%	188	5.1%	119	3.3%	336	6.2%	154	4.2%	284	5.8%
08-09	362	7.0%	359	6.6%	432	7.8%	361	6.7%	387	6.8%	276	7.5%	180	5.0%	380	7.0%	228	6.2%	337	6.8%
09-10	342	6.6%	351	6.5%	402	7.3%	351	6.5%	376	6.6%	320	8.7%	241	6.6%	364	6.7%	281	7.7%	340	6.9%
10-11	340	6.6%	342	6.3%	357	6.5%	334	6.2%	362	6.3%	321	8.7%	276	7.6%	347	6.4%	299	8.2%	333	6.7%
11-12	339	6.5%	339	6.2%	350	6.3%	335	6.2%	370	6.5%	305	8.3%	296	8.2%	347	6.4%	301	8.2%	333	6.7%
12-13	337	6.5%	337	6.2%	355	6.4%	340	6.3%	379	6.6%	288	7.8%	315	8.7%	350	6.4%	302	8.2%	336	6.8%
13-14	344	6.6%	348	6.4%	367	6.7%	348	6.4%	399	7.0%	268	7.3%	314	8.6%	361	6.6%	291	7.9%	341	6.9%
14-15	370	7.1%	378	7.0%	385	7.0%	387	7.1%	430	7.5%	257	7.0%	323	8.9%	390	7.2%	290	7.9%	361	7.3%
15-16	390	7.5%	416	7.7%	408	7.4%	416	7.7%	461	8.1%	234	6.4%	319	8.8%	418	7.7%	277	7.6%	378	7.7%
16-17	389	7.5%	473	8.7%	448	8.1%	459	8.5%	488	8.5%	228	6.2%	294	8.1%	451	8.3%	261	7.1%	397	8.0%
17-18	287	5.5%	333	6.1%	309	5.6%	340	6.3%	378	6.6%	184	5.0%	235	6.5%	329	6.0%	210	5.7%	295	6.0%
18-19	177	3.4%	197	3.6%	201	3.6%	238	4.4%	255	4.5%	127	3.4%	163	4.5%	214	3.9%	145	4.0%	194	3.9%
19-20	119	2.3%	141	2.6%	128	2.3%	174	3.2%	164	2.9%	89	2.4%	122	3.4%	145	2.7%	106	2.9%	134	2.7%
20-21	92	1.8%	139	2.6%	100	1.8%	141	2.6%	118	2.1%	73	2.0%	87	2.4%	118	2.2%	80	2.2%	107	2.2%
21-22	58	1.1%	105	1.9%	69	1.3%	88	1.6%	76	1.3%	61	1.7%	56	1.5%	79	1.4%	59	1.6%	73	1.5%
22-23	38	0.7%	58	1.1%	45	0.8%	50	0.9%	53	0.9%	48	1.3%	33	0.9%	49	0.9%	41	1.1%	46	0.9%
23-24	24	0.5%	37	0.7%	28	0.5%	29	0.5%	34	0.6%	30	0.8%	21	0.6%	30	0.6%	26	0.7%	29	0.6%

Peaks	Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count	
AM	08:45	366	09:15	361	09:15	434	08:45	365	09:15	389	10:30	326	12:00	296	09:15	381	11:15	301	09:15	342
PM	16:30	391	17:00	473	17:00	448	17:00	460	17:00	489	13:00	289	15:30	329	17:00	452	13:00	302	17:00	396

12-Hour	4,019	77.6%	4,205	77.5%	4,373	79.3%	4,233	78.0%	4,608	80.6%	2,996	81.4%	3,075	84.7%	4,287	78.6%	3,039	82.9%	3,929	79.6%
16-Hour	4,627	89.4%	4,946	91.1%	5,032	91.3%	4,977	91.7%	5,279	92.4%	3,365	91.4%	3,418	94.1%	4,971	91.2%	3,396	92.7%	4,519	91.5%
18-Hour	4,689	90.6%	5,041	92.9%	5,105	92.6%	5,056	93.2%	5,366	93.9%	3,443	93.5%	3,472	95.6%	5,050	92.6%	3,463	94.5%	4,594	93.1%
24-Hour	5,177	100.0%	5,429	100.0%	5,514	100.0%	5,425	100.0%	5,716	100.0%	3,682	100.0%	3,631	100.0%	5,451	100.0%	3,664	100.0%	4,937	100.0%

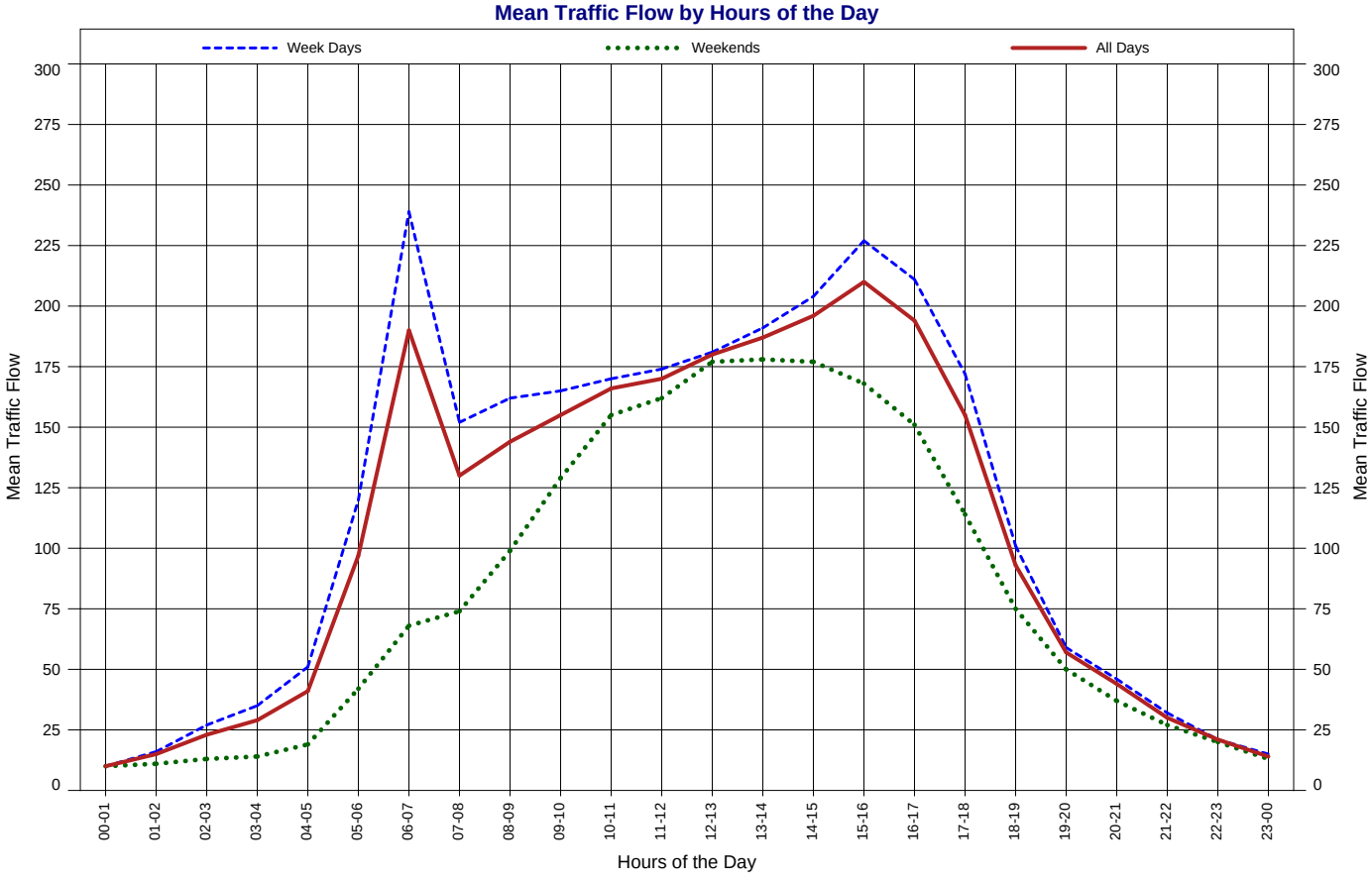
Avg Week Day		95.0%		99.6%		101.2%		99.5%		104.9%						100.0%		67.2%		90.6%
Avg Weekend Day												100.5%		99.1%		148.8%		100.0%		134.7%
Avg Day		104.9%		110.0%		111.7%		109.9%		115.8%		74.6%		73.5%		110.4%		74.2%		100.0%

Area	404 - Fitzroy District
Road Section	16A - CAPRICORN HIGHWAY (ROCKHAMPTON - DUARINGA)
Site	60010 - Capricorn Hwy 3km West Gracemere
Thru Dist	8.69
Type	P - Permanent
Stream	TG - Thru traffic -in gazettal dirn
Traffic Class	00 - All Vehicles
Weeks	2017-W01 - 2017-W52 (52 weeks)
Date Range	Monday 02-Jan-2017 - Sunday 31-Dec-2017

Data Profile

	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays	Saturdays	Sundays
Days in Date Range	52	52	52	52	52	52	52
Days Included	49	49	51	51	50	51	50
Calendar Events	5	3	1	2	2	1	1

Mean Traffic Flow by Hours of the Day



Weekly Volume Report

Weeks 2017-W01 - 2017-W52 (52 weeks)

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Average Week Day		Average Weekend Day		Average Day	
00-01	8	0.3%	9	0.3%	11	0.4%	11	0.4%	10	0.4%	11	0.6%	9	0.4%	10	0.4%	10	0.5%	10	0.4%
01-02	17	0.6%	16	0.5%	18	0.6%	15	0.6%	16	0.6%	12	0.7%	10	0.5%	16	0.6%	11	0.6%	15	0.6%
02-03	35	1.2%	25	0.9%	28	1.0%	23	0.9%	22	0.8%	16	0.9%	10	0.5%	27	1.0%	13	0.7%	23	0.9%
03-04	61	2.1%	32	1.1%	34	1.2%	23	0.9%	25	1.0%	17	0.9%	11	0.5%	35	1.3%	14	0.7%	29	1.1%
04-05	83	2.8%	49	1.7%	43	1.6%	40	1.5%	38	1.5%	22	1.2%	15	0.7%	51	1.8%	19	1.0%	41	1.6%
05-06	153	5.2%	123	4.2%	116	4.2%	109	4.1%	97	3.7%	54	2.9%	30	1.4%	120	4.3%	42	2.1%	97	3.8%
06-07	238	8.1%	252	8.6%	252	9.1%	238	9.0%	215	8.2%	90	4.9%	45	2.1%	239	8.6%	68	3.4%	190	7.4%
07-08	170	5.8%	163	5.6%	159	5.7%	142	5.4%	126	4.8%	84	4.6%	63	3.0%	152	5.5%	74	3.7%	130	5.1%
08-09	170	5.8%	171	5.8%	177	6.4%	152	5.8%	142	5.4%	109	5.9%	88	4.2%	162	5.8%	99	5.0%	144	5.6%
09-10	173	5.9%	170	5.8%	177	6.4%	154	5.8%	153	5.8%	131	7.1%	127	6.0%	165	5.9%	129	6.5%	155	6.1%
10-11	182	6.2%	175	6.0%	176	6.3%	153	5.8%	163	6.2%	150	8.1%	160	7.6%	170	6.1%	155	7.8%	166	6.5%
11-12	189	6.4%	181	6.2%	174	6.3%	157	6.0%	167	6.4%	153	8.3%	171	8.1%	174	6.3%	162	8.2%	170	6.7%
12-13	190	6.4%	191	6.5%	184	6.6%	166	6.3%	174	6.6%	159	8.6%	194	9.2%	181	6.5%	177	8.9%	180	7.1%
13-14	200	6.8%	202	6.9%	194	7.0%	175	6.6%	186	7.1%	153	8.3%	202	9.6%	191	6.9%	178	9.0%	187	7.3%
14-15	215	7.3%	220	7.5%	199	7.2%	189	7.2%	199	7.6%	146	7.9%	207	9.8%	204	7.3%	177	8.9%	196	7.7%
15-16	235	8.0%	247	8.4%	217	7.8%	213	8.1%	225	8.6%	131	7.1%	204	9.7%	227	8.2%	168	8.5%	210	8.2%
16-17	208	7.1%	236	8.0%	196	7.1%	205	7.8%	209	8.0%	118	6.4%	183	8.7%	211	7.6%	151	7.6%	194	7.6%
17-18	166	5.6%	191	6.5%	161	5.8%	170	6.5%	170	6.5%	88	4.8%	140	6.6%	172	6.2%	114	5.7%	155	6.1%
18-19	98	3.3%	105	3.6%	91	3.3%	110	4.2%	100	3.8%	56	3.0%	94	4.5%	101	3.6%	75	3.8%	93	3.6%
19-20	56	1.9%	61	2.1%	56	2.0%	65	2.5%	59	2.3%	39	2.1%	61	2.9%	59	2.1%	50	2.5%	57	2.2%
20-21	43	1.5%	47	1.6%	45	1.6%	51	1.9%	46	1.8%	35	1.9%	39	1.8%	46	1.7%	37	1.9%	44	1.7%
21-22	28	0.9%	32	1.1%	31	1.1%	34	1.3%	34	1.3%	31	1.7%	23	1.1%	32	1.2%	27	1.4%	30	1.2%
22-23	18	0.6%	19	0.6%	20	0.7%	22	0.8%	26	1.0%	25	1.4%	15	0.7%	21	0.8%	20	1.0%	21	0.8%
23-24	13	0.4%	16	0.5%	14	0.5%	16	0.6%	17	0.6%	15	0.8%	10	0.5%	15	0.5%	13	0.7%	14	0.5%

Peaks	Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count	
AM	06:45	243	06:45	257	06:45	254	06:45	238	06:45	216	11:45	154	12:00	172	06:45	242	11:45	161	06:45	189
PM	16:00	235	16:00	248	16:00	218	16:15	215	16:00	225	13:00	159	15:30	213	16:00	228	13:30	178	16:00	209

12-Hour	2,196	74.5%	2,252	76.8%	2,105	75.9%	1,986	75.4%	2,014	76.9%	1,478	80.1%	1,833	86.8%	2,110	75.9%	1,659	83.7%	1,980	77.6%
16-Hour	2,561	86.8%	2,644	90.1%	2,489	89.8%	2,374	90.2%	2,368	90.4%	1,673	90.7%	2,001	94.8%	2,486	89.4%	1,841	92.8%	2,301	90.2%
18-Hour	2,592	87.9%	2,679	91.3%	2,523	91.0%	2,412	91.6%	2,411	92.1%	1,713	92.8%	2,026	96.0%	2,522	90.7%	1,874	94.5%	2,336	91.6%
24-Hour	2,949	100.0%	2,933	100.0%	2,773	100.0%	2,633	100.0%	2,619	100.0%	1,845	100.0%	2,111	100.0%	2,781	100.0%	1,983	100.0%	2,551	100.0%

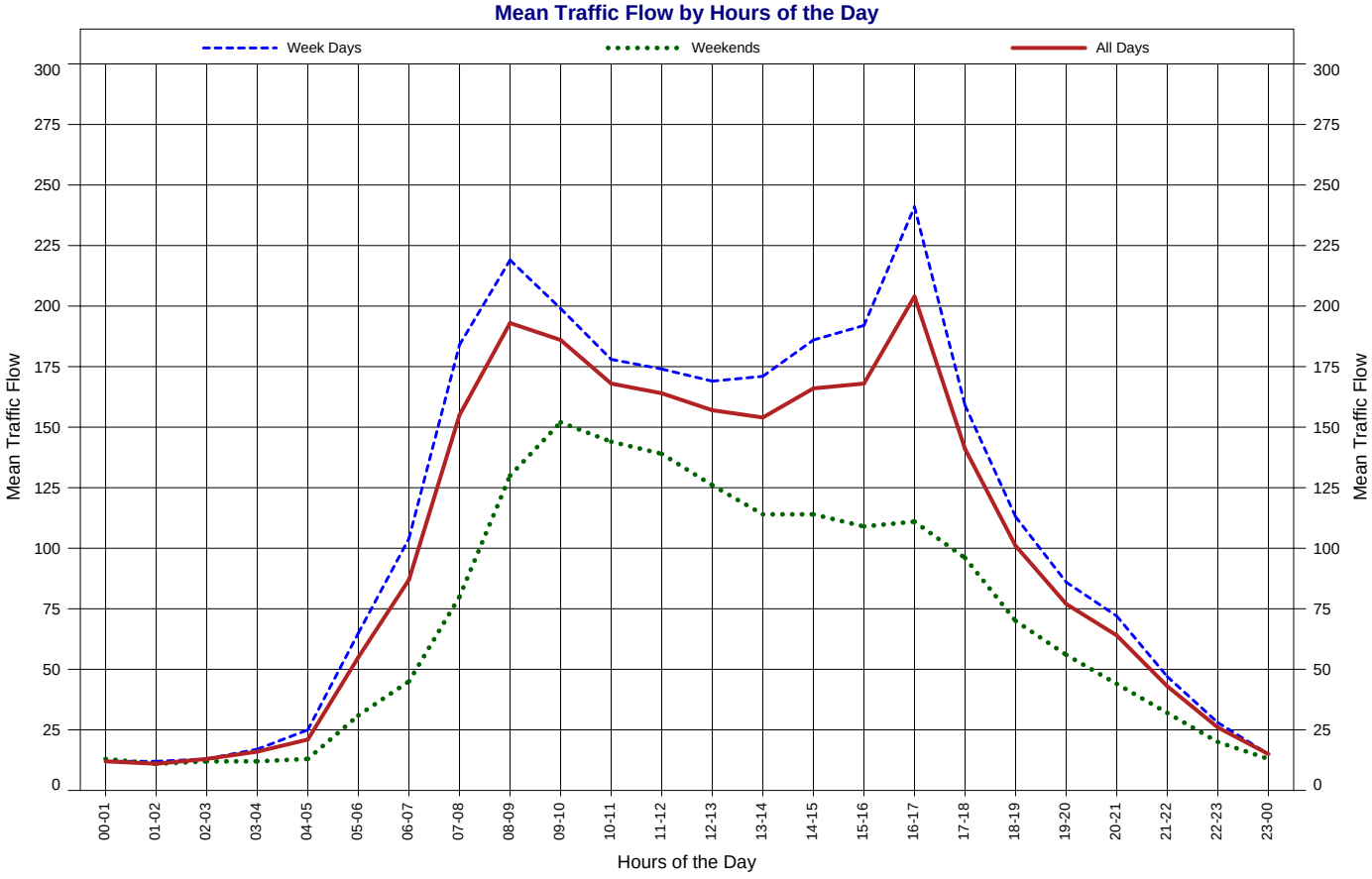
Avg Week Day		106.0%		105.5%		99.7%		94.7%		94.2%						100.0%		71.3%		91.7%
Avg Weekend Day												93.0%		106.5%		140.2%		100.0%		128.6%
Avg Day		115.6%		115.0%		108.7%		103.2%		102.7%		72.3%		82.8%		109.0%		77.7%		100.0%

Area	404 - Fitzroy District
Road Section	16A - CAPRICORN HIGHWAY (ROCKHAMPTON - DUARINGA)
Site	60010 - Capricorn Hwy 3km West Gracemere
Thru Dist	8.69
Type	P - Permanent
Stream	TA - Thru traffic -against gazettal
Traffic Class	00 - All Vehicles
Weeks	2017-W01 - 2017-W52 (52 weeks)
Date Range	Monday 02-Jan-2017 - Sunday 31-Dec-2017

Data Profile

	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays	Saturdays	Sundays
Days in Date Range	52	52	52	52	52	52	52
Days Included	49	49	51	51	51	51	50
Calendar Events	5	3	1	2	2	1	1

Mean Traffic Flow by Hours of the Day



Weekly Volume Report

Weeks 2017-W01 - 2017-W52 (52 weeks)

Hour	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Average Week Day		Average Weekend Day		Average Day	
00-01	11	0.5%	10	0.4%	15	0.5%	11	0.4%	12	0.4%	14	0.8%	12	0.8%	12	0.4%	13	0.8%	12	0.5%
01-02	11	0.5%	10	0.4%	14	0.5%	12	0.4%	11	0.3%	11	0.6%	11	0.7%	12	0.4%	11	0.7%	11	0.5%
02-03	10	0.4%	12	0.5%	15	0.5%	16	0.6%	14	0.4%	14	0.8%	10	0.7%	13	0.5%	12	0.7%	13	0.5%
03-04	15	0.7%	15	0.6%	19	0.7%	19	0.7%	18	0.6%	14	0.8%	9	0.6%	17	0.6%	12	0.7%	16	0.7%
04-05	21	0.9%	22	0.9%	28	1.0%	26	0.9%	26	0.8%	16	0.9%	10	0.7%	25	0.9%	13	0.8%	21	0.9%
05-06	61	2.7%	66	2.6%	69	2.5%	64	2.3%	65	2.1%	37	2.0%	24	1.6%	65	2.4%	31	1.8%	55	2.3%
06-07	101	4.5%	104	4.2%	110	4.0%	103	3.7%	102	3.2%	56	3.0%	33	2.2%	104	3.9%	45	2.7%	87	3.6%
07-08	172	7.7%	169	6.8%	200	7.3%	181	6.5%	200	6.3%	104	5.6%	56	3.7%	184	6.9%	80	4.7%	155	6.5%
08-09	192	8.6%	189	7.6%	255	9.3%	209	7.5%	248	7.9%	167	9.1%	92	6.0%	219	8.2%	130	7.7%	193	8.1%
09-10	168	7.6%	181	7.2%	225	8.2%	196	7.0%	226	7.2%	190	10.3%	114	7.5%	199	7.4%	152	9.0%	186	7.8%
10-11	158	7.1%	167	6.7%	182	6.6%	180	6.4%	202	6.4%	171	9.3%	116	7.6%	178	6.6%	144	8.5%	168	7.0%
11-12	150	6.7%	158	6.3%	176	6.4%	178	6.4%	206	6.5%	152	8.3%	125	8.2%	174	6.5%	139	8.2%	164	6.8%
12-13	147	6.6%	147	5.9%	171	6.2%	174	6.2%	208	6.6%	130	7.1%	121	7.9%	169	6.3%	126	7.5%	157	6.5%
13-14	144	6.5%	146	5.8%	173	6.3%	173	6.2%	217	6.9%	116	6.3%	112	7.4%	171	6.4%	114	6.8%	154	6.4%
14-15	155	7.0%	158	6.3%	185	6.8%	198	7.1%	235	7.5%	112	6.1%	116	7.6%	186	6.9%	114	6.8%	166	6.9%
15-16	155	7.0%	169	6.8%	191	7.0%	203	7.3%	241	7.6%	103	5.6%	115	7.6%	192	7.2%	109	6.5%	168	7.0%
16-17	181	8.1%	237	9.5%	251	9.2%	254	9.1%	284	9.0%	110	6.0%	112	7.4%	241	9.0%	111	6.6%	204	8.5%
17-18	121	5.4%	141	5.6%	148	5.4%	171	6.1%	212	6.7%	96	5.2%	95	6.2%	159	5.9%	96	5.7%	141	5.9%
18-19	79	3.6%	92	3.7%	110	4.0%	128	4.6%	157	5.0%	71	3.9%	69	4.5%	113	4.2%	70	4.1%	101	4.2%
19-20	63	2.8%	80	3.2%	72	2.6%	109	3.9%	106	3.4%	50	2.7%	61	4.0%	86	3.2%	56	3.3%	77	3.2%
20-21	49	2.2%	92	3.7%	55	2.0%	91	3.3%	73	2.3%	39	2.1%	48	3.2%	72	2.7%	44	2.6%	64	2.7%
21-22	30	1.3%	73	2.9%	38	1.4%	53	1.9%	43	1.4%	31	1.7%	33	2.2%	47	1.8%	32	1.9%	43	1.8%
22-23	20	0.9%	39	1.6%	25	0.9%	28	1.0%	28	0.9%	22	1.2%	18	1.2%	28	1.0%	20	1.2%	26	1.1%
23-24	11	0.5%	22	0.9%	13	0.5%	14	0.5%	17	0.5%	15	0.8%	11	0.7%	15	0.6%	13	0.8%	15	0.6%

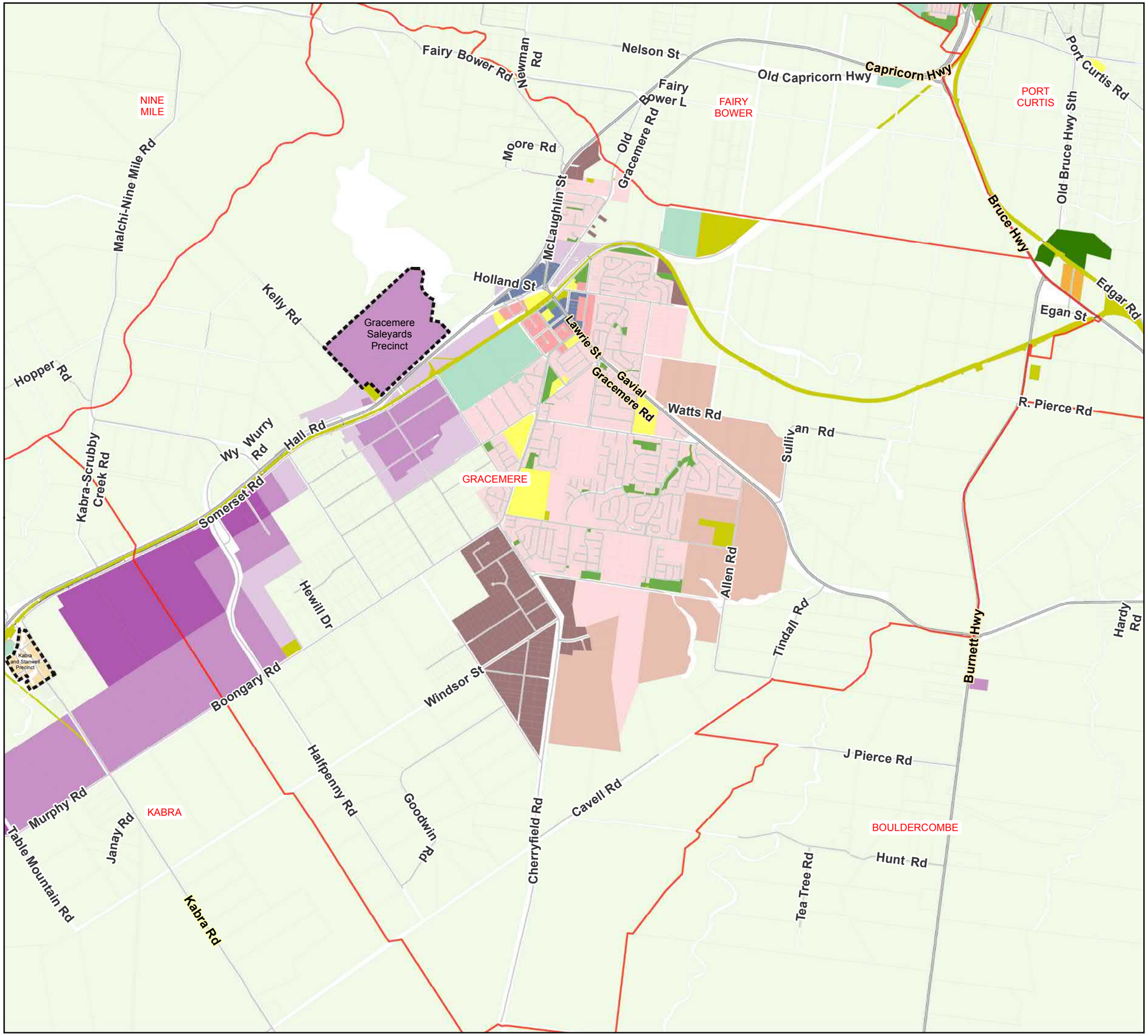
Peaks	Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count		Hour End & Count	
AM	08:45	198	08:30	188	09:00	255	08:45	214	09:00	248	10:00	190	12:00	126	08:45	219	10:00	152	09:15	194
PM	17:00	181	17:00	237	17:00	251	17:00	254	17:00	283	13:00	129	13:00	121	17:00	242	13:00	124	17:00	203

12-Hour	1,822	81.9%	1,954	78.2%	2,267	82.7%	2,245	80.4%	2,636	83.7%	1,522	82.7%	1,243	81.6%	2,185	81.5%	1,385	82.1%	1,957	81.6%
16-Hour	2,065	92.8%	2,303	92.2%	2,542	92.8%	2,601	93.2%	2,960	93.9%	1,698	92.2%	1,418	93.1%	2,494	93.0%	1,562	92.6%	2,228	92.9%
18-Hour	2,096	94.2%	2,364	94.6%	2,580	94.2%	2,643	94.7%	3,005	95.4%	1,735	94.2%	1,447	95.0%	2,537	94.6%	1,595	94.5%	2,269	94.7%
24-Hour	2,225	100.0%	2,499	100.0%	2,740	100.0%	2,791	100.0%	3,151	100.0%	1,841	100.0%	1,523	100.0%	2,681	100.0%	1,687	100.0%	2,397	100.0%

Avg Week Day		83.0%		93.2%		102.2%		104.1%		117.5%						100.0%		62.9%		89.4%
Avg Weekend Day												109.1%		90.3%		158.9%		100.0%		142.1%
Avg Day		92.8%		104.3%		114.3%		116.4%		131.5%		76.8%		63.5%		111.8%		70.4%		100.0%

APPENDIX C

RRC Planning Scheme Zoning Mapping



Legend

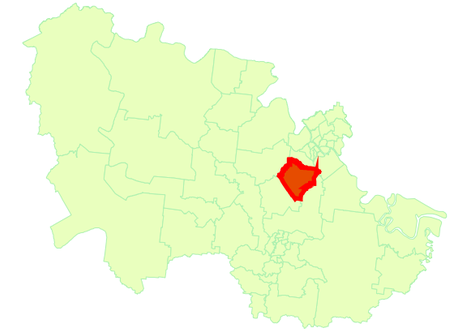
Land Use Zones

- Low density residential
- Low-Medium density residential
- High density residential
- Principal centre
- Major centre
- District centre
- Local centre
- Neighbourhood centre
- Sport and recreation
- Open space
- Environmental management and conservation
- Low impact industry
- Medium impact industry
- High impact industry
- Special industry
- Waterfront and marine industry
- Community facilities
- Emerging community
- Limited development (constrained land)
- Rural
- Rural residential
- Special purpose
- Specialised centre
- Township
- Precincts
- Sub-Precincts
- Locality Boundaries

GRGSP = Gladstone Road and George Street Precinct
MSP = Musgrave Street Precinct
RAP = Rockhampton Airport Precinct
Source: RRC, 2015.

Approx Scale @A3 1:40,000

0 600 1,200 2,400 Metres



Map ZM-17
GRACEMERE
Rockhampton Regional Council Planning Scheme
Zone and Precinct Map

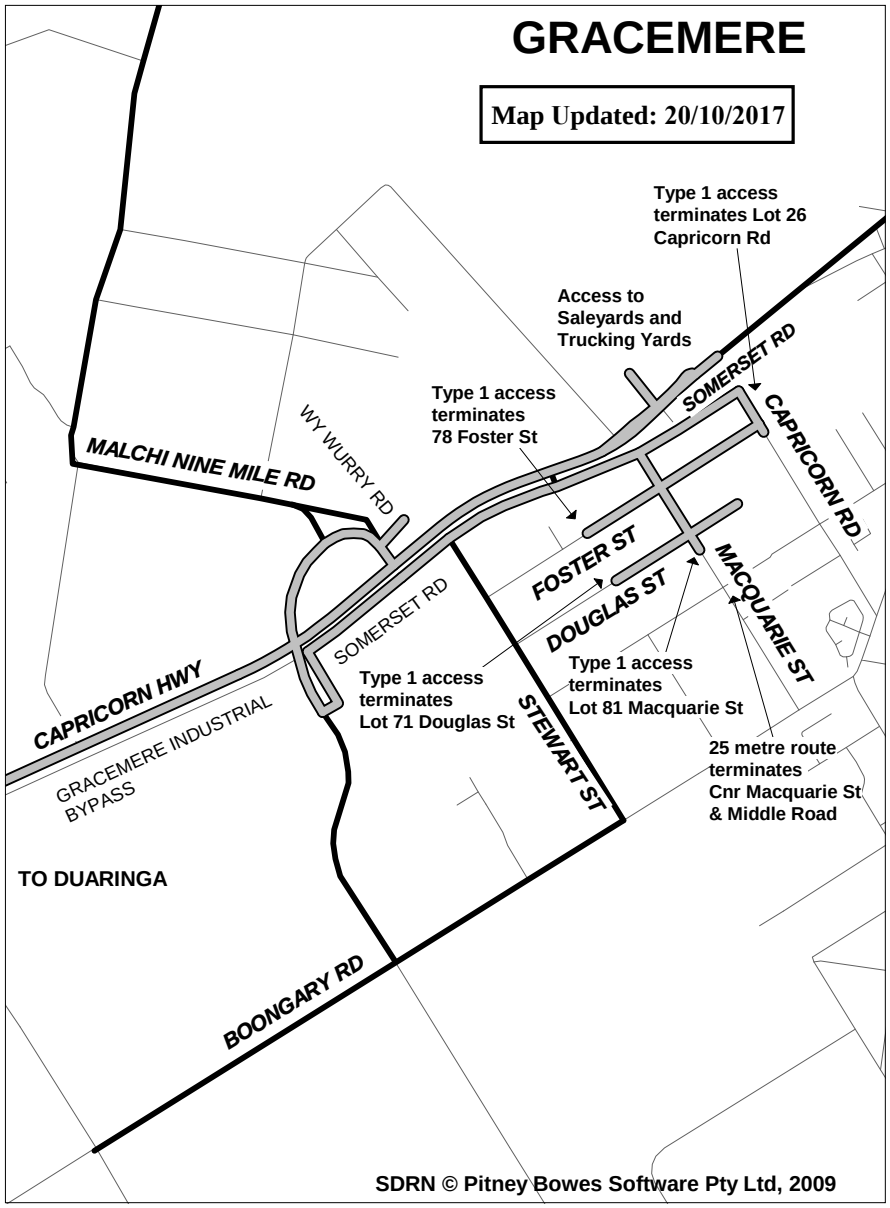
August 2015

APPENDIX D

TMR Multi-Combination Vehicle Mapping

MULTI-COMBINATION ROUTES IN QUEENSLAND

Queensland Government



B-DOUBLES
23 metre routes
23 & 25 metre routes

ROAD TRAINS
Type 1 routes
Type 1 & 2 routes

NO ROAD TRAINS
or B-DOUBLES

REFER TO LEGEND FOR DETAILS OF OPERATIONS IN THE SHADED AREAS
Note: 23 & 25 metre B-doubles can access Type 1 & 2 road train routes

APPENDIX E

Intersection Traffic Volume Calculations

049-18-19 | Gracemere Roadhouse

Capricorn Highway / Site Access Intersection

Existing Traffic Volume Estimates

Existing Use Movements via Site Access (Provided by Aurizon)

Vehicle	Weekly	Max Daily	Max Peak Hour
Gracemere Depot - Signalling			
Light Vehicles		31	31
Body Truck	1	1	1
Gracemere Depot - Overhead			
Light Vehicles		20	20
Body Trucks		3	1
Semi Trailer	1	1	1
Gracemere Depot - IML Warehouse			
Cranes (20t Franna)	3	1	1
Semi Trailer	3	1	1
B-Double	3	1	1
Courier / Fixed Body Truck	15	3	1
Aurizon Passenger Vehicles	5	1	1
Gracemere Tilt Train			
Passenger Vehicles		19	19
Semi Trailer		4	1

Total Light (Passenger) Vehicles - Peak Hour	70
Total Heavy Vehicles - Peak Hour	9

AM Peak

Light Vehicles Incoming	90%	63
From East	80%	50
From West	20%	13
Light Vehicles Outgoing	10%	7
To East	80%	6
To West	20%	1
Heavy Vehicles Incoming	100%	9
From East	50%	5
From West	50%	5
Heavy Vehicles Outgoing	100%	9
To East	50%	5
To West	50%	5

PM Peak

Light Vehicles Incoming	10%	7
From East	80%	6
From West	20%	1
Light Vehicles Outgoing	90%	63
To East	80%	50
To West	20%	13
Heavy Vehicles Incoming	100%	9
From East	50%	5
From West	50%	5
Heavy Vehicles Outgoing	100%	9
To East	50%	5
To West	50%	5

049-18-19 | Gracemere Roadhouse

Capricorn Highway / Site Access Intersection

Pre Development Traffic Conditions - Peak Hour Intersection Volume Forecasts (Estimated)

AM PEAK

GR %	0%	0%	1.0%	1.0%	0%	0%	0%	0%	1.0%	1.0%	0%	0%
Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2017	50	5	190	52	1	5	6	5	168	21	13	5
2018	50	5	192	53	1	5	6	5	170	21	13	5
2019	50	5	194	53	1	5	6	5	171	21	13	5
2020	50	5	196	54	1	5	6	5	173	22	13	5
2021	50	5	198	54	1	5	6	5	175	22	13	5
2022	50	5	200	55	1	5	6	5	177	22	13	5
2023	50	5	202	55	1	5	6	5	178	22	13	5
2024	50	5	204	56	1	5	6	5	180	23	13	5
2025	50	5	206	56	1	5	6	5	182	23	13	5
2026	50	5	208	57	1	5	6	5	184	23	13	5
2027	50	5	210	57	1	5	6	5	186	23	13	5
2028	50	5	212	58	1	5	6	5	187	23	13	5
2029	50	5	214	59	1	5	6	5	189	24	13	5

PM PEAK

GR %	0%	0%	1.0%	1.0%	0%	0%	0%	0%	1.0%	1.0%	0%	0%
Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2017	6	5	179	49	13	5	50	5	185	57	1	5
2018	6	5	181	49	13	5	50	5	187	58	1	5
2019	6	5	183	50	13	5	50	5	189	58	1	5
2020	6	5	184	50	13	5	50	5	191	59	1	5
2021	6	5	186	51	13	5	50	5	193	59	1	5
2022	6	5	188	51	13	5	50	5	194	60	1	5
2023	6	5	190	52	13	5	50	5	196	61	1	5
2024	6	5	192	53	13	5	50	5	198	61	1	5
2025	6	5	194	53	13	5	50	5	200	62	1	5
2026	6	5	196	54	13	5	50	5	202	62	1	5
2027	6	5	198	54	13	5	50	5	204	63	1	5
2028	6	5	200	55	13	5	50	5	206	64	1	5
2029	6	5	202	55	13	5	50	5	208	64	1	5

APPENDIX F

Pre-Development SIDRA Analysis Results

MOVEMENT SUMMARY

Site: 101 [PRE 2019 AM]

Capricorn Highway / Wheatboard Road
Existing Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	6	83.3	0.043	9.0	LOS A	0.1	1.6	0.54	0.74	42.5
3	R2	12	45.5	0.043	13.8	LOS B	0.1	1.6	0.54	0.74	44.2
Approach		18	58.8	0.043	12.1	LOS B	0.1	1.6	0.54	0.74	43.6
East: Capricorn Highway											
4	L2	58	9.1	0.033	5.6	LOS A	0.0	0.0	0.00	0.57	50.2
5	T1	260	21.5	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		318	19.2	0.150	1.0	NA	0.0	0.0	0.00	0.10	58.4
West: Capricorn Highway											
11	T1	202	10.9	0.104	0.3	LOS A	0.2	1.9	0.10	0.05	59.2
12	R2	19	27.8	0.104	8.1	LOS A	0.2	1.9	0.14	0.07	52.4
Approach		221	12.4	0.104	1.0	NA	0.2	1.9	0.11	0.05	58.7
All Vehicles		557	17.8	0.150	1.4	NA	0.2	1.9	0.06	0.10	58.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PRE 2019 PM]

Capricorn Highway / Wheatboard Road
Existing Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	19	27.8	0.146	7.4	LOS A	0.5	4.3	0.54	0.78	45.5
3	R2	58	9.1	0.146	11.7	LOS B	0.5	4.3	0.54	0.78	46.5
Approach		77	13.7	0.146	10.7	LOS B	0.5	4.3	0.54	0.78	46.2
East: Capricorn Highway											
4	L2	12	45.5	0.008	6.1	LOS A	0.0	0.0	0.00	0.57	46.3
5	T1	245	21.5	0.142	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		257	22.5	0.142	0.3	NA	0.0	0.0	0.00	0.03	59.4
West: Capricorn Highway											
11	T1	260	23.5	0.126	0.1	LOS A	0.1	1.0	0.03	0.01	59.8
12	R2	6	83.3	0.126	9.4	LOS A	0.1	1.0	0.04	0.02	46.8
Approach		266	24.9	0.126	0.4	NA	0.1	1.0	0.03	0.01	59.5
All Vehicles		600	22.5	0.146	1.6	NA	0.5	4.3	0.08	0.12	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PRE 2029 AM]

Capricorn Highway / Wheatboard Road
Existing Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	6	83.3	0.047	9.4	LOS A	0.2	1.7	0.56	0.77	41.8
3	R2	12	45.5	0.047	15.1	LOS C	0.2	1.7	0.56	0.77	43.4
Approach		18	58.8	0.047	13.1	LOS B	0.2	1.7	0.56	0.77	42.8
East: Capricorn Highway											
4	L2	58	9.1	0.033	5.6	LOS A	0.0	0.0	0.00	0.57	50.2
5	T1	287	21.6	0.166	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		345	19.5	0.166	1.0	NA	0.0	0.0	0.00	0.10	58.6
West: Capricorn Highway											
11	T1	224	11.3	0.114	0.4	LOS A	0.3	2.0	0.10	0.05	59.2
12	R2	19	27.8	0.114	8.4	LOS A	0.3	2.0	0.14	0.06	52.4
Approach		243	12.6	0.114	1.0	NA	0.3	2.0	0.10	0.05	58.7
All Vehicles		606	17.9	0.166	1.3	NA	0.3	2.0	0.06	0.10	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [PRE 2029 PM]

Capricorn Highway / Wheatboard Road
Existing Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	19	27.8	0.158	7.7	LOS A	0.6	4.6	0.57	0.79	44.9
3	R2	58	9.1	0.158	12.7	LOS B	0.6	4.6	0.57	0.79	45.8
Approach		77	13.7	0.158	11.5	LOS B	0.6	4.6	0.57	0.79	45.6
East: Capricorn Highway											
4	L2	12	45.5	0.008	6.1	LOS A	0.0	0.0	0.00	0.57	46.3
5	T1	271	21.4	0.156	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		282	22.4	0.156	0.3	NA	0.0	0.0	0.00	0.02	59.5
West: Capricorn Highway											
11	T1	286	23.5	0.138	0.2	LOS A	0.1	1.1	0.03	0.01	59.8
12	R2	6	83.3	0.138	9.8	LOS A	0.1	1.1	0.04	0.02	46.8
Approach		293	24.8	0.138	0.4	NA	0.1	1.1	0.03	0.01	59.5
All Vehicles		652	22.5	0.158	1.6	NA	0.6	4.6	0.08	0.11	57.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX G

Project Site Layout Plan

PROPOSED TRUCK STOP & COMMERCIAL DEVELOPMENT

for AURIZON

GRACEMERE - QLD

715 CAPRICORN HIGHWAY

DEVELOPMENT APPROVAL

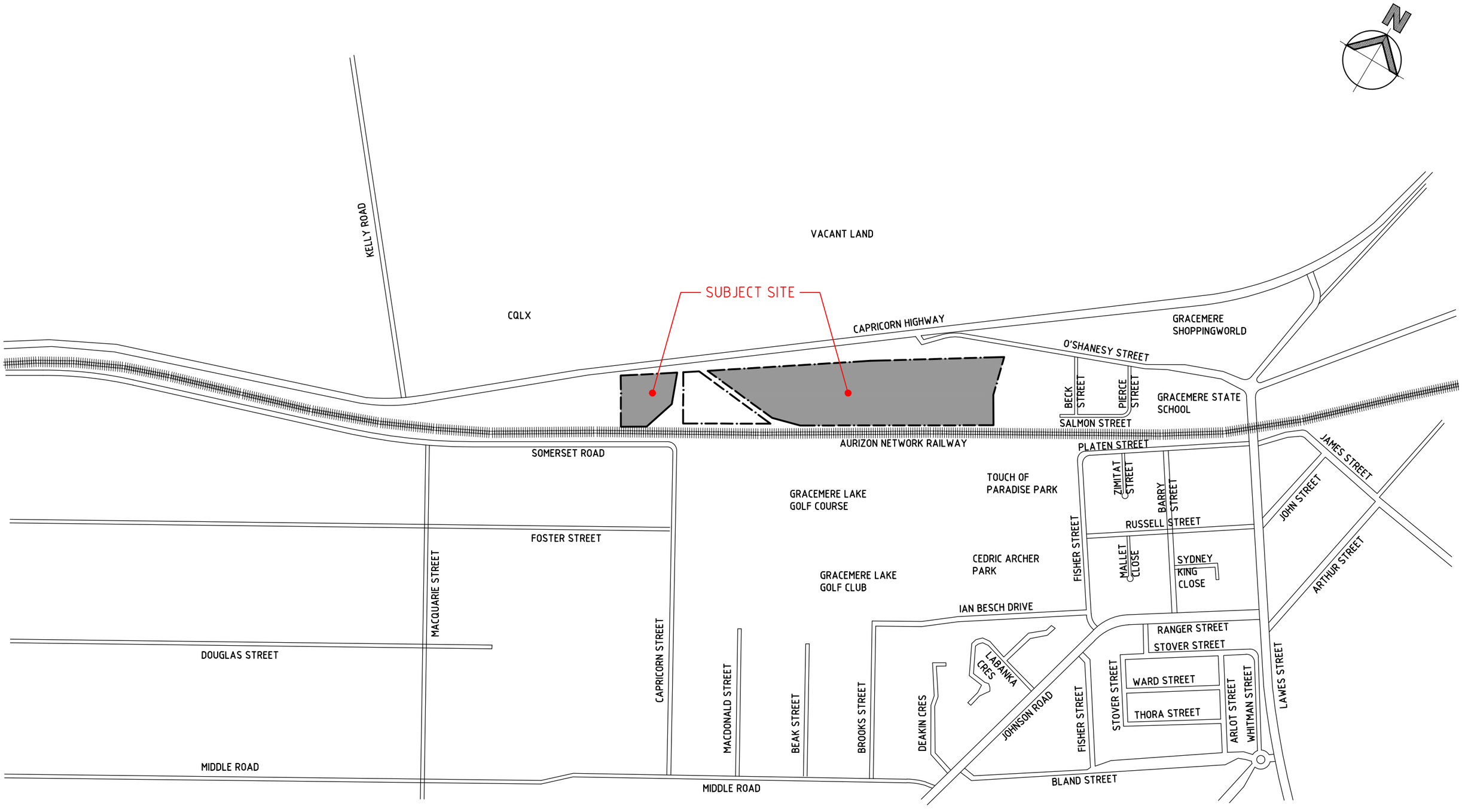
Drg No.	Drawing Title
D00	COVER SHEET
D01	SITE LOCALITY PLAN
D02	EXISTING SITE VIEWS
D03	PROPOSED OVERALL SITE PLAN
D04	PART PROPOSED SITE PLAN
D05	PROPOSED BUILDING FLOOR PLAN
D06	BUILDING ELEVATIONS SHEET 1
D07	BUILDING ELEVATIONS SHEET 2
D08	CAR CANOPY ELEVATIONS
D09	TRUCK CANOPY ELEVATIONS
D10	OVERALL SITE ELEVATIONS
D11	PERSPECTIVE VIEWS - SHEET 1
D12	PERSPECTIVE VIEWS - SHEET 2
D13	TANKER UNLOADING PATH
D14	DELIVERY / REFUSE PATH
D15	VEHICLE QUEUING PLAN
D16	CARAVAN PATH
D17	CONCEPT LANDSCAPING PLAN

TFA Project Group

DRAWING NO		REV
18294	D00	B

CREATE · PLAN · DELIVER

PROJECT MANAGERS | PLANNERS | DESIGNERS | ENGINEERS



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Sydney
Ph: 61 2 8814 5219
Melbourne
Ph: 61 3 9640 0206
Perth
Ph: 61 8 9480 0430

REV	DATE	BY	DESCRIPTION	CHK
A	15.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
SITE LOCALITY PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR

DATE CREATED	A1 SCALE	A3 SCALE
15.02.19		NTS

DRAWING NO	REV
18294-D01	B

VIEW 'A'

VIEW 'B'

VIEW 'C'

VIEW 'D'

VIEW 'E'

VIEW 'F'

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REV	DATE	BY	DESCRIPTION	CHK
A	18.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
EXISTING SITE VIEWS

STATUS
DA ISSUE

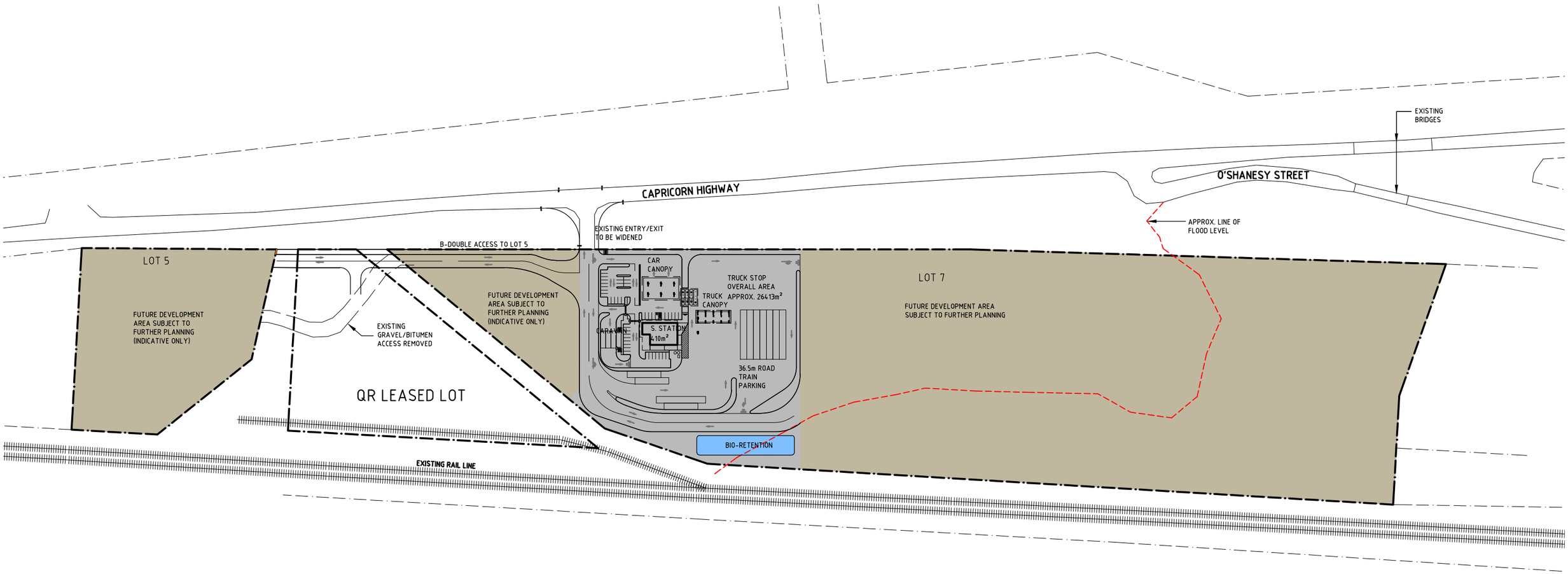
DRAWN	APPROVED
DGC	JR
DATE CREATED	A1 SCALE	A3 SCALE
18.02.19		NTS

DRAWING NO: 18294-D02
REV: B

NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.
2. 26m B-DOUBLE PATH SHOWN FOR REFUELLING.

RPD
LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17840m² + 119500m² = 137340m²



50 25 0 25 50 75 100 150
Millimetres

PROJECT MANAGERS | PLANNERS
DESIGNERS | ENGINEERS

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Ph: 61 8 9480 0430

REV	DATE	BY	DESCRIPTION	CHK
A	18.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
PROPOSED OVERALL SITE PLAN

STATUS
DA ISSUE

DRAWN	APPROVED	
DGC	JR	
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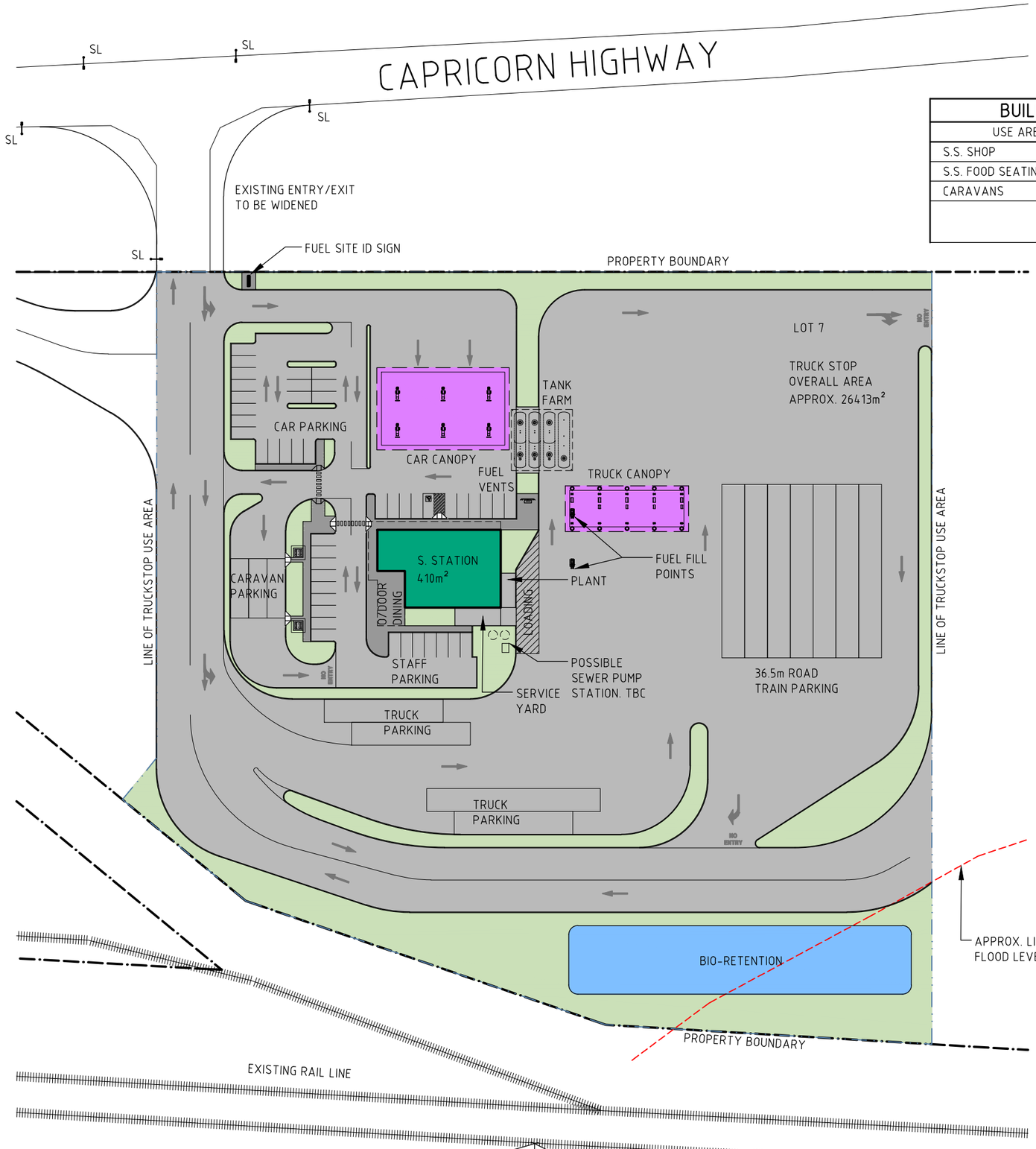
DRAWING NO	REV
18294-D03	B



RPD
LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON
REGIONAL COUNCIL
TOTAL AREA: 17840m² +
119500m² = 137340m²

BUILDING GFA & CAR PARKING SCHEDULE

USE AREA	GFA	PARKING RATE	QTY
S.S. SHOP	335m²	1/25 sqm GFA	13.4 CARS
S.S. FOOD SEATING	147m²	1/15 sqm GFA	9.8 CARS
CARAVANS			3 CARS
		PROVIDED CARS & CARAVANS	49 CARS

TRUCK PARKING SCHEDULE

USE AREA	QTY
ROAD TRAIN 36.5m	8 TRUCKS
B-DOUBLE 26m	3 TRUCKS
	11 TRUCKS

LEGEND:

SL - PROPOSED STREET LIGHTS TO ILLUMINATE MODIFIED ENTRY/EXIT CROSSOVER. TO BE CONFIRMED WITH RELEVANT AUTHORITIES.

NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.
2. SITE FEATURES ARE APPROXIMATE ONLY & SUBJECT TO CHANGE BASED ON DETAIL SITE DRAWINGS.
3. LINEMARKING SHOWN INDICATIVE ONLY - SUBJECT TO CHANGE AT DETAIL DESIGN BY TRAFFIC ENGINEER.
4. CARPARKING & ROAD AISLES TO BE IN ACCORDANCE WITH AS2890.1 & 2890.6.
5. STANDARD PARKING BAYS PROVIDED AT 5.4m x 2.6m.
6. DISABLED PARKING BAYS PROVIDED AT 5.4m x 2.4m WITH 5.4m x 2.4m SHARED ZONE ADJACENT.
7. ROADWORKS EXTERNAL TO SITE TO BE DESIGNED BY OTHERS AND DOES NOT FORM PART OF THIS APPROVAL.

SITE COVERAGE

DEFINED EXTENT	AREA	%
SERVICE STATION TENANCY	410m²	1.5%
OUTDOOR DINING	72m²	.3%
CAR CANOPY	522m²	2.0%
TRUCK CANOPY	270m²	1.0%
LANDSCAPING	4397m²	16.7%
BIO-RETENTION	1120m²	4.2%
SERVICE YARD	40m²	0.2%
PLANT YARD	24m²	0.1%
PATHWAYS	351m²	1.3%
PAVEMENT (EXCLUDING CANOPY)	19207m²	72.7%
TOTAL TRUCKSTOP AREA	26413m²	100%

10 0 10 20 30 40 50m
Metres

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REV	DATE	BY	DESCRIPTION	CHK
A	18.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
PART PROPOSED
SITE PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR
DATE CREATED	A1 SCALE / A3 SCALE
18.02.19	1:1000

DRAWING NO: 18294-D04
REV: B

2000
27000
2000
9000
6000
2000
17000
11025
9950
6000
3975

BIN
BIN
BIN
BIN

1 D06
2 D06
3 D07
4 D07

ENTRY
ENTRY

OIL CAGE
ICE BOX
LPG BOTTLE CAGE

INTERNAL DINING AREA
54m² APPROXIMATE

PUBLIC AMENITIES
39m² APPROXIMATE

SALES AREA
127m² APPROXIMATE

PUBLIC EXTERNAL DINING AREA
36m² APPROX.

TRUCKERS AMENITIES
18m² APPROXIMATE

CASHIER/BACK OF HOUSE
151m² APPROXIMATE

TRUCKERS LOUNGE
21m² APPROXIMATE

TRUCKERS EXTERNAL DINING AREA
36m² APPROXIMATE

MECH PLANT ON GROUND
22m² APPROXIMATE

SERVICE YARD / BIN STORE
40m² APPROXIMATE

N

RPD
LOTS 5 & 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17,840m² + 119,500m²
= 137,340m²

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REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
PROPOSED BUILDING FLOOR PLAN

STATUS
DA ISSUE

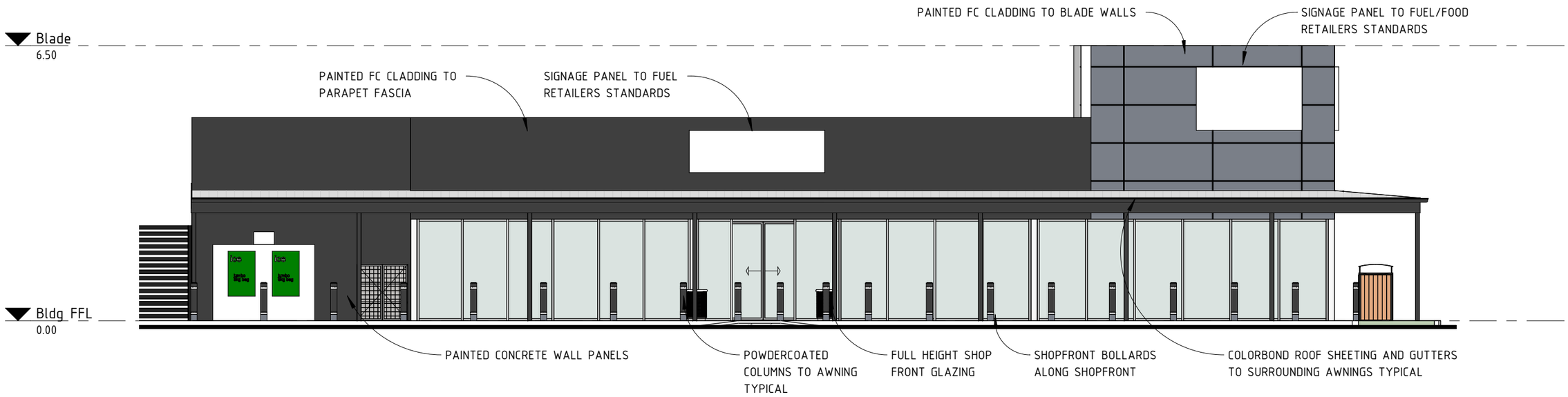
DRAWN	APPROVED
SLM	JR

DATE CREATED	A1 SCALE	A3 SCALE
28.02.19		1 : 100

DRAWING NO	REV
18294 D05	B

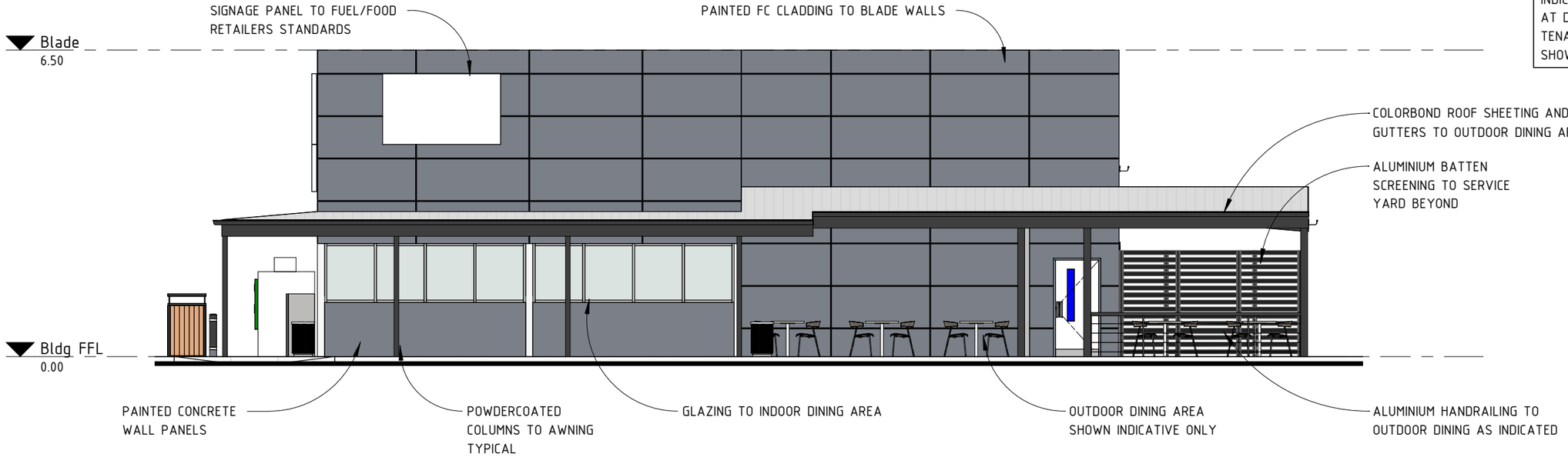
8/03/2019 12:56:39 PM

RPD
LOTS 5 & 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17,840m² + 119,500m²
= 137,340m²



1 D05 NORTH WEST ELEVATION
1 : 100

NOTE:
COLOURS AND FINISHES SHOWN ARE INDICATIVE ONLY. SUBJECT TO CHANGE AT DETAIL DESIGN STAGE TO SUIT TENANCY REQUIREMENTS. SIGNAGE SHOWN INDICATIVE ONLY.



2 D05 SOUTH WEST ELEVATION
1 : 100

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REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
BUILDING ELEVATIONS SHEET 1

STATUS
DA ISSUE

DRAWN	APPROVED
	JR

DATE CREATED	A1 SCALE	A3 SCALE
00.00.16		1 : 100

DRAWING NO	REV
18294 D06	B

8/03/2019 12:56:44 PM

RPD
LOTS 5 & 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17,840m² + 119,500m²
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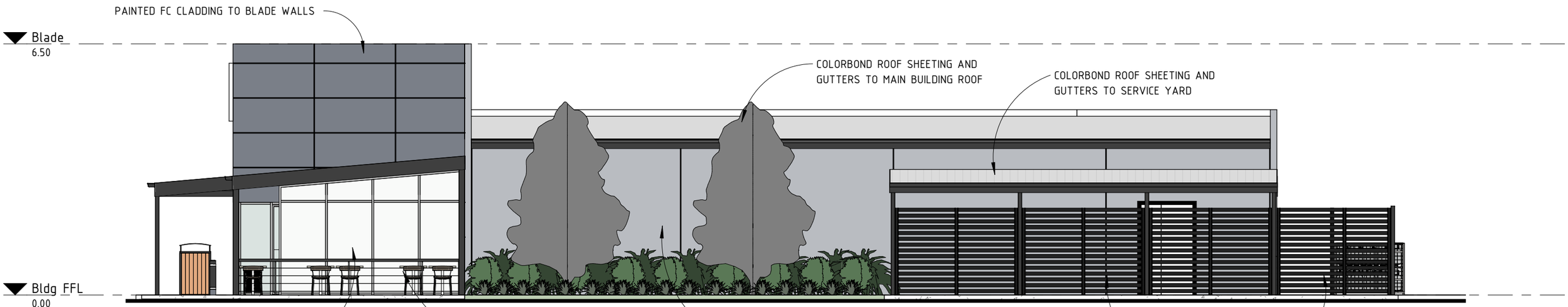
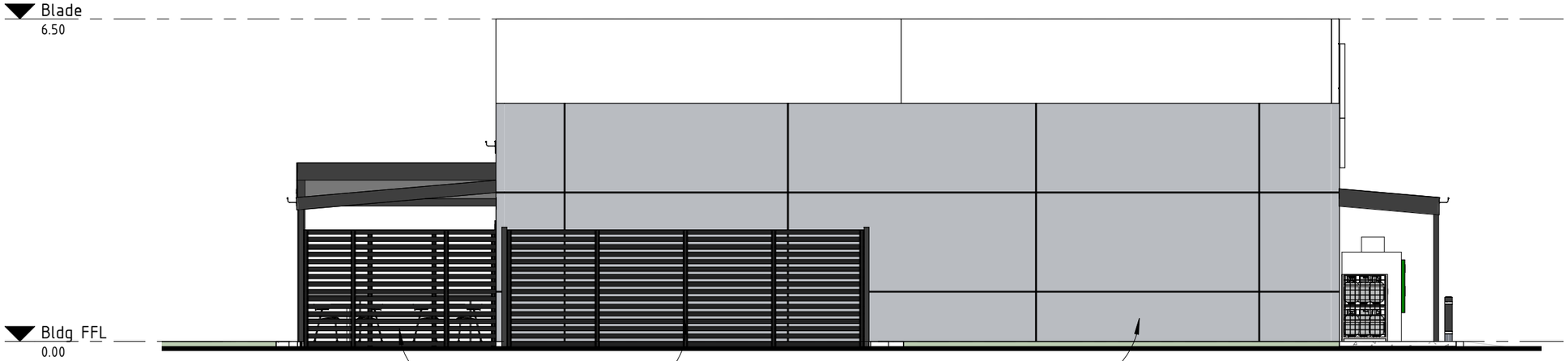


4 / D05 SOUTH EAST ELEVATION
1 : 100



3 / D05 NORTH EAST ELEVATION
1 : 100

NOTE:
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REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

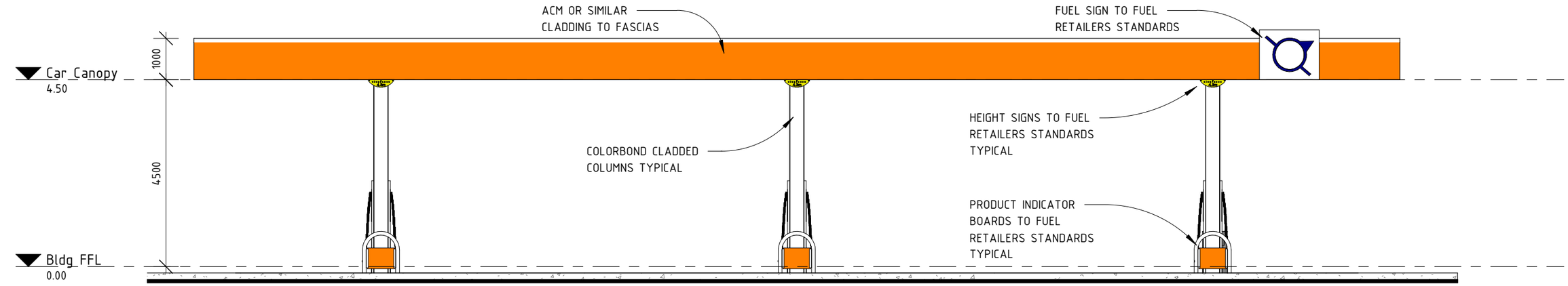
DRAWING TITLE
BUILDING ELEVATIONS SHEET 2

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR
DATE CREATED	A1 SCALE	A3 SCALE
28/02/19		1 : 100

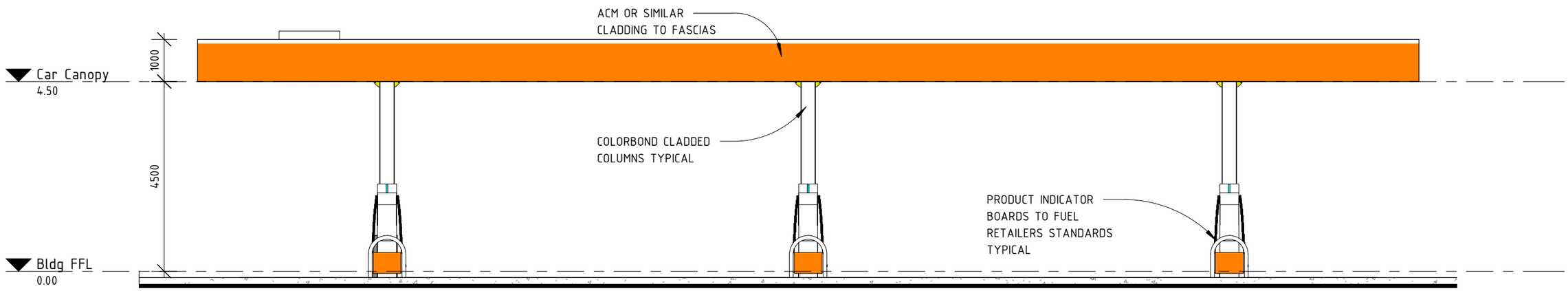
DRAWING NO: 18294 D07 REV: B

8/03/2019 1:01:38 PM



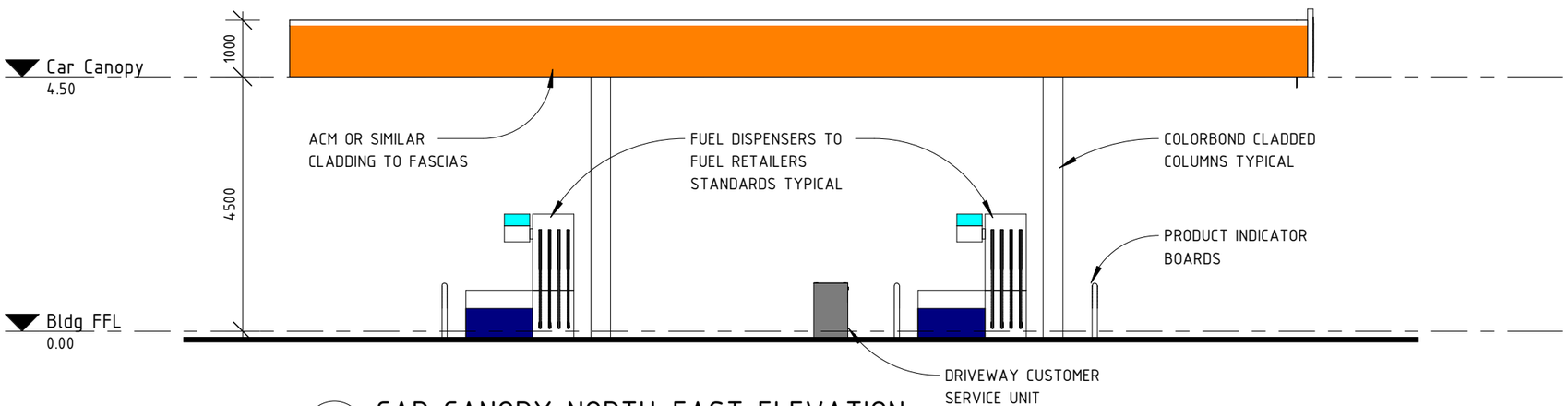
11 CAR CANOPY NORTH-WEST ELEVATION

1 : 100



3 CAR CANOPY SOUTH-EAST ELEVATION

1 : 100



1 CAR CANOPY NORTH-EAST ELEVATION

1 : 100

CAR CANOPY SOUTH-WEST ELEVATION MIRRORED

NOTE:
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REV	DATE	BY	DESCRIPTION	CHK
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B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

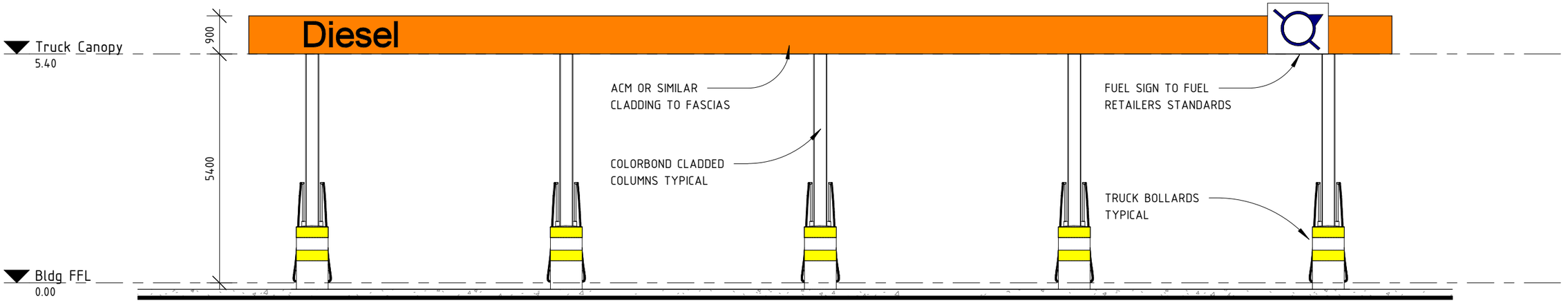
DRAWING TITLE
CAR CANOPY ELEVATIONS

STATUS
DA ISSUE

DRAWN	APPROVED	
	JR	
DATE CREATED	A1 SCALE	A3 SCALE
28.02.19		1 : 100

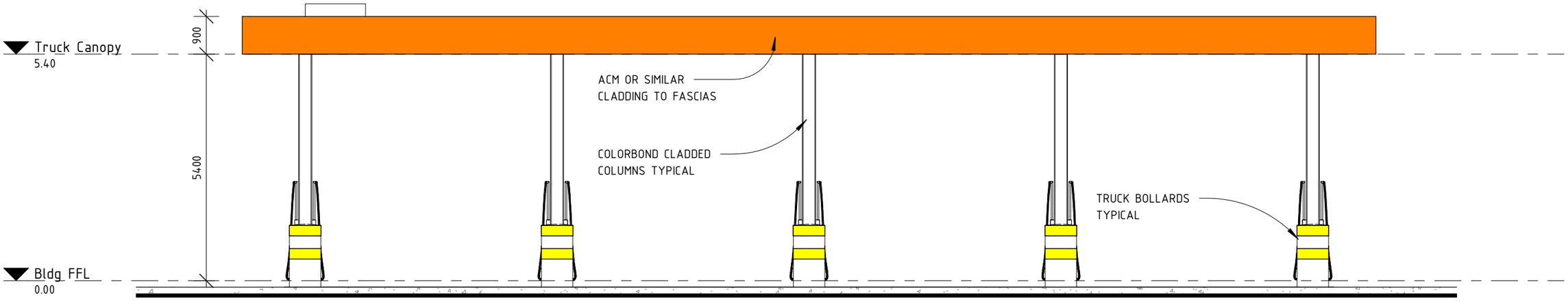
DRAWING NO		REV
18294	D08	B

8/03/2019 12:56:59 PM



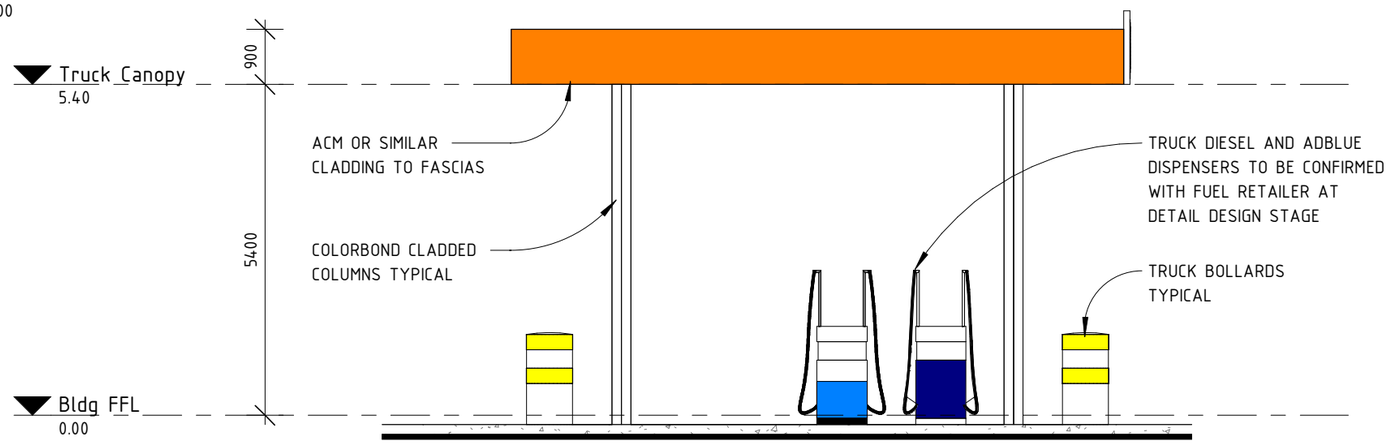
1 TRUCK CANOPY NORTH-WEST ELEVATION

1 : 100



2 TRUCK CANOPY SOUTH-EAST ELEVATION

1 : 100



NOTE:
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3 TRUCK CANNOPY NORTH-EAST ELEVATION

1 : 100 TRUCK CANOPY SOUTH-WEST ELEVATION MIRRORED

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REV	DATE	BY	DESCRIPTION	CHK
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B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

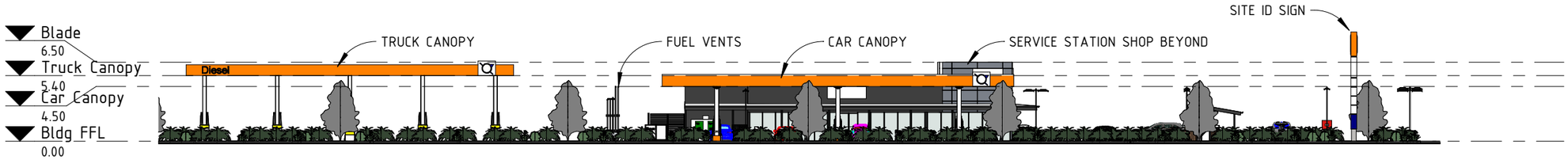
DRAWING TITLE
TRUCK CANOPY ELEVATIONS

STATUS
DA ISSUE

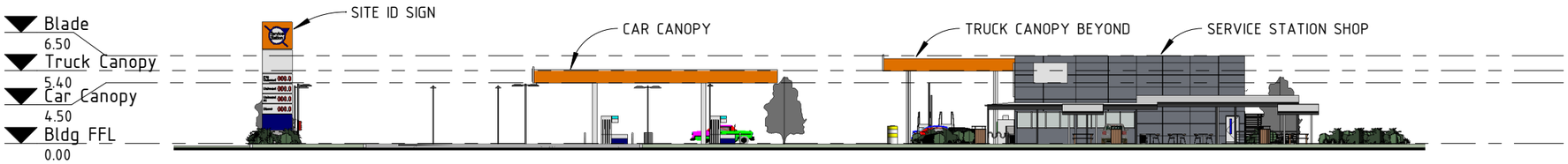
DRAWN	APPROVED	
DGC	JR	
DATE CREATED	A1 SCALE	A3 SCALE
28.02.19		1 : 100

DRAWING NO		REV
18294	D09	B

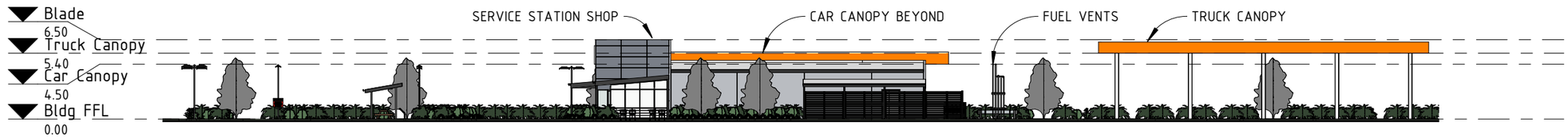
8/03/2019 12:57:04 PM



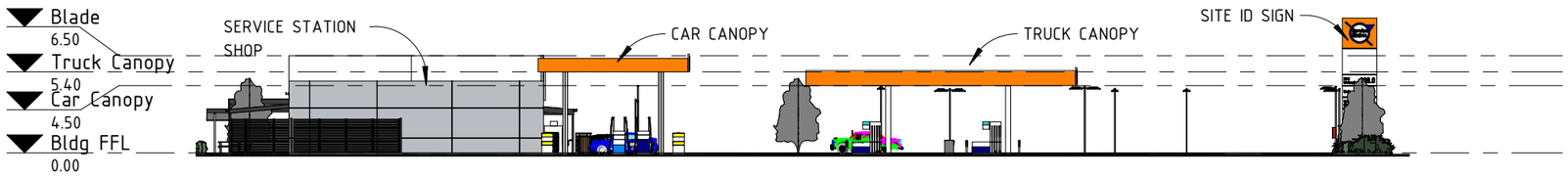
1 NORTH-WEST SITE ELEVATION
1 : 400



2 SOUTH-WEST SITE ELEVATION
1 : 400



3 SOUTH-EAST SITE ELEVATION
1 : 400



4 NORTH-EAST SITE ELEVATION
1 : 400

RPD
LOTS 5 & 7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17,840m² + 119,500m²
= 137,340m²

NOTE:
COLOURS AND FINISHES SHOWN ARE INDICATIVE ONLY. SUBJECT TO CHANGE AT DETAIL DESIGN STAGE TO SUIT TENANCY REQUIREMENTS. SIGNAGE SHOWN INDICATIVE ONLY.

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REV	DATE	BY	DESCRIPTION	CHK
A	28.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
OVERALL SITE ELEVATIONS

STATUS
DA ISSUE

DRAWN	APPROVED	
DGC	JR	
DATE CREATED	A1 SCALE	A3 SCALE
28.02.19		1 : 400

DRAWING NO		REV
18294	D10	B

8/03/2019 12:57:25 PM

1 PERSPECTIVE VIEW FROM CAPRICORN HWY

NOTE:
COLOURS AND FINISHES SHOWN ARE INDICATIVE ONLY. SUBJECT TO CHANGE AT DETAIL DESIGN STAGE TO SUIT TENANCY REQUIREMENTS. SIGNAGE SHOWN INDICATIVE ONLY.

2 PERSPECTIVE VIEW FROM ENTRY

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PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
PERSPECTIVE VIEWS - SHEET 1

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR
DATE CREATED	A1 SCALE	A3 SCALE
28/02/19		

DRAWING NO		REV
18294	D11	B

8/03/2019 12:58:31 PM

1 PERSPECTIVE VIEW TO BUILDING

NOTE:
COLOURS AND FINISHES SHOWN ARE INDICATIVE ONLY. SUBJECT TO CHANGE AT DETAIL DESIGN STAGE TO SUIT TENANCY REQUIREMENTS. SIGNAGE SHOWN INDICATIVE ONLY.

2 PERSPECTIVE VIEW TO OUTDOOR DINING

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B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON at 715 CAPRICORN HWY, GRACEMERE, QLD

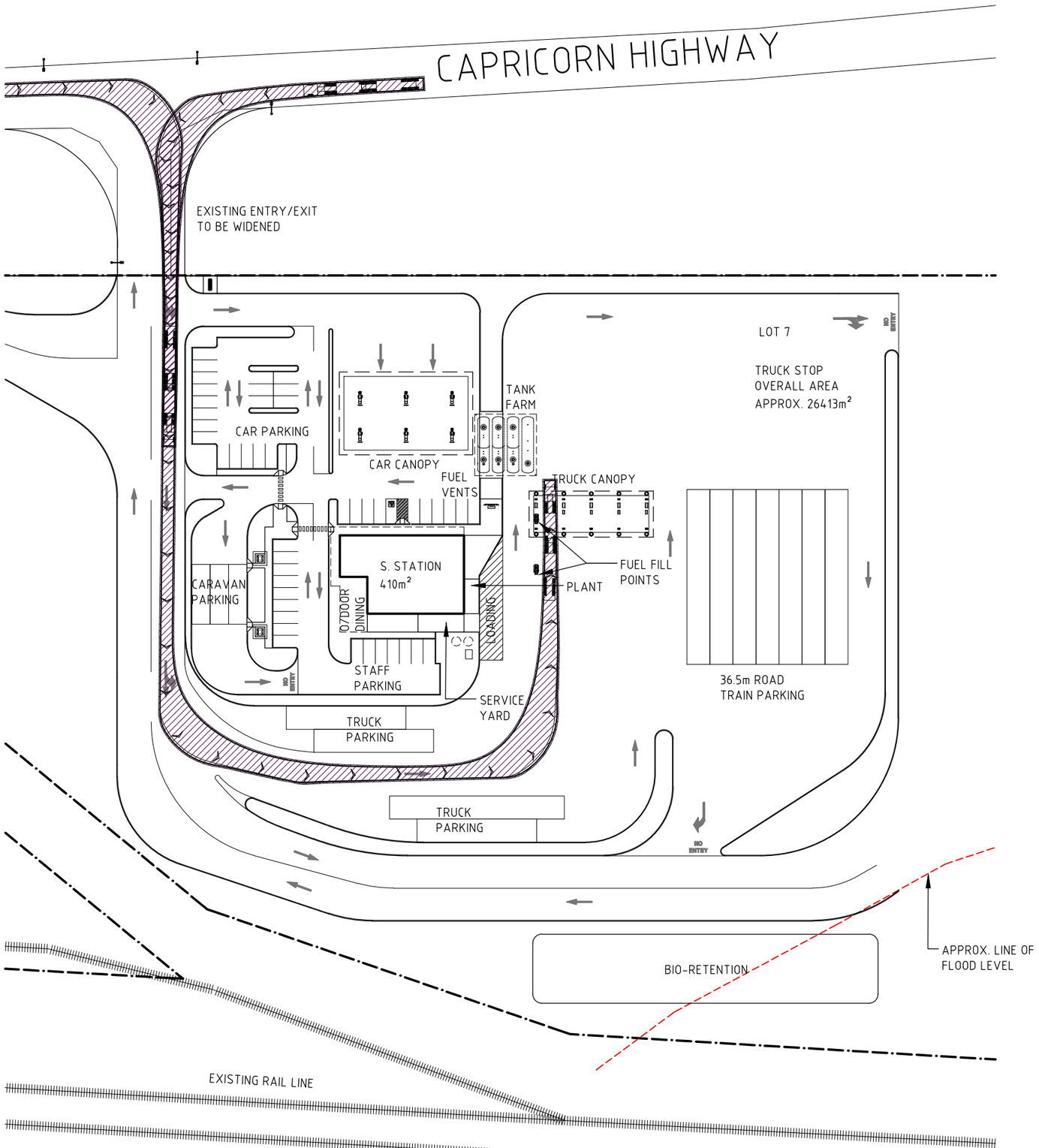
DRAWING TITLE
PERSPECTIVE VIEWS - SHEET 2

STATUS
DA ISSUE

DRAWN	APPROVED	
DGC	JR	
DATE CREATED	A1 SCALE	A3 SCALE
28/02/19		

DRAWING NO		REV
18294	D12	B

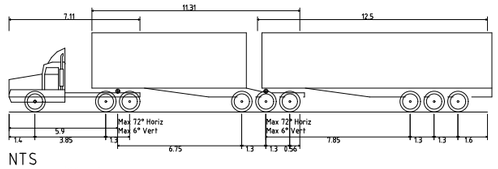
8/03/2019 12:58:59 PM



NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.
2. 26m B-DOUBLE PATH SHOWN FOR REFUELLING.

RPD
LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17840m² + 119500m² = 137340m²



NTS

B-Double (26.0m)

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
Curb to Curb Turning Radius	15.000m

10 0 10 20 30 40 50m
Metres

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REV	DATE	BY	DESCRIPTION	CHK
A	19.02.19	DGC	DA ISSUE	
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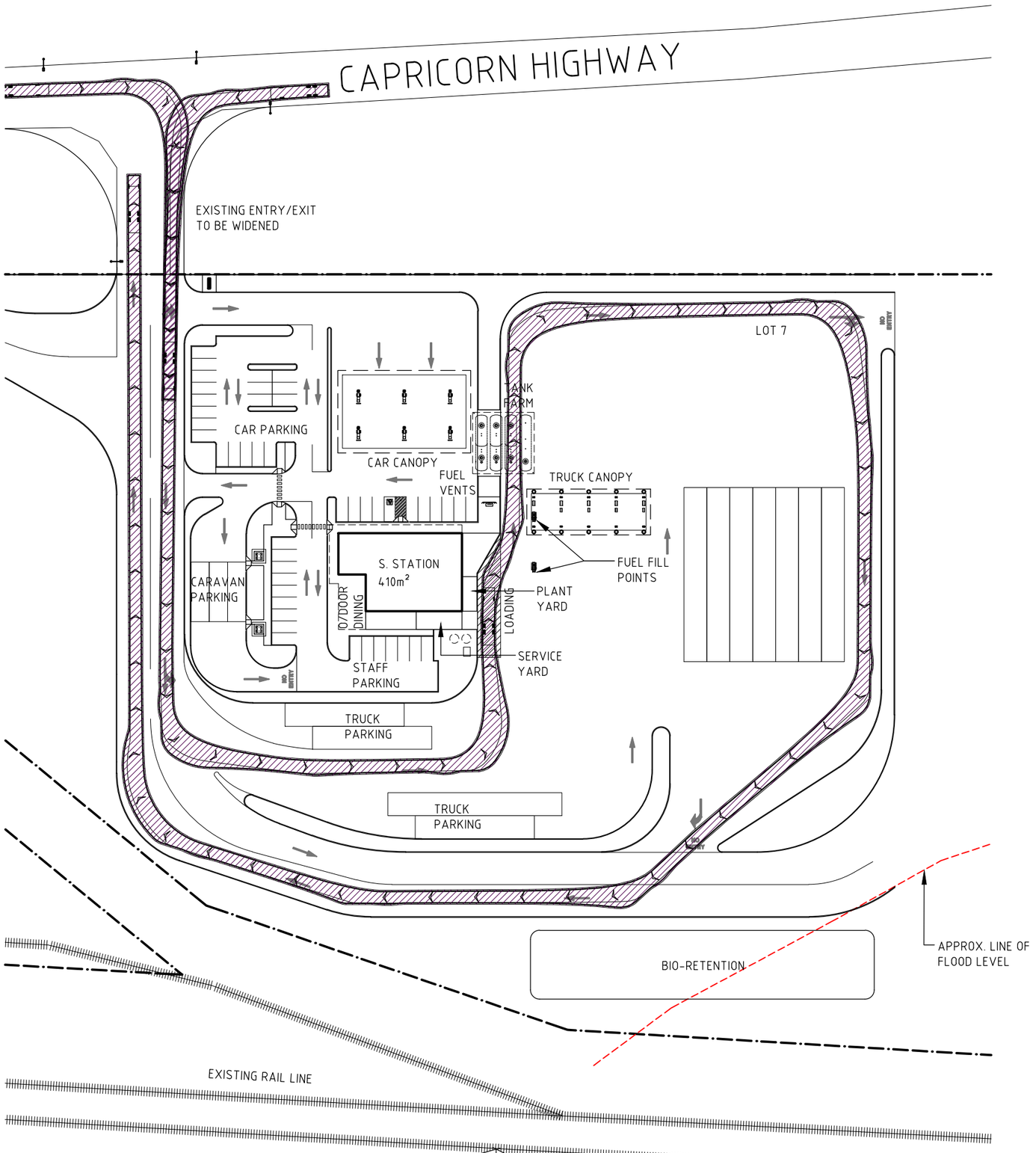
PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
TANKER UNLOADING PATH

STATUS
DA ISSUE

DRAWN DGC	APPROVED JR	
DATE CREATED 19.02.19	A1 SCALE	A3 SCALE 1:1000
DRAWING NO 18294-D13		REV B



NOTES:

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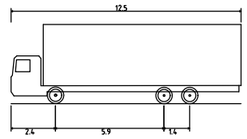
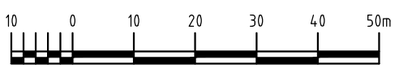
RPD
LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17840m² + 119500m² = 137340m²



NTS

HRV - Heavy Rigid Vehicle	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.417m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



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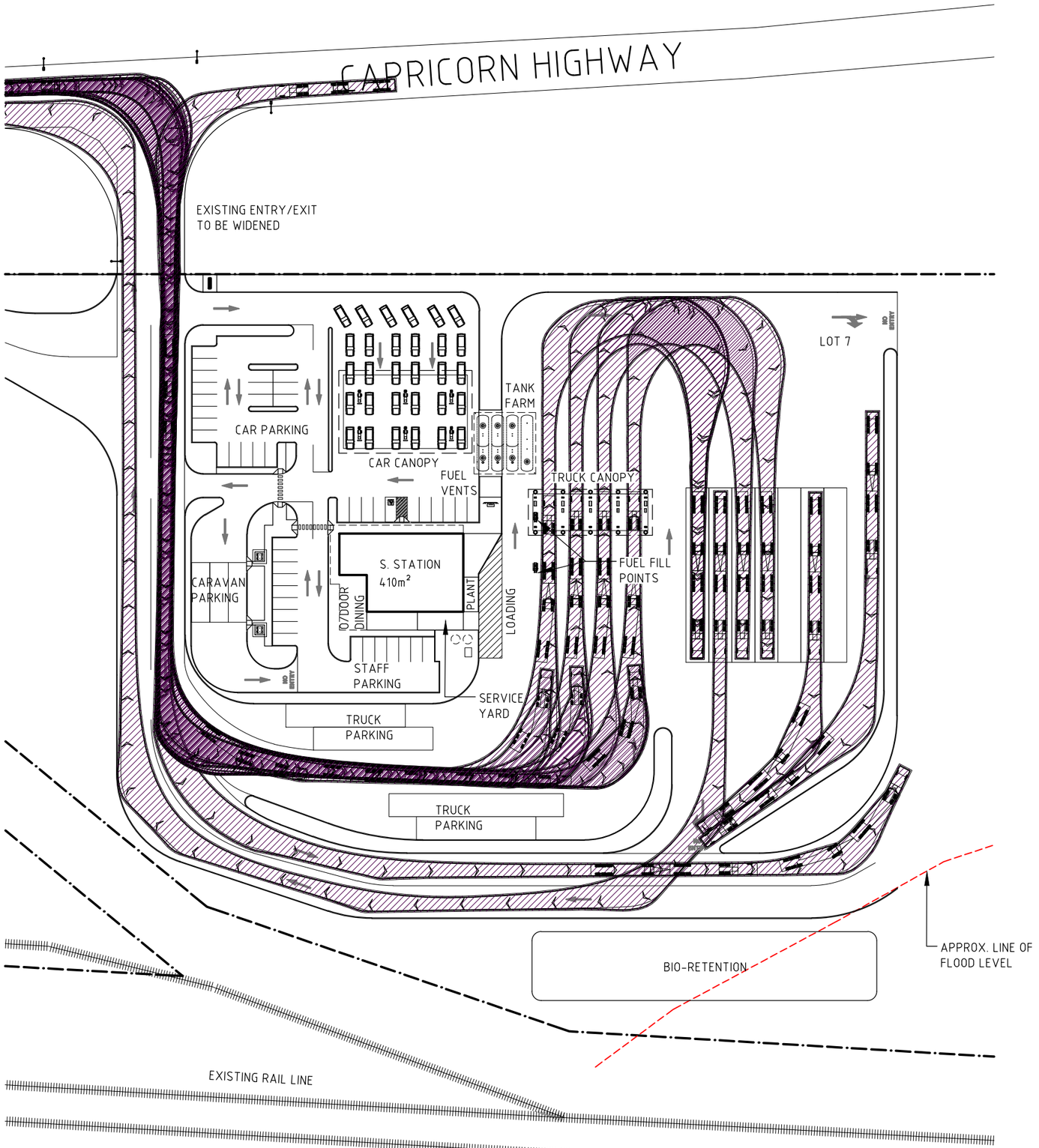
PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
DELIVERY/ REFUSE PATH

STATUS
DA ISSUE

DRAWN	APPROVED	
DGC	JR	
DATE CREATED	A1 SCALE	A3 SCALE
19.02.19		1:1000

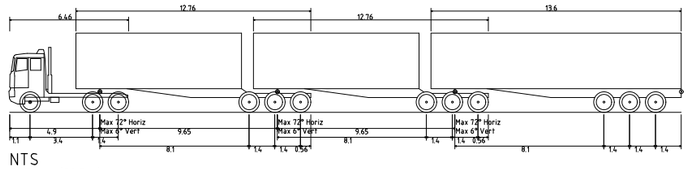
DRAWING NO: 18294-D14 REV: B



NOTES:

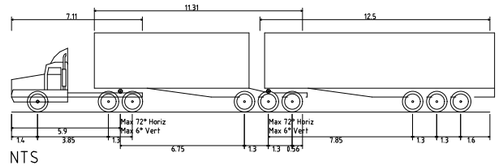
1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.

RPD
LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17840m² + 119500m² = 137340m²



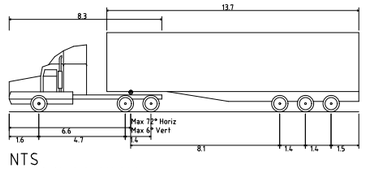
NTS
B-Triple (36.5 m)

Overall Length	36.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.455m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m



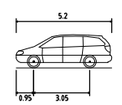
NTS
B-Double (26.0m)

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
Curb to Curb Turning Radius	15.000m



NTS
AV - Articulated Vehicle

Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



NTS
Passenger vehicle (5.2 m)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.300m

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REV	DATE	BY	DESCRIPTION	CHK
A	19.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

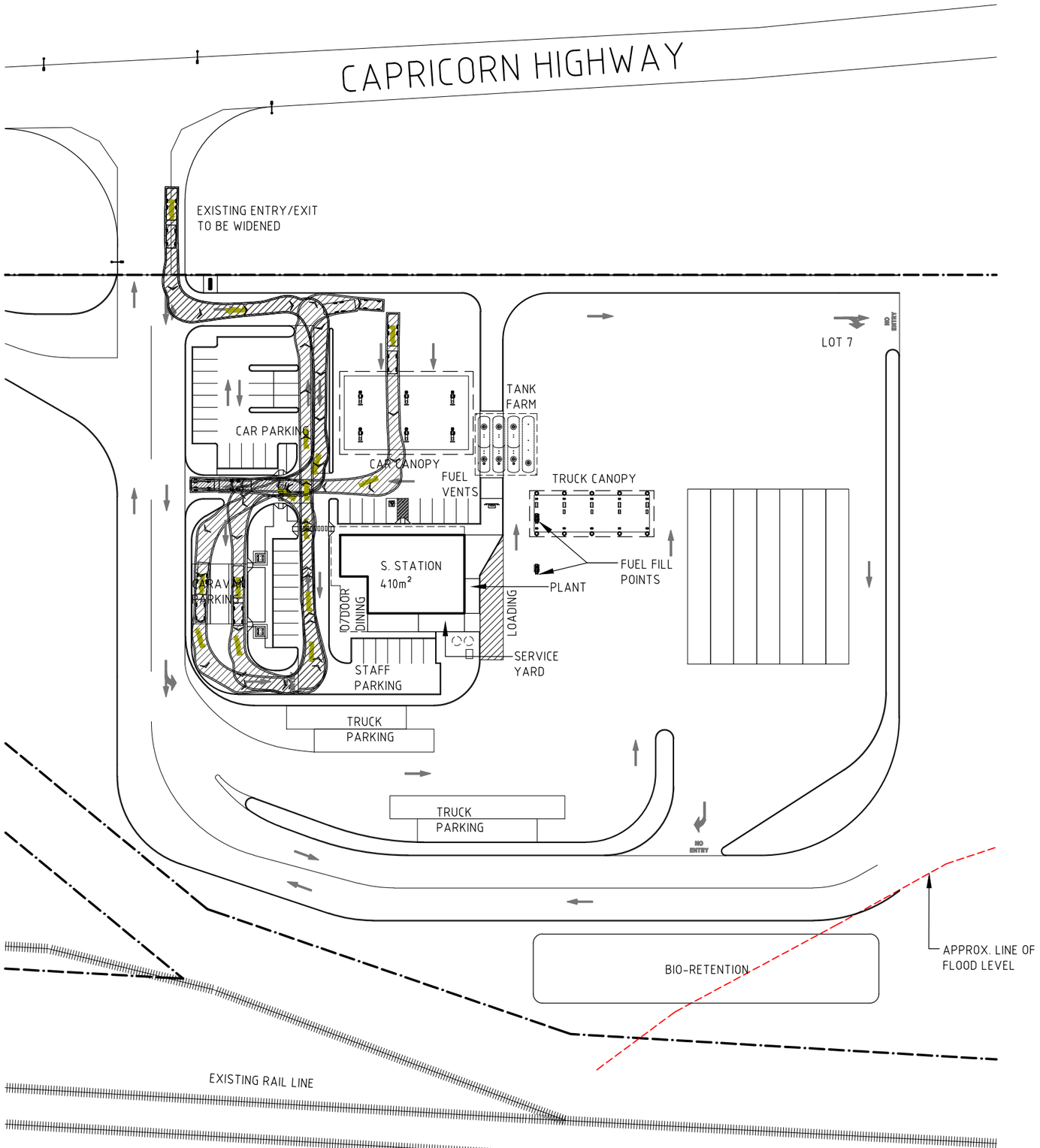
PROJECT DETAILS
PROPOSED TRUCK STOP AND COMMERCIAL DEVELOPMENT for AURIZON
715 CAPRICORN HWY, GRACEMERE, QLD

DRAWING TITLE
VEHICLE QUEUING PLAN

STATUS
DA ISSUE

DRAWN DGC	APPROVED JR	
DATE CREATED 19.02.19	A1 SCALE	A3 SCALE 1:1000

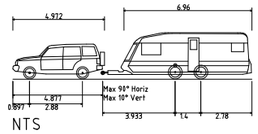
DRAWING NO 18294-D15 REV B



NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.

RPD
LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17840m² + 119500m² = 137340m²



NTS

Luxury 4x4 +Twin Axle Caravan (2006)	
Overall Length	12.990m
Overall Width	2.286m
Overall Body Height	2.524m
Min Body Ground Clearance	0.251m
Max Track Width	2.130m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.800m

10 0 10 20 30 40 50m
Metres

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Perth Ph: 61 8 9480 0430

REV	DATE	BY	DESCRIPTION	CHK
A	19.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

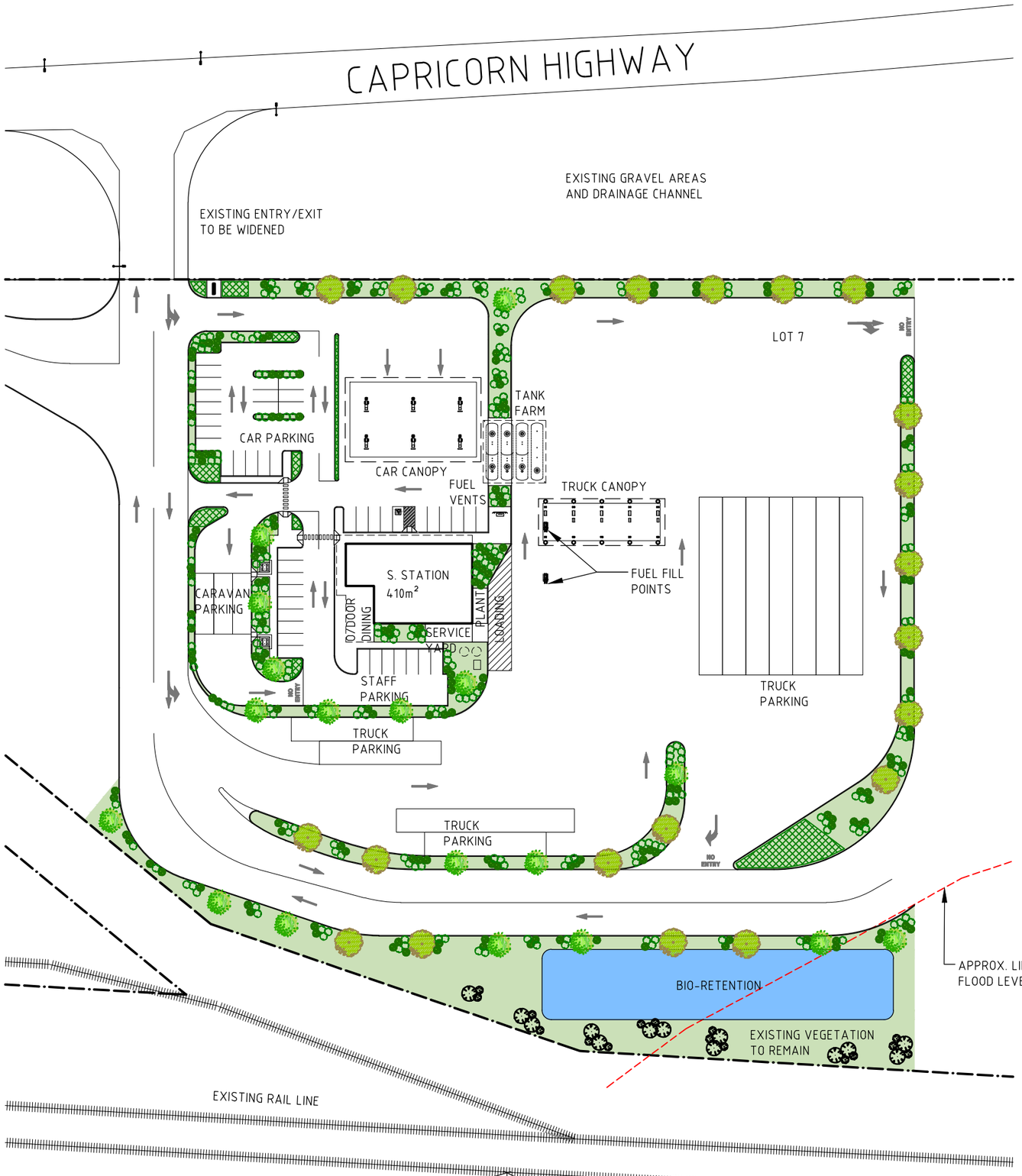
PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
CARAVAN PATH

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR
DATE CREATED	A1 SCALE	A3 SCALE
19.02.19		1:1000

DRAWING NO 18294-D16 REV B



NOTES:

1. DEVELOPMENT APPROVAL ONLY - NOT FOR TENDER OR CONSTRUCTION.
2. 26m B-DOUBLE PATH SHOWN FOR REFUELLING.

RPD
LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17840m² + 119500m² = 137340m²

LEGEND

- EXISTING LARGE ESTABLISHED TREES TO NEIGHBOURING PROPERTIES & SUBJECT SITE TO REMAIN
- FEATURE TREES
- SHRUB PLANTING AREA.
- GROUNDCOVER PLANTING.
- LANDSCAPED MULCH AREA

NOTES:
THE SITE CONTAINS NO SIGNIFICANT VEGETATION

AREAS AROUND ENTRANCES & EXITS TO CONSIST OF LOW SHRUBS & GROUND COVERS TO ENABLE GOOD VISIBILITY FOR SAFE MOVEMENT OF VEHICLES.

LANDSCAPE PLANTINGS TO BE VERIFIED WHEN DETAILED DESIGN LOCATES PROPOSED UNDERGROUND SERVICE LINES, WITH AN EMPHASIS ON DROUGHT HARDY SPECIES.

ALL PAVEMENT AREAS TO HAVE 150mm CONTINUOUS CONCRETE BARRIER TO LANDSCAPE AREAS.

THIS DRAWING IS INTENDED AS A LANDSCAPE CONCEPT DRAWING ONLY. AT THE OPERATIONAL WORKS STAGE, A FULLY DETAILED LANDSCAPE PLAN WILL BE SUBMITTED, ALONG WITH ALL RELEVANT DETAILS & PLANT SPECIES.

LOCAL NATIVE SPECIES WILL BE SELECTED WHERE APPROPRIATE.

10 0 10 20 30 40 50m
Metres

PROJECT MANAGERS | PLANNERS
DESIGNERS | ENGINEERS

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Perth
Ph: 61 8 9480 0430

REV	DATE	BY	DESCRIPTION	CHK
A	19.02.19	DGC	DA ISSUE	
B	07.03.19	DGC	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
CONCEPT LANDSCAPING PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JR
DATE CREATED	A1 SCALE / A3 SCALE
18.02.19	1:1000
DRAWING NO	REV
18294-D17	B

APPENDIX H

Development Traffic Calculations

049-18-19 | Gracemere Roadhouse

Capricorn Highway / Site Access Intersection

Development Traffic Volume Calculations

Service Station Area		=	410	m^2														
Generation Rate (RTA)		=	29.32	trips per	100	m^2 GFA												
Development Generation		=	120	trips														
New Trips		=	20%	24	trips		Drop In Trips	=	80%	96	trips							
AM & PM Peak							AM Peak											
Inbound		=	50%	12	trips		East to West	=	52%	50	trips	25	in	25	out			
	From East	=	75%	9	trips		West to East	=	48%	46	trips	23	in	23	out			
	From West	=	25%	3	trips													
Outbound		=	50%	12	trips		PM Peak											
	To East	=	75%	9	trips		East to West	=	49%	47	trips	23	in	23	out			
	To West	=	25%	3	trips		West to East	=	51%	50	trips	25	in	25	out			

049-18-19 | Gracemere Roadhouse
Capricorn Highway / Site Access Intersection
Development Traffic Volumes (Estimated)

AM PEAK - Drop In

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2020	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2021	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2022	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2023	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2024	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2025	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2026	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2027	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2028	20	5	-20	-5	20	5	18	5	-18	-5	18	5
2029	20	5	-20	-5	20	5	18	5	-18	-5	18	5

AM PEAK - New Trips

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	7	2	0	0	2	1	7	2	0	0	2	1
2020	7	2	0	0	2	1	7	2	0	0	2	1
2021	7	2	0	0	2	1	7	2	0	0	2	1
2022	7	2	0	0	2	1	7	2	0	0	2	1
2023	7	2	0	0	2	1	7	2	0	0	2	1
2024	7	2	0	0	2	1	7	2	0	0	2	1
2025	7	2	0	0	2	1	7	2	0	0	2	1
2026	7	2	0	0	2	1	7	2	0	0	2	1
2027	7	2	0	0	2	1	7	2	0	0	2	1
2028	7	2	0	0	2	1	7	2	0	0	2	1
2029	7	2	0	0	2	1	7	2	0	0	2	1

AM PEAK - Development Trips Total

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2020	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2021	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2022	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2023	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2024	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2025	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2026	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2027	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2028	27	7	-20	-5	23	6	25	6	-18	-5	21	5
2029	27	7	-20	-5	23	6	25	6	-18	-5	21	5

PM PEAK - Drop In

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2020	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2021	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2022	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2023	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2024	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2025	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2026	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2027	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2028	19	5	-19	-5	19	5	20	5	-20	-5	20	5
2029	19	5	-19	-5	19	5	20	5	-20	-5	20	5

PM PEAK - New Trips

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	7	2	0	0	2	1	7	2	0	0	2	1
2020	7	2	0	0	2	1	7	2	0	0	2	1
2021	7	2	0	0	2	1	7	2	0	0	2	1
2022	7	2	0	0	2	1	7	2	0	0	2	1
2023	7	2	0	0	2	1	7	2	0	0	2	1
2024	7	2	0	0	2	1	7	2	0	0	2	1
2025	7	2	0	0	2	1	7	2	0	0	2	1
2026	7	2	0	0	2	1	7	2	0	0	2	1
2027	7	2	0	0	2	1	7	2	0	0	2	1
2028	7	2	0	0	2	1	7	2	0	0	2	1
2029	7	2	0	0	2	1	7	2	0	0	2	1

PM PEAK - Development Trips Total

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2020	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2021	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2022	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2023	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2024	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2025	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2026	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2027	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2028	26	6	-19	-5	21	5	27	7	-20	-5	22	6
2029	26	6	-19	-5	21	5	27	7	-20	-5	22	6

049-18-19 | Gracemere Roadhouse

Capricorn Highway / Site Access Intersection

Post Development Traffic Conditions - Peak Hour Intersection Volume Forecasts (Estimated)

AM PEAK - Drop In

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	78	11	174	48	24	10	31	11	153	17	33	10
2020	78	11	176	49	24	10	31	11	155	17	33	10
2021	78	11	178	49	24	10	31	11	157	17	33	10
2022	78	11	179	50	24	10	31	11	158	18	33	10
2023	78	11	181	50	24	10	31	11	160	18	33	10
2024	78	11	184	51	24	10	31	11	162	18	33	10
2025	78	11	186	51	24	10	31	11	164	18	33	10
2026	78	11	188	52	24	10	31	11	165	18	33	10
2027	78	11	190	52	24	10	31	11	167	19	33	10
2028	78	11	192	53	24	10	31	11	169	19	33	10
2029	78	11	194	54	24	10	31	11	171	19	33	10

PM PEAK - Drop In

Year	Capricorn Highway E				Site Access				Capricorn Highway W			
	L		T		L		R		T		R	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
2019	31	11	164	45	34	10	77	11	169	53	24	10
2020	31	11	166	46	34	10	77	11	171	54	24	10
2021	31	11	168	46	34	10	77	11	173	54	24	10
2022	31	11	169	47	34	10	77	11	175	55	24	10
2023	31	11	171	47	34	10	77	11	177	56	24	10
2024	31	11	173	48	34	10	77	11	179	56	24	10
2025	31	11	175	48	34	10	77	11	181	57	24	10
2026	31	11	177	49	34	10	77	11	183	57	24	10
2027	31	11	179	49	34	10	77	11	185	58	24	10
2028	31	11	181	50	34	10	77	11	187	59	24	10
2029	31	11	183	51	34	10	77	11	189	59	24	10

APPENDIX I

Turn Warrants Assessment

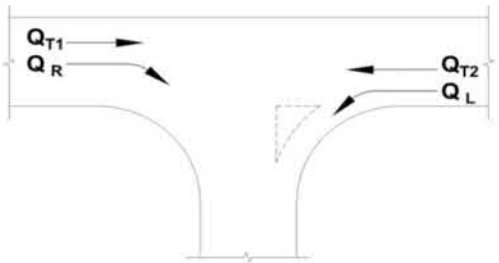
Turn Warrant Assessment

Intersection:	Capricorn Highway / Wheatboard Road (Site Access)
Year / Peak:	2029 AM & PM
Scenario:	Post Development (Roadhouse)

Assessment based on Austroads Guide to Road Design, Part 4b. This warrant assessment applies only to turning movements from the major road only.

	AM Peak	PM Peak
Q_{T1} =	190	248
Q_R =	43	34

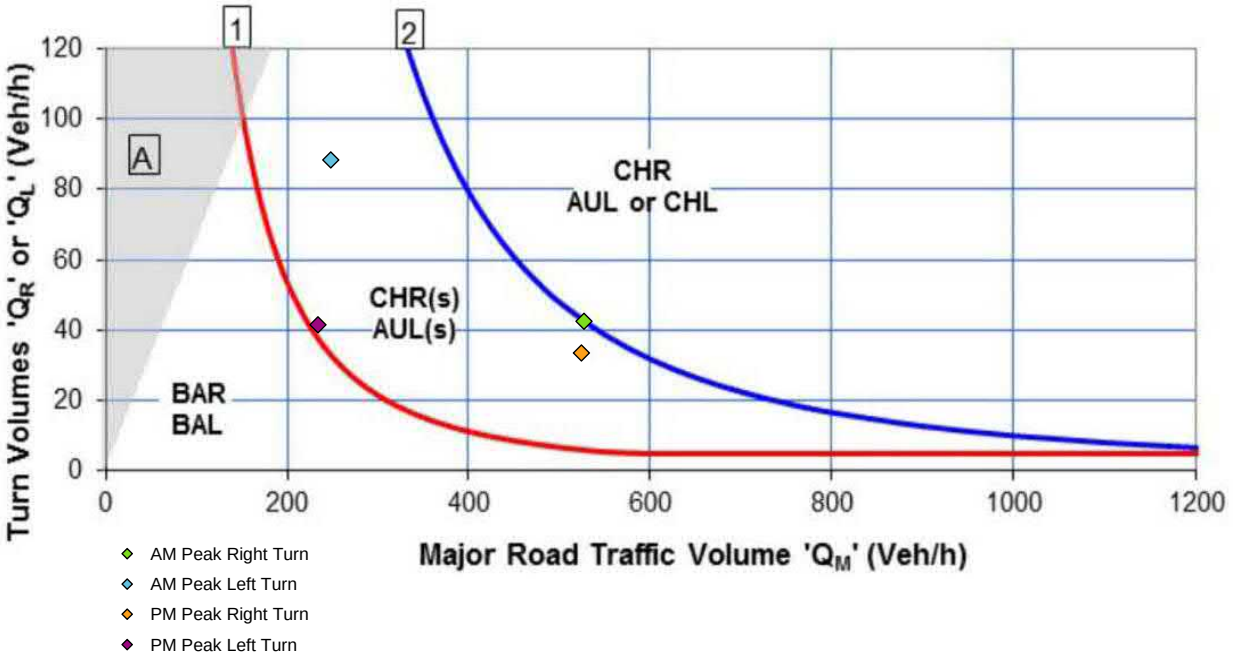
	AM Peak	PM Peak
Q_{T2} =	248	234
Q_L =	89	42



Wheatboard Road (Site Access)

Splitter Island?	No
Design speed (km/h)	90

Graph	Q_M	Q_R/Q_L
AM Peak		
Right	527	43
Left	248	89
PM Peak		
Right	524	34
Left	234	42



Recommended treatments:

Right Turn	CHR
Left Turn	AUL(s)

Legend

BAR	Basic Right Turn	BAL	Basic Left Turn
CHR(S)	Channelised Right Turn (short)	AUL(S)	Auxiliary Left Turn (short)
CHR	Channelised Right Turn	AUL	Auxiliary Left Turn
		CHL	Channelised Left Turn

Comments:

The graph above indicates that the right turn treatment is boardline between the CHR(s) and CHR treatments. As the proposed development is expected to be utilised by large combination heavy vehicles, it is recommended that the conservative approach be taken and the CHR turn treatment be provided for the development.

Prepared by:	Andrew Barrie
Reviewed by:	Chris Hewitt
Date:	6/03/2019

APPENDIX J

Capricorn Highway / Wheatboard Road Intersection Upgrade Plan

LEGEND

PROPOSED PAVEMENT AREA = 991m²

10 0 10 20 30 40 50m

SCALE 1:500 @ A1 SCALE 1:1 000 @ A3

PROPOSED LAYOUT PLAN

SCALE 1:500(A1) 1:1000(A3)

INFORMATION ONLY

SURVEYOR										
N/A										
ADDRESS:										
CO-ORDINATE DATUM										
HEIGHT DATUM			B	05.03.2019	ADDED PROPOSED PAVEMENT AREA	RC	CH	CH	IM
			A	17.12.2018	SUBMITTED FOR INFORMATION	RC	CH	CH	IM
	DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	DFT	DFT CHK	DES	DES CHK

	BY	DATE
REVIEWED		
RPEQ ENG		

RPEQ No:

CLIENT AURIZON

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SCALE: AS SHOWN

PREPARED BY 0491819
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Fax: (07) 4921 1790

CLIENT AURIZON
PROJECT GRACEMERE ROADHOUSE
TITLE GRACEMERE ROADHOUSE
PRELIMINARY CHR INTERSECTION TREATMENT LAYOUT PLAN
SHEET 1 OF 1

A1 | DRAWING NUMBER 0491819-SK-001 | REVISION B

PLOT DATE 9/03/2019 2:48:21 PM DRAWING LOCATION S:\PROJECT RECORDS\18-19\0491-18-19\ACAD\SKETCH\ESS0491819-SK01-LAYOUT PLAN.DWG

APPENDIX K

Post Development SIDRA Analysis Results

MOVEMENT SUMMARY

Site: 101 [POST 2019 AM - ROADHOUSE]

Capricorn Highway / Wheatboard Road
Proposed Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	36	29.4	0.146	7.4	LOS A	0.5	4.7	0.51	0.73	45.8
3	R2	44	26.2	0.146	12.7	LOS B	0.5	4.7	0.51	0.73	46.2
Approach		80	27.6	0.146	10.3	LOS B	0.5	4.7	0.51	0.73	46.0
East: Capricorn Highway											
4	L2	94	12.4	0.055	5.7	LOS A	0.0	0.0	0.00	0.57	49.9
5	T1	234	21.6	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		327	19.0	0.135	1.6	NA	0.0	0.0	0.00	0.16	57.4
West: Capricorn Highway											
11	T1	179	10.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	45	23.3	0.053	7.8	LOS A	0.2	1.7	0.44	0.64	46.9
Approach		224	12.7	0.097	1.6	NA	0.2	1.7	0.09	0.13	57.5
All Vehicles		632	17.8	0.146	2.7	NA	0.5	4.7	0.10	0.22	56.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [POST 2019 PM - ROADHOUSE]

Capricorn Highway / Wheatboard Road
Proposed Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	46	22.7	0.253	7.3	LOS A	1.0	8.2	0.54	0.77	45.6
3	R2	93	12.5	0.253	12.5	LOS B	1.0	8.2	0.54	0.77	46.3
Approach		139	15.9	0.253	10.8	LOS B	1.0	8.2	0.54	0.77	46.1
East: Capricorn Highway											
4	L2	44	26.2	0.028	5.8	LOS A	0.0	0.0	0.00	0.57	48.3
5	T1	220	21.5	0.127	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		264	22.3	0.127	1.0	NA	0.0	0.0	0.00	0.10	58.2
West: Capricorn Highway											
11	T1	234	23.9	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	36	29.4	0.040	7.5	LOS A	0.2	1.3	0.40	0.61	46.5
Approach		269	24.6	0.137	1.0	NA	0.2	1.3	0.05	0.08	58.3
All Vehicles		673	21.9	0.253	3.0	NA	1.0	8.2	0.13	0.23	55.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [POST 2029 AM - ROADHOUSE]

Capricorn Highway / Wheatboard Road
Proposed Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	36	29.4	0.157	7.6	LOS A	0.6	5.1	0.54	0.75	45.2
3	R2	44	26.2	0.157	13.8	LOS B	0.6	5.1	0.54	0.75	45.6
Approach		80	27.6	0.157	11.0	LOS B	0.6	5.1	0.54	0.75	45.4
East: Capricorn Highway											
4	L2	94	12.4	0.055	5.7	LOS A	0.0	0.0	0.00	0.57	49.9
5	T1	261	21.8	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		355	19.3	0.151	1.5	NA	0.0	0.0	0.00	0.15	57.6
West: Capricorn Highway											
11	T1	200	10.0	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	45	23.3	0.055	8.0	LOS A	0.2	1.8	0.46	0.65	46.7
Approach		245	12.4	0.108	1.5	NA	0.2	1.8	0.08	0.12	57.7
All Vehicles		680	17.8	0.157	2.6	NA	0.6	5.1	0.09	0.21	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [POST 2029 PM - ROADHOUSE]

Capricorn Highway / Wheatboard Road
Proposed Intersection Configuration
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Wheatboard Road											
1	L2	46	22.7	0.275	7.8	LOS A	1.2	9.3	0.58	0.80	44.7
3	R2	93	12.5	0.275	14.0	LOS B	1.2	9.3	0.58	0.80	45.4
Approach		139	15.9	0.275	11.9	LOS B	1.2	9.3	0.58	0.80	45.1
East: Capricorn Highway											
4	L2	44	26.2	0.028	5.8	LOS A	0.0	0.0	0.00	0.57	48.3
5	T1	246	21.8	0.143	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		291	22.5	0.143	0.9	NA	0.0	0.0	0.00	0.09	58.4
West: Capricorn Highway											
11	T1	261	23.8	0.153	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	36	29.4	0.041	7.7	LOS A	0.2	1.4	0.42	0.62	46.4
Approach		297	24.5	0.153	0.9	NA	0.2	1.4	0.05	0.07	58.5
All Vehicles		726	22.0	0.275	3.0	NA	1.2	9.3	0.13	0.22	56.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX L

RPEQ Certification

Certification of Traffic Impact Assessment Report

Registered Professional Engineer Queensland

for

Project Title:	Gracemere Roadhouse Service Station

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

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

As the responsible RPEQ, I certify:

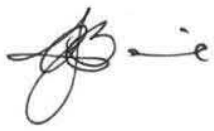
i) I am satisfied that all submitted components comprising this traffic impact assessment, listed in the following table, have been completed in accordance with the Guide to Traffic Impact Assessment published by the Queensland Department of Transport and Main Roads and using sound engineering principles,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

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

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

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

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

Name:	Andrew Barrie	RPEQ No:	12801
RPEQ Competencies:	Civil		
Signature:		Date:	11 March 2019
Postal Address:	PO Box 2149 Wandal QLD 4700		
Email:	andrew@mcmengineers.com		

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

63 Charles Street
North Rockhampton Q 4700
PO Box 2149
Wandal Q 4701
P (07) 4921 1780
E mail@mcmengineers.com

TECHNICAL MEMORANDUM

To:	Chris Ott and Andrew Batts
From	Chris Hewitt McMurtrie Consulting Engineers
Date:	07/03/19
Project No:	0491819
Re:	Water and Sewer connections for Proposed Gracemere Roadhouse

Introduction

McMurtrie consulting Engineers (MCE) have been engaged by Aurizon to provide an assessment of the existing options for Water and Sewerage connections to a proposed Roadhouse at 713 Capricorn Highway, Gracemere

Background

Aurizon has proposed to develop a Truck Stop and associated Commercial Development at their site in Gracemere at 713 Capricorn Highway. The site is currently used as a warehouse/depot for Aurizon staff. **Figure 1** and **Figure 2** shows the proposed roadhouse site plan and location.

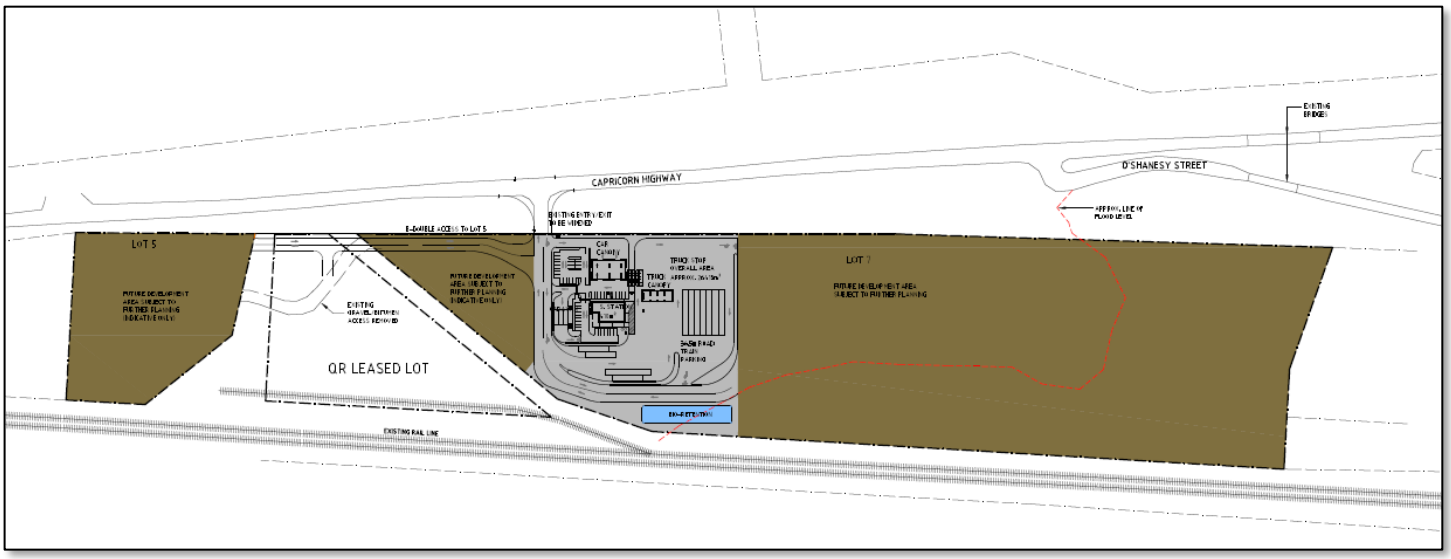


Figure 1 - Proposed overall site plan

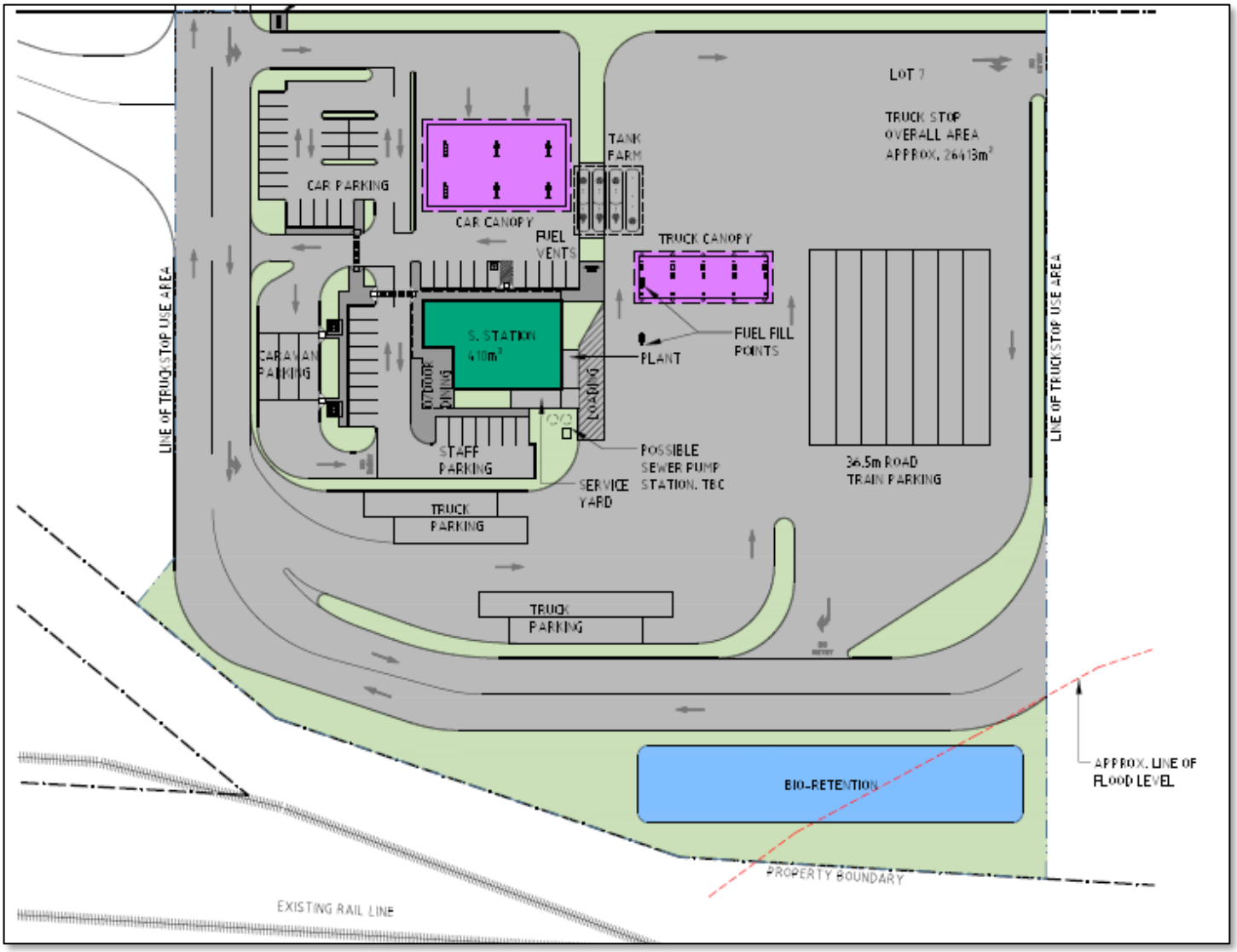


Figure 2 - Part Site Plan

Water Connection

Rockhampton Regional Council's (RRC) online mapping portal shows that there is an existing water connection to the warehouse/office currently located on the site. This has been confirmed by Rockhampton Regional Council, Development Engineering Unit and is shown in **Figure 3**.

The existing connection is a 100mm UPVC to the boundary, which is presumed to be sufficient for the needs of the proposed Roadhouse following discussions with RRC officers.
It is therefore recommended that the proposed roadhouse connect to the existing infrastructure supplying the warehouse/office currently located on site.

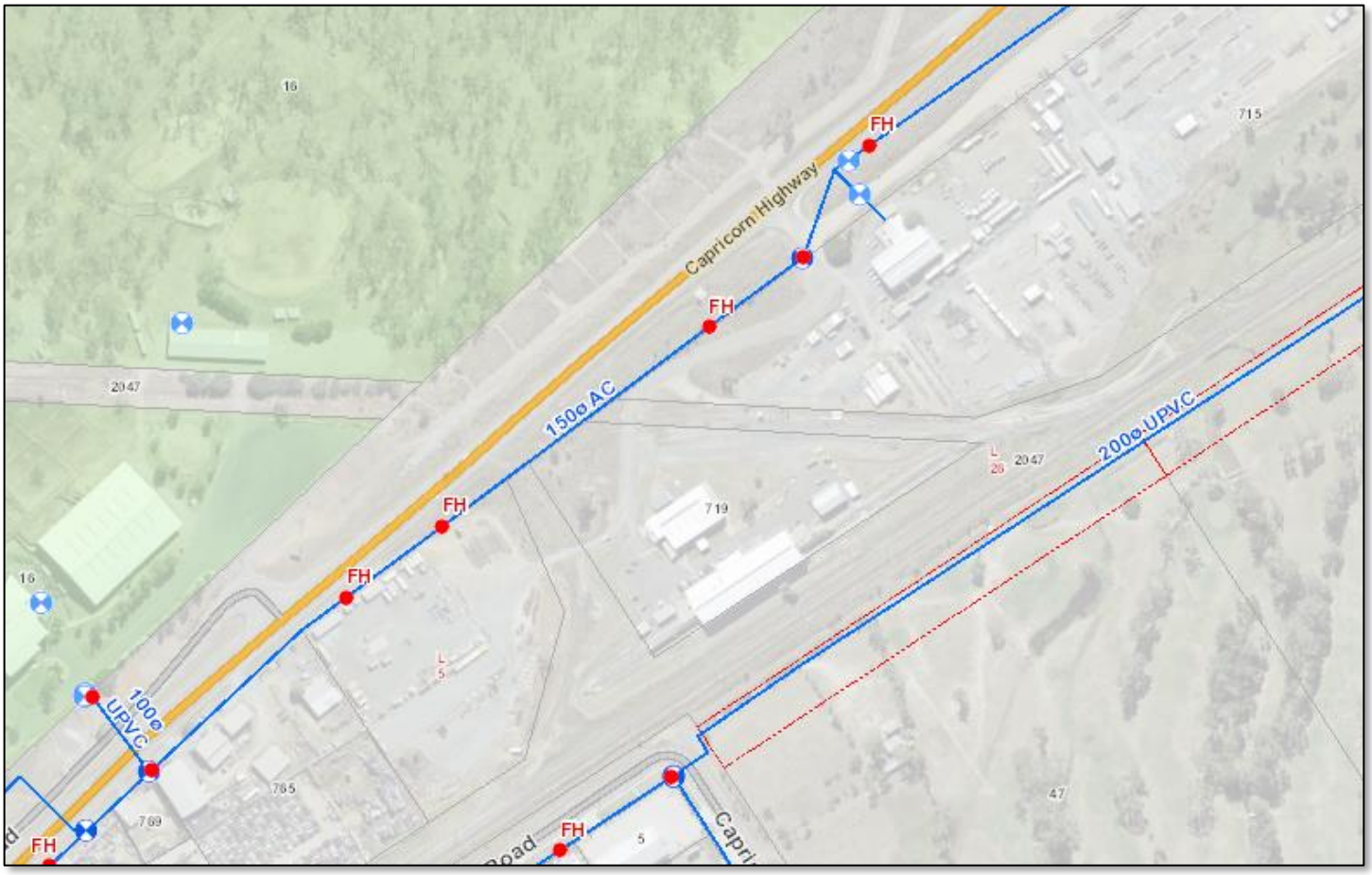


Figure 3 - Water Connection

Sewerage Connection

There are currently no connections for sewer to any of Rockhampton Regional Council's networks and Aurizon has advised that the site is currently serviced by an onsite sewage treatment plant of unknown size and capacity.

Due to the topography of the proposed site and the adjacent sewer networks, connecting the site via a gravity system is not possible. However, there are alternative options for managing the sewage waste created from the roadhouse.

OPTION 1 – ON SITE SEWAGE TREATMENT SYSTEM

An onsite Sewage Treatment Plant may be used to manage the effluent created by the roadhouse, however it is anticipated that this system would be required to have a relatively large capacity (> 20 - 30 Equivalent Persons) and this would be cost prohibitive to install and service. A system of this capacity would also require an ERA through State Government.

OPTION 2 – PUMP SYSTEM AND RISING MAIN

In order to connect to the existing sewer network, an onsite pump system and rising main to a gravity connection is required. The pump system and rising main will be owned and maintained by the owner of the lot. The system pumps effluent from the site tank to the existing network via a pressurised pipe and can therefore overcome adverse gradients and elevation.

The nearest connection point is to the west across the road from the Sale Yards (CQLX) near Langley Road, however this area is then collected and pumped to the east via Capricorn Street Pump Station 7 (PS7). RRC has indicated that the capacity of PS7 is nearing exceedance and connecting to this line is not preferable for RRC.

An alternative point of connection is to the Northeast of the development on Salmon Street. Connecting at this point will require the rising main to traverse through Gracemere Creek which may require further state approval for construction during the Operational Works phase of the project. **Figure 4** shows the existing network and rising main connection options.

It is recommended that an on site Pump Station and Rising Main be constructed to connect to the existing sewer network at Salmon Street.

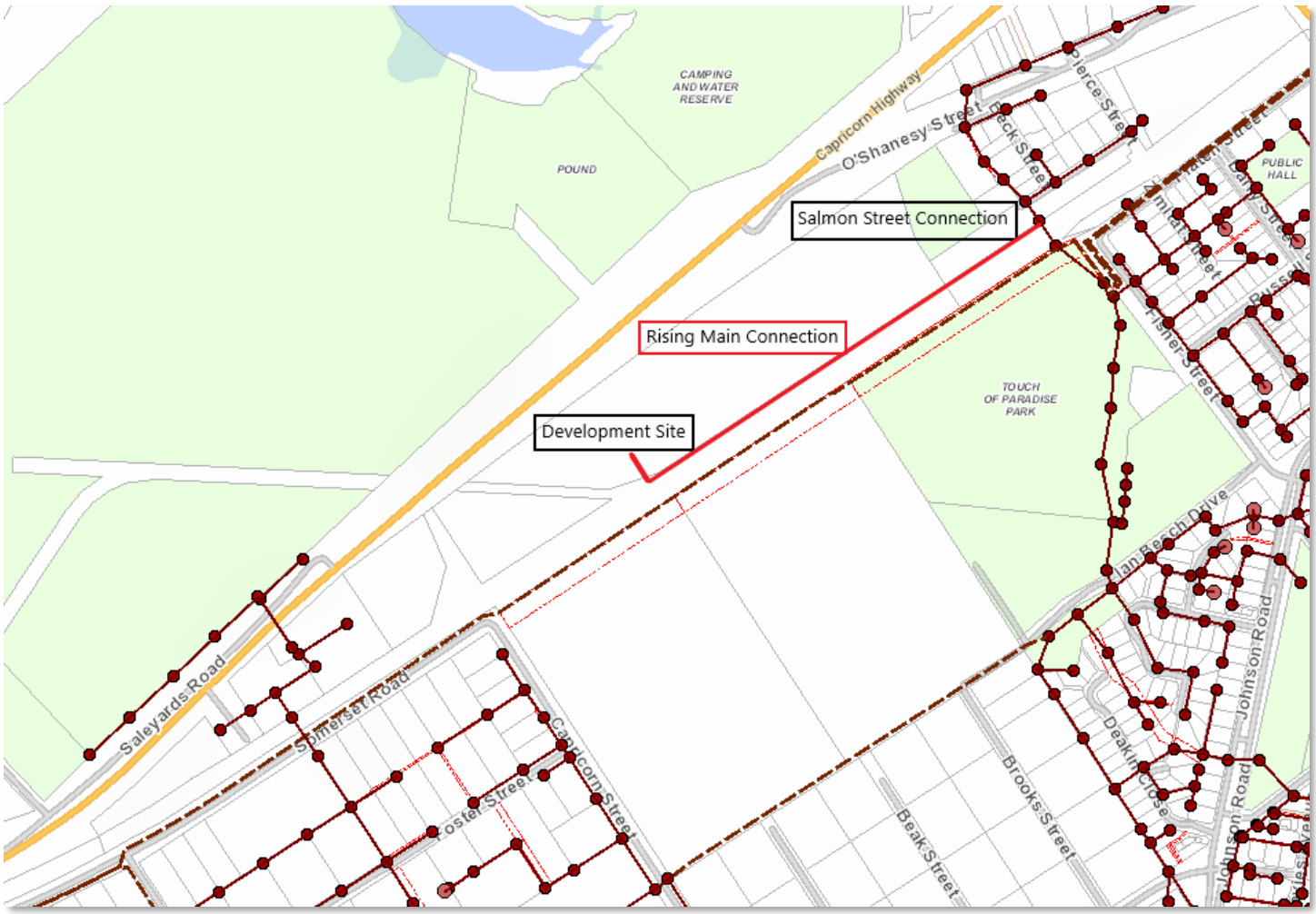


Figure 4 - Sewer Network

Yours sincerely

Chris Hewitt
Principal Civil Engineer
RPEQ NO. 5141

mcmurtrie
CONSULTING ENGINEERS

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OUR AFFILIATIONS

ENGINEERS AUSTRALIA

AS/NZS ISO 9001:2008 Quality Management System Certified

Local Buy
Register of Pre-Qualified Suppliers (RPQS)
Engineering Consultancy Services
Contract: BUS 226-0212

DATE
04.03.2019

STORMWATER MANAGEMENT PLAN

PROJECT

Aurizon Service Station – 715 Capricorn Highway, Gracemere

CLIENT

Property Pty Ltd (Aurizon)

PROJECT NO.

0491819

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/25-2019

Dated: 02 September 2019

mcmurtrie
CONSULTING ENGINEERS

4 March 2019

The Chief Executive Officer
Rockhampton Regional Council
PO Box 1860
ROCKHAMPTON, QLD 4700

Attn: Development Assessment Officer

Re: Aurizon Stormwater Management Plan
715 Capricorn Highway, Gracemere
Project No. 0491819

We are pleased to provide the following Stormwater Management Plan in support of the proposed Service Station located at 715 Capricorn Highway, Gracemere. This report provides details on the stormwater quality and quantity elements of the project and demonstrates that the proposed internal infrastructure mitigates any increased rates of stormwater runoff to be less than the existing (pre-developed) conditions and addresses the water quality objectives for the site.

Please do not hesitate to contact either Mr Chris Hewitt or myself directly should you require any further information or clarification.

Yours sincerely

Gavin Fields
Principal Environmental Engineer

Chris Hewitt
Principal Civil Engineer
RPEQ 5141

Contents

List of Tables

List of Figures

1. INTRODUCTION

McMurtrie Consulting Engineers (MCE) were engaged by Aurizon property Pty Ltd (Aurizon) to undertake an assessment of the stormwater quality and quantity elements of the proposed service station at 715 Capricorn Highway, Gracemere. This Stormwater Management Plan (SMP) is in support of a development application to Rockhampton Regional Council (RRC) to demonstrate that there are no functional restraints on the proposed development and to ensure that there is no adverse impacts on the adjoining properties, public roadways and rail infrastructure. The application will also be reviewed by the Department of Transport and Main Roads with respect to any potential stormwater impacts.

2. SITE AND DRAINAGE CHARACTERISTICS

The site is located at 715 Capricorn Highway, Gracemere and, for the area of the proposed truck stop and service station, is currently a fully developed industrial lot. There are multiple structures with a mix of paved and gravel hardstand areas covering the site. The proposed development area has an area of approximately 2.637ha. The site is used for ancillary rail purposes and storage of rail inventory and equipment. Access is available from Capricorn Highway at the western end of the northern boundary. The location of the site is shown on Figure 1 below.

Figure 1: Site Location

It is proposed that the site be developed into a truck stop and service station with retail access to the public. As part of the

development it is proposed that the existing structures be removed to allow for the construction of the new building within the site, based on the concept details prepared by TFA Project Group.

A review of the local terrain indicates that the site is functionally at a crest in the catchment although it is located adjacent to Gracemere Creek, which crosses through the adjacent golf course to the south through to the Pudgole Lagoon north of the Capricorn Highway. Gracemere Creek inundates small portions of the site during major flood events, however this has not as yet resulted in the site suffering any property damage or restriction in the use of the land.

We have obtained LiDAR data for the area from the ELVIS data service, which has been supplemented by site survey. Figure 2 presents the existing terrain contours based on the LiDAR data extracted for the local area.

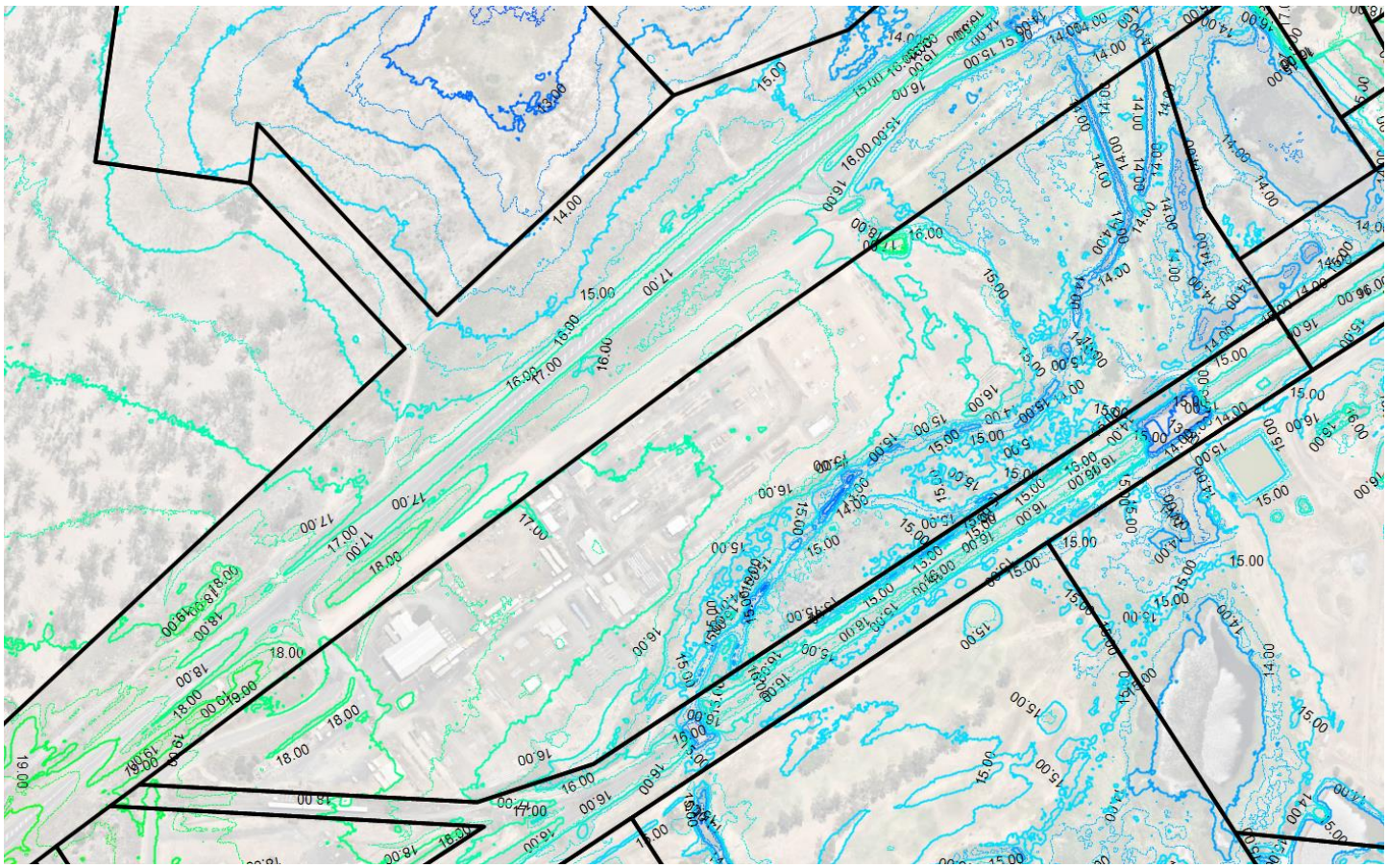


Figure 2: Local Area Contours

Based on the contour data in Figure 2 above, there is approximately 4m of fall from west towards the east from RL 18m AHD down to RL 14m AHD within Gracemere Creek.

3. STORMWATER QUALITY

The proposed re-development of the existing industrial site is required to address the requirements of the State Planning Policy and the Rockhampton Region Planning Scheme with respect to stormwater quality.

3.1 WATER QUALITY OBJECTIVES

The water quality objectives (WQO's) for the proposed industrial development have been obtained from Queensland Water Quality Guidelines, which are summarised in the following table.

Table 1: Water Quality Objectives

Parameter	Pollutant Load Reductions
Total Suspended Solids (TSS)	85% retention of the typical annual load
Total Phosphorous (TP)	60% retention of the typical annual load
Total Nitrogen (TN)	45% retention of the typical annual load

3.2 PROPOSED WATER SENSITIVE URBAN DESIGN

It is proposed that the development be provided with a bioretention basin to achieve the WQO's described in Table 1.

The bioretention basin location is presented on the TFA Project Group drawings. We have however modelled the device in MUSIC to verify the treatment capacity relative the WQO's. The input parameters for the proposed device is presented on the following figure.

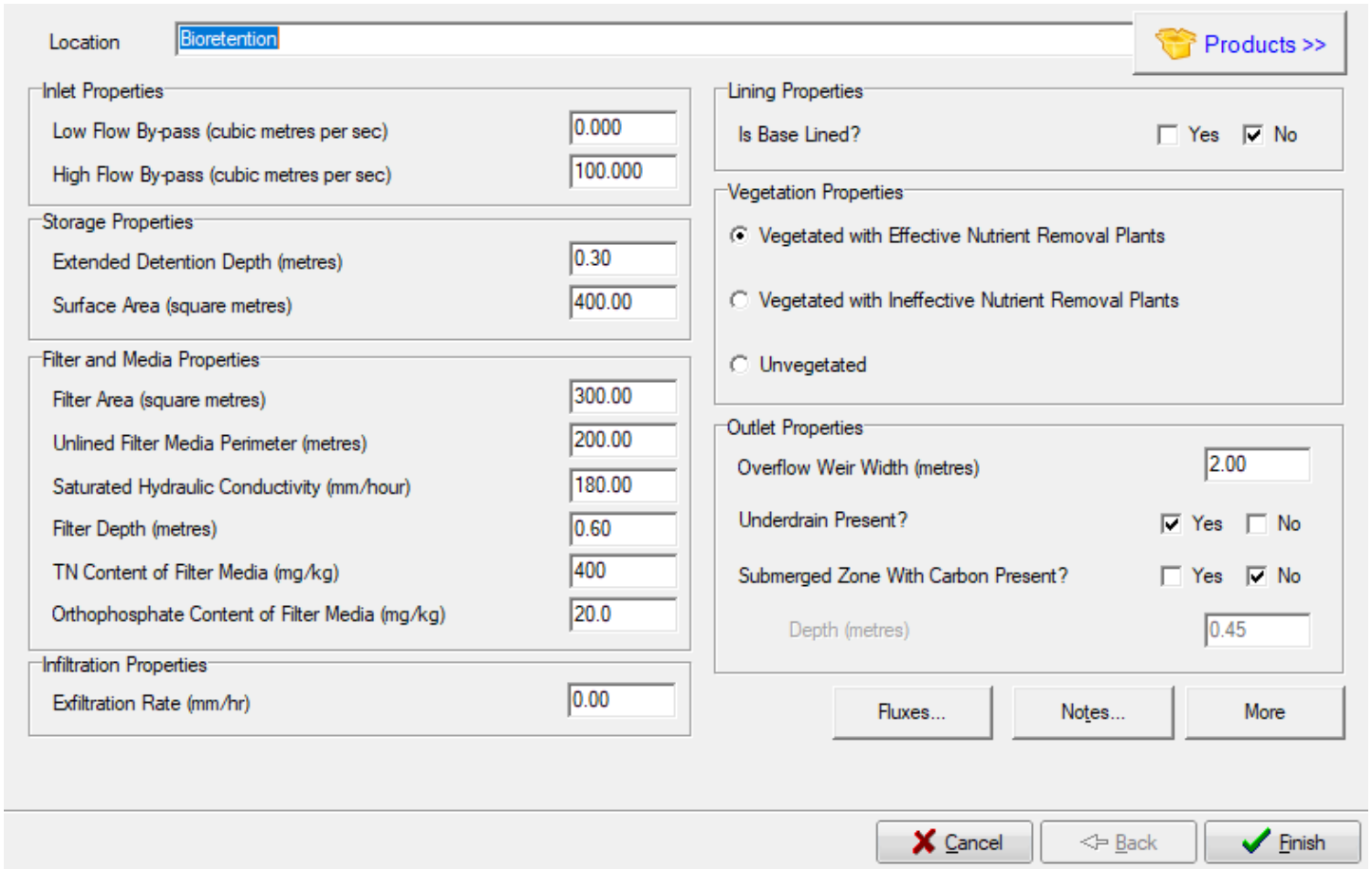


Figure 3: Bioretention Basin MUSIC Model Input Parameters

3.3 MUSIC MODEL

Stormwater quality modelling has been carried out using Version 6.3 of eWater's 'MUSIC' software (Model for Urban Stormwater Improvement Conceptualisation). MUSIC is a decision support tool, used to plan and design appropriate urban stormwater management systems at the conceptual level.

The catchment source nodes within the development are based on the split catchment method based on industrial land use characteristics, which were obtained from the MUSIC Modelling Guidelines prepared by Water by Design. A schematic of the MUSIC model is presented in the following figure.

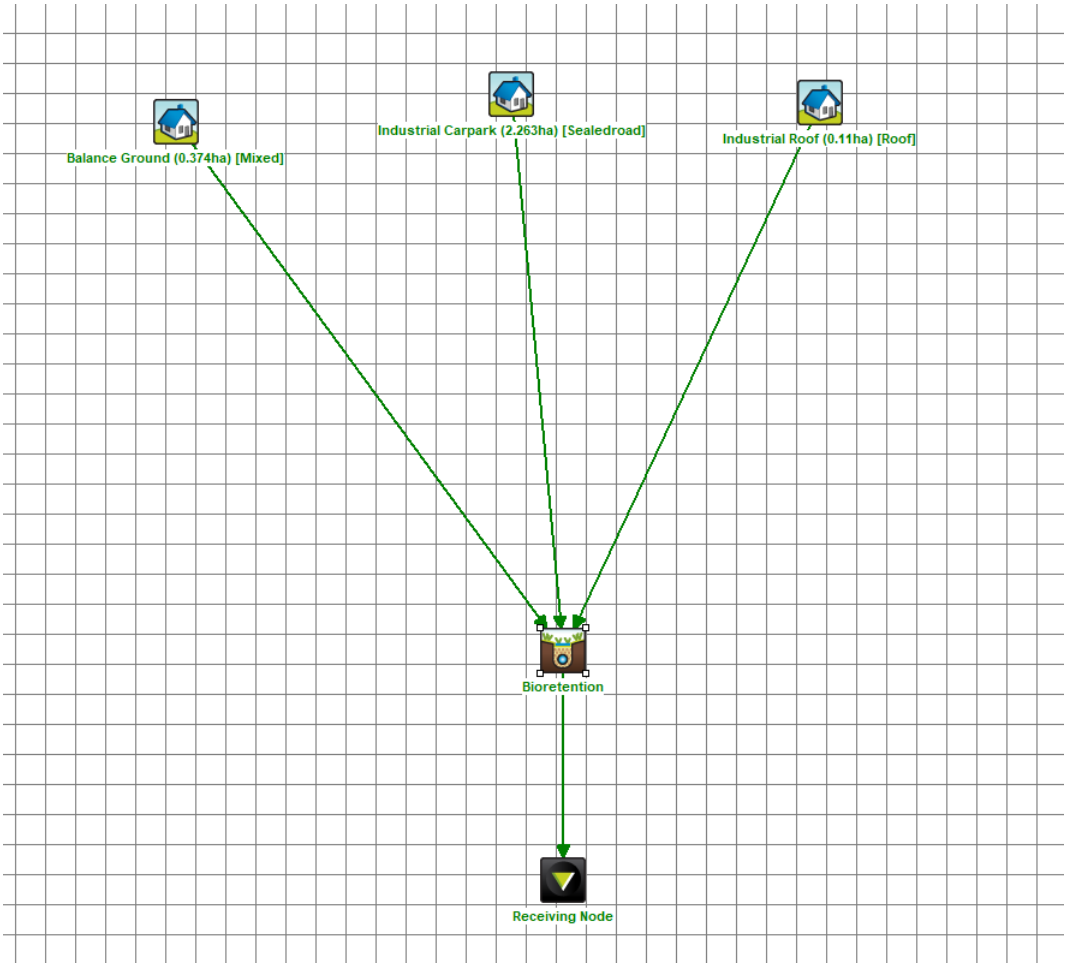


Figure 4: MUSIC Model Schematic Layout

3.4 MUSIC MODEL RESULTS

The results of the MUSIC model were extracted from the Receiving Node to verify the pollutant reductions within the development. The results are presented in Figure 5.

	Sources	Residual Load	% Reduction
Flow (ML/yr)	13.8	13	5.7
Total Suspended Solids (kg/yr)	4470	658	85.3
Total Phosphorus (kg/yr)	7.52	1.54	79.6
Total Nitrogen (kg/yr)	33.1	16.4	50.4
Gross Pollutants (kg/yr)	353	0	100

Figure 5: MUSIC Model Results

The results presented in Figure 5 meet or exceed the requirements presented in Table 1 above.

4. STORMWATER QUANTITY

The site is located within the Gracemere Creek catchment, which has been subject to detailed analysis by Council in the Gracemere Catchments Flood Study (2013) (GCFS). The subject site is immediately adjacent to key crossings of the Gracemere Creek and is well reported with respect to runoff input, depths and hazard. As a result, no specific flood modelling was required for the analysis of the proposed service station on the basis that all earthworks for the service station development will be above the flood elevation or was undertaken on a compensatory basis within the floodplain itself.

The following figures from the GCFS relate to the project, which are enclosed in Appendix A for reference purposes.

- Figure 7 – Hydraulic Model Layout Gracemere Creek
- Figure 9 – Hydraulic Model Layout Land Use Map
- Figure 22: Sheet 2 – 100 Year ARI Inundation Extents
- Figure 23: Sheet 2 – 100 Year ARI Peak Depths
- Figure 24: Sheet 2 – 100 Year ARI Peak Hazards

Key information from the GCFS for the service station project relates to the existing level of development, which in stormwater terms is measured as the fraction of impervious surfaces. The aerial photography of the site presented in Figure 1 confirms that the site comprises of buildings, sealed and unsealed pavement areas, which are considered to be 100% impervious. This is consistent with the assessment shown on Figure 9 of the GCFS where the existing land use was defined as 'Roads and Other Impervious Surfaces'. The following figure has been extracted from Figure 9 of the GCFS for reference purposes.

The proposed service station will incorporate additional landscaping measures, including the bioretention basin, that will increase the pervious coverage of the site compared to the existing scenario. The consequence of this increase in pervious areas will be a reduction in runoff volumes and peak discharge during all storm events. Therefore, no additional detention infrastructure is required to address the requirements of the Rockhampton Region Planning Scheme and the Queensland Urban Drainage Manual for site based stormwater control.

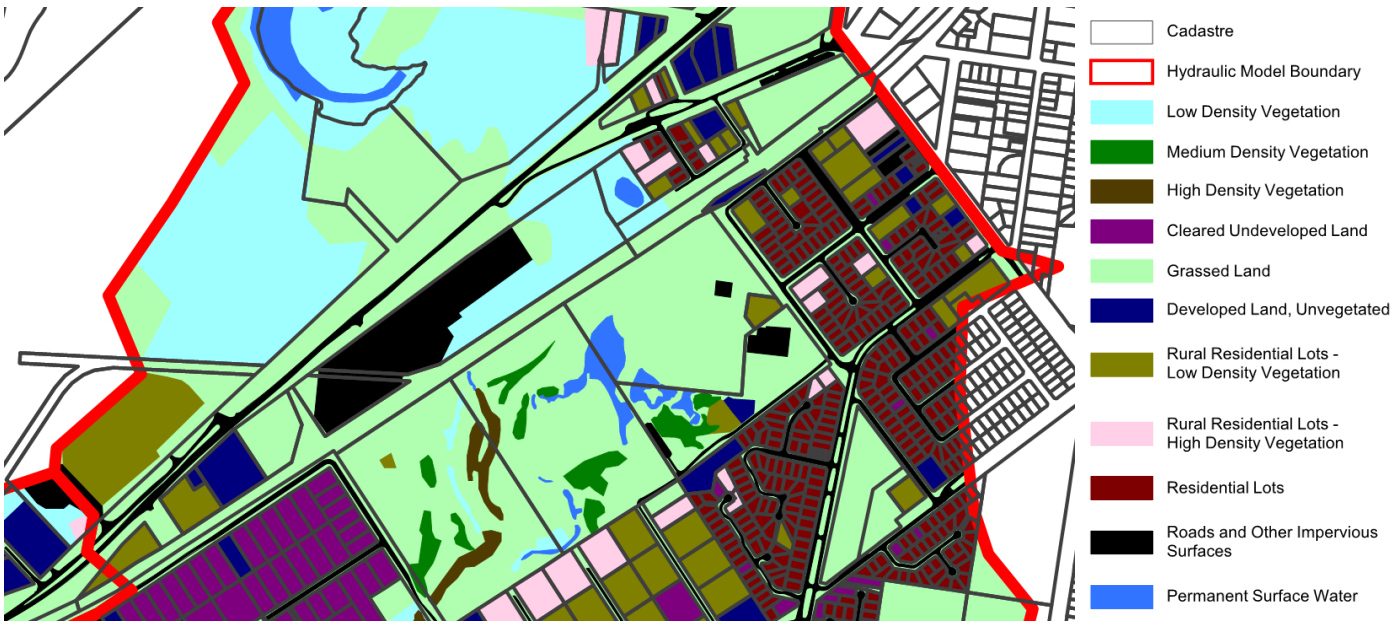


Figure 6: GCFS Land Use Excerpt

4.1 FREEBOARD REQUIREMENTS

A key element for the service station design is the definition of the internal floor elevation of the building infrastructure. The minimum required freeboard above the 100 year ARI design storm event is 500mm. Based on Figure 22: Sheet 2 of the GCFS the maximum flood elevation during a 9 hour duration 100 year ARI design storm event is approximately RL17.0m AHD. The existing surface elevation

where the proposed service station building is to be located is approximately RL17.6m AHD. The existing terrain is higher than the minimum freeboard requirements and any elevation proposed above RL17.5m AHD will be acceptable for the proposed service station.

4.2 SITE DRAINAGE

It is proposed that the site drainage be subject to normal design requirements with pit and pipe connectivity though to the proposed bioretention basin. Due to the existing site terrain it is proposed that the bioretention basin be located towards the southern boundary. It is a requirement that the device be located in the low hazard area (Planning Area 2). Therefore the surface elevation of the bioretention basin should be located at an elevation no lower than RL 16.0m AHD and have a maximum reinforced bund height of RL 16.3m AHD on the Gracemere Creek side.

The legal point of discharge for the proposed works will remain internal to the site and be directed east to the existing Gracemere Creek, which is a defined waterway. And approach channel works or piped drainage outlets are to be assessed as part of the detailed design phase applying the principles of the IECA (Australasia) Guidelines for Erosion and Sediment Control 2008.

5. CONCLUSIONS

This stormwater management plan has assessed the quantity and quality aspects of the proposed service station located on the existing Aurizon industrial site at 715 Capricorn Highway, Gracemere. The water quality has been assessed against the requirement of the State Planning Policy and Rockhampton Region Planning Scheme. To comply with the water quality objectives it is proposed that the development be serviced by a bioretention basin with a filter surface area of 300m^2.

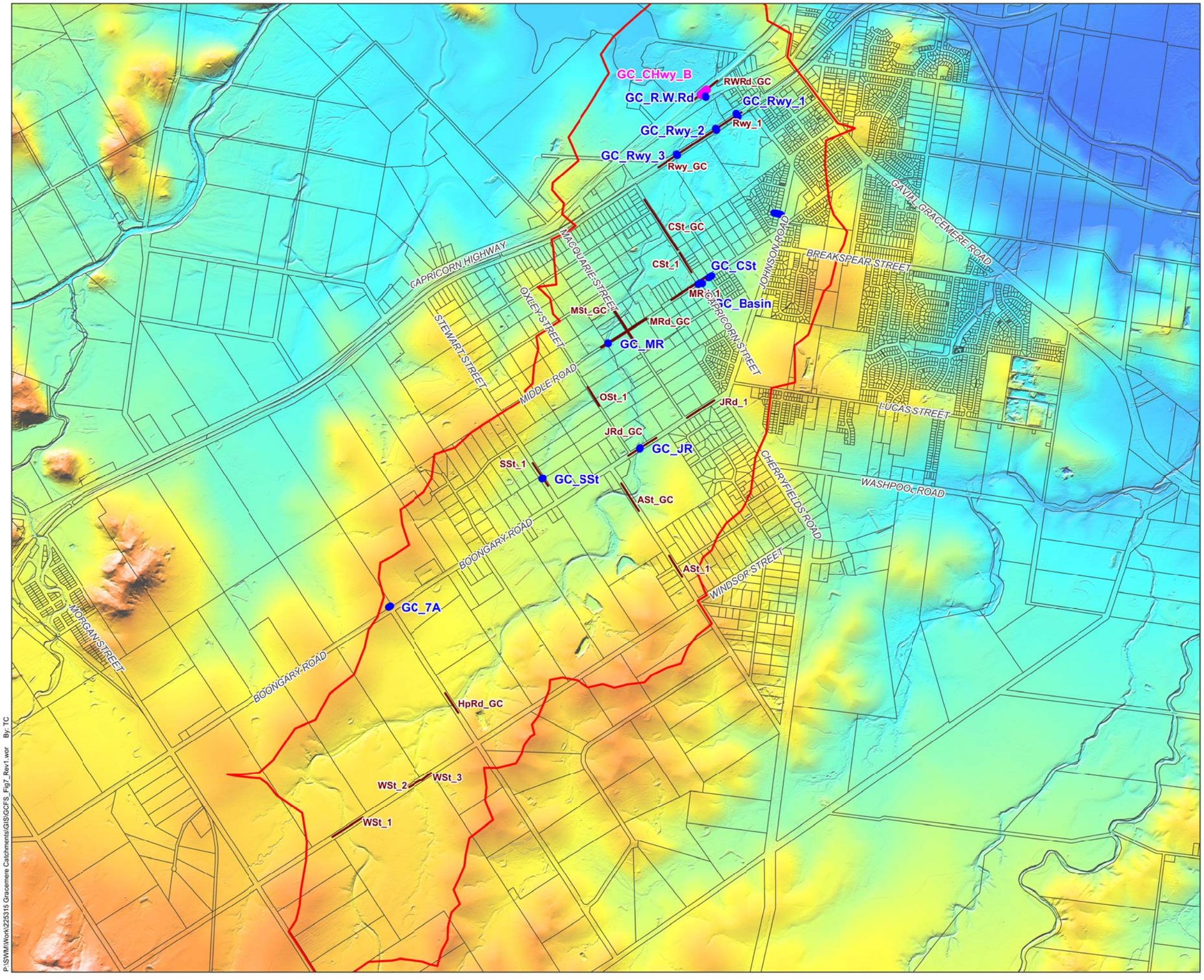
From a stormwater quantity perspective, there is an increase in the pervious surface area through the inclusion of additional landscaping zones such as the bioretention basin. Consequently, there will be a reduction in total runoff volumes and peak discharges compared to the existing case and no additional infrastructure is required for stormwater attenuation to be included as part of the development.

Based on our assessment of stormwater quantity and the impacts of the proposed development, there is not likely to be any detrimental impact on the adjacent road and rail corridor as a result of stormwater from the proposed development.

6. APPENDIX

Appendix A: Gracemere Creek Flood Study Figures

aurecon



Legend

- TUFLOW Model Boundary
- Culvert
- Bridge
- Discharge Reporting Location
- Cadastre

Elevation (m AHD)

200.0
50.0
30.0
15.0
0.0

Notes:

1. This map must not be used without consideration of, or reference to, the Explanatory Notes and Disclaimers which are provided on the Gracemere Catchments Flood Study Figure 25 so as to understand the important limitations and conditions on such use.
2. This mapping considers local catchment flooding only. No consideration of Neerkol Creek or Padgoe Lagoon flooding has been made.
3. This mapping shows inundation within the Gracemere Catchments Flood Study TUFLOW model extents only. Flood inundation continues beyond the downstream extents of this mapping.

Date: 31/03/2012 **Version: 1**

P:\SWM\Work\225315 Gracemere Catchments\GIS\GCFS_Fig7_Rev1.wor By: TC

0 1500 (m)

Scale 1:30 000 (m) (@ A3 size)

Projection: MGA Zone 56

Gracemere Catchments Flood Study

Figure 7 - Hydraulic Model Layout Gracemere Creek

aurecon

Legend

- Cadastre
- Hydraulic Model Boundary
- Low Density Vegetation
- Medium Density Vegetation
- High Density Vegetation
- Cleared Undeveloped Land
- Grassed Land
- Developed Land, Unvegetated
- Rural Residential Lots - Low Density Vegetation
- Rural Residential Lots - High Density Vegetation
- Residential Lots
- Roads and Other Impervious Surfaces
- Permanent Surface Water

Notes:

1. This map must not be used without consideration of, or reference to, the Explanatory Notes and Disclaimers which are provided on the Gracemere Catchments Flood Study Figure 25 so as to understand the important limitations and conditions on such use.
2. This mapping considers local catchment flooding only. No consideration of Neerkol Creek or Padgole Lagoon flooding has been made.
3. This mapping shows inundation within the Gracemere Catchments Flood Study TUFLOW model extents only. Flood inundation continues beyond the downstream extents of this mapping.

Date: 31/03/2012 **Version: 1**

P:\SWM\Work\225315 Gracemere Catchments\GIS\GCFS_Fig9_Rev1.wor By: TC

0 2500 (m)

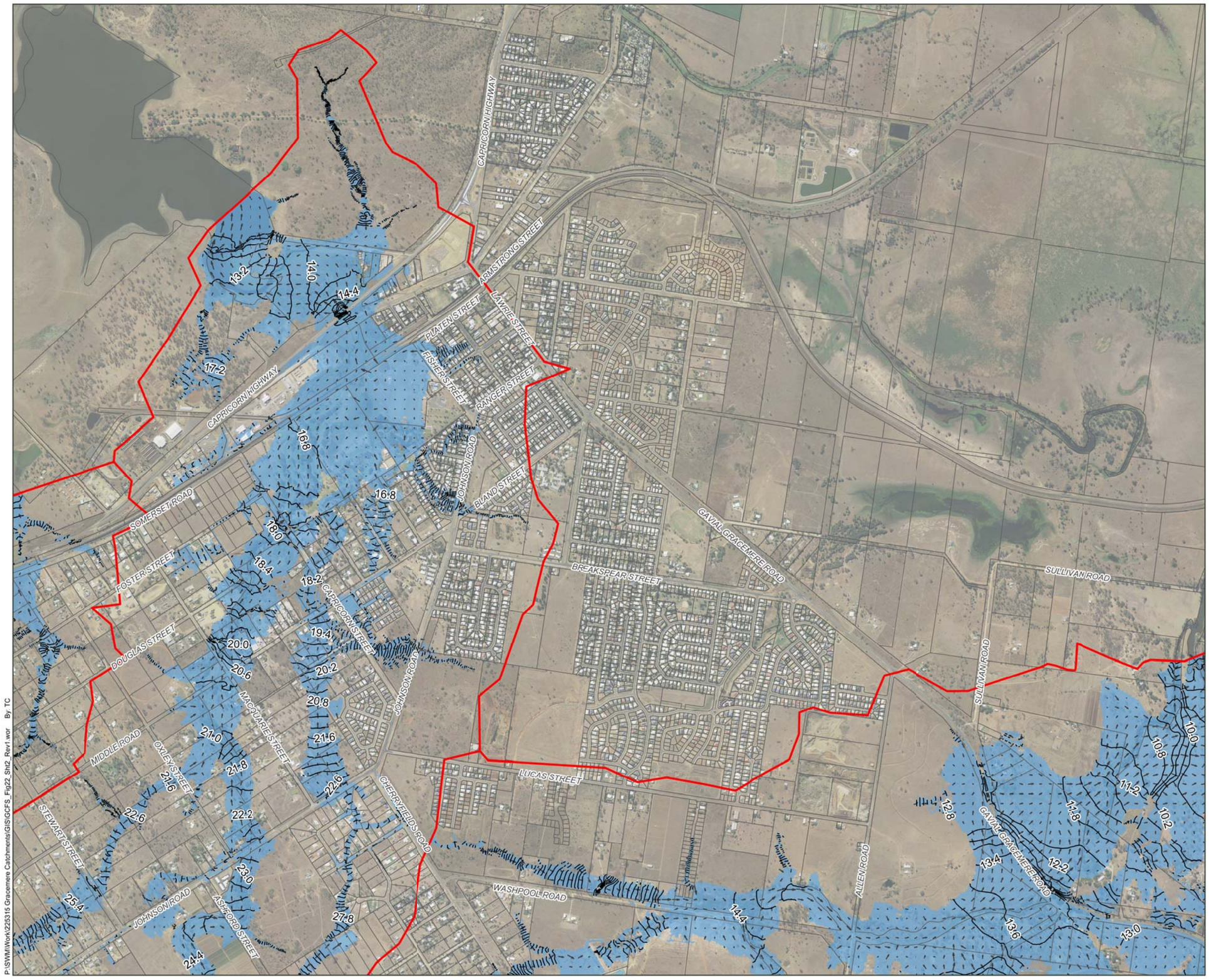
Scale 1:50 000 (m) (@ A3 size)

Projection: MGA Zone 56

Gracemere Catchments Flood Study

Figure 9 - Hydraulic Model Layout Land Use Map

aurecon



P:\SWM\Work\225315 Gracemere Catchments\GIS\GCFS_Fig22_Sht2_Rev1.wor By: TC

Legend

- Cadastre
- TUFLOW Model Extents
- Inundation Extents
- 0.2m (AHD) Peak Water Surface Elevation Contour
- Velocity Vector
  - represents velocity at time of peak water level
  - reference vector = 9 m/s

Notes:

1. This map must not be used without consideration of, or reference to, the Explanatory Notes and Disclaimers which are provided on the Gracemere Catchments Flood Study Figure 25 so as to understand the important limitations and conditions on such use.
2. This mapping considers local catchment flooding only. No consideration of Neerkol Creek or Padgoe Lagoon flooding has been made.
3. This mapping shows inundation within the Gracemere Catchments Flood Study TUFLOW model extents only. Flood inundation continues beyond the dowrstream extents of this mapping.

Date: 31/03/2012 **Version: 1**

0 1000 (m)

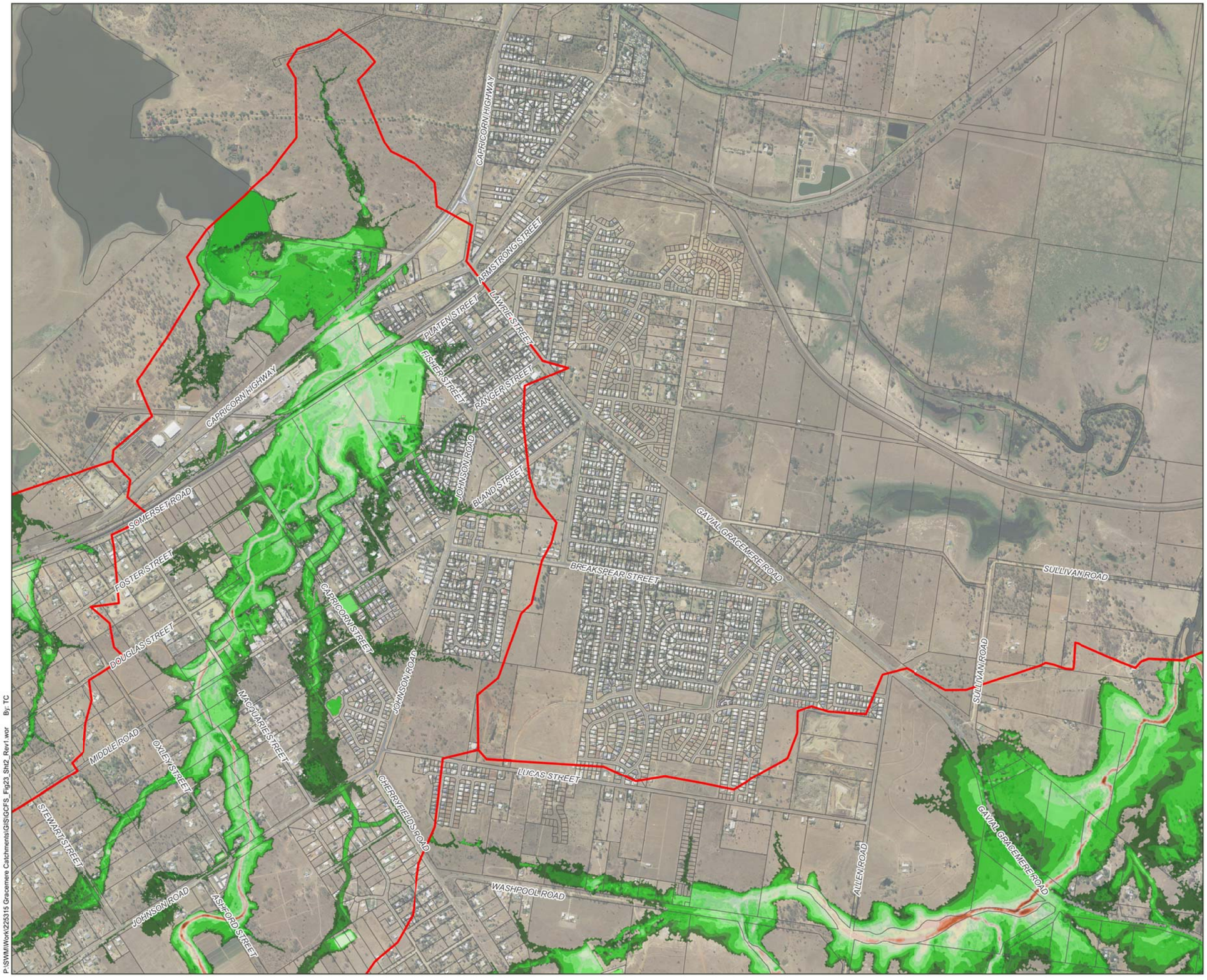
Scale 1:20 000 (m) (@ A3 size)

Projection: MGA Zone 56

Gracemere Catchments Flood Study

Figure 22: Sheet 2 - 100 Year ARI Inundation Extents, Peak Water Surface Elevations and Velocities

aurecon



P:\SWM\Work\225315 Gracemere Catchments\GIS\GCFS_Fig23_Sht2_Rev1.wor By: TC

Legend

- Cadastre
- TUFLOW Model Extents

Depth (m)

0.0 to 0.3	2.5 to 3.0
0.3 to 0.5	3.0 to 3.5
0.5 to 1.0	3.5 to 4.0
1.0 to 1.5	4.0 to 4.5
1.5 to 2.0	4.5 to 5.0
2.0 to 2.5	> 5.0

Notes:

1. This map must not be used without consideration of, or reference to, the Explanatory Notes and Disclaimers which are provided on the Gracemere Catchments Flood Study Figure 25 so as to understand the important limitations and conditions on such use.
2. This mapping considers local catchment flooding only. No consideration of Neerkol Creek or Padgoe Lagoon flooding has been made.
3. This mapping shows inundation within the Gracemere Catchments Flood Study TUFLOW model extents only. Flood inundation continues beyond the dowrstream extents of this mapping.

Date: 31/03/2012 **Version: 1**

0 1000 (m)

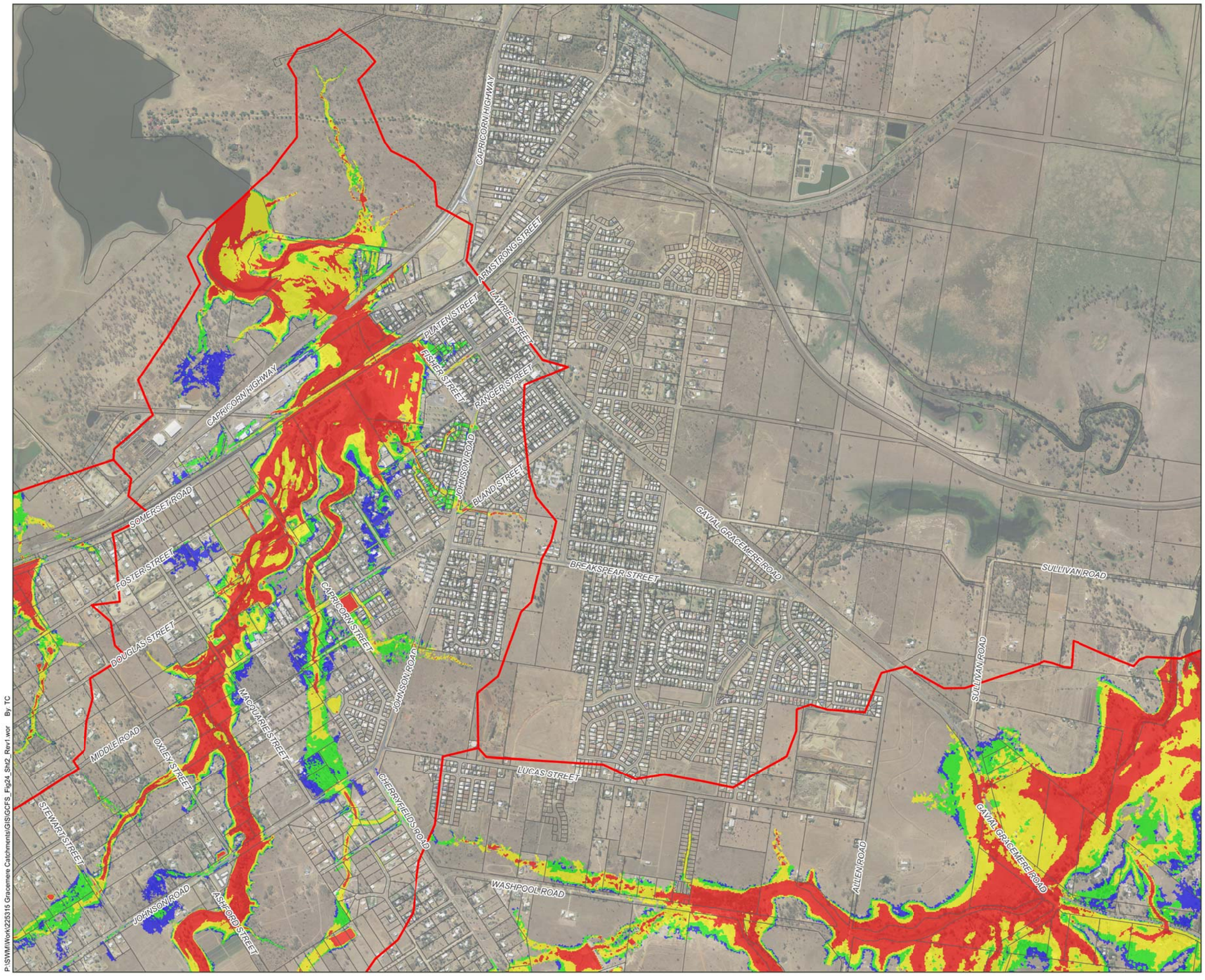
Scale 1:20 000 (m) (@ A3 size)

Projection: MGA Zone 56

Gracemere Catchments Flood Study

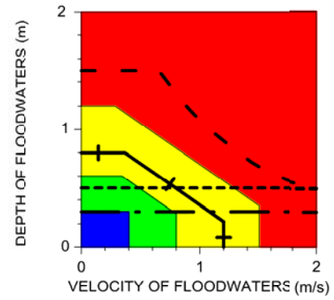
Figure 23: Sheet 2 - 100 Year ARI Peak Depths

aurecon



Legend

- Cadastre
- TUFLOW Model Extents



Hazard Categories	Hazard Thresholds
Extreme	Safe to Use Small Cars
High	Safe to Use 4WDs
Medium	Wading Limit - Children
Low	Wading Limit - Adults

Notes:

1. This map must not be used without consideration of, or reference to, the Explanatory Notes and Disclaimers which are provided on the Gracemere Catchments Flood Study Figure 25 so as to understand the important limitations and conditions on such use.
2. This mapping considers local catchment flooding only. No consideration of Neerkol Creek or Padgoe Lagoon flooding has been made.
3. This mapping shows inundation within the Gracemere Catchments Flood Study TUFLOW model extents only. Flood inundation continues beyond the downstream extents of this mapping.

Date: 31/03/2012 **Version: 1**

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0 1000 (m)

Scale 1:20 000 (m) (@ A3 size)

Projection: MGA Zone 56

Gracemere Catchments Flood Study

Figure 24: Sheet 2 - 100 Year ARI Peak Hazards

mcmurtrie
CONSULTING ENGINEERS

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E mail@mcmengineers.com
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ABN 69 958 286 371

PO Box 2149, Wandal Q 4700
63 Charles Street
North Rockhampton Q 4701

OUR AFFILIATIONS

ENGINEERS AUSTRALIA

AS/NZS ISO 9001:2008 Quality Management System Certified

Local Buy Register of Pre-Qualified Suppliers (RPQS)
Engineering Consultancy Services
Contract: BUS 226-0212

TfA Ref: 18294

13 March 2019

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/25-2019

Dated: 02 September 2019

The Chief Executive Officer
Rockhampton Regional Council
PO Box 1860
ROCKHAMPTON, QLD 4700

ATTN: Development Assessment Officer

RE: Proposed Truck Stop and Commercial Development at 715 Capricorn HWY, Gracemere QLD 4702 – Oily Water Management Statement.

Dear Sir / Madam,

This Oily Water Statement has been prepared with respect to the proposed Truck Stop and Commercial Development's service station component and aims to summarise the proposed oily water system management strategy. Stormwater runoff generated from the site will continue to be managed as per the Stormwater Management Plan prepared by McMurtrie Consulting Engineers (Project No 0491819) dated 04.03.2019.

Oily Water at this site will be managed as follows:

- Dispensing of fuel (trucks and cars) will occur in concrete bunded areas covered by a canopy roof that overhang the dispensing bays by 10 degrees horizontally. Any spillage or minor spills from under the canopies will be captured by grated gully pits and directed to a Spel Puraceptor P.040 Class '1' unit via underground pipe network for hydrocarbon removal. Treated water from the Spel Puraceptor will be then discharged to the site's stormwater network.

- Two fuel delivery fill points (tanker unloading areas) are proposed at this site, one located under the truck canopy (within a refuelling bay) and another just South-West of the truck canopy (uncovered forecourt area).

- Any spills that might occur during unloading operations under the canopy will be captured within the refuelling bay and directed to the abovementioned Spel Puraceptor unit. Similarly, the tanker unloading area outside the truck canopy will be located within a concrete bund and provided with a grated gully pit that will capture and convey any potential spills and send them to the Spel Puraceptor unit. Stormwater flows generated from the uncovered tanker unloading area are negligible and therefore can be also directed to the Spel Puraceptor.

- The proposed Spel Puraceptor unit can fully contain a spill from the largest delivery tanker compartment (8,000 litres) and cater for wind-blown rain entering the canopy areas and stormwater runoff conveyed within the uncovered tanker unloading area as this unit has a total working capacity of 14,400 litres (containment capacity) and can safely treat stormwater flows of up to 40 litres per second.

- A licensed contractor will remove the contents of the Spel Puraceptor when required.

A conceptual oily water management plan has been prepared in order to clarify the operation of the proposed system. Refer to drawing 18294-D18 in Appendix A for details.

TfA Project Group

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Fax: +61 7 3854 2999

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Bella Vista NSW 2153
NSW Phone: +61 2 8814 5219
Australia Wide: 1300 794 300

MELBOURNE
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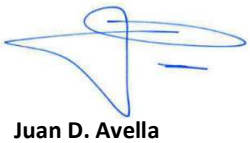
401 Docklands Drive
Docklands VIC 3008
VIC Phone: +61 3 9640 0206
Website: www.tfa.com.au

PERTH
Level 3
1060 Hay Street
West Perth WA 6005
WA Phone: +61 8 9480 0430
ABN: 34 612 132 233

Details of the proposed Spel Puraceptor unit are also attached in Appendix B for Council information.

Please do not hesitate to contact the undersigned should you require any clarification regarding this letter.

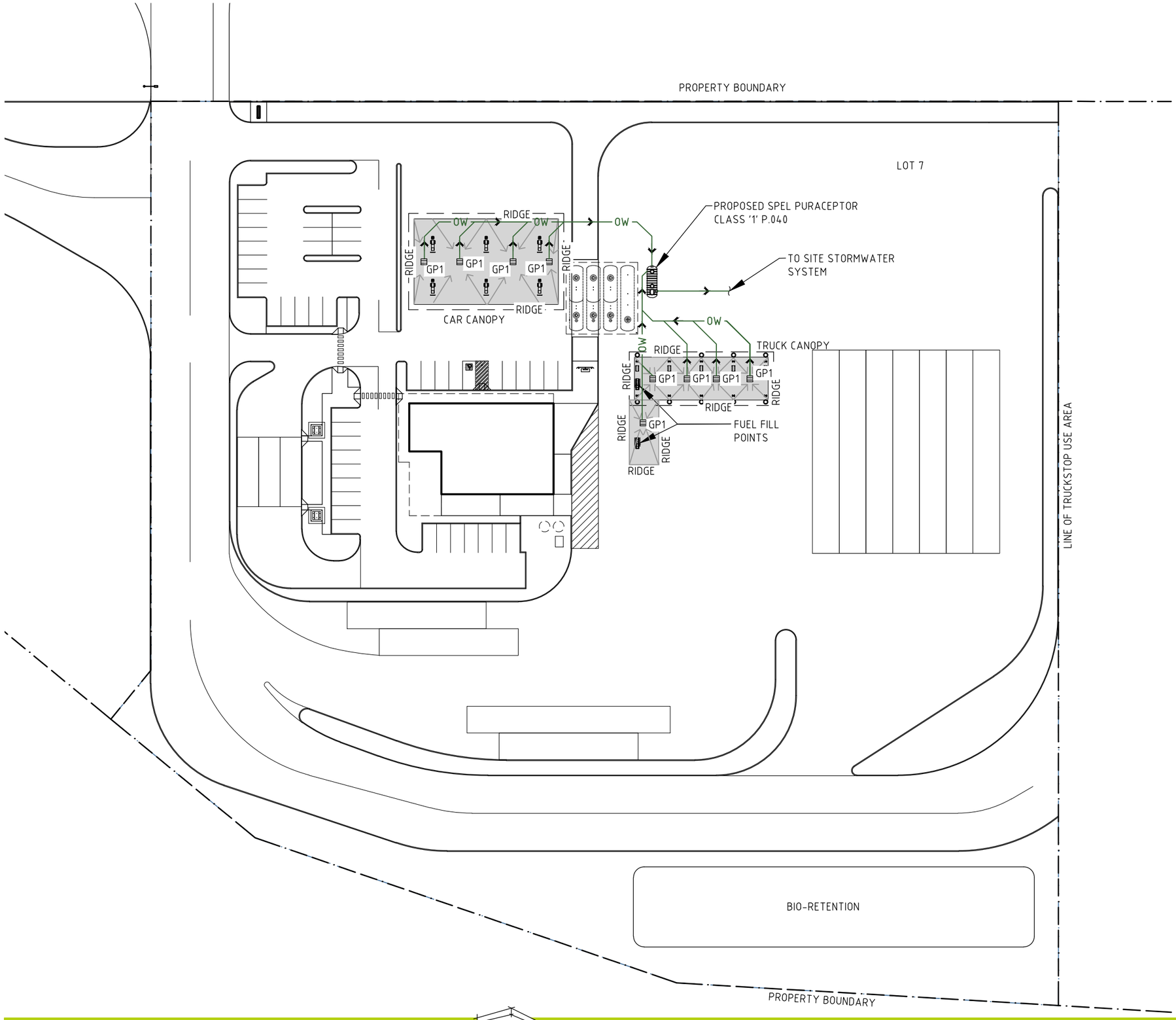
Kind regards,



Juan D. Avella
Director – Civil/ Structural Engineering
BEng MBA MIEAust CPEng NER RPEQ
For and on behalf of TfA Project Group.

Appendices A – Conceptual Oily Water Management Plan – Drawing 18294-D18 Rev A
B – Spel Puraceptor information

APPENDIX A – CONCEPTUAL OILY WATER MANAGEMENT PLAN



RPD

LOTS 5&7 ON SP108697
LGA: ROCKHAMPTON REGIONAL COUNCIL
TOTAL AREA: 17840m² + 119500m²
= 137340m²

LEGEND:

- PROPERTY BOUNDARY
- OW — PROPOSED OILY WATER DRAIN
- DIRECTION OF SURFACE FALL
- GP1 — OILY WATER GULLY PIT (WATER SEALED)
- REFUELING/TANKER UNLOADING AREAS DRAINING TO SPEL PURACEPTOR

10 5 0 10 20 30m
Metres

PROJECT MANAGERS | PLANNERS
DESIGNERS | ENGINEERS

TfA Project Group

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Email: enquiry@tfa.com.au
Sydney
Ph: 61 2 8814 5219
Melbourne
Ph: 61 3 9640 0206
Perth
Ph: 61 8 9480 0430

REV	DATE	BY	DESCRIPTION	CHK
A	12.03.19	LS	DA ISSUE	

PROJECT DETAILS
PROPOSED TRUCK STOP
AND COMMERCIAL DEVELOPMENT
for AURIZON
715 CAPRICORN HWY,
GRACEMERE, QLD

DRAWING TITLE
CONCEPTUAL OILY WATER MANAGEMENT PLAN

STATUS
DA ISSUE

DRAWN	APPROVED
DGC	JA
DATE CREATED	A1 SCALE	A3 SCALE
18.02.19		750

DRAWING NO	REV
18294-D18	A

APPENDIX B – SPEL PURACEPTOR INFORMATION

Project Group

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West Perth WA 6005
WA Phone: +61 8 9480 0430
ABN: 34 612 132 233

SPEL

PURACEPTOR

Pollution Prevention

Stormwater Treatment & Hydrocarbon Capture

Petrol Stations

Australia

SPEL STORMWATER SOLUTIONS

Standards & Guidelines for Petrol Station Stormwater Pollution Control

There is no Australian Standard for oil/water separators.

There are only guidelines for hydrocarbon discharge limits for stormwater discharge.

All State and territory regulating environmental authorities (or EPA) have guidelines with varying terminology stating that hydrocarbons are not to be visual (10ppm) in stormwater and receiving waters.

European Standard
(oil and petrol separators)

In the absence of an Australian Standard, the European British Standard 858.1 applies when compliance is the regulating issue.

It is the world's most stringent standard for hydrocarbons separation for the use of oil/petrol separators in surface water drainage systems. Prevents the emission of petrol odours.

Australian Runoff Quality

The Australian Runoff Quality A Guide to Water Sensitive Urban Design (Engineers Australia) ISBN 0 85825 852 8 Chapter 9 `Hydrocarbon Management` refers to The Standard and the European Agency UK Oil Separator Selection and Design` for petrol stations.

Picture shows an under-sized canopy with fuel pumps outside the canopy dripline

Non-Compliant Sites

Petrol stations with the following defects.

- Canopy drip line that does not allow for the 10 degree inset
- Fuel hose line that reaches outside the drip line
- Fuel bowsers that have no canopy
- Defective Oil/Water plate separator (Sewer connected)

Picture shows a common site at petrol stations - uncovered fuel pumps.

Picture shows a defective forecourt design with oils and fuels discharging directly to the street drain.

Unseemly & highly visible hydrocarbons polluting the stormwater. The concentration in the picture is in excess of 100ppm

Solution for Non-Compliant Petrol Stations

SPEL Puraceptor Class 1 stormwater treatment system is a solution for the treatment, capture and retention of hydrocarbons off petrol stations.

SPEL Puraceptor Class 1 can rationalize the existing use of service stations in conformity with the applicable environmental guidelines and put in place ongoing operational measures to prevent the likelihood of contamination in the case of an unforeseen future event.

SPEL's Puraceptor Class 1 oil/water separator is connected to the stormwater [provides the site with the highest degree of environmental protection; - a protection that complies with the councils, and the EPA's guidelines.]

Petrol forecourt and surrounds at a busy metropolitan petrol station rendered compliant. The catchment consists of a grated drain encompassing the complete perimeter of the under-sized canopy. Surface water and forecourt runoff drains to the Puraceptor located under the two trafficable covers in the foreground.

Puraceptor Benefits

- Full retention Class 1 treatment oil/water separator. It treats all liquid. There is no bypass.
- Complies with federal and state government regulating environmental guidelines for water quality.
- University tested and certified to independent European Standard EN BS 858.1 for the capture and retention of hydrocarbons with a discharge quality of no visible trace from a tested inflow concentrator of 5,000ppm.
- Capture and contain oil/fuel spillages.
- Can be sized to capture and contain a spill from a refuelling tanker and prevent discharge to stormwater.
- Passive gravity function ensuring treatment is continuous.
- Equipped with an intrinsically safe oil alert probe providing regular detection for oil build-up. Set to alarm when oil hydrocarbons attain 10% of the chamber's volume.
- Oil alert probe enables 'self-monitoring', suitable for unmanned and remote locations.
- Equipped with a flame trap ensuring fire water is extinguished.
- Equipped with a vapour trap preventing vapours from discharging and preventing the emission of odours.
- Water tight structure
- Minimum 50 years life span.
- Low frequency and low cost maintenance
- Operations & Maintenance manual with a ledger for accurate recording of maintenance operations.
- Maintenance performed from ground level; no entering of tank is required, satisfying O.H.& S. requirements.

Puraceptor Certification

Australian Independent Tests

The Puraceptor has been independently tested at Australia's pre-eminent hydraulics research facility, the University of South Australia (UNISA), and at the UK's leading hydraulics research faculty HR Wallingford.

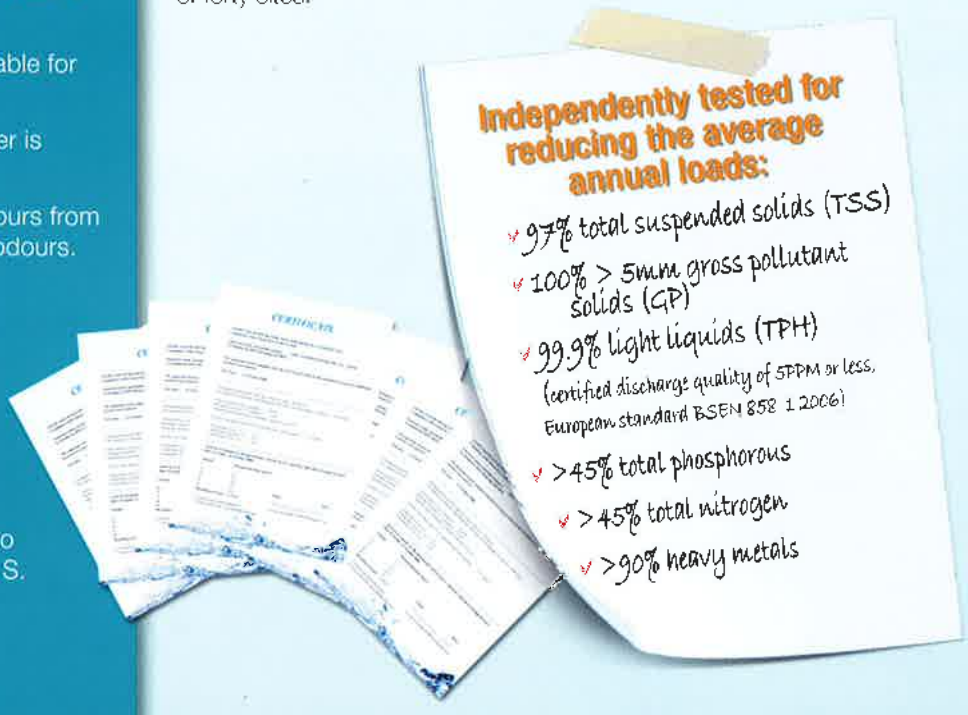
- NATA analysis of the tests shows a water quality of 'no visible trace' of hydrocarbons from an inflow concentration of 5,000ppm.

In-Situ Testing

NATA analysis of Puraceptors operating at similar applications in Australia reveal 'no detection' of hydrocarbons from a captured concentration of 8,000ppm.

Council Approvals

The increasing awareness by councils of the superior European Standard has prompted many to review their current procedures and in only the past eighteen months over sixty councils have approved SPEL for service stations and similar applications with units' already operational in excess of forty sites.



MAINTENANCE

- Designed for high performance and low maintenance over a long life span
- Visible oils (TPH) are skimmed from the surface of the water level
- Easy and safe to access and clean, with access shafts positioned on all chambers.
- No entering of the unit is required
- Not mandatory for the unit to be cleaned every 3 months.
- Only oils, sediment and gross pollutants need to be removed. All stormwater does not require removal.
- The cylindrical design ensures sediment collects easily on the floor of the chambers effecting easy, quick removal. There are no square corners or unreachable cavities and recesses.
- Waste is removed by a vacuum loading truck. (Suction truck)

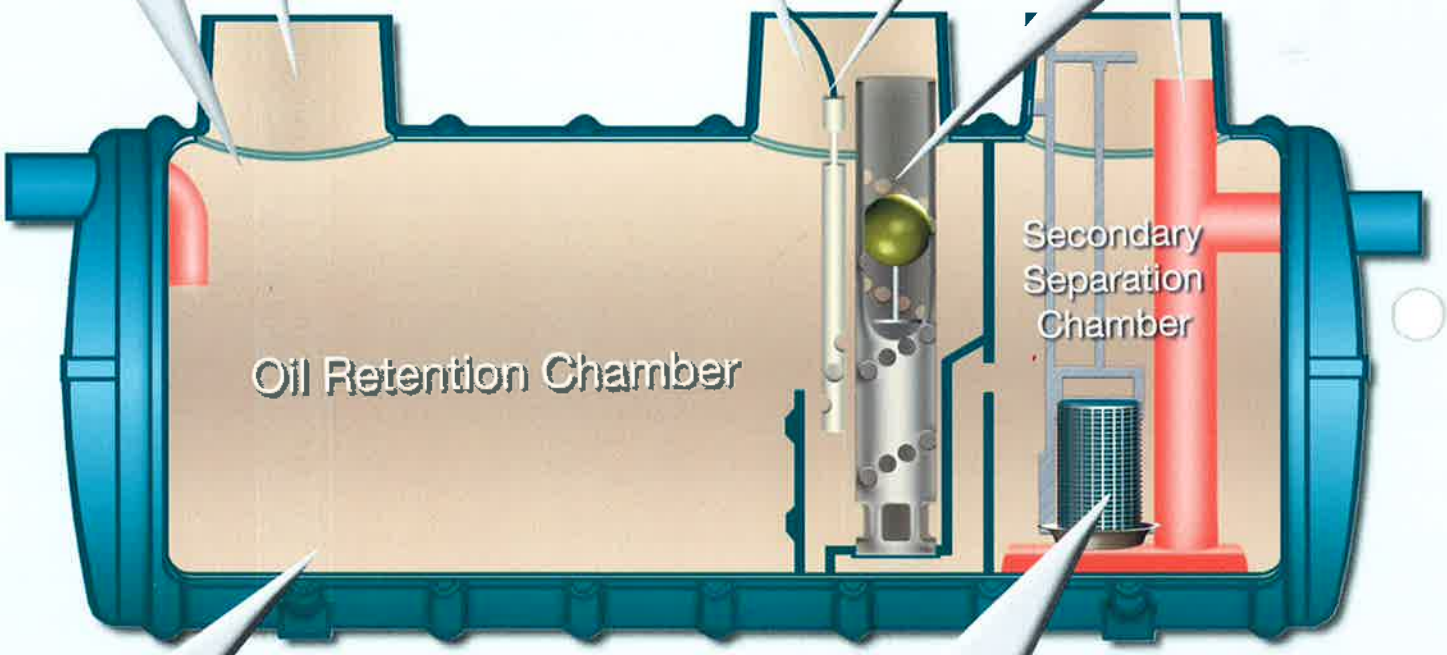
Stormwater discharge quality is < 1.86 mg/l hydrocarbon content exceeding the Environmental Protection Agency (E.P.A.) requirements of 10mg/l hydrocarbon content.

Test sampling access: Field test discharged samples are taken from sampling point and analysed by NATA accredited laboratories.

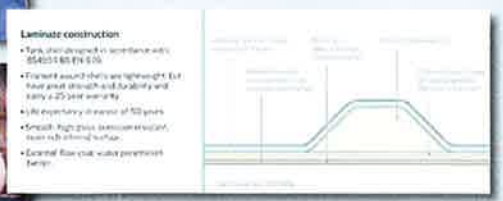
The probe is freely suspended in the probe protection tube in the separator at the correct level. When the oil-layer or depth of hydrocarbons reaches the predetermined level, the top of the probe will be immersed in the oil, breaking the circuit and activating the alarm. It is intrinsically 'fail-safe' system providing complete assurance that is operative. If a fault occurs it will be signaled immediately.

The **AUTOMATIC CLOSURE DEVICE (A.C.D.)** is a precisely engineered device comprising a water-buoyant ball that is sensitive to any change in the water density as a consequence of light liquids build up, thereby automatically activating a process of depressing the A.C.D. to SHUT OFF the separator, preventing pollutants from discharging to drains and waterways.

SPEL® PURACEPTOR tanks contain an immersed inlet dip pipe to extinguish flames and prevent inflammable vapours form passing through to the drainage system. Complies with Section 6.3.4 of BS EN 858.1.2006. SPEL PURACEPTOR can withstand temperatures of up to 140°C.



SPEL ® PURACEPTOR units are glass reinforced plastic vessels made by the technical advanced chop hoop filament winding process (patented) producing circumferential and longitudinal strength complying with AS 2634-1983 for tank design.



SPEL PURACEPTOR Class 1 separators incorporate coalescer units. They consist of a quality stainless steel mesh container with an adjustable handle and high volume reticulated foam insert.

The coalescer unit is mounted in the second chamber, providing a coalescence process for the separation of smaller globules of light liquid pollutants before final discharge to stormwater.

SPEL PURACEPTOR™

OIL CAPTURE & CONTAINMENT

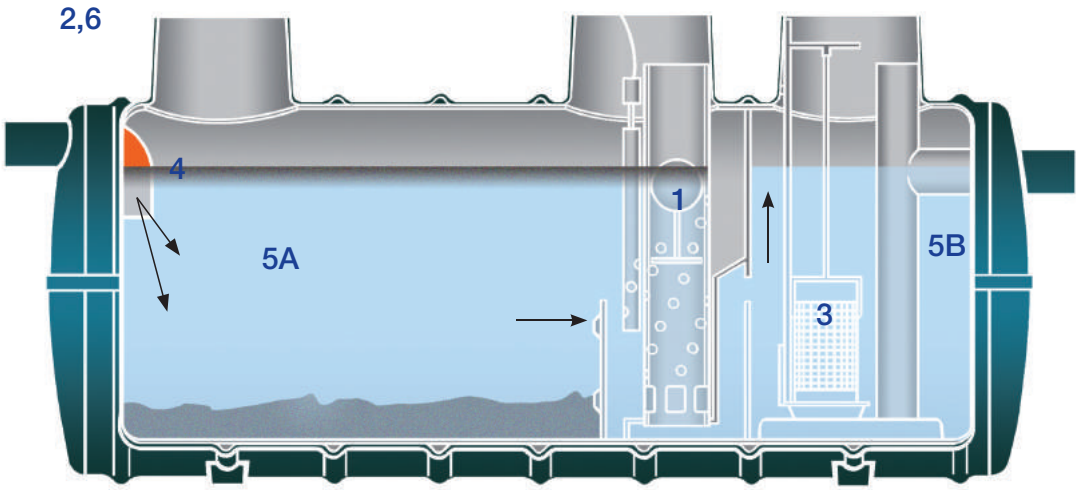
Head Office
83 – 87 Fennell Street, Parramatta NSW 2150
02 8838 1000

ACT	NZ	NSW / NT	QLD	SA	VIC / TAS	WA
02 6128 1000	+64 9 276 9045	02 8838 1000	07 3390 8677	08 8275 8000	03 5274 1336	08 9350 1000

SPEL PURACEPTOR™ CLASS 1

Oil containment

"How it works"



SPEL PURACEPTOR™ is a FULL RETENTION separator that treats all flows and is sized to contain more than the anticipated maximum oil spillage enabling it to be fully operational at all times.

It has two chambers, a coalescer and is fitted with an automatic closure device specifically designed to treat and contain major oil spills thereby making it suitable for high risk applications.

It achieves a water discharge quality of 5mg light liquids per litre complying to European Standard BS EN 858.1. 2006. Treatable flow rates range from 2LPS to 200LPS. Pipe sizes range from 100mm to 450mm (larger sizes on request).

Careful and proper planning by corporate Australia and government bodies is essential when designing and implementing systems that are effective in protecting our environment.The proven and independently accredited SPEL PURACEPTOR™ (complies to European Standard BS EN 858.1 2006) is an Australian made stormwater treatment and oil containment device that can contain and prevent light liquid pollutants from discharging into our waterways.

1 AUTOMATIC CLOSURE DEVICE
The AUTOMATIC CLOSURE DEVICE (A.C.D.) is a precisely engineered device comprising a water-bouyant ball that is sensitive to any change in the water density as a consequence of light liquids build up, thereby automatically activating a process of depressing the A.C.D. to SHUT OFF the separator, preventing pollutants from discharging to drains and waterways.

2 FULL RETENTION
All liquid is treated. There is no by-pass operation.

3 COALESCER EQUIPPED
Provides a coalescing process for the separation of smaller globular of light liquid pollutants to reduce the light liquid content in the outlet to **5mg/litre or less.**

4 INLET DIP PIPE - FLAME TRAP
For minimum turbulence and to prevent fire and inflammable vapours passing through to the drainage system.

5 TWO CHAMBER
A non-turbulant flow through two horizontal treatment chambers, utilising the underflow principle to retain light liquids in all flow conditions.

A. CONTAINMENT CHAMBER: Where Total Suspended Solids (TSS) silt, sediments, sludge and gross pollutants are trapped and settle on the chamber floor and where light liquids are contained.

B. COALESCER CHAMBER: Where light liquids separation is enhanced reducing it to **5mg/litre** or less prior to discharge.

6 GRAVITY OPERATED
Will function in the event of power failure and fits into existing pipe drainage systems or new sites.

7 MAINTENANCE
Easy and safe with no entering of the tank required.

SPEL Separator Commisioning Operation and Maintenance

SPEL

Puraceptor Class 1

Operation and Maintenance Manual

Introduction

Congratulations on your purchase of a SPEL Environmental Stormwater Quality Improvements Device. With proper care and by following a few simple guide lines your system will give you many years of dependable service.

Important

Only qualified personnel should maintain, operate and repair you Stormwater system. Any wiring of equipment should be performed by a qualified electrician.

Warning

Operation may cause injury. Take all necessary precautions, wear protective equipment, refer to Engineers Department. For your own safety, read all instruction manuals prior to working on equipment.

Safety Precautions

- Follow all “occupation, health and safety” regulations.
- Ensure maintenance personnel are aware of “Confined Spaces” guidelines, which must be followed.
- Make sure that there is sufficient oxygen and that there are no poisonous gases present.
- Check the explosion risk before wielding or using electric hand tools.
- Do not ignore health hazards. Observe strict cleanliness.
- Ensure that the lifting equipment (where required) is in good condition.
- All personnel who are to work with these systems should be vaccinated against diseases that can occur.
- Keep a first aid kit handy.

Health & Safety

Maintenace should be carried out by a competent contractor in accordance with the above procedures. Health and Safety at Work legislation and good building practice.

A warning notice should be visible at the top of each access shaft - ‘danger, harmful fumes’ and ‘ respirators should be worn in this tank.’ Before entering persons must be qualified in accordance with ‘confined space’ requirements

Information contained in this data sheet is approximate and for general guidance only. In accordance with the companies policy of constant improvement and development SPEL Products reserves the right to change the specification without prior notice.

SPEL ENVIRONMENTAL
STORMCEPTOR™ PURACEPTOR™

Puraceptor Class 1

SPEL Operation and Maintenance Manual

Service Stations

Fuel Depots

Windfarms

Switchyards

Sub Stations

Power Stations

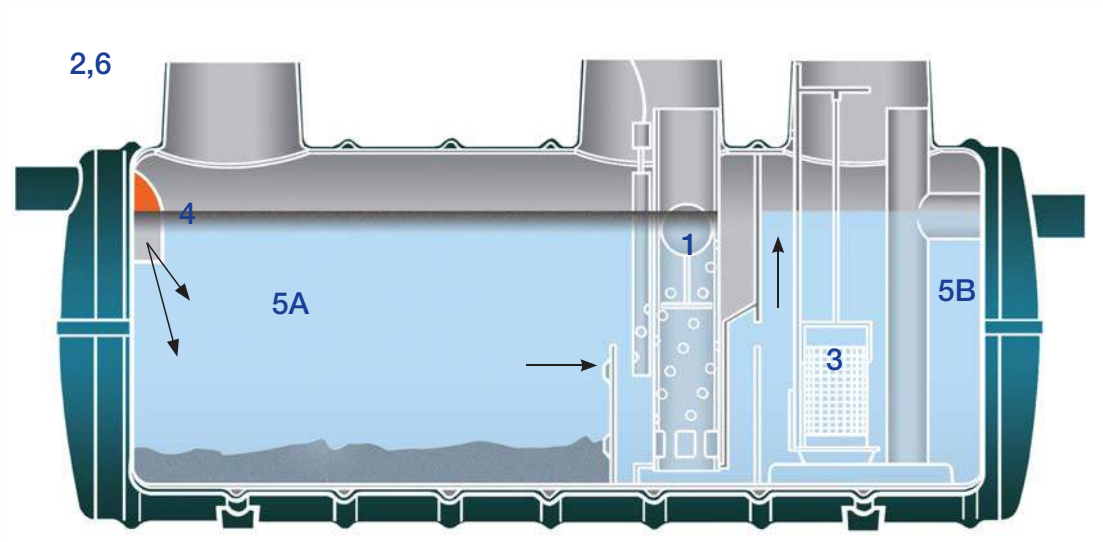
Industrial Locations

Contents

SPEL PURACEPTOR™ CLASS 1

Oil containment

"How it works"



SPEL PURACEPTOR™ is a FULL RETENTION separator that treats all flows and is sized to contain more than the anticipated maximum oil spillage enabling it to be fully operational at all times.

It has two chambers, a coalescer and is fitted with an automatic closure device specifically designed to treat and contain major oil spills thereby making it suitable for high risk applications.

It achieves a water discharge quality of 5mg light liquids per litre complying to European Standard BS EN 858.1. 2006. Treatable flow rates range from 2LPS to 200LPS. Pipe sizes range from 100mm to 450mm (larger sizes on request).

Careful and proper planning by corporate Australia and government bodies is essential when designing and implementing systems that are effective in protecting our environment.The proven and independently accredited SPEL PURACEPTOR™ (complies to European Standard BS EN 858.1 2006) is an Australian made stormwater treatment and oil containment device that can contain and prevent light liquid pollutants from discharging into our waterways.

1 AUTOMATIC CLOSURE DEVICE
The AUTOMATIC CLOSURE DEVICE (A.C.D.) is a precisely engineered device comprising a water-bouyant ball that is sensitive to any change in the water density as a consequence of light liquids build up, thereby automatically activating a process of depressing the A.C.D. to SHUT OFF the separator, preventing pollutants from discharging to drains and waterways.

2 FULL RETENTION
All liquid is treated. There is no by-pass operation.

3 COALESCER EQUIPPED
Provides a coalescing process for the separation of smaller globular of light liquid pollutants to reduce the light liquid content in the outlet to **5mg/litre or less.**

4 INLET DIP PIPE - FLAME TRAP
For minimum turbulence and to prevent fire and inflammable vapours passing through to the drainage system.

5 TWO CHAMBER
A non-turbulant flow through two horizontal treatment chambers, utilising the underflow principle to retain light liquids in all flow conditions.

A. CONTAINMENT CHAMBER: Where Total Suspended Solids (TSS) silt, sediments, sludge and gross pollutants are trapped and settle on the chamber floor and where light liquids are contained.

B. COALESCER CHAMBER: Where light liquids separation is enhanced reducing it to **5mg/litre** or less prior to discharge.

6 GRAVITY OPERATED
Will function in the event of power failure and fits into existing pipe drainage systems or new sites.

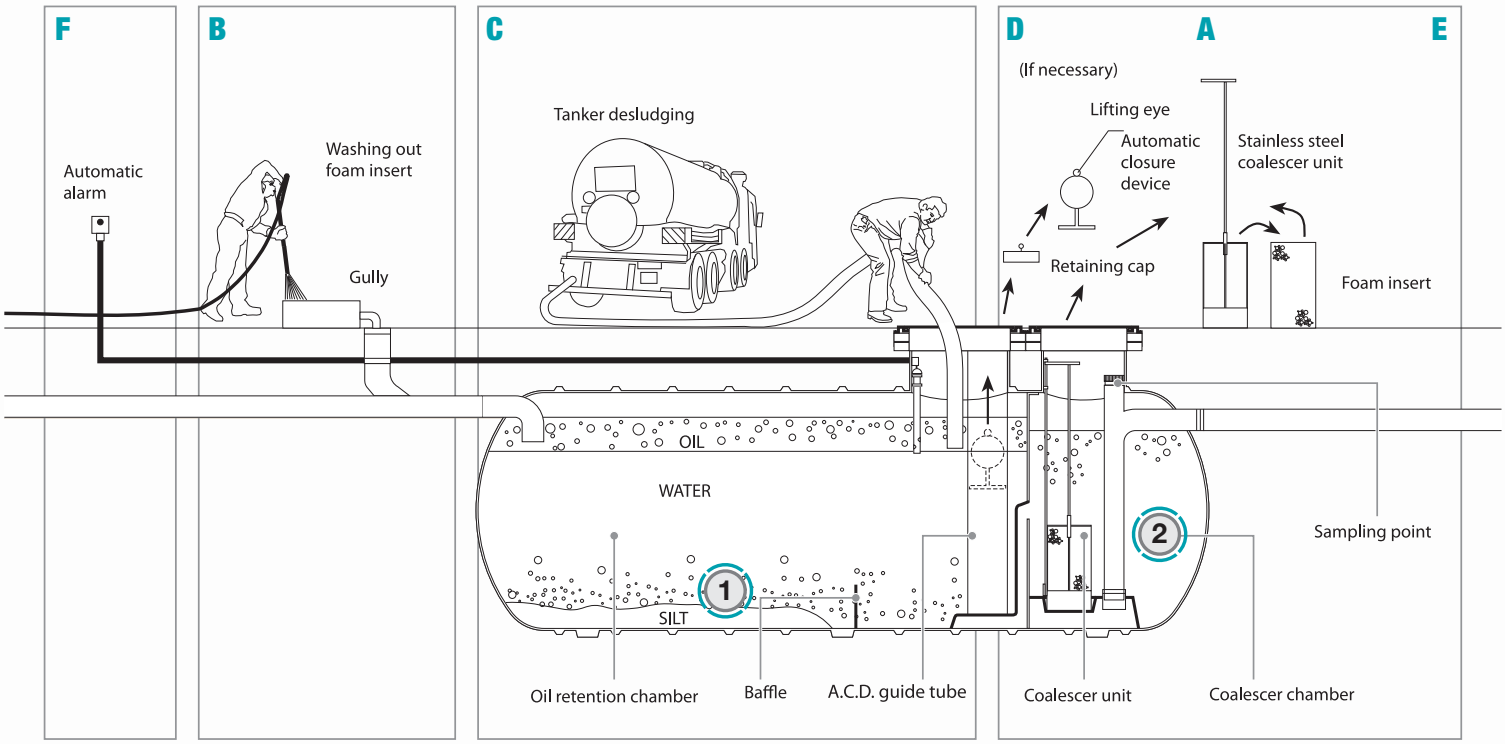
7 MAINTENANCE
Easy and safe with no entering of the tank required.

SPEL PURACEPTOR™

Puraceptors™ should be inspected at three - six - or twelve monthly intervals depending on site conditions, to determine the depth of retained pollutants and silt in both chambers and the correct operating of the ACD (automatic closure device). When the depth of the oil/fuel retained has reached the predetermined design level, (approx. 50mm) or after a spill it should be cleaned out.

1 **CONTAINMENT CHAMBER:** Where silt, sediments, sludge, gross pollutants settle out and light liquids are retained. The auto closure device operates in its retaining tube next to the oil alert sensor probe.

2 **COALESCER CHAMBER:** Where light liquids separation is enhanced prior to discharge and where the coalescer unit is incorporated, the coalescer should be removed and cleaned in accordance with the requirements set out in the coalescer data sheet.



MAINTENANCE PROCEDURE

A Coalescer unit
Use the lifting handle or the chain and lift the coalescer unit out of the tank and place it near the Puraceptor™. In a retained area so pollutants do not escape.

B Cleaning foam insert
Remove foam insert and wash with normal water pressure ensuring the dirty water runs into the Puraceptor™.

C Sucking out oil/fuel and silt
Suck off the retained oil from both chambers of the Puraceptor™ and then the silt deposited on the bottom, leaving sufficient water to ensure the (auto closure device) ACD remains floating.

D Sucking out complete contents (if necessary)
If the quantity of pollutants exceeds recommended level, the complete contents of the Puraceptor™ may need to be removed. After sucking out completely, remove the ACD. Using a pole with a hook, lift out the ACD using the lifting eye on the float.

Important note:
When cleaning out, ensure both chambers are sucked out equally starting with the first chamber and then the second chamber and back again. Ensuring even water pressure against baffle wall.

E Re-insert coalescer unit and ACD
Re-insert the foam insert into the stainless steel coalescer unit and re-insert the coalescer unit into the Puraceptor™ as provided with the SPEL lifting/location/locking system.

Partially fill the Puraceptor™ with clean water (if necessary) to ensure the ACD when re-inserted remains floating. Re-insert the ACD.

Finally check the ACD is floating and the retaining cap has been replaced to safeguard against its removal by unauthorised persons, unless depth of tank precludes doing so from ground level.

F SPEL automatic alarm/monitoring system
The SPEL automatic alarm/monitoring system probe should be lifted out of the probe protection tube, wiped clean and re-inserted. the system should now be reset according to instructions.

SPEL COALESCER UNITS

The SPEL Puraceptor™ Class 1 separator and the SPEL Stormceptor™ Class 1 by-pass separators incorporate coalescer units. The coalescer units provide a coalescence process for the separation of small globules of light liquid pollutants before final discharge to the surface water drain.

Coalescers are found in the second chamber of the SPEL Puraceptor™ and the second chamber of the SPEL Stormceptor™ Class 1

Prior to installation

1. Remove any strapping / ropes which have been used to hold the coalescer units from shifting in transit.
2. The access shaft(s) above the coalescer units should be covered to prevent ingress of concrete, dust, debris etc., which could clog the foam inserts.
3. On completion of installation, check that the coalescer unit is inserted securely into the base socket.

On heavily polluted sites silt and contaminants may build up in the coalescer unit foam inserts and add significantly to it's weight. Use lifting chain sets that are on hooks at ground level for safe lifting with a tripod or hoist.

Installation

During installation, it is important that the foam inserts are not clogged with dust, debris or drops of wet concrete. To safeguard against this, we recommend covering the access shaft with a sheet of polythene, if not already covered.

Commissioning

On completion of installation, check the foam insert is fitted inside the stainless steel coalescer unit and the coalescer unit is inserted securely into the base socket.

Maintenance

1. Lift handle and coalescer unit out of the tank and place in a retained area so pollutants do not escape.
2. Remove foam insert and wash with normal water pressure ensuring the dirty water runs into the Puraceptor™ / Stormceptor™.
3. Make sure the hole in the centre of the coalescer foam is facing towards the manhole when installed in the tank.
4. Re-insert the foam insert into the stainless steel coalescer unit and re-insert the coalescer into the Puraceptor™ / Stormceptor™. After the tank has been cleaned.

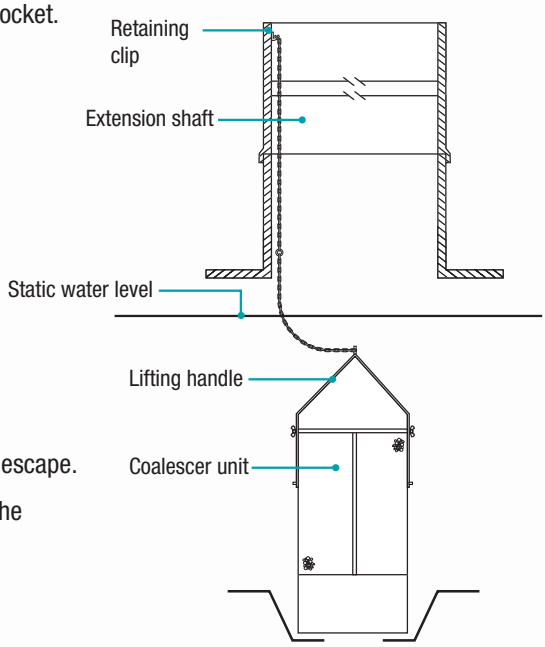


Figure 1. Coalescer unit with lifting chains

SPEL COALESCER UNITS GUIDE RAIL SYSTEM/LIFTING, LOCATING AND LOCKING SYSTEM

SPEL coalescer unit guide rail system

This facilitates easy insertion and removal of coalescer units. The system is robust, manufactured throughout in stainless steel and is action positive, leaving no doubt the coalescer unit is located properly.

Brackets fixed to the top and bottom of the coalescer unit simply engage the stainless steel guide rail fixed to the top of the stub access shaft. The coalescer is then lowered in the normal way, being guided at the correct angle into the conical base unit which finally locates the coalescer unit into it's final position.

Extension guide rails can be incorporated into the SPEL extension shafts to suit (preferably when ordered with the separator).

However, when the separator is full of water, debris or sludge accumulated over a period could prevent the coalescer unit from re-seating correctly after servicing.

The coalescer unit lifting / locating / locking system ensures the coalescer unit is seated correctly and can be locked into position to prevent tampering.

The stainless steel lifting handle can be extended to suit deep tank inverts and provide easy access for lifting manually or with a tripod and hoist utilising the lifting hook.

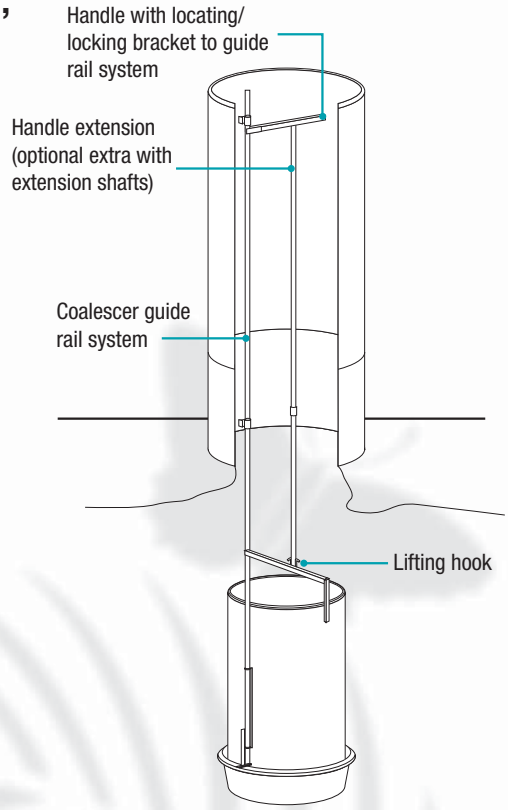


Figure 2. SPEL coalescer unit guide rail system/lifting, locating and locking system

SPEL AUTO CLOSURE DEVICE (ACD)

• SPEL ACDThe Automatic Closure Device (ACD) is found in the first chamber of a Puraceptor™. The purpose of the ACD is to close the separator off automatically when the maximum storage capacity of light liquid is attained.

The ACD is to ensure that in the event of a major spillage, pollutants do not pass into the drainage system; it should not be regarded as a substitute for an automatic alarm / monitoring system.

Prior to installation

Prior to installation the ACD retaining tube should be covered to prevent ingress of concrete etc., which could fall onto the ACD and upset it's calibration.

Operation and Maintenance

If the tank should fill with light liquid, the ACD which is calibrated for a specific gravity of 0.85, will automatically sink and close off the SPEL Puraceptor™.

Normally routine maintenance would include removing light liquid intercepted within the Puraceptor™. If a SPEL automatic alarm / monitoring system is incorporated, it will automatically indicate when the Puraceptor™ should be emptied. Only in an emergency will the Puraceptor™ fill to it's maximum and operate the ACD.

In such an event the Puraceptor™ should be completely sucked out and the ACD lifted out. Check that the ACD is in good working condition – ie. Lifting hook secure and sealed; float not leaking; knuckle joint free and clean; sealing ring intact and complete. Clean with warm soapy water before re-inserting.

To re-insert the ACD, partially fill the Puraceptor™ with clean water (if necessary) to ensure the ACD when re-inserted remains floating. Re-insert the ACD.

Finally check the ACD is floating and the retaining cap has been replaced to safeguard against it's removal by unauthorised persons, unless depth of tank precludes doing so from ground level.

SPEL Puraceptor™ Class 1 separators – Two Chamber Models

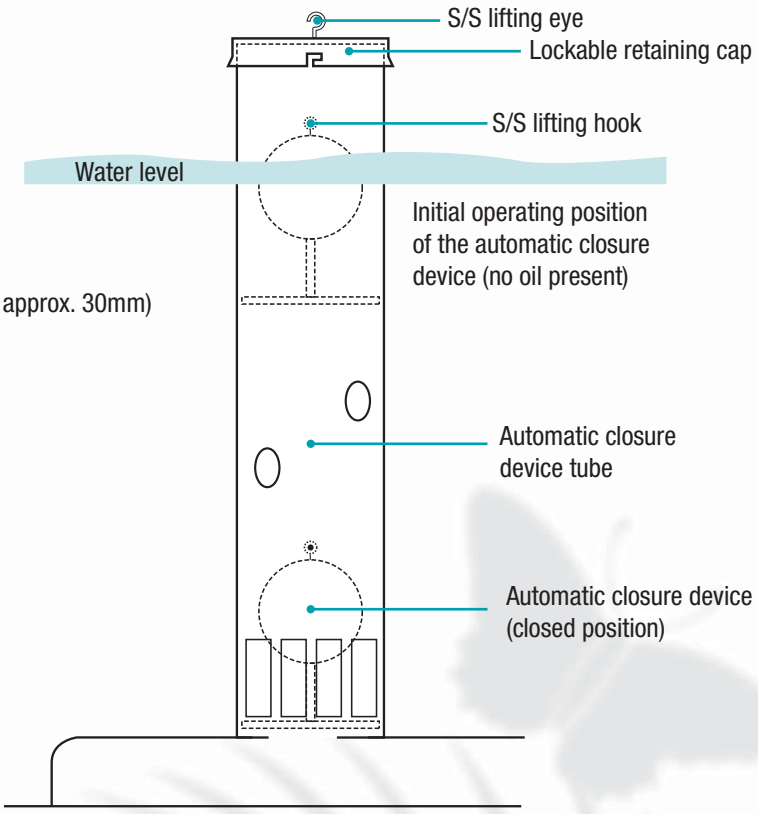
Commissioning

After the tank has been installed, leave the water in.

1. Remove the ACD from the packing box, taking care not to cause damage.
2. Remove the retaining cap from the top of the retaining tube in the separator.
3. Insert the ACD into the retaining tube using the lifting eye provided, ensuring it floats correctly with the float (top section approx. 30mm) just visible above the water level.
4. Replace the retaining cap. This is to safeguard against the removal of the float by unauthorised persons or rising above the tube under abnormal conditions.

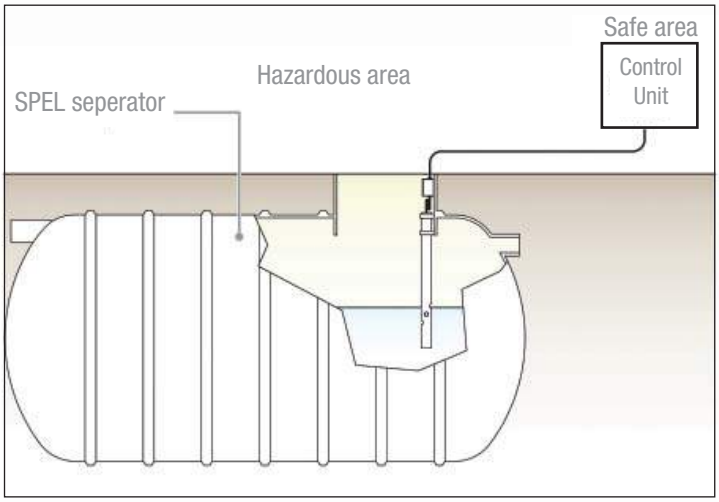
Note: If the tank's invert depth exceeds 1metre, it is advisable to remove the retaining cap prior to installation and only replace after inserting the ACD, if it is possible to do so from ground level.

Automatic closure device SPEL Puraceptor™ Class 1 separators (two chamber)



SPEL Automatic Alarm/Monitoring System

The SPEL automatic alarm/monitoring system provides a audible warning alarm when the level of the oil in the SPEL separator reaches approximately 10% of the storage volume under static liquid level conditions. This is a early warning system that is used for spills or lack of maintenance.
The system comprises of a probe mounted in the main separation chamber which senses when the designed volume of light liquids has accumulated and sends a signal to the electronic control unit activating a red 'empty now' warning light and an audible alarm,



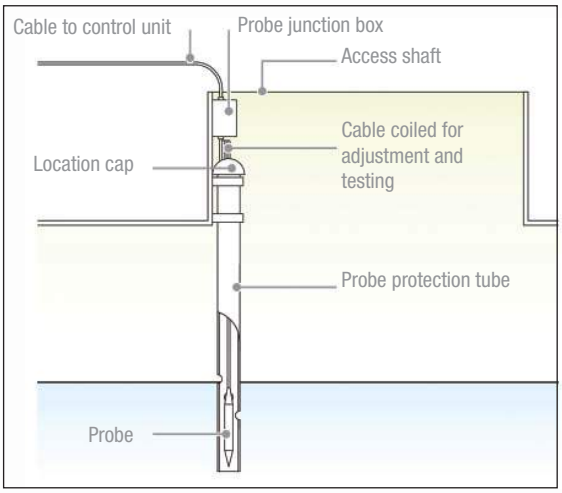
Operation

The probe is freely suspended in the probe protection tube in the separator at the correct level. When the oil-layer or depth of hydrocarbons reaches the predetermined level, the top of the probe will be immersed in the oil, breaking the circuit and activating the alarm. It is a 'fail-safe' system providing complete assurance that it is operative. If a fault occurs it will be signalled immediately.

Installation

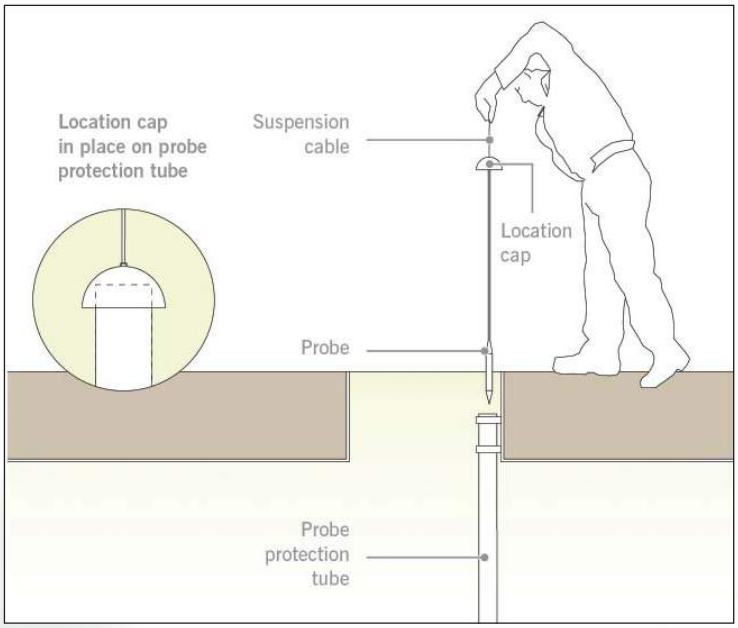
Control unit (general positioning)

The control unit has been designed to be located indoors and outdoors, within a nonhazardous area. It should be wall mounted and positioned such that the LED display and push switches on the front panel can be readily seen and accessed. The unit can be secured to the wall by using the four mounting holes provided. Included within the control is an intrinsically safe circuit (approved according to ATEX Directive 94/9/EC), to which the probe unit is connected.



Maintenance

When the separator is maintained, lift the probe out of the probe protection tube, check it operates the alarm (see under Tests Ref. 10.2) and at the same time wipe oil and contaminants from the probe to prevent a fake alarm after re-inserting.



Insert probe onsite

The probe protection tube is factory fitted and the probe matched to ensure the alarm is activated when the light liquids reach approximately 10% of the storage volume the SPEL separator is designed for.

All that is required on site is to undertake the electrical installation in accordance with the instructions provided and lower the probe with the pre-fixed location cap into the probe protection tube. When the cap locates onto the top of the probe protection tube, the probe is suspended at the correct level.

Control unit (electrical connections)

1. Mains voltage connection;

The control unit should be connected to a suitable 220/240V AC supply and fused at 3 amps.

Note: This appliance must be earthed.

2. Control unit/probe junction box connection

Wiring from the control unit to the probe junction box in the separator chamber requires a 3-core screened. 0.75mm core section cable.

Maximum cable length: 300 metres.

3. Probe connection

A 5 metre 3-core probe cable is normally fitted to the junction box and the probe.

After all connections have been made, the cables must be secured by tightening each entry gland.

Probe

The probe is installed freely suspended in the SPEL separator within the probe protection tube. The 3-core cable is connected into the junction box mounted in the access shaft above the probe protection tube. Extra cable is provided to enable raising the junction box where extension shafts are incorporated.

Important note: In all cases good, standard electrical practice should be followed and the installation must conform to the Australian Wiring Rules – AS 3000 – 2007. In essence, the installation must be such that the intrinsic safety is no compromised by:

- Exposure to risk of mechanical damage
- Unauthorised modification of interference
- Exposure to moisture, dust and foreign bodies
- Excessive heat
- Invasion of intrinsically safe circuit by other electrical equipment or circuitry

Certificate of conformity

The alarm device has been approved to be used in explosion-hazardous areas. The control unit and probe are approved according to ATEX Directive 94/9/EC. These approvals mean that the probes can be installed in Zone 0, which is continuously explosion-hazardous.

The SPEL oilset control unit must be located in the safe area, but it can be connected to the probe without any barrier.

Tests (10.2)

The function can be tested by lifting the probe within the probe protection tube. In approximately 5 seconds, the alarm is given by a red light and audible signal. Both relays release. Push the RESET button - the buzzer goes off and relay pulls in.

When the probe is placed in water again, relay pulls in and the red light goes off.

Cable break and short circuit test

Also the function can be tested in case of cable fault or short circuit. First cause short circuit in probe cable terminals 1 and 2. Then the yellow light of short circuit is lit. Both the relays pick up and the buzzer goes on. Remove the short circuit and reset the buzzer.

Simulated Function Test

The function of probe, cable and electronics can be tested. Push the TEST button for 2 to 5 seconds. Both relays pick up, and the red light is lit. When the TEST button is released, the red light goes off and relay returns to its normal position. The buzzer and relay must be reset.

Installation

Important note: It is important that installation is carried out by a competent technician familiar with this type of equipment or contact our Special Products Division for installation, commissioning and maintenance service.

SPEL ENVIRONMENTAL

STORMCEPTOR™ PURACEPTOR™

SPARE PARTS LIST

DATE: _____

INVOICE NO: _____

TYPE: _____

MODEL: _____

SERIAL NO: _____

JOB NO: _____

LINE	DESCRIPTION	QTY	PART No.
1			
2			
3			
4			
5			
6			
7			
8			

For all spare parts enquiries, please ring 1800 631 202

OilSET-1000

Oil Separator Alarm Device

Installation and Operating Instructions

TABLE OF CONTENTS

SYMBOLS


Warning / Attention


Pay special attention to installations at explosive atmospheres


Device is protected by double or reinforced insulation

1 GENERAL

OilSET-1000 is an alarm device for monitoring the thickness of the oil layer accumulating in an oil separator. Depending on the order, the delivery consists of OilSET-1000 control unit, SET/DM3D probe and a cable joint.

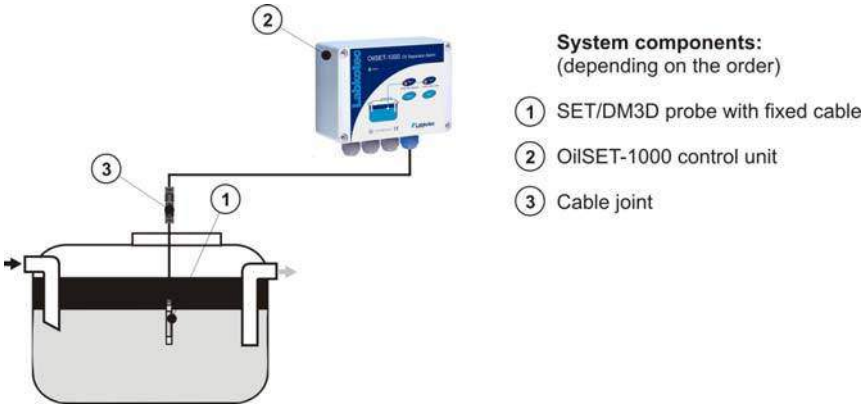


Figure 1. Oil separator alarm system

SET/DM3D probe is installed into the light liquid storage chamber and gives an alarm when the chamber is filled to a pre-determined degree. The probe is normally immersed in water.

The function is based on the measurement of the electrical conductivity of the surrounding liquid – water conducts electricity much better than oil.

Oil separator is regarded as potentially explosive (Ex) area. SET/DM3D probe can be installed in a zone 0, 1 or 2 potentially explosive area but the control unit must be mounted in a safe area.

The LED indicators, push buttons and interfaces of the OilSET-1000 control unit are described in figure 2.

Figure 2. OilSET-1000 control unit - features

2 INSTALLATION

2.1 OilSET-1000 control unit

OilSET-1000 control unit can be wall-mounted. The mounting holes are located in the base plate of the enclosure, beneath the mounting holes of the front cover.

The connectors of the external conductors are isolated by separating plates. The plates must not be removed. The plate covering the connectors must be installed back after executing cable connections.

The cover of the enclosure must be tightened so, that the edges touch the base frame. Only then do the push buttons function properly and the enclosure is tight.

Before installation, please read the safety instructions in chapter 6 !

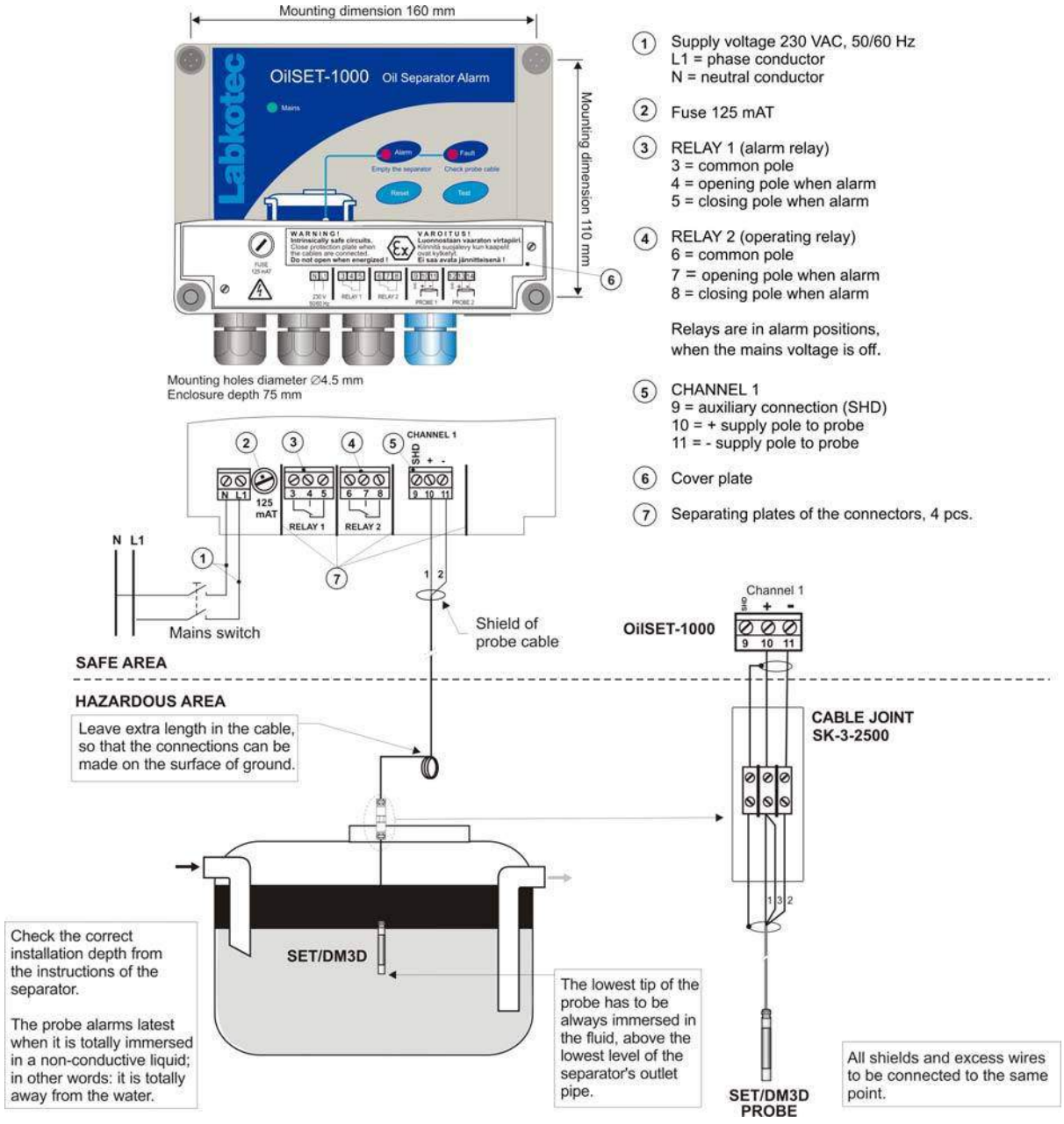


Figure 3. OilSET-1000 alarm device installation.

2.2 SET/DM3D probe

SET/DM3D probe should be installed as described in figure 3.

The probe gives an alarm earliest when the upper electrode is in oil and latest when the probe is totally immersed in a non-conductive liquid - in other words, it is totally away from the water.

Please check the correct installation depth also from the instructions of the oil separator.

2.3 Cable joint

Fig. 4 Cable joint SK-3-2500

Connections of the probe cable inside the cable joint are explained in figure 3. Cable shields and possible excess wires need to be connected to the same point in galvanic contact.

Please make sure, that the probe and cable between OilSET-1000 control unit and the probe do not exceed the maximum allowed electrical parameters – see chapter 7 Technical data.

IP rating of the cable joint is IP67. Make sure, that the cable joint is closed properly.

If the probe cable must be extended and there is a need for equipotential grounding, it should be done with the junction box LJB2. The cabling between the OilSET-1000 control unit and the junction box should be done with a shielded twisted pair instrument cable.

Fig. 5. Cable installation example

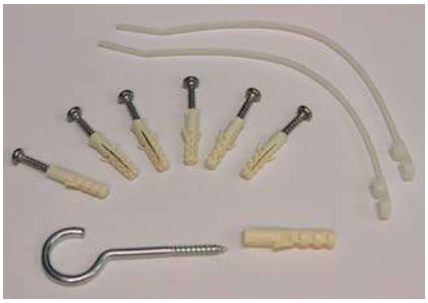


Fig. 6. Installation accessories

3 OPERATION AND SETTINGS

The OilSET-1000 alarm device is initialized at the factory.

The operation of the alarm device should be checked always after the installation.

Functionality test

1. Immerse the probe into water. The device should be in normal mode.
2. Lift the probe up in air or oil. An Oil alarm should be generated (see chapter 3.1 for more detailed description).
3. Immerse the probe back into water. The alarm should go off after a delay of 5 sec. Clean up the probe if necessary before placing it back into the oil separator.

A more detailed description of the operation is provided in chapter 3.1. If the operation is not as described here, check the factory settings (chapter 3.2.) or contact a representative of the manufacturer.

3.1 Operation

The operation of a factory-initialized OilSET-1000 is described in this chapter.

Normal mode – no alarms

SET/DM3D probe is totally immersed in water.

Mains LED indicator is on.
Other LED indicators are off.
Relays 1 and 2 are energized.

Oil alarm

SET/DM3D probe is immersed in oil. (The probe gives an alarm earliest when the upper electrode is in oil and latest when the probe is totally immersed in a non-conductive liquid, in other words it is totally away from the water.)

Mains LED indicator is on.
Oil Alarm LED indicator is on.
Buzzer on after 5 sec delay.
Relays de-energize after 5 sec delay.
(Note. The same alarm takes place when SET/DM3D probe is in the air.)

After removal of an alarm, the Oil Alarm LED indicator and buzzer will be off, and relays will be energized after a fixed delay of 5 sec.

Fault alarm

Probe cable break, short circuit or a broken probe, i.e. too low or too high probe signal current.

Mains LED indicator is on.
Probe circuit Fault LED indicator is on after 5 sec delay.
Buzzer is on after 5 sec delay.
The relays de-energize after 5 sec delay.

Reset of an alarm

When pressing the Reset push button.

Buzzer will go off.
Relay 1 energizes.
Relay 2 will stay de-energized until the actual alarm or fault is off.

TEST FUNCTION

Test function provides an artificial alarm, which can be used to test the function of the OilSET-1000 alarm device and the function of other equipment, which are connected to OilSET-1000 via its relays.

Attention! Before pressing the Test button, make sure that the change of relay status does not cause hazards elsewhere!

Normal situation	*When pressing the Test push button:* *Oil Alarm and Fault LED indicators are immediately on.* *Buzzer is immediately on.* *Relays de-energize after 2 sec of continuous pressing.* *When the Test push button is released:* *LED indicators and buzzer go immediately off.* *Relays energize immediately.*
Alarm on	*When pressing the Test push button:* *Fault LED indicator is immediately on.* *Oil Alarm LED indicator remains on.* *Buzzer remains on. If it has been reset earlier, it will return to be on.* *If relay 1 was already reset, it will de-energize again after 2 sec. of continuous pressing.* *Test will not affect relay 2, because it is already in alarm status.* *When the Test push button is released:* *The device returns without delay to the preceding status.*
Fault alarm on	*When pressing the Test push button:* *The device does not react to the test at all.*

3.2 Factory settings

If the operation of OilSET-1000 is not as described in the previous chapter, check that the device settings are as in figure 7. Change the settings according to the following instructions if needed.

The following tasks must only be executed by a person with proper education and knowledge of Ex-i devices.

We recommend, that when altering the settings the mains voltage is off or the device is initialized before the installation is executed.

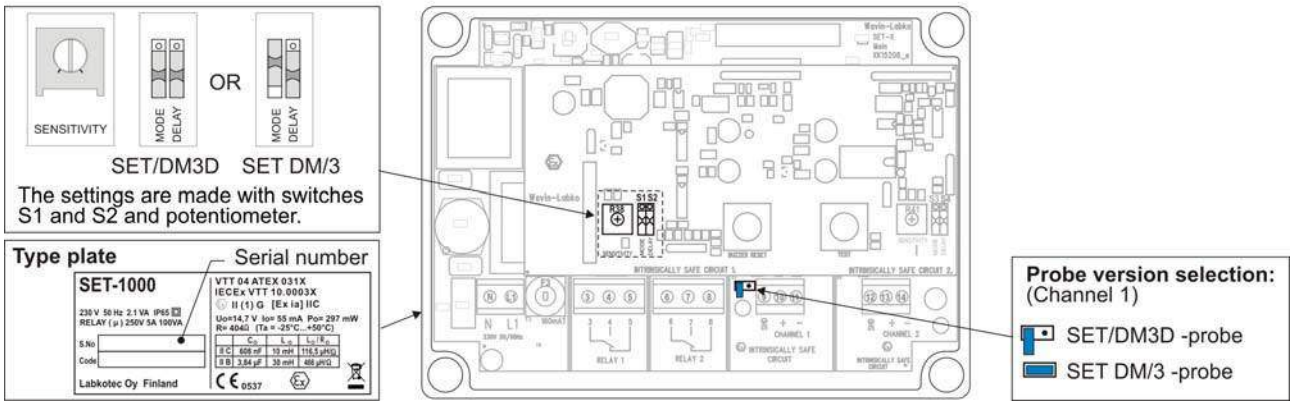
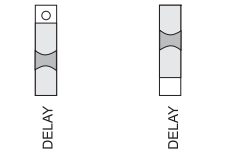


Figure 7. Factory settings

The settings are made with switches (MODE and DELAY) and potentiometer (SENSITIVITY) located in the upper printed circuit board, and the jumper located in the lower board (figure 7). In figure 7, the switches are as set in the factory.



Delay 5 sec. Delay 30 sec.

Switch S2 is used to set the **operational delay of the control unit**. When the switch is in low position, relays operate and buzzer is on after 5 seconds after the level has reached the trigger level, and if the level still remains on the same side of the trigger level.

When the switch is in high position, the delay is 30 seconds.

Delays are operational in both directions (energizing, de-energizing). Alarm LED follows the probe current value and trigger level without delay. Fault alarm takes place after a fixed delay of 5 sec.

4 TROUBLE-SHOOTING

Problem: **MAINS LED indicator is off**

Possible reason: Supply voltage is too low or the fuse is blown. Transformer or MAINS LED indicator is faulty.

To do:
1. Check if the two pole mains switch is off.
2. Check the fuse.
3. Measure the voltage between poles N and L1. It should be 230 VAC ± 10 %.

Problem: **No alarm when probe in oil or air, or the alarm will not go off**

Possible reason: The SENSITIVITY setting is wrong in the control unit (see figure 7), or probe is dirty.

To do:
1. Clean-up the probe and lift it up in the air or immerse it into oil.
2. Turn the SENSITIVITY potentiometer slowly anticlockwise until the probe gives an alarm.
3. Immerse the probe into water and wait until the alarm goes off. If the alarm does not go off, turn the potentiometer slowly clockwise until the alarm goes off.
4. Lift the probe up in the air or oil. The probe should give an alarm again.

Problem: **FAULT LED indicator is on**

Possible reason: Current in probe circuit too low (cable break) or too high (cable in short circuit). The probe might also be broken.

To do:
1. Make sure, that the probe cable has been connected correctly to the OilSET-1000 control unit. See probe specific instructions.
2. Measure the voltage separately between the poles 10 and 11. The voltages should be between 10,3….11,8 V.
3. If the voltage is correct, measure the probe current. Do as follows:
   - 3.1 Disconnect probe's [+] wire from probe connector (pole 10).
   - 3.2 Measure short circuit current between [+] and [-] poles.
   - 3.3 Connect mA-meter as in figure 8.
     Make a comparison to the values in Table 1.
   - 3.4 Connect the wire back to the connector.

If the problem can not be solved with the above instructions, please contact Labkotec Oy's local distributor or Labkotec Oy's service.

Attention! If the probe is located in an explosive atmosphere, the multimeter must be Exi-approved!

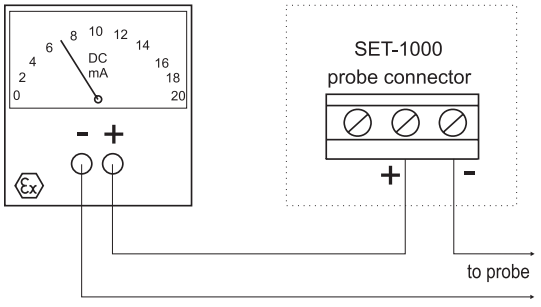


Figure 8. Probe current measurement

	SET/DM3D, channel 1 **Poles 10 [+] ja 11 [-]**
Shortcircuit	20 mA – 24 mA
Probe in the air	9 – 10 mA
Probe in oil (εr . 2)	9 – 10 mA
Probe in the water	2 – 3 mA
Factory setting for alarm point	approx. 6.5 mA

Table 1. Probe currents

5 REPAIR AND SERVICE

The probe should be cleaned and the operation should also be tested when emptying the oil storage chamber or at least once every six months. The easiest way to check the operation is to lift the probe up in the air and to put it back to the separator. The operation is described in chapter 3.

For cleaning, a mild detergent (e.g. washing-up liquid) and a scrubbing brush can be used.

The mains fuse (marked 125 mAT) can be changed to another glass tube fuse 5 x 20 mm / 125 mAT complying EN 60127-2/3. Any other repair and service works on the device may be carried out only by a person who has received training in Ex-i devices and is authorized by the manufacturer.

In case of queries, please contact Labkotec Oy's service: labkotec.service@labkotec.fi.

6 SAFETY INSTRUCTIONS

OilSET-1000 control unit must not be installed in potentially explosive atmosphere. Probes connected to it may be installed in zone 0, 1 or 2 potentially explosive atmospheres.

In case of installations in explosive atmospheres the national requirements and relevant standards as *EN 50039 and/or EN 60079-14* must be taken into account.

If electrostatic discharges can cause hazards in the operating environment, the device must be connected into equipotential ground according to requirements with regards to explosive atmospheres. Equipotential grounding is made by connecting all conductive parts into same potential e.g. at the cable junction box. Equipotential ground must be earthed.

The device does not include a mains switch. A two pole mains switch (250 VAC 1 A), which isolates both lines (L1, N) must be installed in the main power supply lines in the vicinity of the unit. This switch facilitates maintenance and service operations and it has to be marked to identify the unit.

When executing service, inspection and repair in explosive atmosphere, the rules in standards EN 60079-17 and EN 60079-19 about instructions of Ex-devices must be obeyed.

7 TECHNICAL DATA

OilSET-1000 control unit	
Dimensions	175 mm x 125 mm x 75 mm (L x H x D)
Enclosure	IP 65, material polycarbonate
Ambient temperature	-25 ºC…+50 ºC
Supply voltage	230 VAC ± 10 %, 50/60 Hz Fuse 5 x 20 mm 125 mAT (EN 60127-2/3) The device is not equipped with a mains switch
Power consumption	2 VA
Probes	One SET probe (SET/DM3D)
Max. impedance of the current loop between the control unit and a probe	75 Ω.
Relay outputs	Two potential-free relay outputs 250 V, 5 A, 100 VA Operational delay 5 sec or 30 sec. Relays de-energize at trigger point. Operation mode selectable for increasing or decreasing level.
Electrical safety	EN 61010-1, Class II ⧈, CAT II / III
Insulation level Probe / Mains supply voltage	375V (EN 50020)
EMC Emission Immunity	 EN 61000-6-3 EN 61000-6-2
Ex-classification Special conditions (X)	Ⓔx II (1) G [Ex ia] IIC VTT 04 ATEX 031X (Ta = -25 °C…+50 °C) IECEx VTT 10.0003X
Electrical parameters Characteristic curve of the output voltage is trapezoidal See table 2.	U_o = 14,7 V I_o = 55 mA P_o = 297 mW R = 404 Ω
Year of manufacture See serial number from the type plate	xxx x xxxxx xx YY x where YY = year of manufacture (e.g. 10 = 2010)

Due to non-linear characteristics of the probe voltage, the interaction of both, capacitance and inductance, must be taken into account. The table below indicates the connecting values in explosion groups IIC and IIB. In explosion group IIA the values of the group IIB can be applied.

Max. permissible value			Combined Co and Lo	
	Co	Lo	Co	Lo
II C	608nF	10 mH	568nF 458 nF 388 nF 328 nF 258 nF	0,15 mH 0,5 mH 1,0 mH 2,0 mH 5,0 mH
II B	3,84µF	30 mH	3,5 µF 3,1 µF 2,4 µF 1,9 µF 1,6 µF	0,15 mH 0,5 mH 1,0 mH 2,0 mH 5,0 mH

L_o/R_o = 116,5 µH/Ω (IIC) and 466 µH/Ω (IIB)

Table 2. OilSET-1000 electrical parameters

SET/DM3D probe	
Control unit	Labkotec Oy's LevelSET S and SET – control units
Principle of operation	Measurement of conductivity
Enclosure	IP68, materials: AISI 316 and PVC, NBR, PA
Cable	Fixed, oil resistant and shielded instrumentation cable 2 x 0.75 mm^2, standard length 5 m. Can be delivered with a customized cable, max. length of a fixed cable 15 m. The cable can be extended if necessary. Max. load 75 Ω.
Temperature range Ambient Safety	 0 ºC…+0 ºC -30 ºC…+60 ºC
Signal Supply voltage	Digital and analog 7 mA / 13 mA 8 V…16 V DC
Cable	Fixed oil resistant PVC cable 3 x 0,5 mm^2, standard length 5 m.
EMC Emission Immunity	 EN 61000-6-3 EN 61000-6-2
Ex-classification Special conditions (X)	Ⓔx II 1 G Ex ia IIB T5 Ga VTT 09 ATEX 026X - (Ta -30 ºC…+60 ºC) IECEx VTT 10.0001X
Electrical parameters	U_i = 16 V I_i = 80 mA P_i = 400 mW C_i = 3,5 nF L_i = 85 µH
Year of manufacture See serial number from the type plate	xxx x xxxxx xx YY x where YY = year of manufacture (e.g. 10 = 2010)

Figure 9. Dimensional drawing of SET/DM3D probe

Labkotec
INDUTRADE GROUP

L15277Ce
F15278Ce

Declaration of Conformity

This declaration certifies that the below mentioned apparatus conforms to the essential requirements of the EMC directive 2004/108/EY, Low-Voltage directive (LVD) 2006/95/EC and ATEX directive 94/9/EC.

Description of the apparatus:	Level switch
Type:	SET-1000 and SET-2000 series
Manufacturer:	Labkotec Oy Myllyhaantie 6 FI-33960 Pirkkala FINLAND

The construction of the appliance is in accordance with the following standards:

EMC:

EN 61000-6-2 (2001)	Electromagnetic compatibility, Generic immunity standard, class: Industrial environment.
EN 61000-6-3 (2001)	Electromagnetic compatibility, Generic emission standard, class: Residential, commercial and light industry.
EN 61000-3-2 (2000)	Electromagnetic compatibility, Product family standard: Harmonic current emissions.
EN 61000-3-3 (1995) +A1:2001+A2:2005	Electromagnetic compatibility, Product family standard: Voltage fluctuations and flicker sensation.

LVD:

EN 61010-1 (2001)	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements.

ATEX:

EN 60079-0 (2006) IEC 60079-0 (2007)	Electrical apparatus for explosive gas atmospheres — Part 0: General requirements.
EN 60079-11 (2007)	Explosive atmospheres — Part 11: Equipment protection by intrinsic safety 'i'.
EC-type examination certificate:	VTT 04 ATEX 031X
Ex-classification:	⟨Ex⟩ II (1) G [Ex ia] II C Ta = -25...+50°C
Production quality assurance notification:	VTT 01 ATEX Q 001
Notified Body:	VTT Expert Services Ltd; notified body number 0537.
Address of the notified body:	P.O. Box 1001, FI-02044 VTT, Finland

The product is CE-marked since 2004.

Signature

The authorized signatory to this declaration, on behalf of the manufacturer, and the Responsible Person based within the EU, is identified below.

Pirkkala 25.02.2010

Heikki Helminen
CEO
Labkotec Oy

Labkotec
INDUTRADE GROUP

L26029_e
F26030_e

Declaration of Conformity

This declaration certifies that the below mentioned apparatus conforms to the essential requirements of the EMC directive 2004/108/EC and ATEX directive 94/9/EC.

Description of the apparatus:	Level sensor
Type:	SET/DM3D
Manufacturer:	Labkotec Oy Myllyhaantie 6 FI-33960 Pirkkala FINLAND

The construction of the appliance is in accordance with the following standards:

EMC:

EN 61000-6-2 (2001)	Electromagnetic compatibility, Generic immunity standard, class: Industrial environment.
EN 61000-6-3 (2001)	Electromagnetic compatibility, Generic emission standard, class: Residential, commercial and light industry.

ATEX:

EN 60079-0 (2006) IEC 60079-0 (2007)	Electrical apparatus for explosive gas atmospheres — Part 0: General requirements
EN 60079-11 (2007)	Explosive atmospheres — Part 11: Equipment protection by intrinsic safety 'i'
EN 60079-26 (2007)	Explosive atmospheres — Part 26: Equipment with equipment protection level (EPL) Ga

EC-type examination certificate:	**VTT 09 ATEX 026X**
Ex-classification :	**Ex II 1 G Ex ia II B Ga Ta = -30...+60°C**
Production quality assessment notification:	**VTT 01 ATEX Q 001**
Notified Body:	VTT Expert Services Ltd; notified body number 0537.
Address of the notified body:	P.O. Box 1001, FI-02044 VTT, Finland

Signature

The authorized signatory to this declaration, on behalf of the manufacturer, and the Responsible Person based within the EU, is identified below.

Pirkkala 19.4.2010

Heikki Helminen
CEO
Labkotec Oy

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/25-2019

Dated: 02 September 2019

Waste Management Plan – Proposed Service Station at Gracemere

2 April 2019

Table of Contents

1.0 INTRODUCTION

The construction and operation phases of the proposed Service Station development will result in the generation of specific waste streams and products. The improper management and disposal of waste from the proposed development has potential to cause adverse impacts to both environmental and social values.

To ensure the appropriate management and disposal of development-related waste, there is a need for a framework addressing waste management. This Waste Management Plan (WMP) provides an overview of the framework and management practices likely to be utilised to manage waste streams generated in the proposed development.

1.1 Purpose and Scope of the WMP

This WMP has been prepared to satisfy the legal obligations to minimise and appropriately manage wastes pursuant to the *Environmental Protection Act 1994* (Qld), the *Environmental Protection Regulation 2008* (Qld), the *Waste Reduction and Recycling Act 2011* (Qld) and the *Waste Reduction and Recycling Regulation 2011* (Qld).

The key objectives of this WMP are outlined as follows.

> Ensure that waste management at the site is compliant with relevant legislation for the storage and collection.

> Ensure that waste management at the site is undertaken in such a way to avoid or minimise impacts on the community and harm to surrounding environment.

> Inform site personnel and contractors undertaking activities at the site regarding their environmental obligations, including those under this WMP.

The WMP relates to the proposed Service Station development on the land located at 715 Capricorn Highway, Gracemere, which is described as Lot 7 on Survey Plan 108697.

Figure 1 shows the site location.

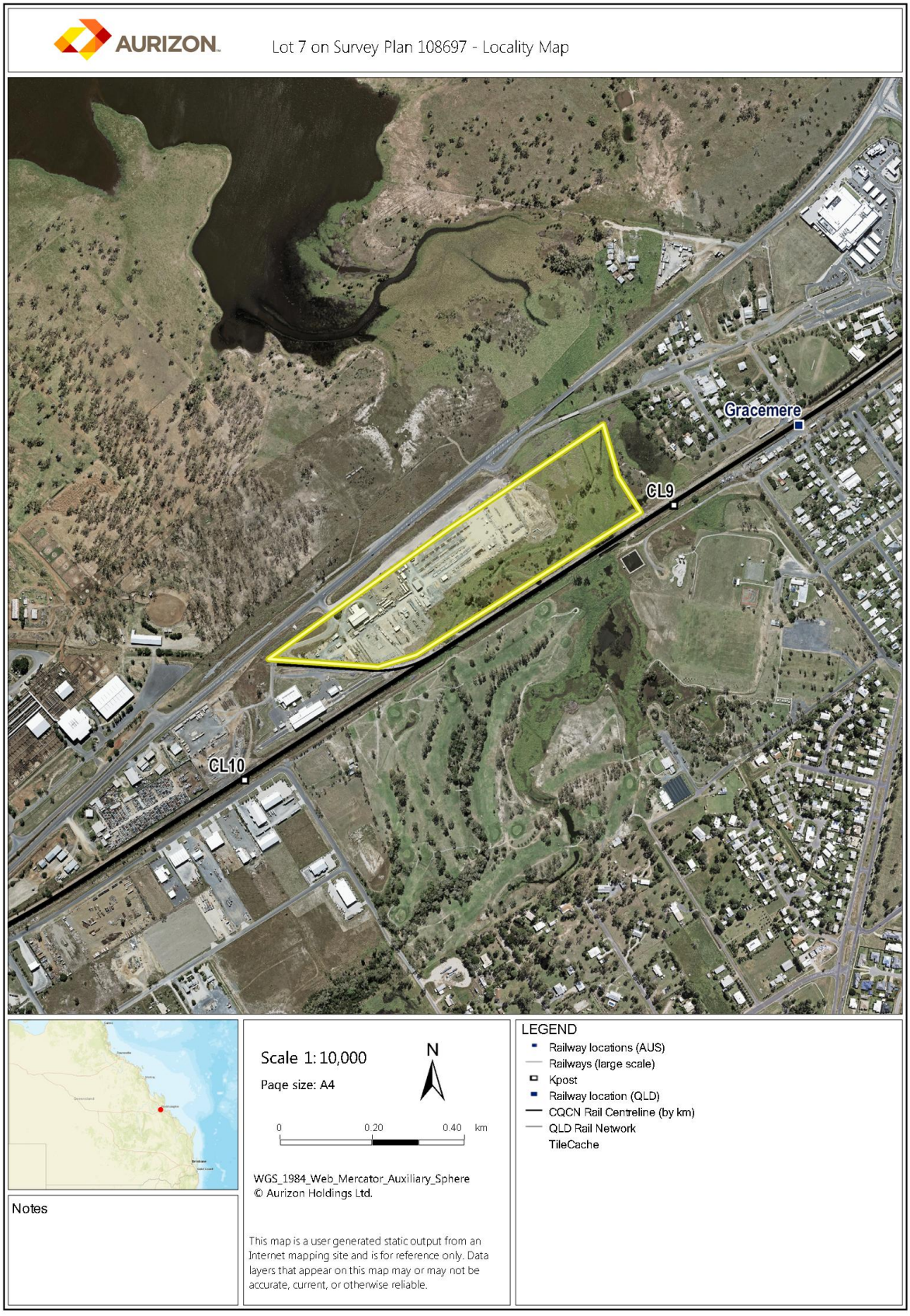


Figure 1: Site location

2.0 LEGAL AND OTHER OBLIGATIONS

The *Environmental Protection Act 1994* is the key element of Queensland's environmental protection legal system. Its objective is to protect Queensland's environment while allowing for development that improves the total quality of life, in a way that manages ecological processes (that is, ecologically sustainable development).

Wastes which are derived from commercial or industrial operations and which are known to have adverse impacts on the environment and human health are listed in Schedule 7 Part 1 of the *Environmental Protection Regulation 2008* (Qld) and are referred to as 'regulated wastes.' Listed regulated wastes can only be collected, transported and disposed of by a licensed waste transporter.

Under the *Environmental Protection Regulation 2008* (Qld), waste transporters must submit waste tracking certificates which detail the quantity, origin and destination of the regulated waste to the Queensland Department of Environment and Science (DES) when transporting regulated waste or waste residues. In addition, it is the responsibility of the waste generator to submit waste tracking certificates to the DES within seven (7) business days of the regulated waste being collected. A complete list of trackable regulated wastes can be found in Schedule 2E of the *Environmental Protection Regulation 2008* (Qld).

The following actions can attract penalties for individuals and for corporations:

> Failure to store waste in a secure (i.e., no leaking) container which is securely covered;

> Placing of smouldering or lit waste, living organisms in a waste container; or

> Failure to separate regulated waste from general waste (i.e., co-storage of waste types).

There are also substantial penalties associated with the improper disposal of waste.

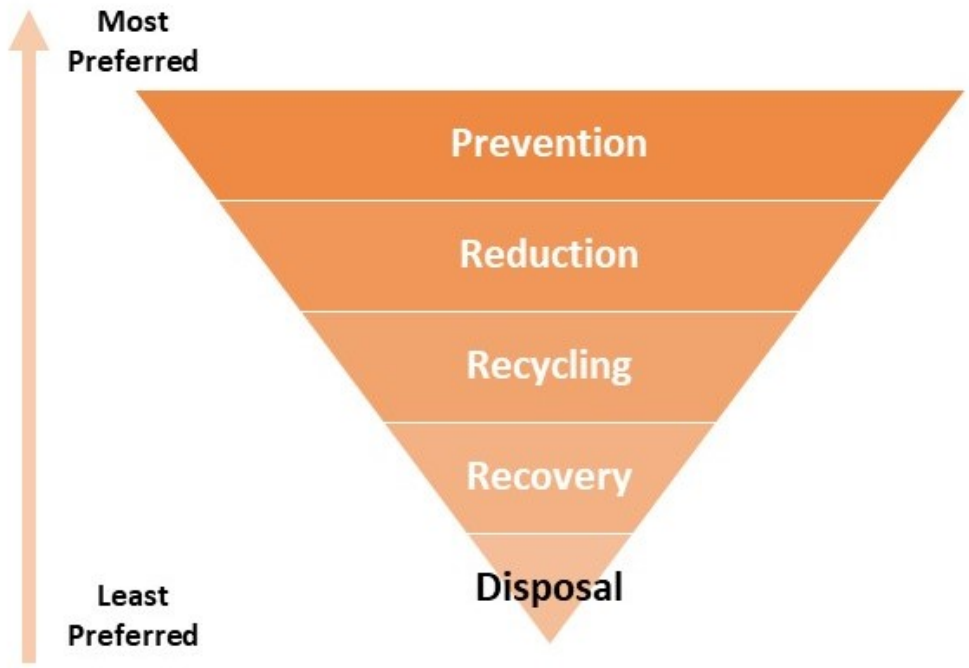
The *Waste Reduction and Recycling Act 2011* (Qld) contains a suite of measures to reduce waste generation and landfill disposal and encourage recycling. Chapter 5 of the *Waste Reduction and Recycling Act 2011* (Qld) outlines the offences relating to littering and illegal dumping.

Liquid waste generated by business and industry is referred to as trade waste. The *Water Supply (Safety and Reliability) Act 2008* (Qld) prohibits the unauthorised discharge of wastes, other than domestic sewage, into a municipal sewerage system. In this regard, the proposed Service Station operator will be required to obtain approval from the Rockhampton Regional Council to discharge trade waste generated at the site to the sewerage system.

3.0 SPECIFIC GUIDANCE

3.1 Waste management hierarchy

The following hierarchy of waste management actions will be implemented on site:



3.2 On-site waste storage

The proposed development includes a 40m^2 service yard / bin store area that will be located at the rear of the Service Station building. This area will be fenced and securely locked, other than when refuse collection activities are occurring. The bin store area will feature an impervious surface, which drains to an appropriate arrestor trap and a tap and hose will be available for cleansing activities (if required).

The following actions will be undertaken to ensure appropriate waste storage on the site:

> Provision of separate storage bins for differing waste streams (e.g. regulated waste bins for empty hydrocarbon containers, oily rags and other material containing hydrocarbon residues, general waste bins and recyclables bins). Regulated waste will be stored separately from general waste. Additionally, different regulated waste types will not be stored together (e.g. lead batteries and hydrocarbon containers).

> The bins and storage of waste will be managed safely (e.g. provision of lids, limiting public access to the service yard / bin store area).

> The refuse collection vehicles servicing the proposed development will be able to ingress and egress the marked loading area and the site in a forward gear.

3.3 Collection and disposal of waste

All waste generated at the site will be collected and disposed by licensed waste management contractor at a suitably licenced waste management facility.

It is acknowledged that each time regulated waste is collected, it is a legal requirement, pursuant to the *Environmental Protection Act 1994* (Qld), for waste contractors to provide trackable waste certificates to both the waste generator and the DES. This will be completed as part of the waste management procedures implemented at the site.

3.4 Site housekeeping

A high quality of housekeeping will be implemented at the site to ensure waste and other materials are not left where they can be washed or blown away to become litter.

Workers will be made aware through site induction and daily pre-start briefings of the need to avoid littering and to use the bins provided and to advise of any issues relating to waste storage, collection or disposal.

Visitors to the site will be informed of this WMP and the waste management procedures implemented on site through the site induction.

3.5 Oily water

The conceptual Oily Water Management Plan (prepared by TFA Project Group) specifies the proposed oily water system management strategy for the site.

Appendix A – Proposed waste treatment methods

Waste generated	Category	Treatment Method
Food waste, food packaging, cigarette butts, food waste, non-recyclables.	General Waste	> Disposal by personnel, contractors and visitors into marked general waste bins. > General waste bins will be regularly emptied into a general waste skip. > Waste stored in general waste skip will be regularly removed by licensed waste management contractor.
Paper, Cardboard, Aluminium Cans, Glass Bottles, PET Bottles and HDPE Containers (not used for storage of chemicals, lubricants, etc).	Recyclables (co-mingled)	> Disposal by personnel, contractors and visitors into marked recycle bins. > Co-mingled recyclables in the marked bins will be regularly removed by licensed waste management contractor.
IT waste (printer/copier toner cartridges)	Recyclables	> Disposed by personnel/visitors into special marked container provided by Office E-Waste. > Items removed for recycling by IT consumables provider.
Waste oil, waste solvents, waste coolants, waste metal surface treatment solutions, other waste chemicals, sludge from oil/water separator/s, used lead batteries, used tyres, used oil filters	Regulated Waste	> Disposal by personnel, contractors and visitors into marked regulated waste bins. > Regulated waste bins will be regularly emptied into a regulated waste skip. > Waste stored in regulated waste skip bin regularly removed by licensed waste management contractor.
Waste containers used for storage of oil/coolants/solvents or other chemicals, oily rags, aerosol cans	Regulated waste	> Disposal by personnel, contractors and visitors into marked regulated waste bins. > Regulated waste bins will be regularly emptied into a regulated waste skip. > Waste stored in regulated waste skip bin regularly removed by licensed waste management contractor

mcmurtrie
CONSULTING ENGINEERS

30th May 2019

Rockhampton Regional Council
PO Box 1860
Rockhampton QLD 4700

Your Ref: D/25-2019
Our Ref: 0491819

ROCKHAMPTON REGIONAL COUNCIL
APPROVED PLANS
These plans are approved subject to the current conditions of approval associated with
Development Permit No.: D/25-2019
Dated: 02 September 2019

Re: Material Change of Use for a Service Station
715 Capricorn Highway, Gracemere.
Response to Information Request

In response to Councils Information Request Dated 13th May 2019, the following information is provided in response to Items 3, 4, 5, 6 and 7 copied below:

Sewerage

Item 3: Investigate the possibility of providing a receiving access chamber in the road reserve located at the eastern boundary of Lot 7 and the construction of a gravity sewer main to the existing chamber is Salmon St. This would be Councils preferred option when considering the future development of the remaining areas. If this option is not viable then a receiving chamber would be required prior to entering the existing chamber at Salmon St.

MCE Response:

Information provided by Rockhampton Regional Council through the online Mapping Portal and site investigations show that it is not possible to achieve fall between a proposed collection pit located in the road reserve at the eastern boundary of Lot 7 and the existing manhole 4C/3.

RRC Mapping portal contours show that the location of the proposed collection pit at the eastern boundary of Lot 7 is at an elevation of 14m while the existing Manhole 4C/3 is at an elevation of 16m. The approximate distance between existing manhole and the councils proposed pit is 175m and site investigations show that the invert level of the manhole is 3.26 m below the top of manhole.

Due to the elevation of the site in the road reserve adjacent to Lot 7, fall from the proposed pit to the existing Manhole 4C/3 is not achievable. This area is also prone to flooding and inundation due to being adjacent to a natural watercourse.

A more suitable location for the proposed collection pit would be as close as possible to the existing manhole adjacent to 12 Salmon St to ensure that the network is not impacted by flooding events as shown in **Figure 1**.

ABN 69 958 286 371
P (07) 4921 1780
F (07) 4921 1790
E mail@mcmengineers.com
PO Box 2149
Wandal Q 4700
63 Charles Street
North Rockhampton Q 4701

Figure 1 - Proposed Pit Locations

The proposed 1050mm diameter collection pit is to be constructed in accordance with CMDG Standard Drawing CMDG-S-070 with a minimum invert depth of 900mm as per Table D12.10.13 (Minimum cover of Sewer Mains) of CMDG D12 Sewerage System Design Guidelines.

A 150 mm sewer main at a minimum grade of 1:150 will be constructed to connect the existing manhole and proposed collection pit. The proposed collection pit will be constructed as close as practical to the existing manhole (approx. 2m) and achieving fall to the manhole is not a concern. Site investigations undertaken by RRC have shown that there is an existing 100 mm blank connection from the northeast however it has been presumed that the collection pit will require a new 150 mm connection from the West and may require an internal drop in the existing manhole (as per CMDG-S-023).

Detailed survey of the site and confirmation of elevations and invert levels would be conducted prior to the any operational works applications.

The Volume of waste created by the facility and disposed via the sewer connection has been estimated by considering the worst-case scenario of a fast food service which specifies 3.5 ET per 100 sqm GFA. Presuming that the Gross Floor Area of the buildings on the lot is 200 sqm, the Design Average Dry Weather Flow **(ADWF)** is **3780 L/D**.

At this stage of the Material Change of Use Application, McMurtrie Consulting Engineers has not completed any analysis in relation to the future development of the remaining areas of the lot as there is no proposal for any future development. The current Material Change of Use application has only considered the development of a Roadhouse on the site at 715 Capricorn Highway, however if RRC

require the rising main to cater for future development of the site it should be conditioned by council as such.

Stormwater

Please find attached a copy of the MUSIC model that was prepared for the Gracemere Service Station. The response to Items 4 – 7 in the information request is as follows:

Item 4: Please provide an electronic copy of the MUSIC modelling for Council's review. Furthermore, it is noted that gross pollutant targets are met in the MUSIC model results provided, please indicate how this has been achieved noting that the gross pollutant traps must be incorporated into the MUSIC model.

MCE Response:

We enclose a copy of the MUSIC model that was prepared for the site. The primary treatment device that is proposed to be constructed as part of the development is a bioretention basin with a top water surface area of 400m^2. As Council's engineering staff would be aware, bioretention basins have a gross pollutant removal function that is particularly valid in private development sites that are subject to maintenance – as will be the case for the proposed service station. From a numerical standpoint, the inclusion of the physical gross pollutant traps is not functionally required as the gross pollutant removal performance by the bioretention basin is at 100% effectiveness – and the addition of the gross pollutant devices will have no impact on the performance from a reporting or numerical standpoint. Therefore, no modification to the MUSIC model is proposed.

Further information on the treatment functions of bioretention nodes in the MUSIC modelling package is available in the software reference documentation prepared by eWATER and the former CRC for Catchment Hydrology.

Item 5: Please provide background calculations that demonstrate the size of the proposed bio-retention basin is sufficient. Please also provide details of the flood level used to determine the bio-retention basin surface elevation and bund height.

MCE Response:

The size of the bioretention basin was determined through an iterative process within the MUSIC model interface. We also have a proprietary spreadsheet that undertakes a review of the design characteristics of the bioretention systems that is based on the South East Queensland Technical Guidelines for Water Sensitive Urban Design. This includes calculations for the inlet sediment forebay area, outlet field inlet dimensions, sub-soil pipe requirements and bypass weir size. The detailed calculations will be adopted during the detailed design of the site as part of the future application for Operation Works. We confirm that there are no observable restrictions on the concept design provided for the site.

The bioretention basin surface was determined based on-site constraints to allow for internal grading of the private stormwater network, connectivity into the receiving waterway, and providing a degree

of immunity to certain flood events based on the external catchment discharges that flow past the site. As noted in the Stormwater Management Plan, the minimum surface elevation for the proposed bioretention basin is at RL 16.0m AHD, with a bund height set 300mm above this at RL 16.3m AHD. This information will be further detailed in engineering plans for the future application for Operational Works. A bund height set at 16.3m AHD is approximately equal to the existing top of bank in the southern channel between the site and the railway line, which is adjacent to where the bioretention basin is proposed to be located. The following figure presents a section through this location to demonstrate the observed elevations in this area.

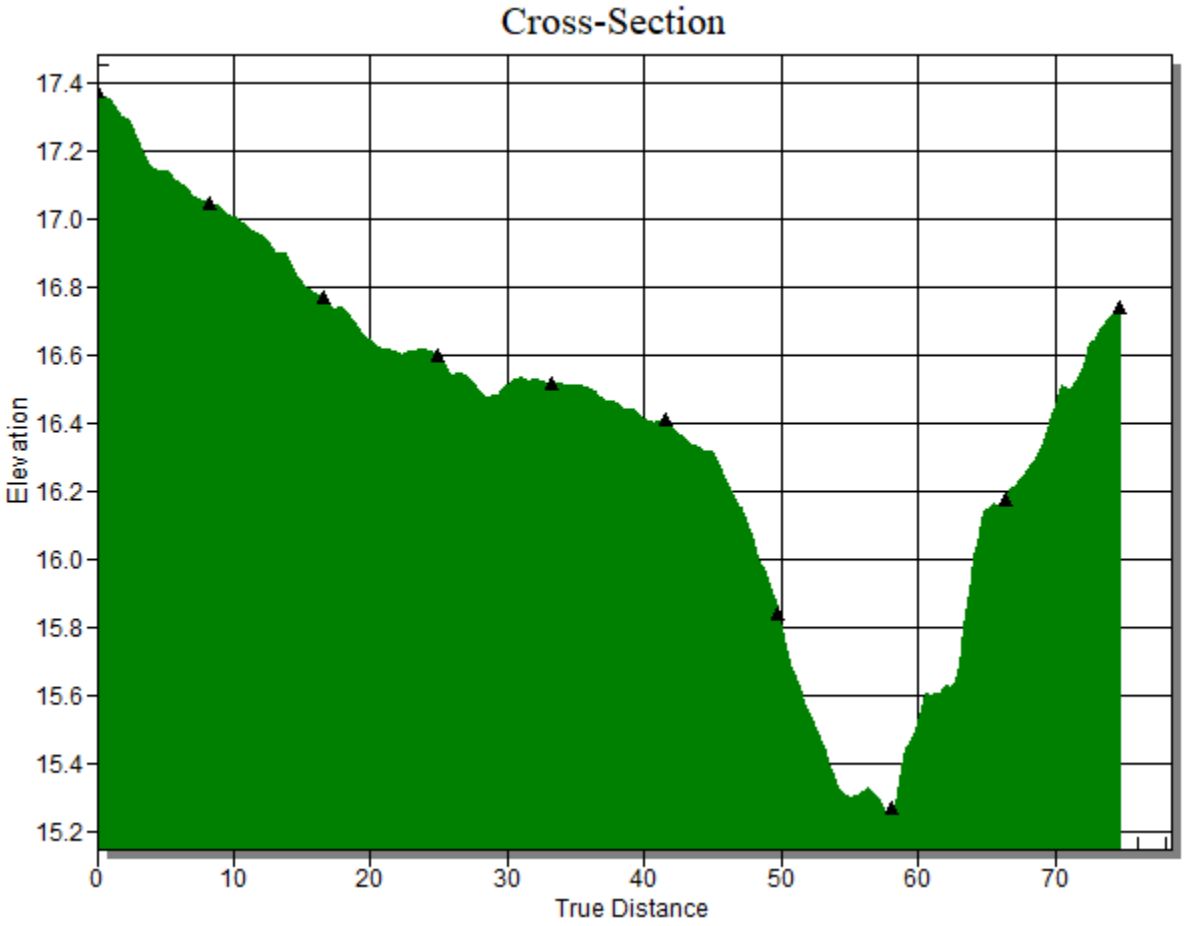


Figure 2: Cross-section of the Existing Terrain From the Site (Left) to the Southern Channel and Railway Line (Right)

In terms of flood immunity, it is estimated that the bund height at RL 16.3m AHD will be above 10 Year ARI peak inundation elevation of approximately RL 16.2m AHD. Ultimately, the bioretention basin will be subject to a maximum depth of inundation of approximately 0.8m, above the filter surface elevation, during a 100 Year ARI design storm event. This is considered to be acceptable for the site given that the major inundation is largely due to backwater effects with the existing hazard criteria being low-medium during a 100 Year ARI design storm event. In the event that there is any minor repairs required post an inundation event it will be undertaken in accordance with a site maintenance guide that will be prepared for the operational phase of the site.

Item 6: Please detail how contaminant spills associated with the truck storage area will be appropriately treated prior to entering the stormwater system.

MCE Response:
It is proposed that a spill containment oil separator, in the form of a Spelceptor or approved equivalent device, will be provided for the service station area. Please refer to details prepared by TFA Project Group for further information.

Item 7: Council have concerns regarding the methodology used to determine the peak stormwater flow rates from the site for the pre and post development scenarios particularly the gravel sub-catchment area for pre-development being assumed as 100% impervious, Council would recommend using an assumption of 70% impervious for this area. Please amend and provide supporting calculations for the flow rates for both pre and post development. Please note that if there is an increase in the discharge post development, detention will be required on-site to return the discharge from the site to the pre-development scenario. Alternatively, justification will need to be provided as to why no mitigation measures are required.

MCE Response:
The assessment of the fraction impervious has come from a physical assessment of the site itself, which comprises of existing buildings, sealed pavement and well compacted gravels. Discussion with the operator of the site indicates high runoff from the compacted gravel areas that is attributed to bridging of the granular material that forms an impervious barrier to infiltration capacity – particularly during infrequent rainfall events (i.e. 10 year ARI and rarer). The Stormwater Management Plan also confirmed that the site is equally mapped as "Roads and Other Impervious Surfaces", which is consistent with the observations made on-site. In the event that the site be subject to a reduced fraction impervious then the Gracemere Creeks flood study would require an amendment as the development site is located towards the downstream end of the modelling extent. In the event that a detention device were to be installed there would be a potential for tailwater impacts that would propagate up through the model and potentially result in adverse conditions upstream of the railway corridor. As professional engineers, we are satisfied that the previous mapping adopted by Council is consistent with the site conditions and that the assessment that the area is subject to a 100% impervious cover is appropriate and that no additional calculations are required for the assessment of peak discharge from the site.

Kind regards,

Chris Hewitt
Principal Engineer, RPEQ 5141

Scale 1:500 - Lengths are in Metres.

5 0 5 10 15 20 25 30 35 40 45

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/25-2019

Dated: 02 September 2019

CAPRICORN HIGHWAY

2x Ø525 RCP

Ø450 RCP

Layback Kerb

Address Markers

Watermain Valves

Palm

Hosereel

Concrete Hump

Garden

Septic Mound

Conduits

Septic Tank

Toilets

Office

Car Parking

Stormwater Drain

Unknown Pit

Maintenance Shed

Carport

Column

Security Fence

Gate

Mailbox

Post

Barrier

Shed

Slab

Bollards

Storage containers and shaded area

Sheds

Boom Gates

Stormwater Pit (Unable to find outlet)

Communications alignment plotted from DBYD records

Water alignment plotted from DBYD records

Ø100 PVC

PM 90376

3x Ø1330 RCP

Track Centre

Wire Fence

7
SP108697

SEE SHEET 2

SEE SHEET 4

Buildings / structures to be relocated or demolished prior to the construction of the proposed service station.

0 50 mm 100 mm 150 mm SCALE BAR

Sheet 3 of 4

IMPORTANT NOTES:
(These notes are an integral part of this plan)
This plan has been prepared for Aurizon for the purposes of contour and detail survey. It is not to be used by any other person or corporation or for any other purposes and is subject to the following limitations:

The title boundaries as shown hereon have been determined from minimum connections to survey marks placed by others and then from measurements by others, the verification of which does not form part of this survey.

The State of Queensland (Department of Natural Resources, Mines and Energy) [12.02.2019] Based on or contains data provided by the State of Queensland (Department of Natural Resources, Mines and Energy) [12.02.2019]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for direct marketing or be used in breach of the privacy laws.

Only visible surface features of underground services on or adjacent to the site have been surveyed.

Underground water and communication alignments have been plotted from DBYD records.

The Position of underground services on this drawing are indicated by a single line. Care should be exercised as services may occupy a considerably wider corridor than that indicated on this drawing. Users should be aware during excavation or construction that services may exist for which there is no record. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed location of all services.

AURIZON

GRACEMERE SITE

Data Sources	
Cadastral Boundaries	DNRM & DCDB
Contours / Topographic	-
Aerial Images	-
Flood Level	-
Engineering Design	-
Architectural Design	-
Landscape Design	-

Issue	Revisions	Date	Drawn
A	Original	12.02.2019	MSM

Locality:	Gracemere
Local Authority:	Rockhampton Regional
Projection:	Plane
Horizontal Meridian:	MGA Zone 56
Vertical Level Datum:	AHD
Level Origin:	OPM 90376 RL 16.441m
Scale:	1:500 at A1
Surveyed:	MSM & JSN 8/2/19
Contours:	0.25min, 1.0 maj
Drawn:	MSM 12/2/19
Checked:	BSC 12/2/19
Plot Date:	13 Feb, 2019
Computer File Ref:	400217-005 CD-01 Rev A.dwg

Contour & Detail Survey over Lots 5, 7, part of Lot 8 on SP108697 and part of the Capricorn Highway GRACEMERE

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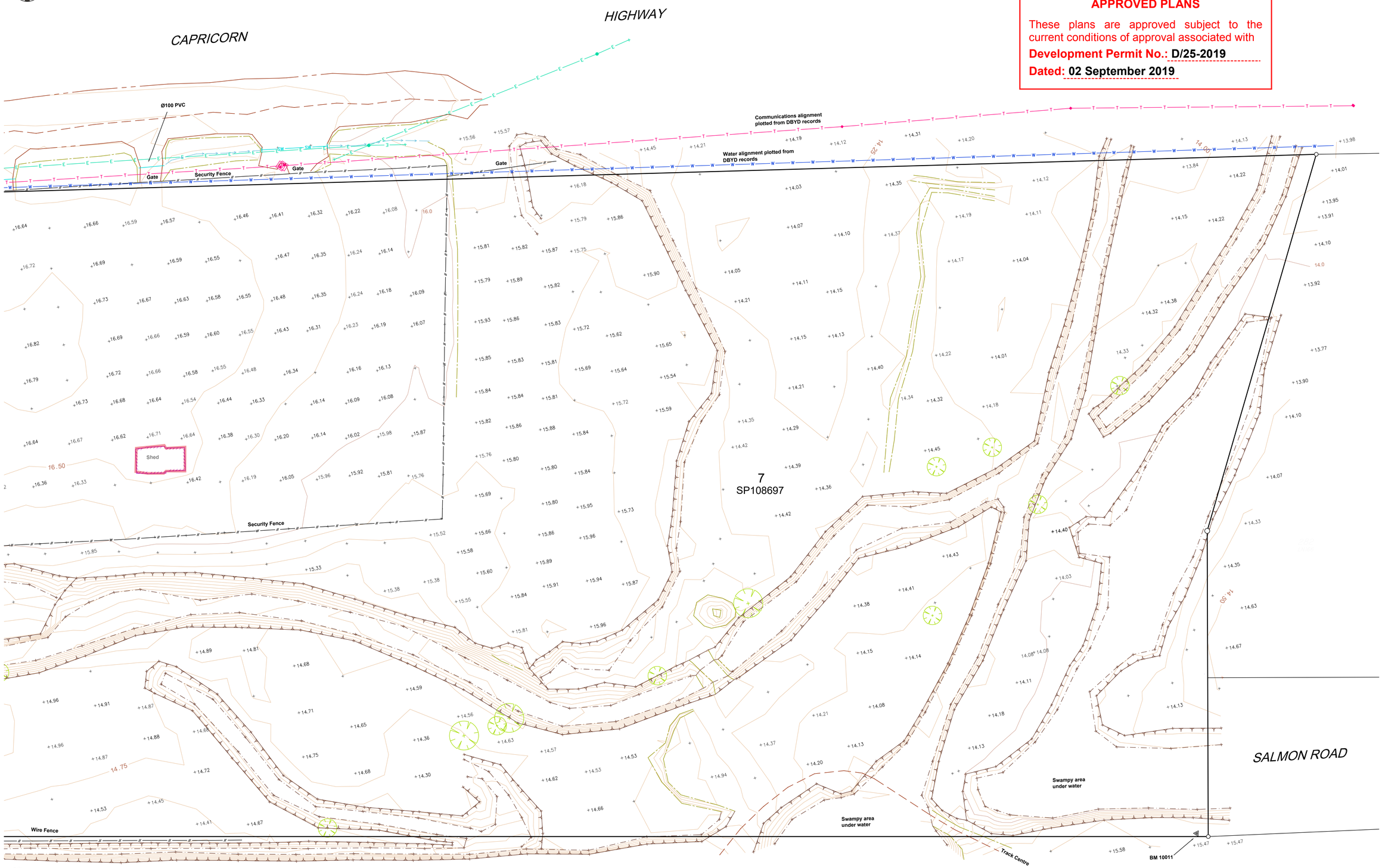
Issue: A



ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/25-2019

Dated: 02 September 2019

Buildings / structures to be relocated or demolished prior to the construction of the proposed service station.

Scale 1:500 - Lengths are in Metres.

5 0 5 10 15 20 25 30 35 40 45

0 50 mm 100 mm 150 mm SCALE BAR

Sheet 4 of 4

IMPORTANT NOTES:
(These notes are an integral part of this plan)
This plan has been prepared for Aurizon for the purposes of contour and detail survey. It is not to be used by any other person or corporation or for any other purposes and is subject to the following limitations:

The title boundaries as shown hereon have been determined from minimum connections to survey marks placed by others and then from measurements by others, the verification of which does not form part of this survey.

The State of Queensland (Department of Natural Resources, Mines and Energy) [12.02.2019]. Based on or contains data provided by the State of Queensland (Department of Natural Resources, Mines and Energy) [12.02.2019]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for direct marketing or be used in breach of the privacy laws.

Only visible surface features of underground services on or adjacent to the site have been surveyed.

Underground water and communication alignments have been plotted from DBYD records.

The Position of underground services on this drawing are indicated by a single line. Care should be exercised as services may occupy a considerably wider corridor than that indicated on this drawing. Users should be aware during excavation or construction that services may exist for which there is no record. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed location of all services.

AURIZON

GRACEMERE SITE

Data Sources	
Cadastral Boundaries	DNRM & DCDB
Contours / Topographic	*
Aerial Images	*
Flood Level	*
Engineering Design	*
Architectural Design	*
Landscape Design	*

Issue	Revisions	Date	Drawn
A	Original	12.02.2019	MSM

Locality:	Gracemere
Local Authority:	Rockhampton Regional
Projection:	Plane
Horizontal Meridian:	MGA Zone 56
Vertical Level Datum:	AHD
Level Origin:	OPM 90376 RL 16.441m
Scale:	1:500 at A1
Surveyed:	MSM & JSN 8/2/19
Contours:	0.25mm, 1.0 maj
Drawn:	MSM 12/2/19
Checked:	BSC 12/2/19
Plot Date:	13 Feb, 2019
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Drawing No 400217-005-CD01 Issue A