D.A ISSUE

RPD
LOT 604 ON R2642

COUNCIL: ROCKHAMPTON

DEVELOPMENT ASSESSMENT

SITE AREA	- 3,204m²
LANDSCAPE AREA	- 788m²
BLDG SITE COVER (INCLUDES ALL ROOFED AREAS)	- 13%

IMPERVIOUS AREA

- PRE DEVELOPMENT - 0m²
- POST DEVELOPMENT - 2,416m²

BUILDING AREAS - GFA

- T1 - FOOD & DRINK - 283m² (INCLUDES INTERNAL REFUSE ENCLOSURE 22m2)
- T2 - FOOD & DRINK - 102m²

TOTAL BUILDING AREA - 385m²

EXTERNAL AREAS

- T1 - PLANT - 10m²
- T2 - ALFRESCO - 20m²

CAR PARKING

- PARKING *REQUIRED* - *
  * REFER TO TRAFFIC REPORT
- PARKING *PROVIDED* - 28

ROCKHAMPTON REGIONAL COUNCIL
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EXISTING GREENFIELD SITE (NTS)

SPLIT FACED RETAINING WALL, EXTENT SHOWN GREEN, REFER CIVIL DOCUMENTS FOR DETAILS
SANDSTONE RETAINING WALL, EXTENT SHOWN ORANGE, REFER CIVIL DOCUMENTS FOR DETAILS
BM 03 Iron Pin RL 28.04
BM 02 Plug in Conc RL 28.72
LINE OF PROPOSED WIDENING
EXISTING ROAD EDGE
T2 FOOD & DRINK 10700
ALFRESCO
T2 DELIVERY BAY
EXISTING POWER POLE
PROPOSED ENTRY/EXIT
APPROX. LINE OF NEW KERB & CHANNEL
JOHN STREET
EXISTING CHILDCARE DRIVEWAY
T1 SIGN
EXISTING SIGNAL CONTROL BOX
PROPOSED ENTRY ONLY
T1 FOOD & DRINK
DELIVERY BAY
PLANT
REFUSE
REFUSE/ DELIVERY BAY
"NO ENTRY" SIGNAGE
T1 SITE PYLON
LAWRIE STREET
NEW EXTERNAL INTERSECTION UPGRADE BY OTHERS. LAYOUT SHOWN INDICATIVE ONLY, TO BE VERIFIED ONCE SUITABLE DRAWINGS FILES ARE RECEIVED

Consulting Engineer

VERVE BUILDING DESIGN CO.
BUILDING DESIGNERS LICENCE No. 1002212 PH. 07 3857 0942
OFFICE 2, LEVEL 1, 488 LUTWYCHE ROAD, LUTWYCHE QLD 4030 E: info@vervebd.com.au
imagine □ create □ deliver

□ commercial / industrial / retail
□ fast food restaurant design
□ travel centre / service stations
□ project concept to completion

Revision and approvals

Code	Date	Drn	Description	Dwn
A2	08.06.2022	GN	ISSUE FOR INFORMATION	
A	14.04.2022	GN	D.A ISSUE	

Project Description: PROPOSED MIXED USE DEVELOPMENT
6 LAWRIE STREET, GRACEMERE, QLD.

Drawing Title: SITE PLAN

Scale: 1:250 @ A1 / 1:500 @ A3
Drawn:
Approved:
Issued:

Drawing Number: 20009–DA01
Revision: A2

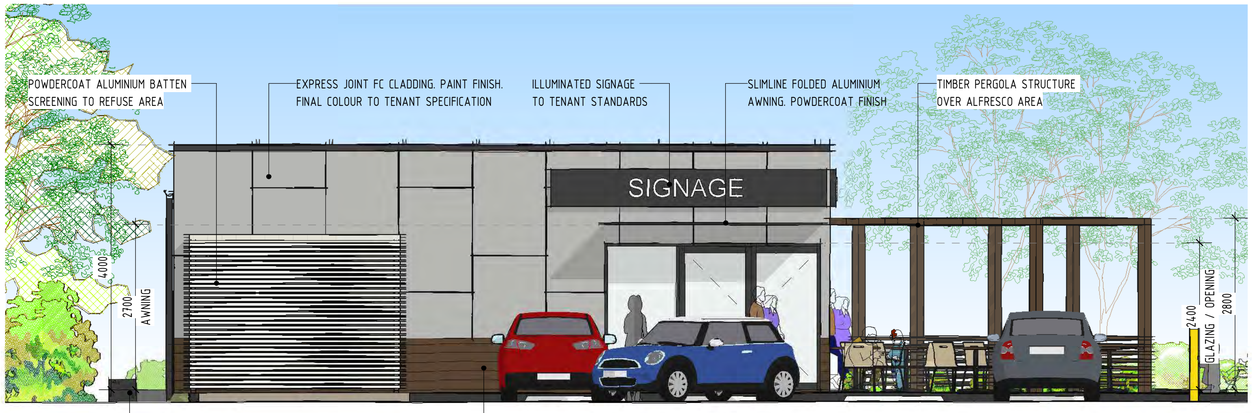
DA ISSUE

THIS DRAWING IS NOT FOR CONSTRUCTION

NOTE

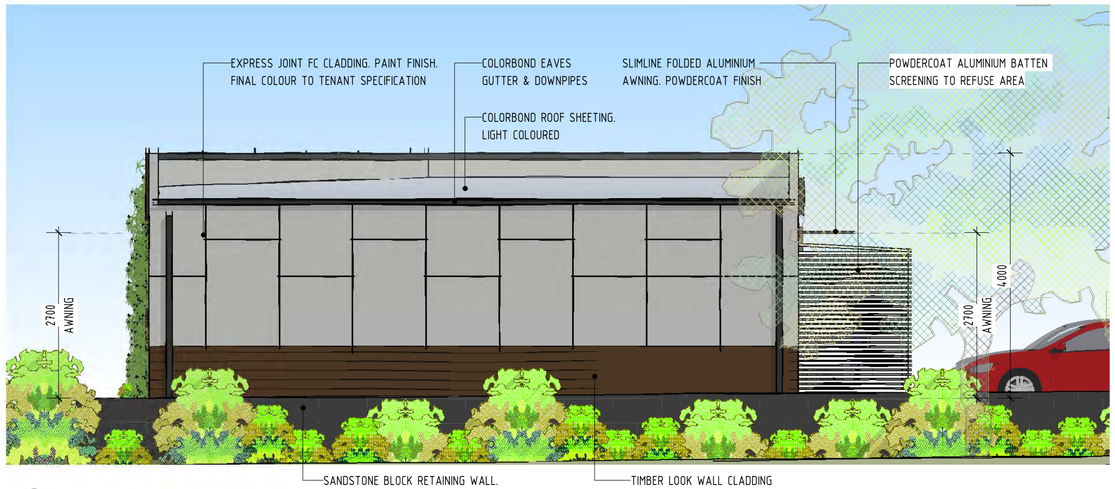
1. ALL EXTERNAL MATERIALS & FINISHES SHOWN INDICATIVE ONLY AND SUBJECT TO FINAL TENANT STANDARDS
2. ALL DIMENSIONS MEASURED FROM FINISHED GROUND FLOOR LEVEL UNLESS NOTED OTHERWISE
3. ALL SIGNAGE INCLUDING LOCATIONS AND HEIGHTS ARE SUBJECT TO A SEPARATE SIGNAGE APPLICATION AND APPROVAL BY LOCAL AUTHORITY
4. LANDSCAPING IS SHOWN FOR "ARTIST IMPRESSION" PURPOSES ONLY. REFERENCE SHOULD BE MADE TO THE LANDSCAPE DRAWINGS PREPARED BY THE RELEVANT CONSULTANT.

1 ELEVATION - NORTH
1 : 50



2 ELEVATION - SOUTH
1 : 50

3 ELEVATION - EAST
1 : 50



4 ELEVATION - WEST
1 : 50

THIS DRAWING PACKAGE IS FOR D.A. PURPOSES ONLY AND IS NOT TO BE USED FOR TENDER PURPOSES.
ALL DESIGN COMPONENTS ARE SHOWN INDICATIVE ONLY AND ARE SUBJECT TO FINAL DESIGN DURING DETAILED DESIGN BY THE RESPECTIVE CONSULTANT.
ANY PRICING BASED UPON THE DETAILS SHOWN IN THESE DRAWINGS ARE COMPLETELY AT THE RESPONSIBILITY OF THE TENDERER.
VERVE BUILDING DESIGN CO. SHALL NOT BE HELD RESPONSIBLE FOR ANY REQUIRED CHANGES OR UPDATES TO THE DESIGN, POST D.A. THAT ARE PRICE IMPACTED.

ROCKHAMPTON REGIONAL COUNCIL

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Dated: 22 August 2022

VERVE SCHEDULES DISCLAIMER:

1. ALL SCHEDULES SHOULD BE CHECKED WITH THE REMAINDER OF THE DRAWING SET.
2. SCHEDULED RATES AND AREAS ARE INTENDED FOR ASSISTANCE ONLY. NO RESPONSIBILITY IS TAKEN FOR THE ACCURACY OF QUANTITIES.
3. ANY DISCREPANCIES IN SCHEDULES SHOULD BE IDENTIFIED TO THE AUTHOR NOTED.
4. ALL AREAS ARE GROSS AREAS, UNLESS NOTED OTHERWISE

CONSULTING ENGINEER

VERVE BUILDING DESIGN CO.
QBCC LICENCE No. 1236672
OFFICE 1, LEVEL 1, 488 LUTWYCHE RD, LUTWYCHE 4030
PH. (07) 3857 0942
E: info@vervebd.com.au

imagine □ create □ deliver

□ commercial / industrial / retail
□ fast food restaurant design
□ travel centre / service stations
□ project concept to completion

Revision and approvals

Rev	Date	Drn	Description	Appr
P1	07.03.2022	LN	PRELIMINARY ISSUE	GN
P2	28.03.2022	PL	T1 BUILDING ADDED	GN
A	14.04.2022	LN	DA ISSUE	GN

Project Description: PROP. FAST FOOD DEVELOPMENT
6 LAWRIE ST, GRACEMERE

Drawing Title: BUILDING ELEVATIONS & PERSPECTIVES

Scale @A1: 1 : 50
Date: MAR 2022
Drawn: LN
Approved By: GN

Job Number - Drawing Number: 20009 DA03
Revision: A

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HJs BUILDING AREA	259m²
BIN ROOM	22.0m²
PLANT ROOM	10.0m²
CAR PARKING :	23 SPACES
DISABLED PARKING	1 SPACE
WAITING BAY :	1 SPACE
TOTAL CAR PARKING :	25 SPACES
CAR STACK:	13 CARS

HJs Building Area
measured from the internal face of external walls, exclude bin room and plant enclosure

EXTENT OF LANDSCAPE AREA PLANTS BY LANDSCAPE SPECIALIST.

EXTENT OF BLACK CONCRETE PAVEMENT

FUTURE CAR WASH SITE

PROPOSED HUNGRY JACKS RESTAURANT

PLANT 10m²

BIN ROOM 22m²

DELIVERY BAY

BIKE RACK

JOHN STREET

LAWRIE STREET

HJ PYLON

ENSURE HEAVY-DUTY PAVEMENT WITHIN DASHED LINE ZONE

SIGNAGE LEGEND

REFER TO DA06-DA07 FOR SIGNAGE DETAILS

S01 - 9.0M HIGH PYLON SIGN
S02 - ILLUMINATED DIRECTIONAL SIGN
S03 - ILLUMINATED DIRECTIONAL SIGN
S04 - ILLUMINATED DIRECTIONAL SIGN
S05 - ILLUMINATED DIRECTIONAL SIGN
S06 - ILLUMINATED DIRECTIONAL SIGN
S07 - 2.4m SQUARE ILLUMINATED BUN LOGO
S08 - DRIVE THRU GANTRY HEIGHT BAR
S09 - DRIVE THRU PREVIEW BOARD
S10 - DRIVE THRU MENUBOARDS
S11 - ILLUMINATED RED FASCIA LIGHTBOX
S12 - BICYCLE PARKING SIGN
S13 - WAITING BAY POST & GROUNDMARKING SIGNS
S14a - DRIVE THRU WINDOW SIGNS
S14b - DRIVE THRU WINDOW SIGNS
S15 - ILLUMINATED HUNGRY JACK'S LETTERSET
S16 - PRINTED GRAPHIC (DT LANE)
S17 - ILLUMINATED BURGER STRIP SIGN
S18 - PAINTED GRAPHIC (SHOPFRONT)
S19 - BANNER POLES

CLIENT
HUNGRY JACK'S PTY. LTD.
L6 - 100 WILLIAM STREET
WOOLLOOMOOLOO NSW 2011

STATUS: SKETCH / DA/ PP / AMENDED DA / BA/CC / TENDER / CONSTRUCTION

REV	DATE	AMENDMENT	DRW
1	11.11.21	FOR HJ REVIEW	NB/SF

PROJECT HUNGRY JACK'S
GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE QLD 4702

DRAWING
SITE PLAN & SIGNAGE LOCATION PLAN

PROJECT NO. 211103 | DATE NOVEMBER 2021
SCALE 1:200@A3 | DRAWING NO. DA01 | REV. 1

63 WYNDHAM STREET
ALEXANDRIA NSW 2015
ABN 47 627 526 881
PH : 02 8590 5185
info@fangarchitects.com.au
Nominated Architect: Shyan Fang (Reg 7958)
FANG ARCHITECTS

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/48-2022

Dated: 22 August 2022

GRAPHIC WALL
DT W1
DT W2
DT W3
POS
SWITCH BOARD
SPENT OIL
FREEZER
COOLROOM
GENERAL BIN
RECYCLE BIN
CHEMICAL
MOP RACK
PPE
ICE MAKER
POWER FROM CEILING
KITCHEN
RACK LID
SPECS FREEZER
FRY DISPENSER
FUTURE FRYER
FRY HOLD STATION
SS BENCH
SHAKE SUNDAE MACHINE
400Wx450L SS BENCH
STORE
DELIVERY BENCH
COFFEE
PICKUP
ORDER
WASH UP
MANAGER
DRY STORE
BUN
UNIFORM
WATER FILTRATION
POST MIX
BUCKET WASTE
STAFF CHANGE
MALE
FEMALE
ACCESSIBLE
HTD
BC
DINING
50 SEATS
BIN INSERT
LOADING BAY
2.4m HIGH PRIVACY SCREEN
DRIVE THRU WAITING
DELIVERY BAY

VERIFY ALL DIMENSIONS AND LEVELS ON SITE AND REPORT ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORK. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL CONTRACT DOCUMENTS. USE FIGURED DIMENSIONS ONLY. DO NOT SCALE FROM DRAWINGS. THE COMPLETION OF THE ISSUE DETAILS CHECKED AND AUTHORISED SECTION IS CONFIRMATION OF THE STATUS OF THE DRAWING. THE DRAWING SHALL NOT BE USED FOR CONSTRUCTION UNLESS ENDORSED 'FOR CONSTRUCTION' AND AUTHORISED FOR ISSUE.

CLIENT

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L6 - 100 WILLIAM STREET
WOOLLOOMOOLOO NSW 2011

STATUS
- SKETCH
- DA/ PP
- AMENDED DA
- BA/CC
- TENDER
- CONSTRUCTION

REV	DATE	AMENDMENT	DRW
1	11.11.21	ISSUE FOR HJ REVIEW	SF

PROJECT HUNGRY JACK'S

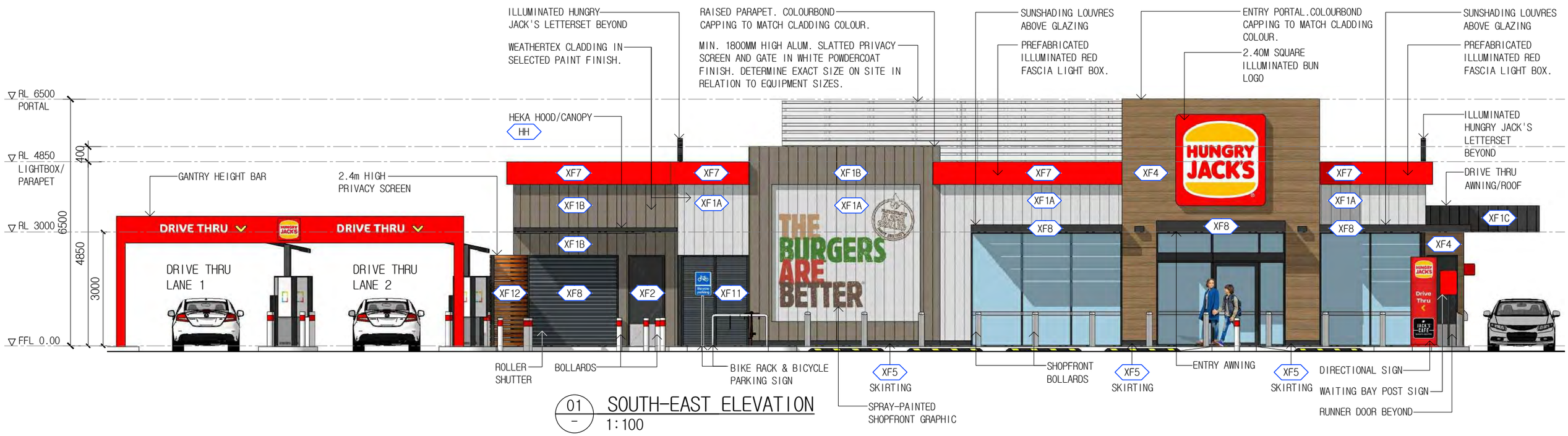
GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE
QLD 4702

DRAWING

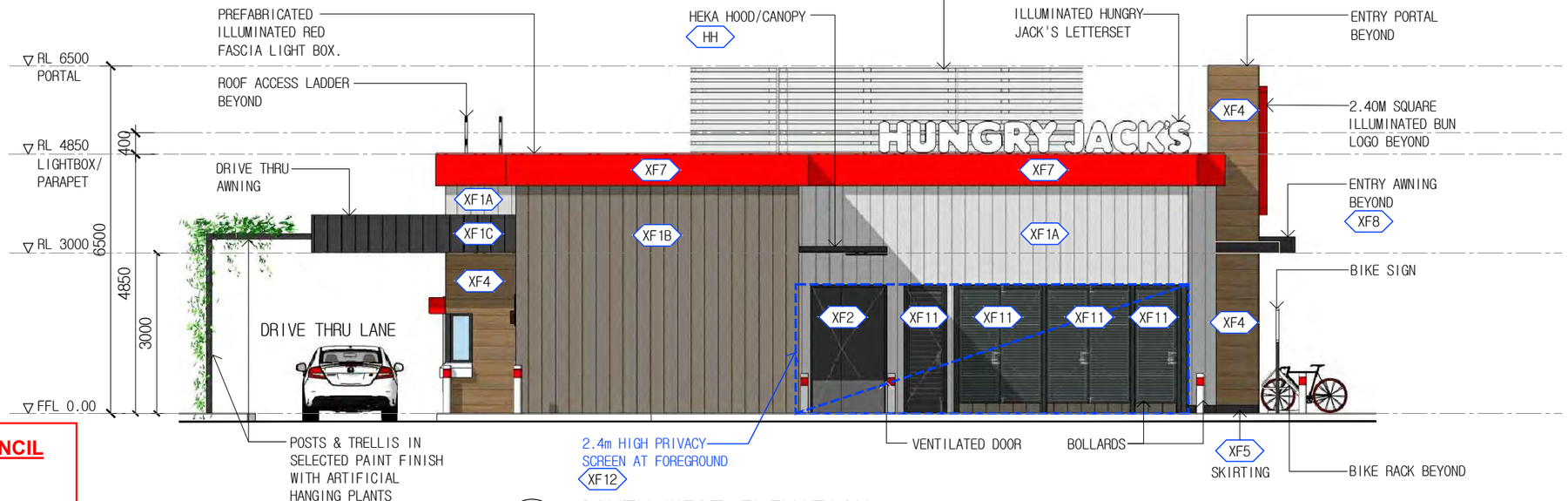
PROPOSED FLOOR PLAN

PROJECT NO.	DATE	
211103	NOVEMBER 2021	
SCALE	DRAWING NO.	REV.
1:100@A3	DA02	1

63 WYNDHAM STREET
ALEXANDRIA NSW 2015
ABN 47 627 526 881
PH : 02 8590 5185
info@fangarchitects.com.au
Nominated Architect: Shyan Fang (Reg 7958)
FANG ARCHITECTS



01 / - SOUTH-EAST ELEVATION
1:100



02 / - SOUTH-WEST ELEVATION
1:100

ROCKHAMPTON REGIONAL COUNCIL

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REV	DATE	AMENDMENT	DRW
1	15.11.21	ISSUE FOR HJ REVIEW	NB

PROJECT HUNGRY JACK'S

GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE
QLD 4702

DRAWING **ELEVATIONS**- SHEET 1

PROJECT NO. 211103 | DATE NOVEMBER 2021
SCALE 1:100@A3 | DRAWING NO. DA03 | REV. 1

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ALEXANDRIA NSW 2015
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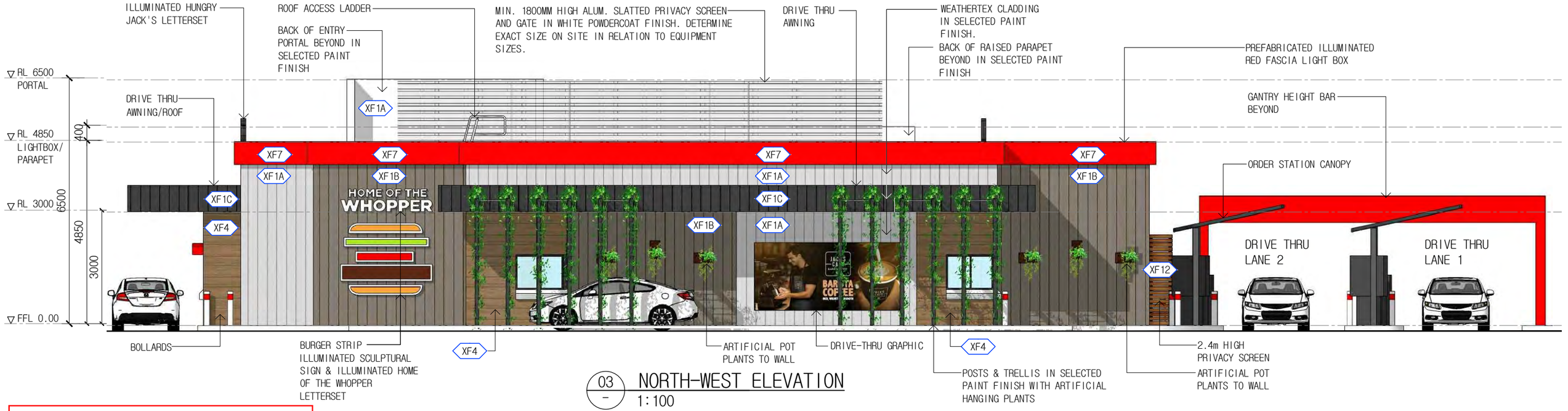

03 – NORTH-WEST ELEVATION
1:100

ROCKHAMPTON REGIONAL COUNCIL

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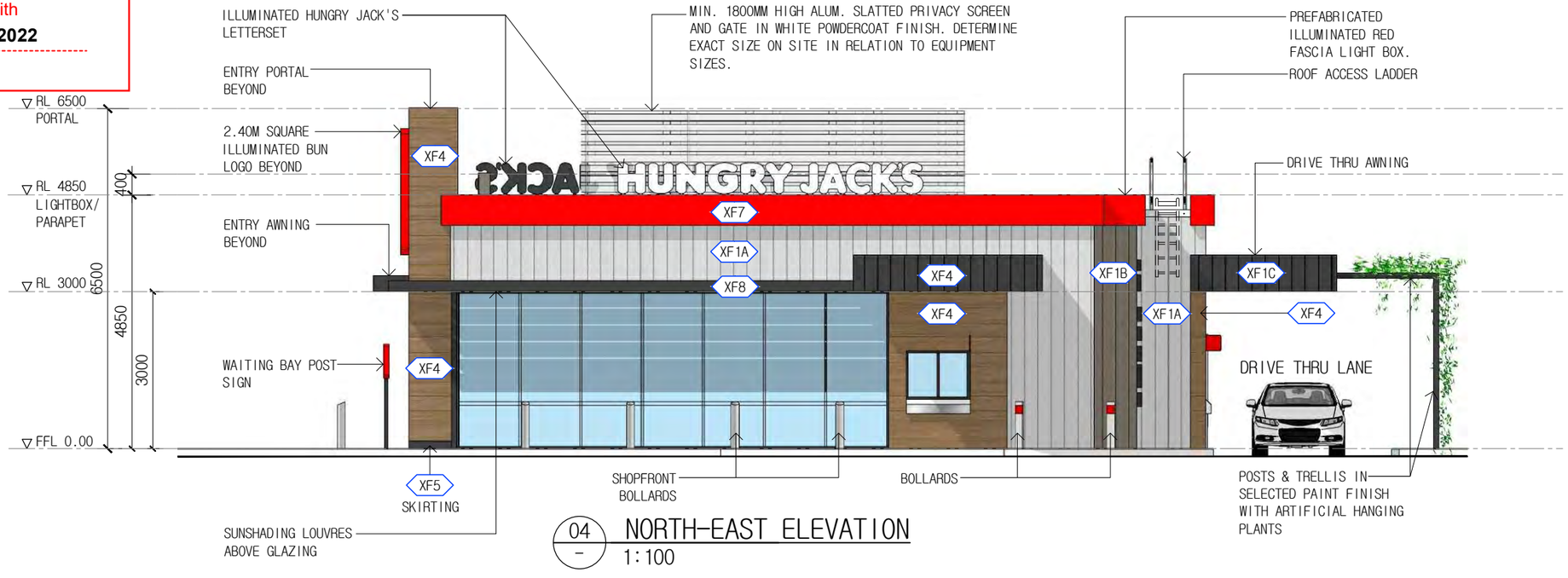

04 – NORTH-EAST ELEVATION
1:100

CLIENT

HUNGRY JACK'S PTY. LTD.
L6 - 100 WILLIAM STREET
WOOLLOOMOOLOO NSW 2011

STATUS
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- DA/ PP
- AMENDED DA
- BA/CC
- TENDER
- CONSTRUCTION

REV	DATE	AMENDMENT	DRW
1	15.11.21	ISSUE FOR HJ REVIEW	NB

PROJECT HUNGRY JACK'S

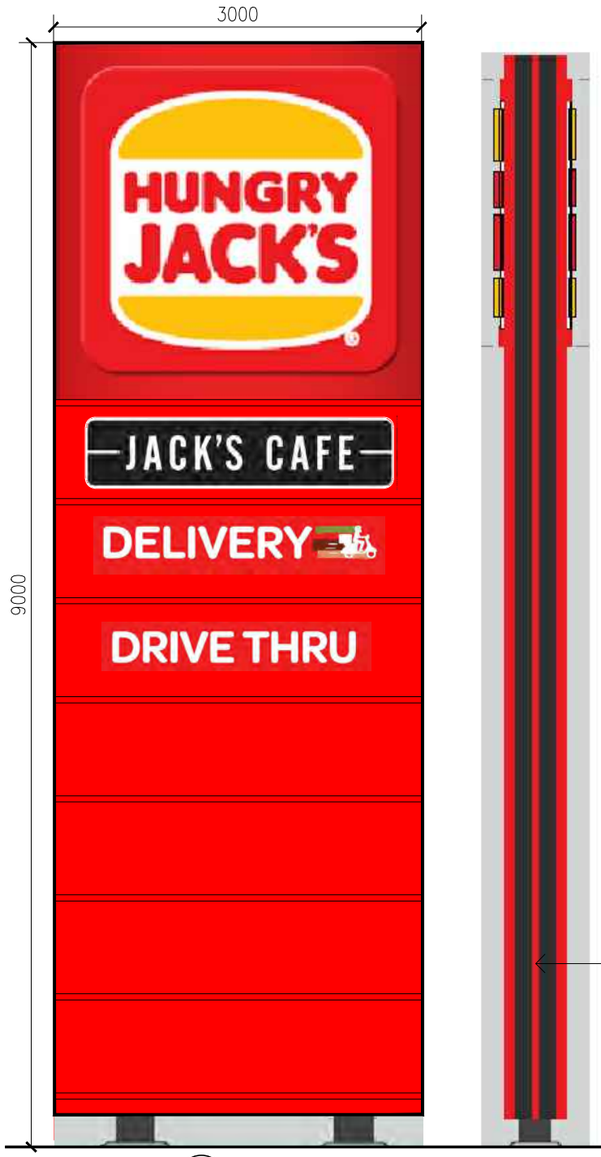
GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE
QLD 4702

DRAWING

ELEVATIONS- SHEET 2

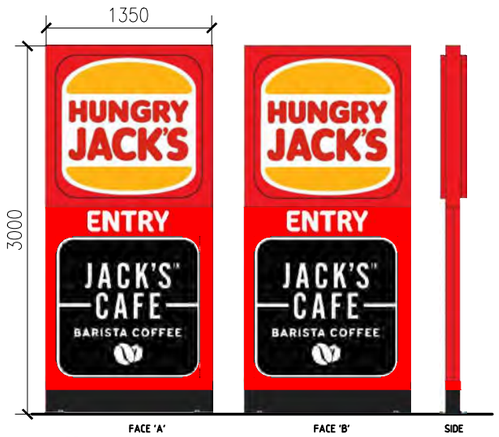
PROJECT NO. 211103 | DATE NOVEMBER 2021
SCALE 1:100@A3 | DRAWING NO. DA04 | REV. 1

63 WYNDHAM STREET
ALEXANDRIA NSW 2015
ABN 47 627 526 881
PH : 02 8590 5185
info@fangarchitects.com.au
Nominated Architect: Shyan Fang (Reg 7958)
FANG ARCHITECTS



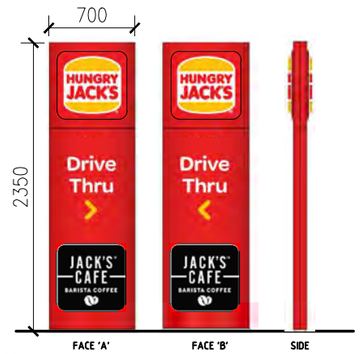
S01 DA05 PYLON SIGN
SCALE 1:50

SUPPLY BY HJ'S, FOOTING & INSTALL BY BUILDER.



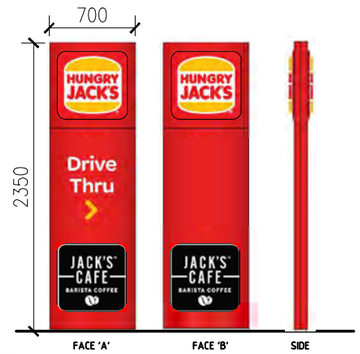
S02 DA01 ILLUMINATED DIRECTIONAL SIGN
SCALE 1:50

SUPPLIED BY HJ'S, FOOTING INSTALLED BY BUILDER.



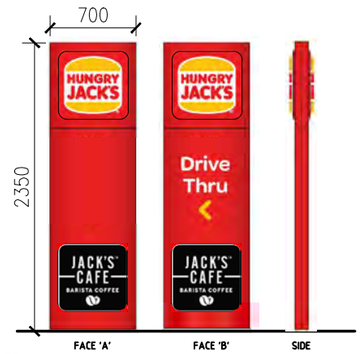
S03 DA01 ILLUMINATED DIRECTIONAL SIGN
SCALE 1:50

SUPPLIED BY HJ'S, FOOTING INSTALLED BY BUILDER.



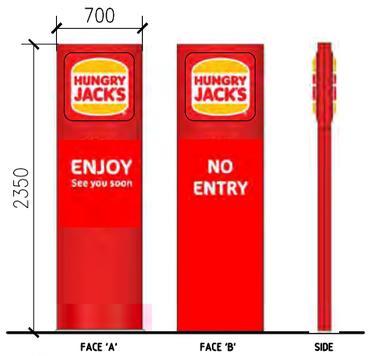
S04 DA01 ILLUMINATED DIRECTIONAL SIGN
SCALE 1:50

SUPPLIED BY HJ'S, FOOTING INSTALLED BY BUILDER.



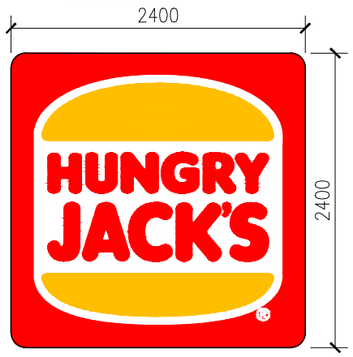
S05 DA01 ILLUMINATED DIRECTIONAL SIGN
SCALE 1:50

SUPPLIED BY HJ'S, FOOTING INSTALLED BY BUILDER.



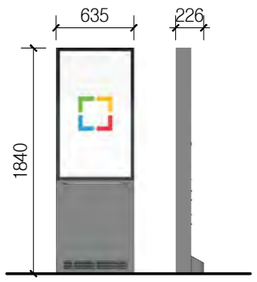
S06 DA01 ILLUMINATED DIRECTIONAL SIGN
SCALE 1:50

SUPPLIED BY HJ'S, FOOTING INSTALLED BY BUILDER.



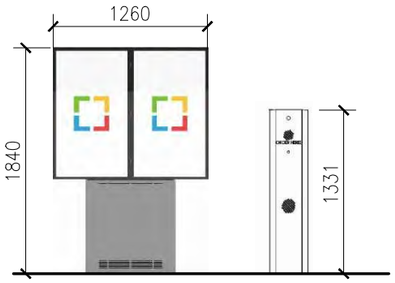
S07 DA01 ILLUMINATED BUN LOGO
SCALE 1:50

SUPPLY BY HJ'S, INSTALL BY BUILDER.



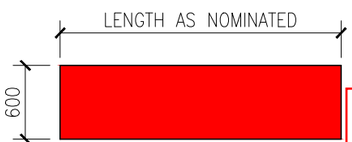
S09 DA01 DIGITAL PREVIEW MENUBOARD
SCALE 1:50

DIGITAL DRIVE THRU PREVIEW MENUBOARD.
SUPPLY & INSTALLATION BY HJ'S.



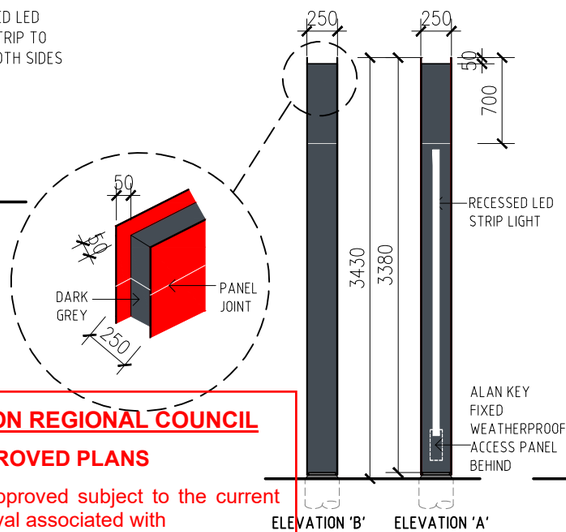
S10 DA01 DIGITAL MENUBOARD & SPEAKER
SCALE 1:50

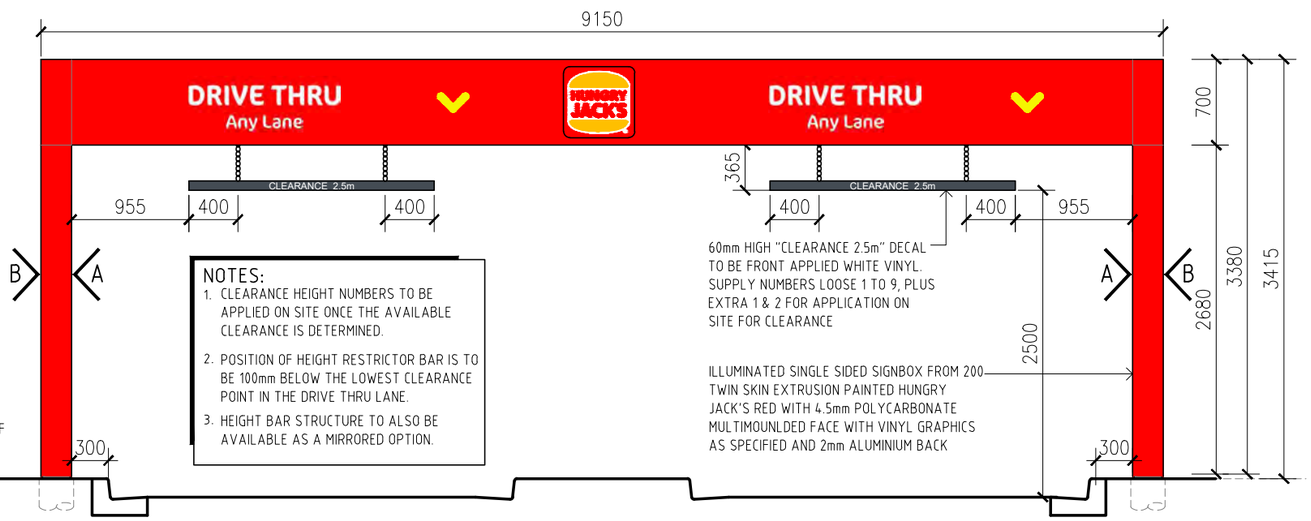
DIGITAL DRIVE THRU MENU BOARDS.
SUPPLY & INSTALLATION BY HJ'S.



S11 DA01 ILLUMINATED RED BAND
SCALE 1:50

ILLUMINATED RED LIGHT BOX.
REFER TO ELEVATION FOR LOCATION.





S08 DA01 HEIGHT BAR
SCALE 1:50

ROCKHAMPTON REGIONAL COUNCIL

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CLIENT
HUNGRY JACK'S PTY. LTD.
L6 - 100 WILLIAM STREET
WOOLLOOMOOLOO NSW 2011

STATUS
- SKETCH
- DA/ PP
- AMENDED DA
- BA/CC
- TENDER
- CONSTRUCTION

REV	DATE	AMENDMENT	DRW
1	15.11.21	ISSUE FOR HJ REVIEW	NB

PROJECT HUNGRY JACK'S

GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE
QLD 4702

DRAWING
SIGNAGE DETAILS
SHEET 1

PROJECT NO. 211103 | DATE NOVEMBER 2021
SCALE 1:50@A3 | DRAWING NO. DA05 | REV. 1

63 WYNDHAM STREET
ALEXANDRIA NSW 2015
ABN 47 627 526 881
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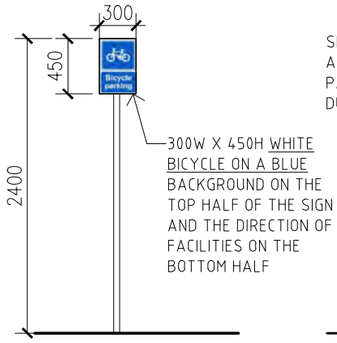
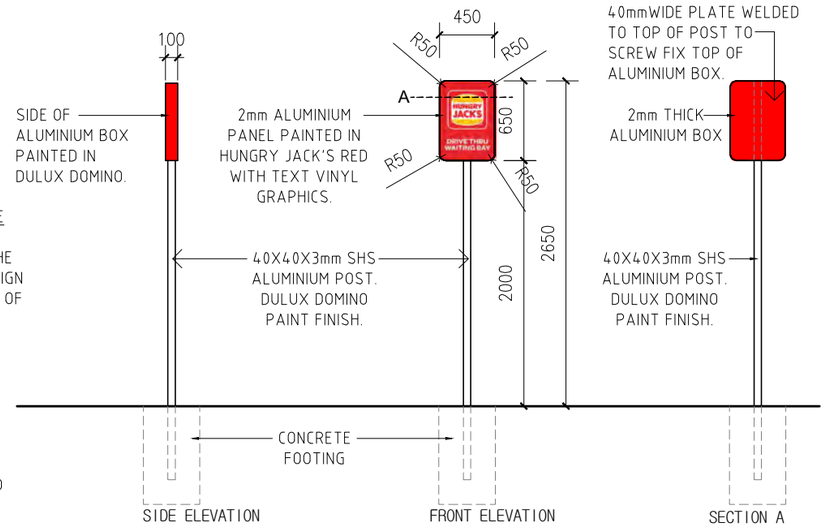
info@fangarchitects.com.au
Nominated Architect: Shyan Fang (Reg 7958)
FANG ARCHITECTS



300W X 450H WHITE BICYCLE ON A BLUE BACKGROUND ON THE TOP HALF OF THE SIGN AND THE DIRECTION OF FACILITIES ON THE BOTTOM HALF

S12 DA01 BIKE SIGN SCALE 1:50

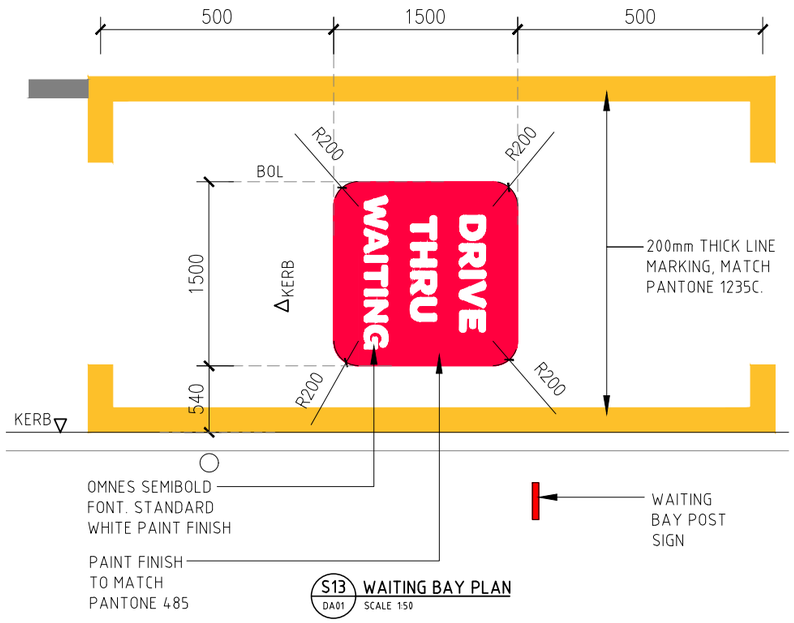
STANDARD ROAD SIGN COMPLY WITH QLD ROAD. SUPPLY & INSTALL BY BUILDER.



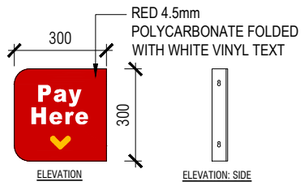
S13 DA01 WAITING BAY POST SIGN SCALE 1:50

2mm THICK ALUMINUM BOX PAINTED IN HJ RED. ENLARGED WAITING BAY SIGN TO FRONT FACE.

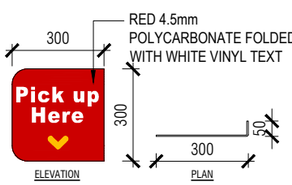
POST SIGNAGE BLOW UP



S13 DA01 WAITING BAY PLAN SCALE 1:50



S14a DA01 DRIVE THRU WINDOW SIGNS SCALE 1:20



S14b DA01 DRIVE THRU WINDOW SIGNS SCALE 1:20

NOTE:

- ALL SITE SIGNAGE WILL BE SUPPLIED BY HJ AND INSTALLED BY HJ CONTRACTOR UNLESS NOTED OTHERWISE. BUILDER TO PROVIDE FOOTING & ADEQUATE SUPPORT FOR ALL NEW SIGNAGES
- STATUTORY SIGN AND ALL DOOR SIGN BY BUILDER UNLESS NOTED OTHERWISE
- REFER TO EQUIPMENT SCHEDULE FOR OTHER SIGNAGE & GRAPHICS SCOPE OF WORKS

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/48-2022

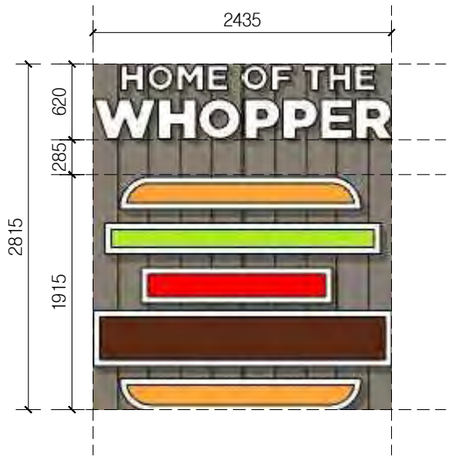
Dated: 22 August 2022

S15 DA01 ILLUMINATED LETTERSET SCALE 1:50

INTERNALLY ILLUMINATED LETTERS WITH WHITE ACRYLLIC FACES. BLACK EDGES.

PRINTED GRAPHIC ON ACM, DIRECT STICK ON WALL BY HJ SIGNAGE CONTRACTOR.

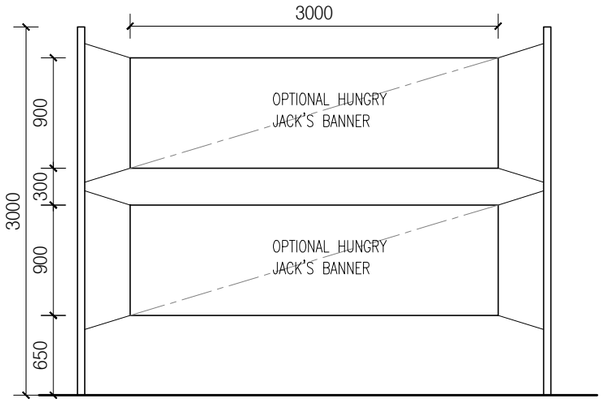
S16 DA01 PRINTED GRAPHIC SCALE 1:50



S17 DA01 ILLUMINATED BURGER STRIP & LETTERSET SCALE 1:50

SPRAY-PAINTED WALL GRAPHIC BY BUILDER

S18 DA01 SPRAY-PAINT GRAPHIC SCALE 1:50



S19 DA01 BANNER POLES & FUTURE BANNER SCALE 1:50 REFER DA01 FOR LOCATION

VERIFY ALL DIMENSIONS AND LEVELS ON SITE AND REPORT ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORK. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL CONTRACT DOCUMENTS. USE FIGURED DIMENSIONS ONLY. DO NOT SCALE FROM DRAWINGS. THE COMPLETION OF THE ISSUE DETAILS CHECKED AND AUTHORISED SECTION IS CONFIRMATION OF THE STATUS OF THE DRAWING. THE DRAWING SHALL NOT BE USED FOR CONSTRUCTION UNLESS ENDORSED 'FOR CONSTRUCTION' AND AUTHORISED FOR ISSUE.

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L6 - 100 WILLIAM STREET
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- SKETCH
- DA/ PP
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REV	DATE	AMENDMENT	DRW
1	15.11.21	ISSUE FOR HJ REVIEW	NB

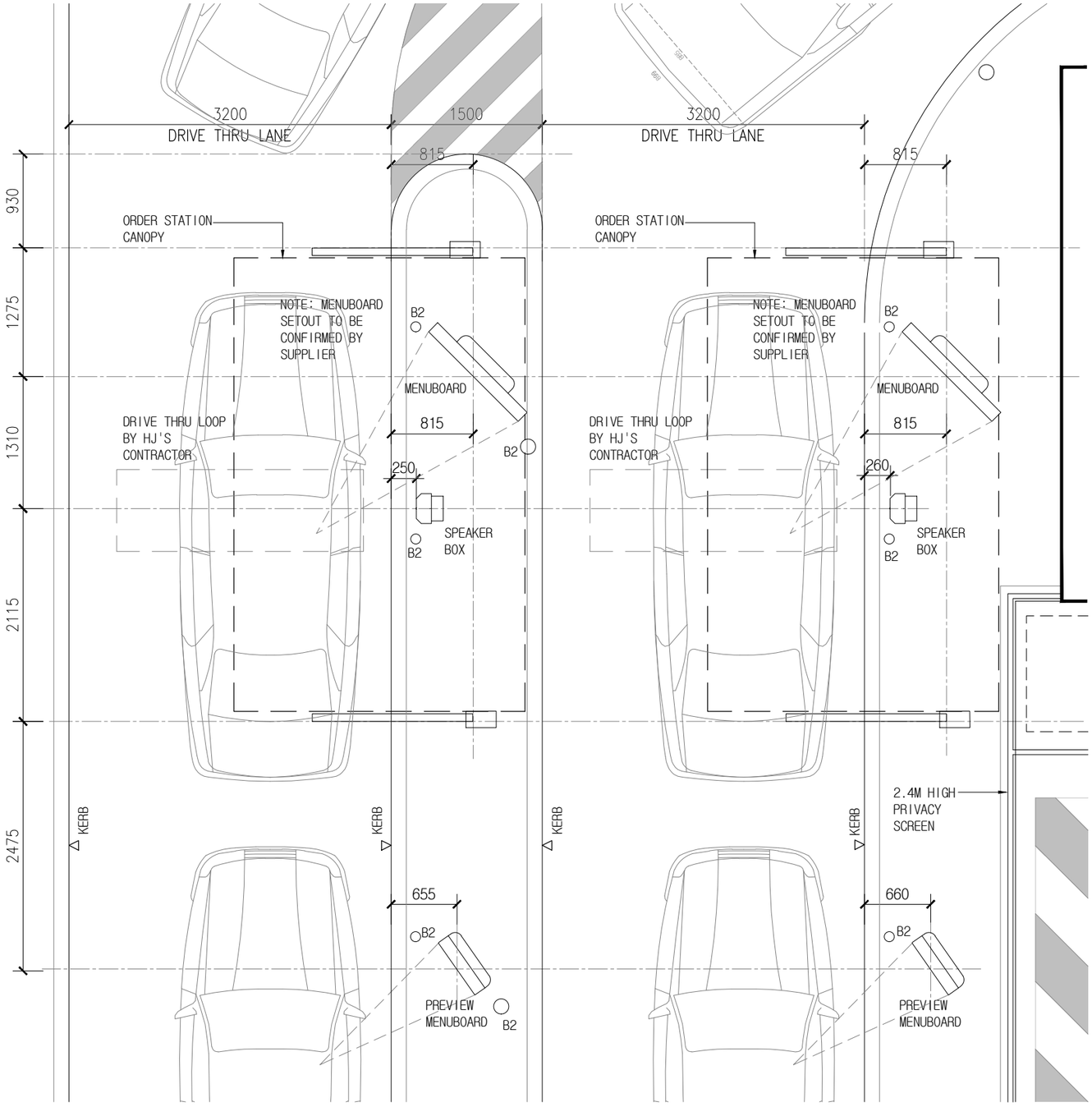
PROJECT HUNGRY JACK'S

GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE
QLD 4702

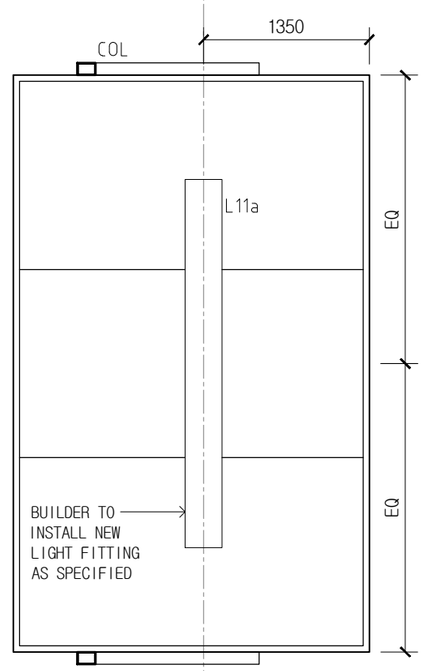
DRAWING
SIGNAGE DETAILS
SHEET 2

PROJECT NO. 211103 | DATE NOVEMBER 2021
SCALE 1:50@A3 | DRAWING NO. DA06 | REV. 1

63 WYNDHAM STREET
ALEXANDRIA NSW 2015
ABN 47 627 526 881
PH : 02 8590 5185
info@fangarchitects.com.au
Nominated Architect: Shyan Fang (Reg 7958)
FANG ARCHITECTS



1 / - ORDER STATION CANPOY & MENUBOARD SETOUT
1:50



2 / - REFLECTED CEILING PLAN
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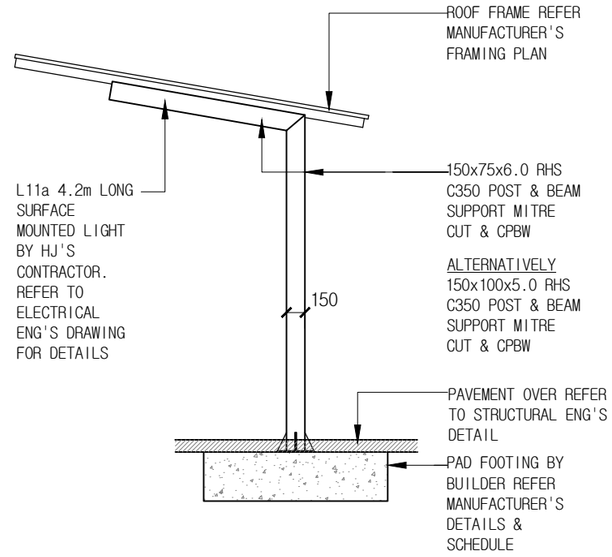
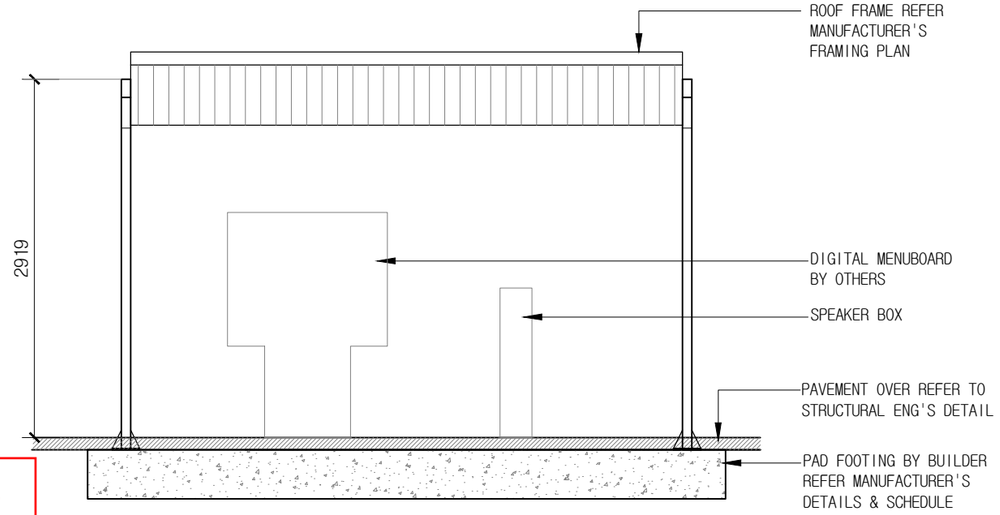


3 / - SIDE ELEVATION
1:50



4 / - FRONT ELEVATION
1:50

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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Development Permit No.: D/48-2022

Dated: 22 August 2022

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- TENDER
- CONSTRUCTION

REV	DATE	AMENDMENT	DRW
1	15.11.21	ISSUE FOR HJ REVIEW	NB

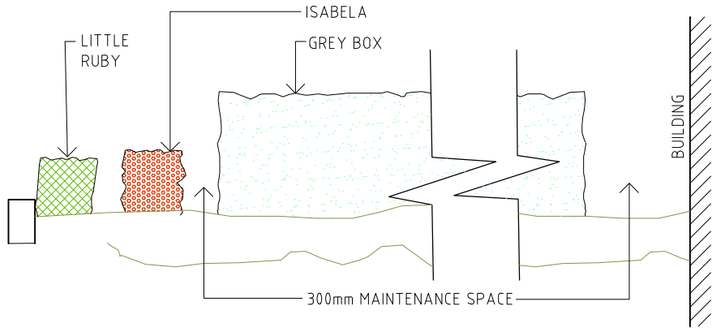
PROJECT HUNGRY JACK'S

GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE
QLD 4702

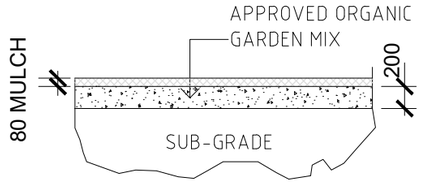
DRAWING
DRIVE THRU ORDER STATION CANOPY DETAILS

PROJECT NO.	DATE	
211103	NOVEMBER 2021	
SCALE	DRAWING NO.	REV.
1:50 @A3	DA07	1

63 WYNDHAM STREET
ALEXANDRIA NSW 2015
ABN 47 627 526 881
PH : 02 8590 5185
info@fangarchitects.com.au
Nominated Architect: Shyan Fang (Reg 7958)
FANG ARCHITECTS



02 – TYPICAL PLANTING & MAINTENANCE SECTION
NTS



03 – SOIL SECTION DETAIL
NTS

NOTE

LANDSCAPE CONTRACTOR TO CHECK ALL PLANT SPACING PRIOR TO CONSTRUCTION. ENSURE ROWS OF PLANTS ARE STAGGERED.

ROCKHAMPTON REGIONAL COUNCIL

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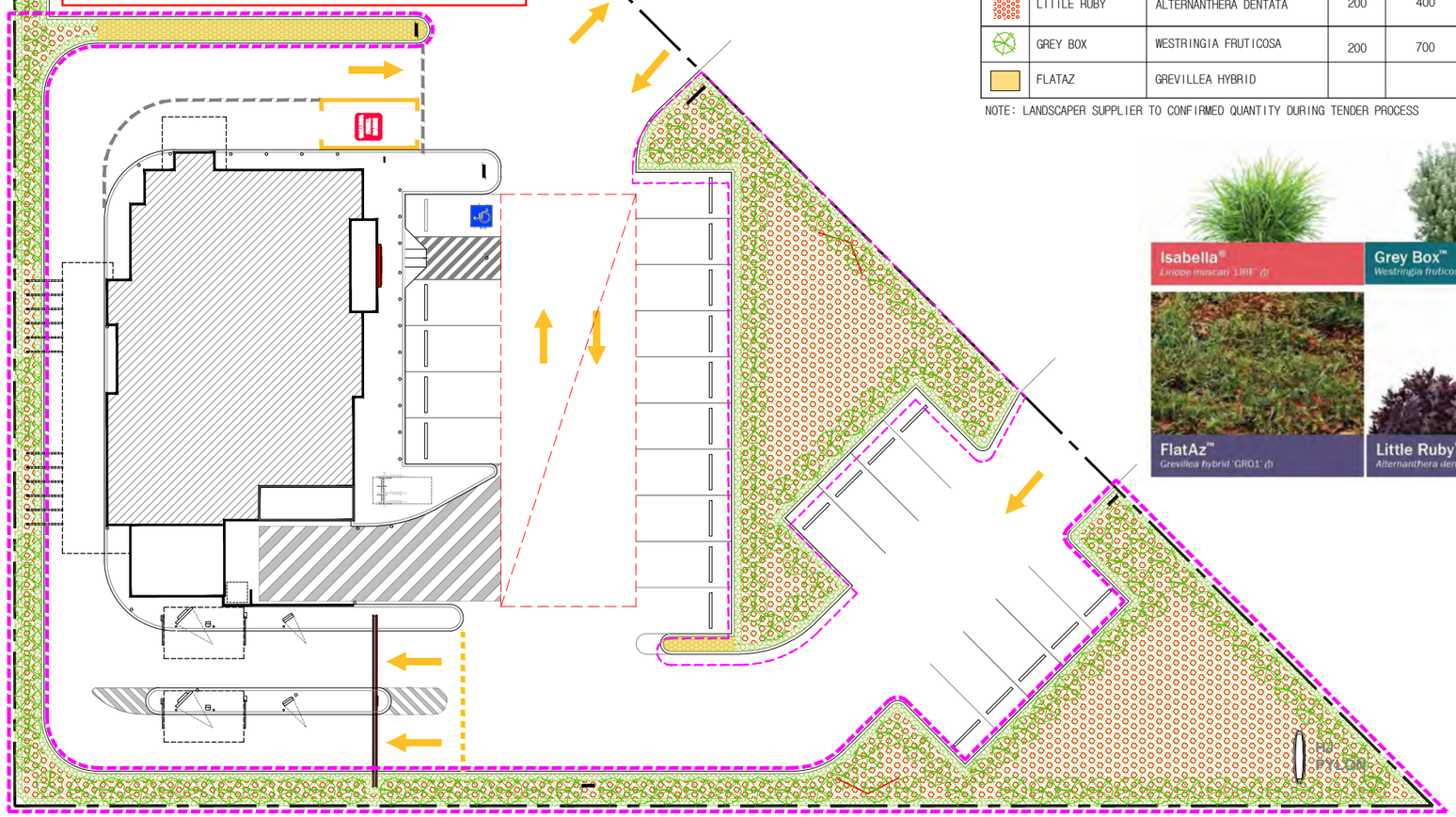

01 – LANDSCAPE PLAN
NTS

DASHED LINE DENOTES PLANTING AT LEAST 200mm HIGH PRIOR HANDOVER

LANDSCAPE SCHEDULE

CODE	COMMON NAME	BOTANICAL NAME	SIZE (mm)	SPACING (mm)	MAINTAINED HEIGHT (mm)
	ISABELLA	LIRIOPE MUSCARI	200	400	400
	LITTLE RUBY	ALTERNANTHERA DENTATA	200	400	400
	GREY BOX	WESTRINGIA FRUTICOSA	200	700	450
	FLATAZ	GREVILLEA HYBRID			

NOTE: LANDSCAPER SUPPLIER TO CONFIRMED QUANTITY DURING TENDER PROCESS

NOTES

1.0 SITE PREPARATION

ANY EXISTING TREES AND VEGETATION TO BE RETAINED SHALL BE PRESERVED & PROTECTED FROM DAMAGE OF ANY SORT DURING THE EXECUTION OF THE CONSTRUCTION WORK. IN PARTICULAR, ROOT SYSTEMS OF EXISTING PLANTS MUST NOT BE DISTURBED IF POSSIBLE ANY NEARBY SITE WORKS SHOULD BE CARRIED OUT CAREFULLY USING HAND TOOLS TO ENSURE THE SURVIVAL AND GROWTH OF EXISTING PLANTS. PROTECT BY FENCING OR ARMOURING WHERE NECESSARY. TREES SHALL NOT BE REMOVED OR LOPPED UNLESS SPECIFIC WRITTEN APPROVAL TO DO SO IS GIVEN OR IS INDICATED ON PLAN. STORAGE OF MATERIALS, MIXING OF MATERIALS, VEHICLE PARKING, DISPOSAL OF LIQUIDS, MACHINERY REPAIRS & REFUELING, SITE OFFICE / SHEDS AND THE LIGHTING OF FIRES SHALL NOT OCCUR WITHIN THREE METRES OF ANY EXISTING TREES. DO NOT STOCKPILE SOIL, RUBBLE OR OTHER DEBRIS CLEARED FROM THE SITE, OR BUILDING MATERIALS, WITHIN THE DRIP LINE OF EXISTING TREES. VEHICULAR ACCESS SHALL NOT BE PERMITTED WITHIN THREE METRES OF ANY TREE.

2.0 SOIL PREPARATION

ALL PROPOSED PLANTING AREAS ARE TO BE DEEP RIPPED TO 200MM AND CLAY SOILS TO BE TREATED WITH CLAY BREAKER. 150MM DEPTH OF GOOD QUALITY PLANTING MIX TO BE IMPORTED AND COMBINED WITH 50MM OF AUSTRALIAN NATIVE LANDSCAPES GREEN LIFE COMPOST OR APPROVED EQUIVALENT. TO BE WORKED IN WITH ROTARY HOE. CARE SHALL BE TAKEN TO HAND CULTIVATE ANY AREA WHERE EXISTING TREE ROOTS EXIST TO PRESERVE HEALTH OF TREES.

3.0 NEW PLANTINGS

NEWLY PLANTED TREES AND LARGE SHRUBS SHOULD BE SECURED TO STAKES WITH HESSIAN TIES TO PREVENT ROCKING BY WIND. PLANTING HOLES FOR PLANT MATERIAL SHOULD BE LARGE ENOUGH IN SIZE TO TAKE ROOT BALL WITH ADDITIONAL SPACE TO TAKE BACK FILLING OF GOOD QUALITY PLANTING MIX. MATURE HEIGHTS OF PLANTINGS ARE THE GREATEST HEIGHT POSSIBLE IN IDEAL CONDITIONS. THESE HEIGHTS ARE SUBJECT TO PARTICULAR SITE CONDITIONS, POSSIBLE CONTAINER ENVIRONMENTS AND INTENDED HEDGING OR PRUNING FOR FUNCTIONAL REQUIREMENTS SUCH AS AVAILABLE WIDTH, INTENDED ACCESS UNDER BRANCHES AND SOLAR ACCESS. ALL PLANTS TO BE WELL GROWN, DISEASE FREE SOURCED FROM LOCAL NURSERY STOCK AND TRUE TO SPECIES TYPE. NO SPECIES TO BE SUBSTITUTED WITHOUT APPROVAL FROM ARCHITECT.
NO VARIEGATED VARIETY TO BE USED UNLESS SPECIFIED IN PLANTING SCHEDULE. TREES: SHALL COME IN CONTAINERS 35 LITRE IN SIZE OR MORE, IN POTS OR IN EQUIVALENT GROWING BAGS. TO HAVE A DEVELOPED STRAIGHT STEM AND TRUNK CALLIPER AND TOTAL HEIGHT AND SPREAD EQUAL TO BEST NURSERY QUALITY AND SIZE FOR THE CONTAINER. ADVANCED SHRUBS SHALL BE WELL ESTABLISHED CONTAINER GROWN PLANTS WITH A SINGLE LEADING SHOOT WELL FURNISHED WITH BUDS AND LEAVES AND BE OF A TOTAL HEIGHT AND SPREAD EQUAL TO BEST NURSERY QUALITY AND SIZE FOR EACH NOMINATED SPECIES AND CONTAINER SIZE. SEMI-ADVANCED GROUNDCOVERS: SHALL COME IN 150MM 5 LITRE POTS SHALL HAVE A STRONG PRIMARY SHOOT WITH DEVELOPING SECONDARY SHOOTS.

4.0 MULCHING

ALL PLANTING AREAS TO BE MULCHED WITH A MINIMUM 75MM THICK COVER OF 10-25mm FOREST MULCH AS SPECIFIED. MULCH AND THOROUGHLY SOAK ALL PLANTED AREAS WITH WATER. ALL MULCH SHALL BE FREE OF VEGETATIVE REPRODUCTIVE PARTS OF ALL WEED SPECIES. FINISH HEIGHT OF MULCH IS TO BE 20mm BELOW THE HEIGHT OF ADJOINING KERBS / PAVING.

5.0 FERTILISER

ALL PLANTING AREAS TO BE FERTILISED WITH 9 MONTH 'NPK' SLOW RELEASE FERTILISER. MASS PLANTED AREAS: ALLOW ONE SLOW RELEASE AGRIFORM PELLET PER 5-25 LITRE PLANT. ALL FERTILISERS TO BE APPLIED IN ACCORDANCE WITH MANUFACTURES INSTRUCTIONS. TURFED AREAS: SUPPLY AND INSTALL AGRIFORM SLOW RELEASE FERTILISER OR APPROVED EQUIVALENT LAWN START FERTILISER APPLIED AT THE RATE RECOMMENDED BY THE MANUFACTURER.

6.0 STAKING

TO THOSE PLANTS INDICATED ON THE PLANTING SCHEDULES PROVIDE: HARDWOOD STAKES AS NOMINATED AND DRIVEN INTO GROUND TO A DEPTH ABLE TO ACHIEVE RIGID SUPPORT AND TO FINISH A MINIMUM OF 800-1000MM ABOVE FINISHED LEVELS. PLACE STAKE AT EDGE OF PLANTS ESTABLISHED ROOT ZONE AND SUPPORT PLANT WITH HESSIAN TIED IN FIGURE EIGHT APPROXIMATELY 300- 800MM (DEPENDING ON PLANT) ABOVE FINISHED LEVELS AS REQUIRED. HESSIAN TO BE SECURELY STAPLED TO THE STAKE.

7.0 PLANT REQUIREMENTS

A MINIMUM SPACING BETWEEN SPECIES TO BE ACHIEVED AT ALL TIMES UNLESS OTHERWISE INDICATED. MASSED PLANTED AREAS ARE TO BE ALIGNED IN NEAT ROWS USING THE SPACING GUIDE PROVIDED IN THE PLANTING SCHEDULE FOR EACH INDIVIDUAL SPECIES.

8.0 SUB SOIL

EXTENT OF ROCK AND OTHER SUB-SOIL MATERIAL TO BE DETERMINED ON SITE. ALTERATIONS FOR ROCK EXCAVATION AND ADDITIONAL SUB-SOIL DRAINAGE TO BE APPROVED PRIOR TO PROCEEDING.

9.0 IRRIGATION SYSTEM

REFER TO SPECIFICATION FOR DRIP IRRIGATION SYSTEM REQUIREMENTS. IRRIGATION LINES MUST BE BURIED IN THE SOIL. SURFACE MOUNTED INSTALLATIONS COVERED BY MULCH ONLY WILL BE REJECTED.

10.0 MAINTENANCE

MAINTAIN ALL LANDSCAPING AS NECESSARY TO ESTABLISH A HIGH QUALITY OUTCOME. REFER TO THE SPECIFICATION FOR LANDSCAPE MAINTENANCE REQUIREMENTS AND TIMEFRAME / FREQUENCY. REFER TO THE SPECIFICATION FOR LANDSCAPE MAINTENANCE FORM WHICH IS REQUIRED TO BE FILLED OUT BY THE LANDSCAPE CONTRACTOR AND SIGNED BY THE STORE MANAGER AT EACH SITE VISIT.

VERIFY ALL DIMENSIONS AND LEVELS ON SITE AND REPORT ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORK. DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL CONTRACT DOCUMENTS. USE FIGURED DIMENSIONS ONLY. DO NOT SCALE FROM DRAWINGS. THE COMPLETION OF THE ISSUE DETAILS CHECKED AND AUTHORISED SECTION IS CONFIRMATION OF THE STATUS OF THE DRAWING. THE DRAWING SHALL NOT BE USED FOR CONSTRUCTION UNLESS ENDORSED 'FOR CONSTRUCTION' AND AUTHORISED FOR ISSUE.

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1	15.11.21	ISSUE FOR HJ REVIEW	NB

PROJECT HUNGRY JACK'S

GRACEMERE
CORNER OF LAWRIE & JOHN STREET GRACEMERE QLD 4702

DRAWING

LANDSCAPE PLAN

PROJECT NO. 211103 | DATE NOVEMBER 2021
SCALE NTS@A3 | DRAWING NO. DA08 | REV. 1

63 WYNDHAM STREET
ALEXANDRIA NSW 2015
ABN 47 627 526 881
PH : 02 8590 5185
info@fangarchitects.com.au
Nominated Architect: Shyan Fang (Reg 7958)
FANG ARCHITECTS

Stormwater Management Report

PROPOSED FOOD AND DRINK OUTLETS

Lot 604 on R2642

6 Lawrie Street, Gracemere, QLD

For Gibb Group Development Management Pty Ltd

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/48-2022

Dated: 22 August 2022

Davey Engineering Solutions Pty Ltd

Yeppoon, QLD 4703

0419 872 040

admin@daveyes.com.au

DAVEY
ENGINEERING
SOLUTIONS

Contents

Revision History
Issue A – 13 April 2022

Jeff Davey Digitally signed by Jeff Davey Date: 2022.04.13 13:15:46 +10'00'

Jeff Davey
B.Eng (Hons), RPEQ 8386, JP (Qual)

23 Dune Circle, Lammermoor, QLD 4703

Telephone (07) 49 33 69 61

Davey Engineering Solutions Pty Ltd
ABN 66 502 462 702
Email: admin@daveyes.com.au

1.0 INTRODUCTION

Davey Engineering Solutions Pty Ltd has prepared the following report to address the Stormwater Management associated with the Material Change of Use (MCU) for Food and Drink Outlets. The development frontage is located on the corner of Lawrie & John Streets on existing Lot 604 on R2642. The site is 3,187 square metres in area. The proposed development is shown in the image below.

Figure 1 – Site Locality

2.0 EXSTING SITE / PRE-DEVELOPMENT CONDITIONS

Currently the land is a vacant block with light grass cover and few scattered trees. The site generally grades from south to north. Majority of the runoff from the site will discharge on to John Street while a small portion of southern catchment will discharge on to Lawrie Street. The above two discharge locations are the Lawful Point of Discharge for this site. The site is not impacted by any external catchments and post development discharge will be assessed to ensure that there will be no adverse impacts on downstream infrastructures.

3.0 STORMWATER MANAGEMENT

The intent of this Stormwater Management report is to provide guidelines and recommendations to be incorporated into the future Operational Works design to minimise the impact this development has on the surrounding environment, infrastructure and nearby properties. Refer to detailed drawing in Appendix A for proposed drainage catchment details. Catchment 'B' is unchanged in post-development scenario and therefore it is omitted from hydrology and hydraulic assessment.

4.0 HYDROLOGY ASSESSMENT

Hydrologic calculations have been undertaken using XPSTORM 2020.1 for pre and post development scenarios. The modelling within XPSTORM environment has been undertaken to estimate the peak discharge for storms up to 1% AEP. Hydrologic modelling has been undertaken using the Laurenson Runoff Routing Method. Laurenson's Method is an industry leading hydrologic routing method that can be used for catchments ranging between $10m^2$ up to $20,000km^2$.

Table 1 and 2 summarise the input data for the development site in pre-development and post-development conditions.

Table 1: Pre-Development Model Parameters (XP Storm)

Parameter		Existing Site (Catchment A)
		Vacant Land
Area (ha)		0.283
Impervious (%)		0.0
Slope (%)		2.0
Laurenson 'n' (storage non-linearity exponent)		-0.285
Infiltration	Initial Loss (mm/hr)	0.0
	Continuing Loss (mm/hr)	2.5
Manning's Roughness (n)		0.030

Table 2: Post-Development Model Parameters (XP Storm)

Parameter		Post-Development (Catchment A)	
		Pavement and Roof	**Landscape**
Area (ha)		0.257	0.026
Impervious (%)		100	0.0
Slope (%)		2.0	2.0
Laurenson 'n' (storage non-linearity exponent)		-0.285	-0.285
Infiltration	Initial Loss (mm/hr)	0.0	0.0
	Continuing Loss (mm/hr)	0.0	2.5
Manning's Roughness (n)		0.014	0.035

ARR'19 ensemble temporal patterns have been applied to the catchments to allow the identification of the critical duration for the mean minor (10% AEP) and major storm (1% AEP) events in accordance with QUDM (Section 7.3). The below figures are screen shots of Box and Whisker plot taken from XPSTORM software. These plots show the comparison of storm ensembles for different durations for minor and major storm events.

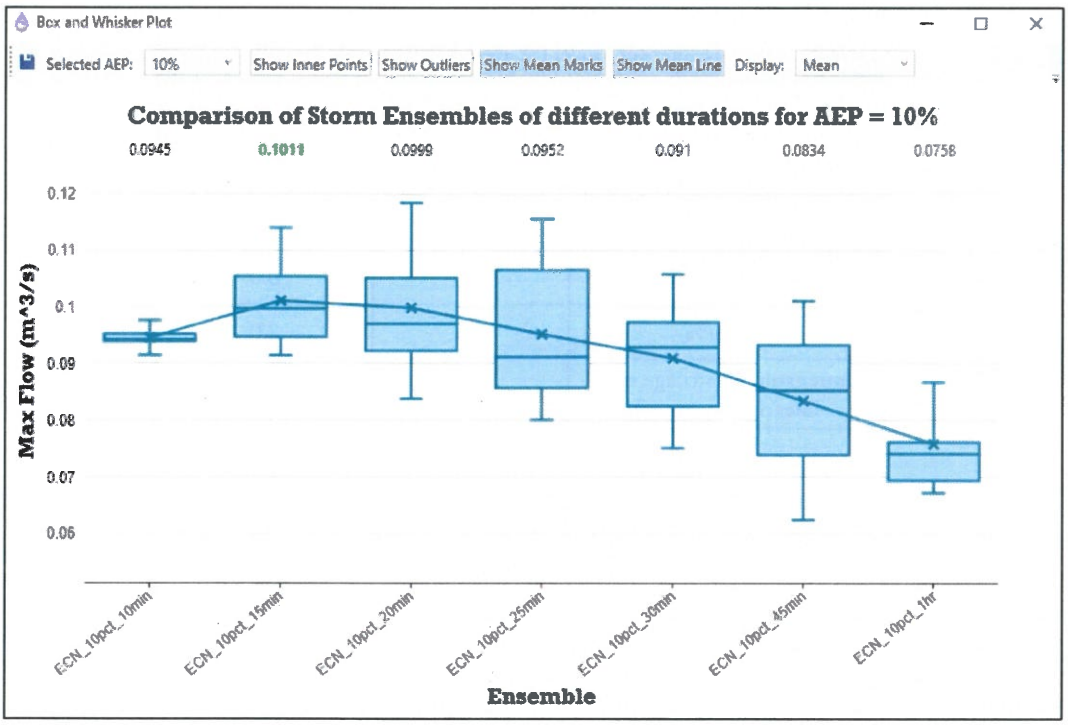


Figure 2 – Pre-Development Minor Storm

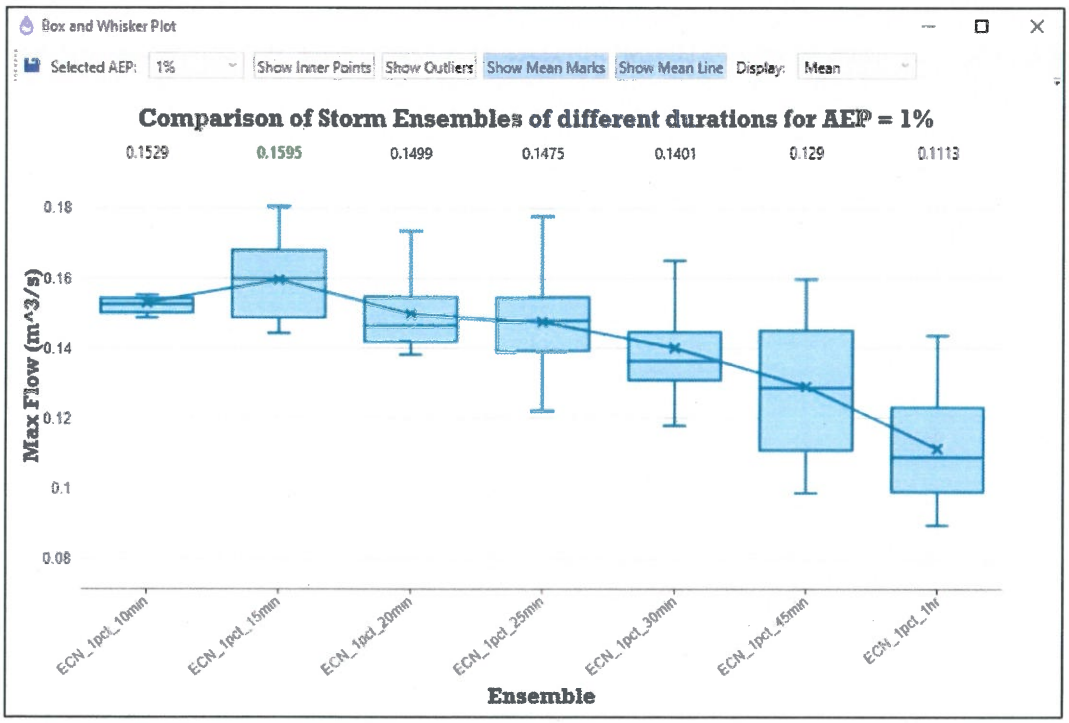


Figure 3 – Pre-Development Major Storm

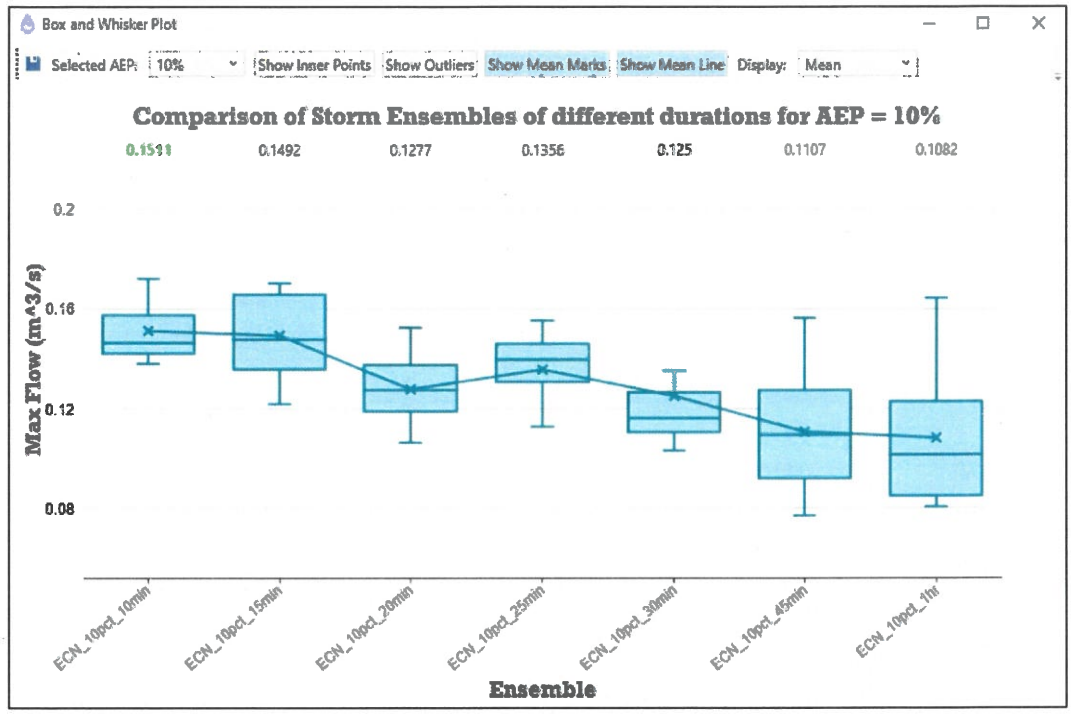


Figure 4 – Post-Development Minor Storm

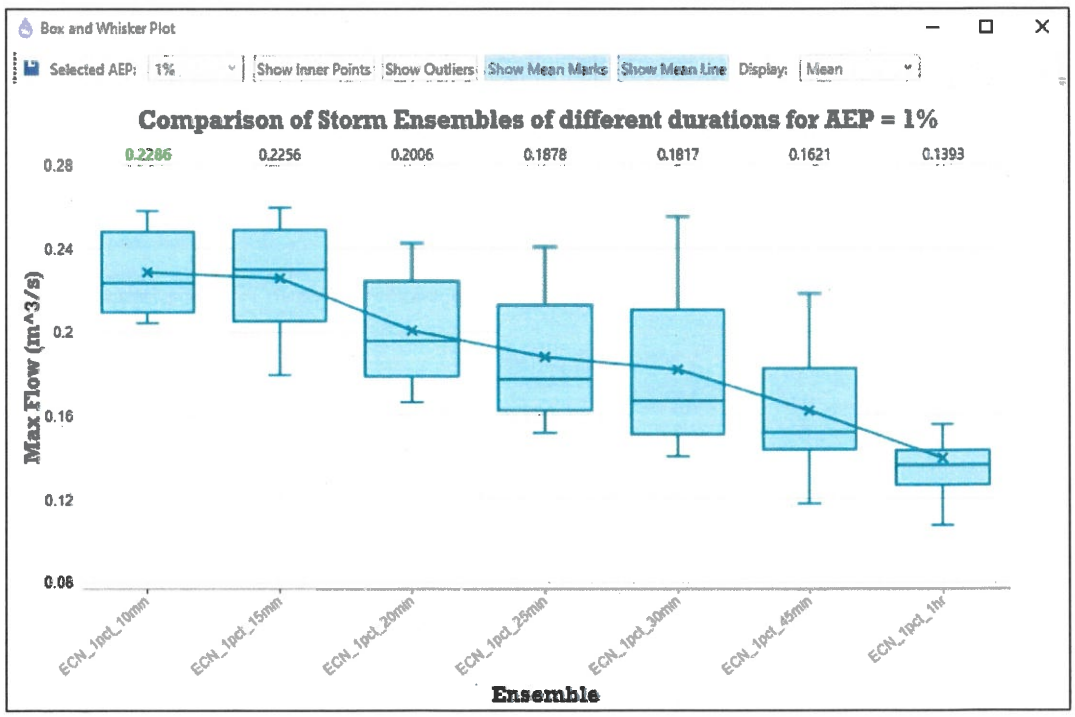
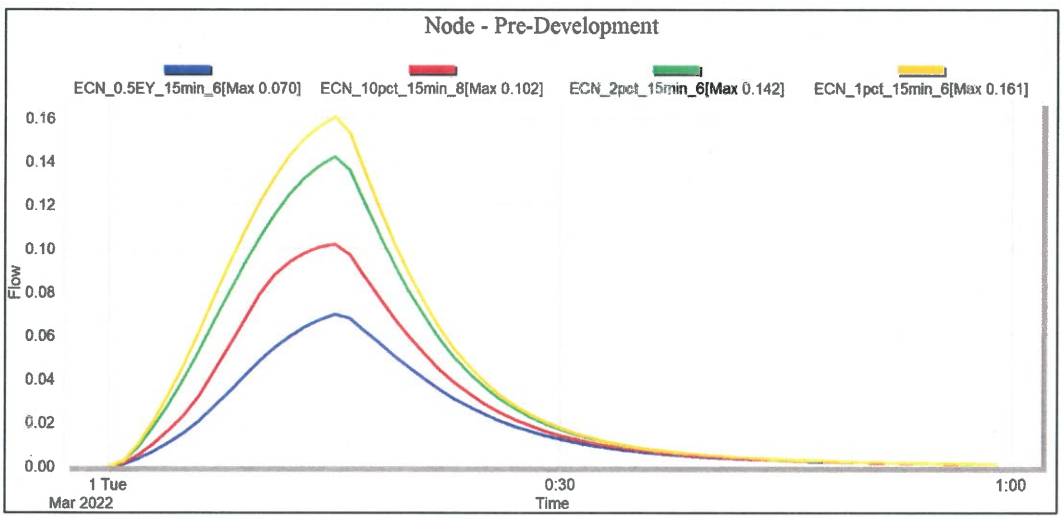


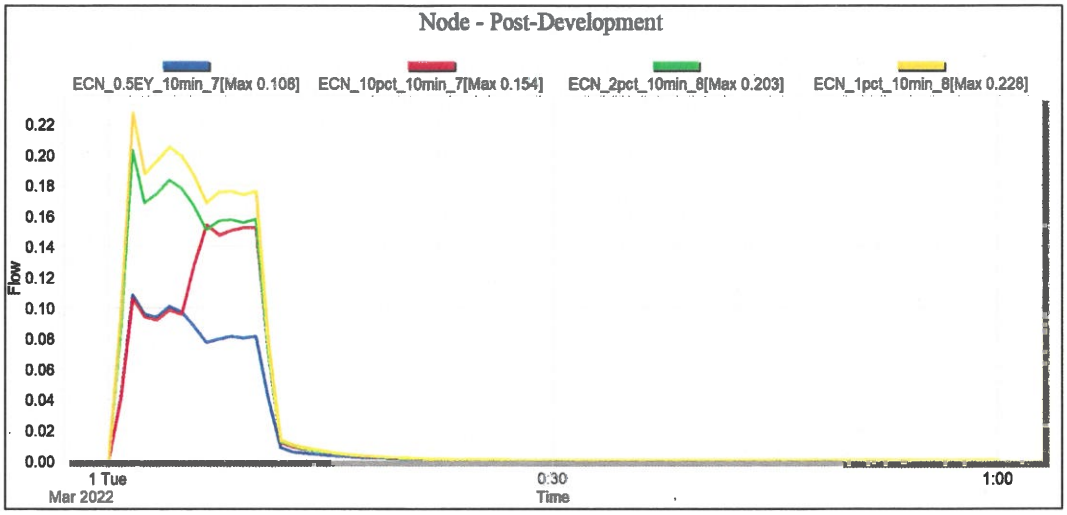
Figure 5 – Post-Development Major Storm

The results of each of the ensembles are summarised in Table 4. The same storm events are applied to the hydraulic analysis. There are multiple 'potential' critical post development storms presented below. This is because all of these storms have a higher peak discharge than the predevelopment case and as such need to be addressed by the proposed mitigation strategy.

Table 3: Critical Storm Events

Recurrence interval	Pre-development Peak Duration Storm (Design Objective)	Post-development Peak Duration Storm	Post-Development Storm Durations Requiring Mitigation (Greater than Design Objective)
0.5EY	0.5EY_15min_6	0.5EY_10min_7	0.5EY_10min_7
			0.5EY_15min_9
			0.5EY_20min_7
10% (minor storm)	10pct_15min_8	10pct_10min_7	10pct_10min_7
			10pct_15min_1
			10pct_20min_1
2%	2pct_15min_6	2pct_10min_8	2pct_10min_8
			2pct_15min_2
			2pct_20min_4
1% (major storm)	1pct_15min_6	1pct_10min_8	1pct_10min_8
			1pct_15min_2
			1pct_20min_4





5.0 HYDRAULIC ASSESSMENT

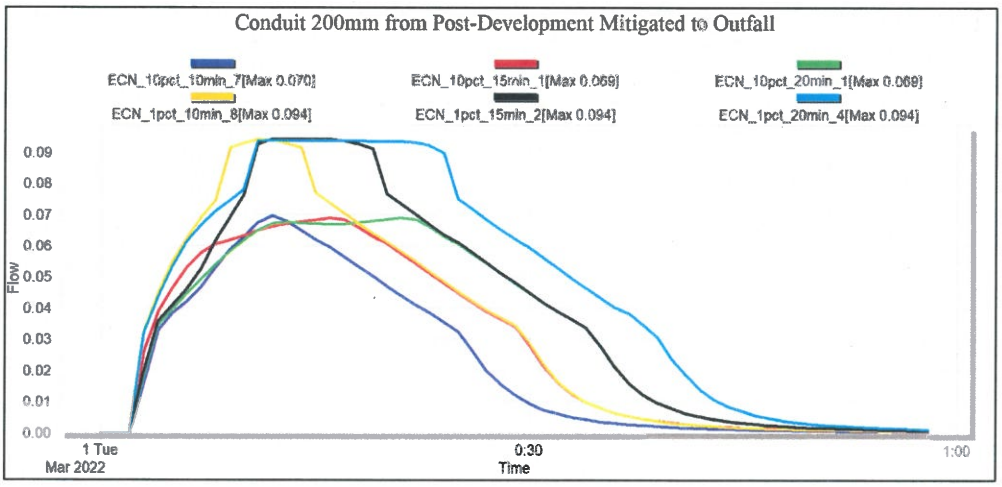
The hydraulic assessment for the site has been carried out using XPSTORM 2020.1. The aim of the hydraulic modelling is to demonstrate that the post-development minor and major storm peak discharge at the LPOD is equal or less than the peak pre-development discharge. This will be achieved by utilising an underground detention tank and restricting outlet conditions.

The proposed site stormwater network will consist of stormwater links and internal stormwater sag pits to convey the site runoff to the underground detention tank. The 200mm outlet and a 5m kerb break will be restricting the runoff to pre-development conditions. The 5m kerb break will act as a weir outlet when the water ponds to a maximum depth of approximately 75mm at the inlet / surcharge pit located above the underground detention tank. The site peak discharge for each site condition is presented below, with critical cases highlighted in yellow. Table 4 demonstrates that the post development peak discharge is limited to pre-development site conditions.

Table 4: Peak Discharge Rate at LPOD

Storm Event (AEP % and duration)	Pre-Development Peak Discharge (m^3/s)	Post-Development Unmitigated Peak Discharge (m^3/s)	Post-Development Mitigated Peak Discharge (m^3/s)		
			Pipe outlet (200mm dia. uPVC)	Weir outlet (5m Kerb Beak)	Total
0.5EY_10min	0.0601	0.1061	0.054	0.000	0.054
0.5EY_15min	00692	0.1015	0.060	0.000	0.060
0.5EY_20min	0.0667	0.0979	0.059	0.000	0.059
10pct_10min	0.0945	0.1511	0.070	0.000	0.070
10pct_15min	0.1011	0.1492	0.069	0.000	0.069
10pct_20min	0.0999	0.1277	0.069	0.000	0.069
2pct_10min	0.1342	0.2004	0.093	0.016	0.109
2pct_15min	0.1418	0.1981	0.094	0.039	0.133
2pct_20min	0.1328	0.1755	0.093	0.010	0.103
1pct_10min	0.1529	0.2286	0.094	0.060	0.154
1pct_15min	0.1595	0.2256	0.094	0.062	0.156
1pct_20min	0.1499	0.2006	0.094	0.035	0.129

The first two flow columns presented in data presented in table 4 (Pre-development Peak flow and Post-Development Unmitigated Peak flow) summarise the hydrology data for the earlier presented Box and Whisker charts for 10%AEP and 1%AEP. The Post-Development Mitigated Peak flow data is derived from the following hydraulic model graphs for 10%AEP and 1%AEP. The process is same for the other storm events and not shown for clarity reasons.



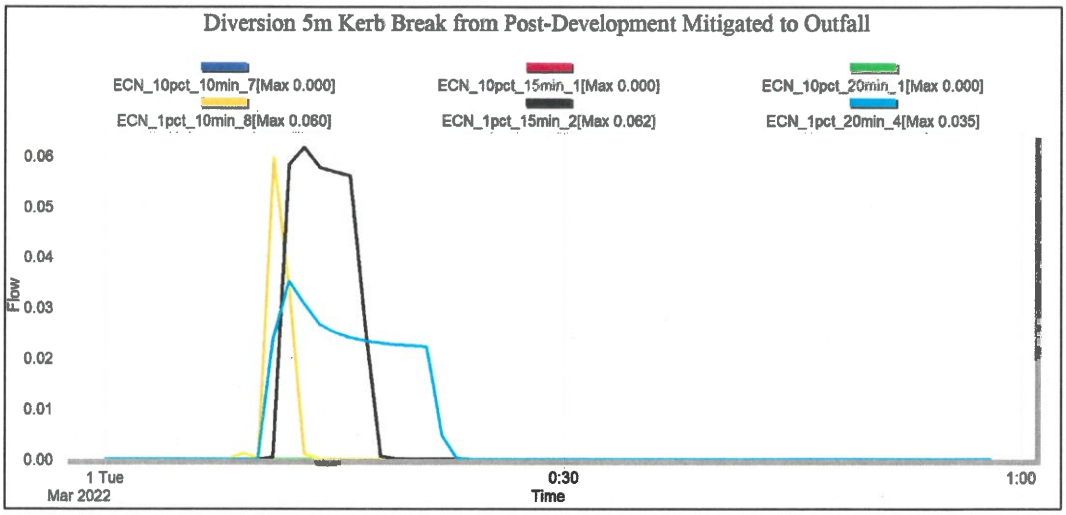


Table 5: Storage Model Parameters

5m Wide Kerb Break (Weir – Major Flow) Surface level	27.575m
Maximum Ponding Depth over Inlet / Surcharge Pit	0.075m
Inlet / Surcharge Pit Surface level	27.5m
Approximate Ponding Area over Inlet / Surcharge Pit	$16m^2$
Assumed Pavement Depth	0.300m
Underground Detention Tank Level below Pavement	27.2m
Underground Detention Tank Depth	1.0m
Invert Level of 200mm Low Flow Outlet at the base of the Underground Detention Tank	26.2m
Approximate Detention Volume	$62m^3$

6.0 STORMWATER QUALITY

The following section describes the preliminary design of the Stormwater Quality Improvement Devices (SQID's) that form a treatment train for the operational phase of the development that complies with State Planning Policy 2017 water quality objectives as follows:

- 85% Reduction of Total Suspended Solids
- 60% Reduction in Total Phosphorus
- 45% Reduction in Total Nitrogen
- 90% Reduction in Gross Pollutants

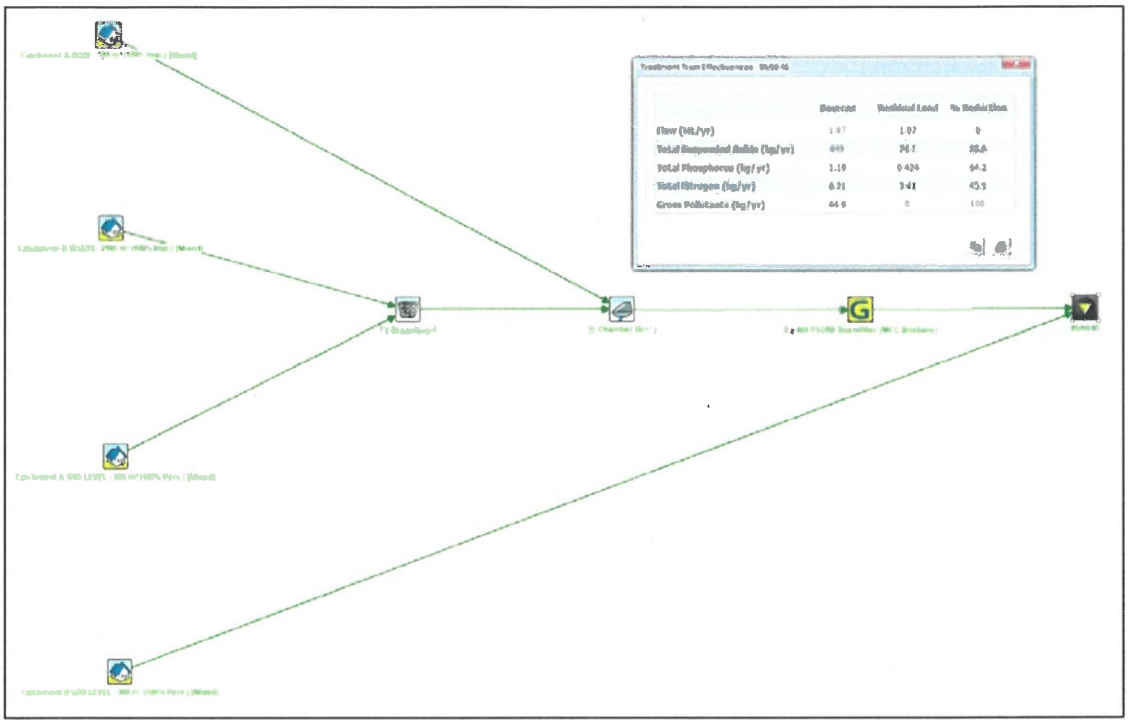
The following guidelines and parameters have been followed in modelling the catchment in MUSIC;

- MUSIC Version 6.3.0
- Rainfall Station 39083 Rockhampton, 6 Minute Time Step From 1980 To 1989
- Water by Design's MUSIC Modelling Guidelines Version 1.0 - 2010 utilizing modified % impervious area, rainfall threshold, soil properties & pollutant concentration
- No drainage routing between nodes

Upon modelling the site's stormwater treatment design, the following Ocean Protect systems are proposed to meet the above prescribed stormwater pollutant reduction:

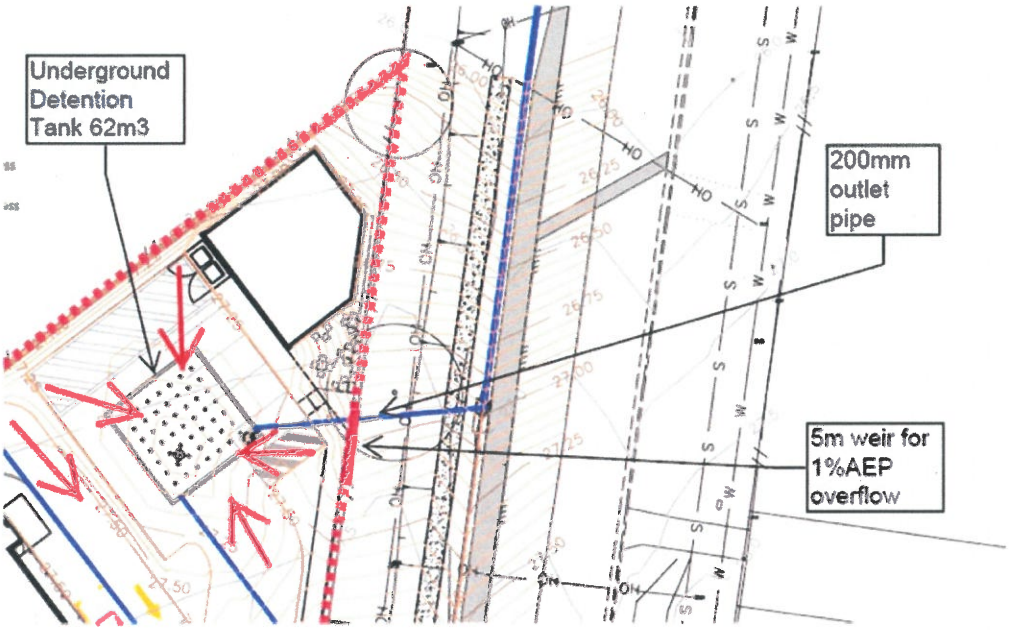
- 8 x Standard (460) PSorb cartridge StormFilter system within a **6m^2 StormFilter chamber**, inside the Underground Tank.
- 7 x OceanGuards with 200µm mesh bags (OG-200)

Electronic copies of the MUSIC models can be provided upon request.



Treatment Train Effectiveness - 85/60/45

	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.97	1.97	0
Total Suspended Solids (kg/yr)	649	74.1	88.6
Total Phosphorus (kg/yr)	1.19	0.424	64.2
Total Nitrogen (kg/yr)	6.21	3.41	45.1
Gross Pollutants (kg/yr)	44.9	0	100



8.0 CONCLUSION

This Stormwater Management Report has been prepared for the proposed Food and Drink development to address stormwater management in relation the site.

The results of the assessment in conjunction with the proposed onsite dentition and water quality treatment devices demonstrate that the proposed development can occur without causing any actionable impact external to the site.

The development is subject to detailed design, and further supporting analysis may be required as part of future Operational works applications.

The analysis and overall approach was specifically catered for the particular project requirements at Material Change of Use stage, and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from our office.

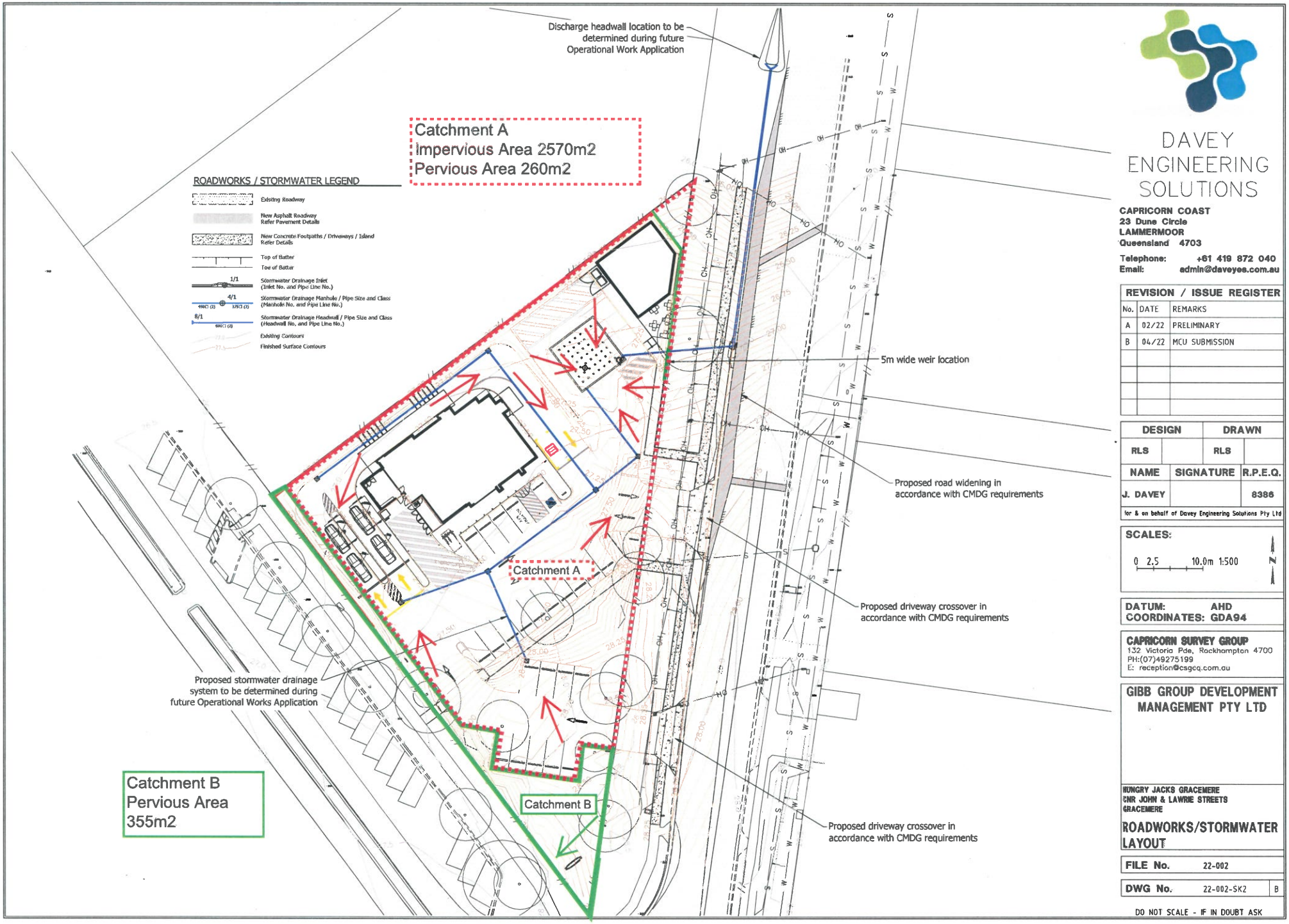
The report is based on the following information provided by others:

- Site Survey prepared by Capricorn Survey Group;
- Proposed development layout prepared by Verve Building Design Co and
- Water Quality Treatment inputs provided by Ocean Protect.

The accuracy of the report is dependent upon the accuracy of this information.

DAVEY ENGINEERING SOLUTIONS

APPENDIX 1



DAVEY ENGINEERING SOLUTIONS
CAPRICORN COAST
23 Dune Circle
LAMMERMOOR
Queensland 4703
Telephone: +61 419 872 040
Email: admin@daveyes.com.au

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B	04/22	MCU SUBMISSION

DESIGN		DRAWN	
RLS		RLS	
NAME	SIGNATURE		R.P.E.Q.
J. DAVEY			8386

for & on behalf of Davey Engineering Solutions Pty Ltd

SCALES:
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N

DATUM: AHD
COORDINATES: GDA94

CAPRICORN SURVEY GROUP
132 Victoria Pde, Rockhampton 4700
PH:(07)49275199
E: reception@csgcq.com.au

GIBB GROUP DEVELOPMENT MANAGEMENT PTY LTD

HUNGRY JACKS GRACEMERE
CNR JOHN & LAWRIE STREETS
GRACEMERE

ROADWORKS/STORMWATER LAYOUT

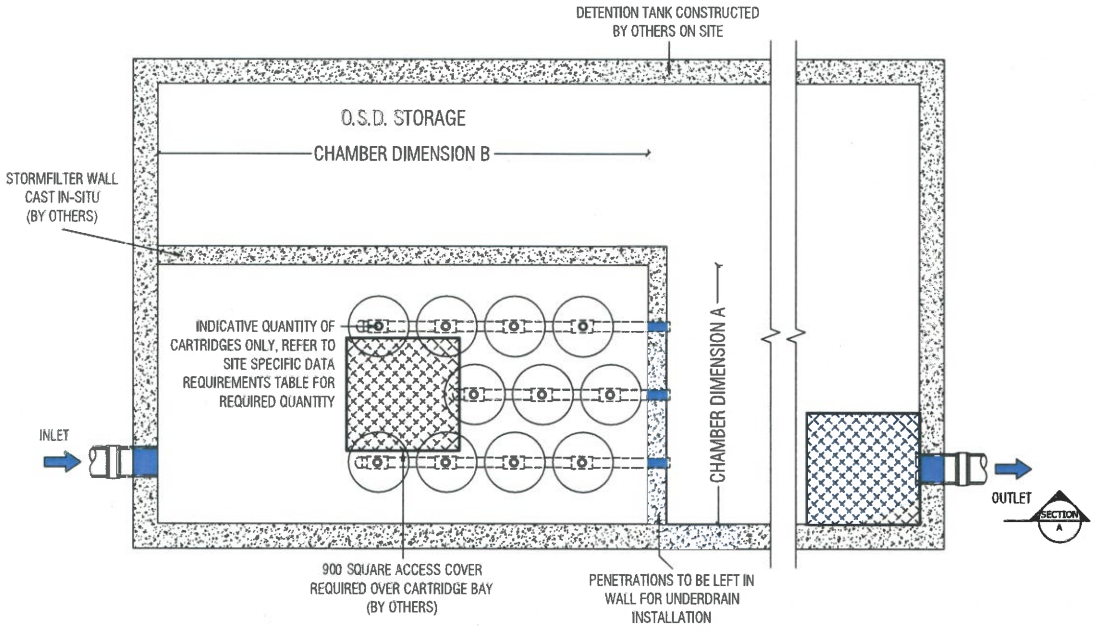
FILE No.	22-002	
DWG No.	22-002-SK2	B

DO NOT SCALE - IF IN DOUBT ASK

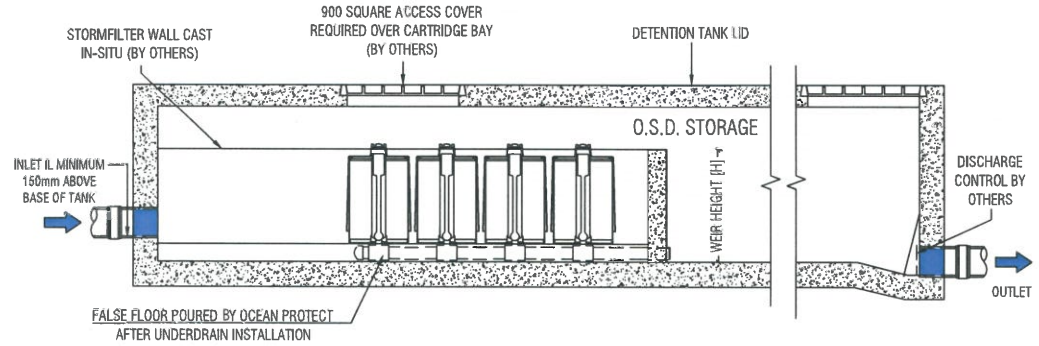
DAVEY ENGINEERING SOLUTIONS

APPENDIX 2

NOT FOR CONSTRUCTION



PLAN LAYOUT

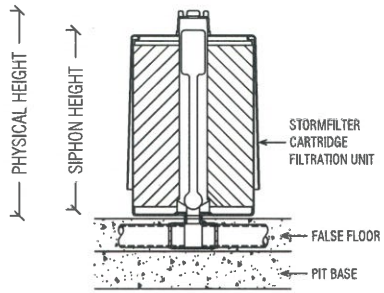


SECTION A

STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CERTIFYING ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 178mm.

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
TYPICAL WEIR HEIGHT [H] (mm)	920	690	540
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.6	1.1	0.7
CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s)	0.9	0.46	0.39



STORMFILTER CARTRIDGE DETAIL

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	[ ]
NUMBER OF CARTRIDGES REQ'D	[ ]
SIPHON HEIGHT (310 / 460 / 690)	[ ]
MEDIA TYPE (ZPG / PSORB)	[ ]
WATER QUALITY FLOW RATE (L/S)	[ ]
DIMENSION A	[ ]
DIMENSION B	[ ]

TOTAL CARTRIDGE BAY AREA (A x B) TO MATCH AREA REQUIRED BY MUSIC MODELLING OR COUNCIL SPECIFIC REQUIREMENTS

GENERAL NOTES

1. INLET AND OUTLET PIPES TO BE IN ACCORDANCE WITH APPROVED PLANS.
2. A HIGH FLOW BYPASS ARRANGEMENT OR DISSIPATION STRUCTURE MAY BE REQUIRED TO MINIMISE RE-SUSPENSION OF SOLIDS OR ANY SIGNIFICANT INERTIAL FORCES ON THE CARTRIDGES.
3. ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
4. SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
5. THE INVERT LEVEL OF THE INLET PIPE MUST BE GREATER THAN THE RL OF THE FALSE FLOOR WITHIN THE CARTRIDGE CHAMBER.
6. CONCRETE STRUCTURE AND ACCESS COVERS DESIGNED AND PROVIDED BY OTHERS. ACCESS COVERS TO BE A MINIMUM 900 X 900 ABOVE CARTRIDGES. OH&S REGARDING ACCESS COVERS AND TANK ACCESS TO BE ASSESSED BY OTHERS ON SITE.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES.
8. DRAWINGS NOT TO SCALE.

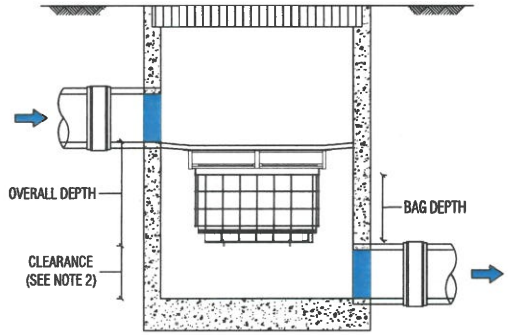
INSTALLATION NOTES

1. UNDERDRAIN AND FALSE FLOOR INSTALLED BY OCEAN PROTECT.

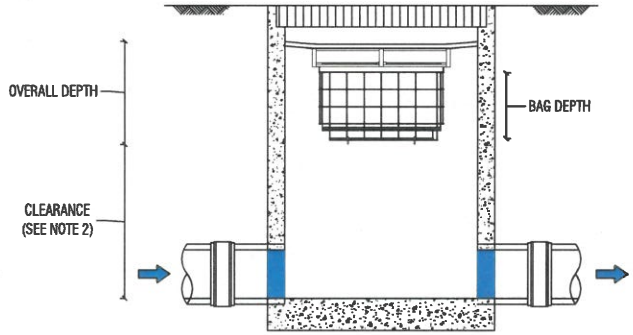
OCEAN PROTECT
PHONE: 1300 354 722
www.oceanprotect.com.au

OCEAN PROTECT
STORMFILTER SYSTEM
DETENTION TANK ARRANGEMENT
SPECIFICATION DRAWING

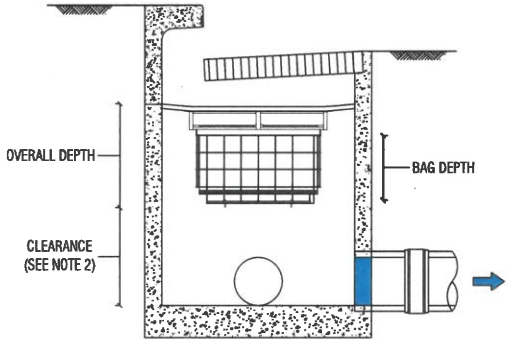
LAST MODIFIED: 07-03-19



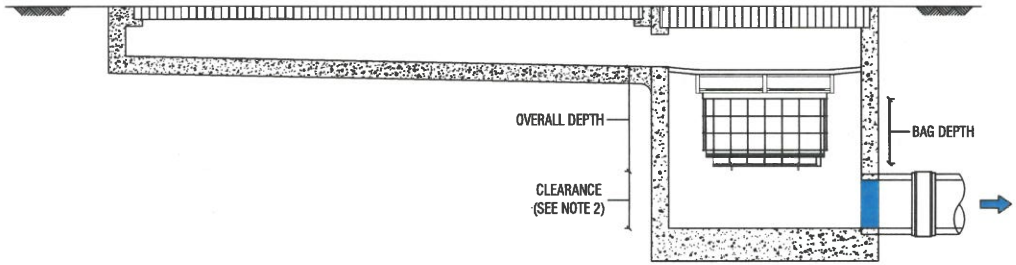
PIPE FLOW CONFIGURATION



SURFACE FLOW CONFIGURATION



SURFACE FLOW CONFIGURATION



GRATED STRIP DRAIN CONFIGURATION

PLAN ID	MAXIMUM PIT PLAN DIMENSIONS
S	450mm x 450mm
M	600mm x 600mm
L	900mm x 900mm
XL	1200mm x 1200mm

DEPTH ID	BAG DEPTH	OVERALL DEPTH
1	170	270
2	300	450
3	600	700

		DEPTH ID		
		1	2	3
PLAN ID	S	■		
	M	■	■	
	L	■	■	■
	XL	■	■	■

GENERAL NOTES

1. THE MINIMUM CLEARANCE DEPENDS ON THE CONFIGURATION (SEE NOTE 2) AND THE LOCAL COUNCIL REQUIREMENTS.
2. CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS, THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
3. OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES:- 200 MICRON BAGS FOR HIGHER WATER QUALITY FILTERING AND A COARSE BAG FOR TARGETING GROSS POLLUTANTS.
4. DRAWINGS NOT TO SCALE.

OCEAN PROTECT
PHONE: 1300 354 722
www.oceanprotect.com.au

OCEAN PROTECT
OCEANGUARD
TYPCIAL ARRANGEMENTS
SPECIFICATION DRAWING

LAST MODIFIED: 15-10-19

Engineering Services Report

PROPOSED FOOD AND DRINK OUTLETS

Lot 604 on R2642

6 Lawrie Street, Gracemere, QLD

For Gibb Group Development Management Pty Ltd

ROCKHAMPTON REGIONAL COUNCIL

APPROVED PLANS

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

Development Permit No.: D/48-2022

Dated: 22 August 2022

Davey Engineering Solutions Pty Ltd

Yeppoon, QLD 4703

0419 872 040

admin@daveyes.com.au

DAVEY ENGINEERING SOLUTIONS

Contents

Revision History
Issue A – 13 April 2022

Jeff Davey Digitally signed by Jeff Davey Date: 2022.04.13 14:11:05 +10'00'

Jeff Davey
B.Eng (Hons), RPEQ 8386, JP (Qual)

23 Dune Circle, Lammermoor, QLD 4703

Telephone (07) 49 33 69 61

Davey Engineering Solutions Pty Ltd
ABN 66 502 462 702
Email: admin@daveyes.com.au

1.0 INTRODUCTION

Davey Engineering Solutions Pty Ltd has prepared the following report to address the engineering services and infrastructure connections associated with the Material Change of Use (MCU) for a proposed Food and Drink development. The development frontage is located on the corner of Lawrie & John Streets on existing Lot 604 on R2642. The site is 3,187 square metres in area. The proposed development is shown in the image below.

Figure 1 – Site Locality

2.0 SITE WORKS / EROSION CONTROL / EARTHWORKS

Site works for the proposed development will be relatively minor shaping to ensure stormwater controls and site discharge is managed and controlled from site. From historical aerial photos from 1970's it appears a house once was onsite located in the southern corner of the allotment. No evidence of concrete footings or slab were observed onsite. The surface falls from its southern corner generally in a north-westerly. Surface levels range from approx. 28.50m AHD in the

southern eastern corner fronting John Street and down to approx. 26.20m AHD in the site northern corner.

The proposed works associated with this application will consist of the following stages;

- Minor reshaping and detailed earthworks involving shaping the car park, access driveways and building pad. The proposed building pad will be slightly elevated from the existing site surface levels to create positive fall for stormwater drainage and to improve the ground foundation for the proposed development.
- Underground services installation.
- Roadworks and stormwater drainage works
- Sewer and Water road crossings
- Building construction works

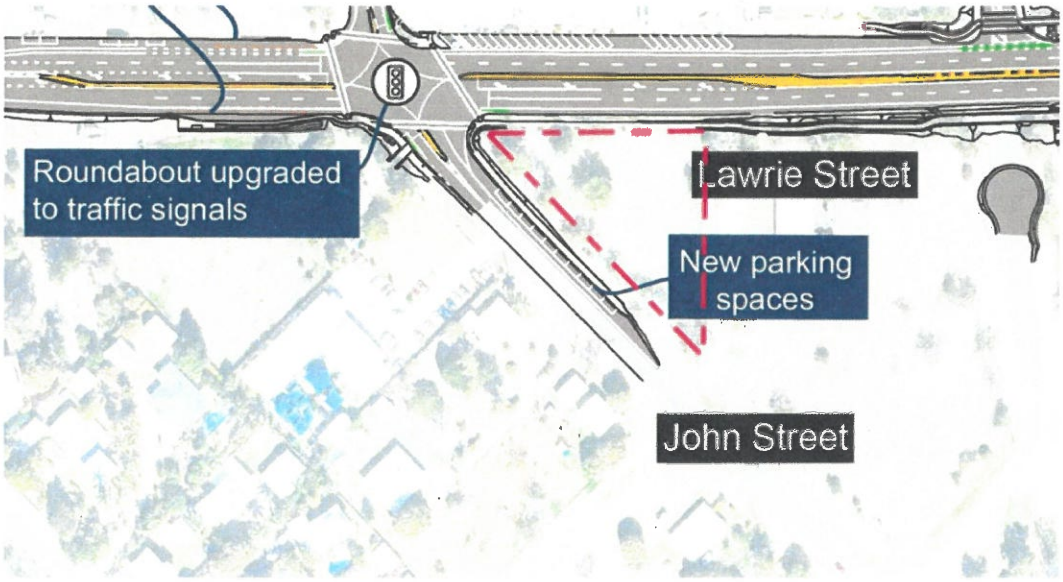
All materials brought onto the site for use with the construction of the proposed development will be stockpiled and segregated into pavements, sand/gravels and protected with appropriate silt traps and fences. Stockpiles are to be accessed from the upstream side to reduce erosion and need to be maintained constantly throughout the construction stage.

Erosion control measures are to be implemented during the construction in accordance with Rockhampton Regional Council requirements. The Principal Contractor will be responsible to reinstate and maintain all erosion control measures routinely and after all rain events and vandalism during the construction period. Conceptual earthworks and cut and fill depths are shown SK01 in Appendix 1.

3.0 ROADWORKS

The existing roundabout on the Department of Transport & Main Roads (DTMR) controlled intersection of Lawrie and John Street is currently under construction being upgraded to a signalised intersection. The latest publicly available information for these works is on the DTMR Project Design Gavial-Gracemere Lawrie Street update dated September 2021. The drawing shows Lawrie Street being widened and the addition of 10 parallel car spaces in John Street directly adjacent to the subject site. It is understood the upgrade works to widening to a Major Urban

Collector width as per Council requirements to over 85% of the John Street frontage. It is expected the works proposed as part of that upgrade will be generally consistent with the requirements for this development. Refer to SK02 in Appendix 1 for proposed roadworks.



Extract from: DTMR Project Design Gavial-Gracemere Lawrie Street update dated September 2021 (Subject Site shown in Red outline)

4.0 SEWER

An existing 150mm sewer main runs on the eastern side of John Street adjacent to the development site. The site has an existing sewer connection with an invert of 26.88m AHD located in the high elevation area of the site adjacent to John Street. The invert for this connection has insufficient depth to service the Tenancy number 2.

To service this development with sufficient depth for the proposed buildings a new lamphole sewer main is required to be constructed across the road. It is proposed that a new manhole is constructed on the southern side boundary of lot 14A John Street (~30m upstream to the closest existing manhole. The edge of the manhole can be offset the required distance to comply with Capricorn Municipal Development Guidelines (CMDG) as generally shown on drawing SK03. The indictive proposed floor level for the T1 building (furthest from connection) is 27.6m AHD, therefore sufficient depth is available to service the site via the proposed invert of 26m AHD.

Refer to SK03 in Appendix 1 for proposed sewer connection.

4.1 Demand Calculations

The CMDG, Sewer Network Design & Construction Guidelines – Rev L January 2022, list the following Typical Loadings Per Development Type as:

- Fast Food Services – Sewer load is 3.5ET per 100sqm of gross floor area

Where the Design Average Dry Weather Flow (ADWF) for Rockhampton Regional Council is 540L/d/ET.

Based on the above guidelines, the table below outlines the loading of the proposed development on the sewer network:

Proposed Development:	
102m² of Fast Food Services (T2 -Food & Drink) GFA	1,928 L/day
283m² of Fast Food Services (T1 Hungry Jacks) GFA	5,349 L/day
Total Demand Range	7,277 L/day

Davey Engineering Solutions does not have access to a calibrated hydraulic model of the existing system however, we understand the proposed sewer connection and adjacent network will have sufficient capacity to service this development. It should be noted that the existing sewer down John Street has an approximate grade of 3.8% which will have ample spare capacity for this development.

5.0 WATER

A 100mm watermain is located on the eastern (opposite) side of John Street Road frontage of the lot. It is proposed to extend a new 100mm main via John Street road crossing to provide a new Fire hydrant and also service the development. The water connection size will be determined during detailed design. An existing 200mm diameter water main is located on the opposite side of Lawrie Street, however this main is not proposed to be utilised for this development. Refer to SK04 in Appendix 1 for proposed water connection.

5.1 Demand Calculations

Planning Guidelines for Water Supply and Sewerage - March 2014, indicate development usage averages are:

Fast Food Store – Water demand is 1,400 – 4,200L per 100sqm of gross floor area

Proposed Development:

102m² of Fast Food Services (T2) GFA	1,428 – 4,284 L/day
283m² of Fast Food Services (T1 - Hungry Jacks) GFA	3,962 – 11,886 L/day
Total Demand Range	5,390 – 16,170 L/day

Davey Engineering Solutions does not have access to a calibrated hydraulic model of the existing water infrastructure for the area, however we understand Council can complete a network analysis on request. Considering the proximity to the 200mm truck main in Lawrie Street and substantial level difference from the Gracemere reservoir and the site elevation of ~27.6m it is not expected to pose any issues for the proposed use of the site.

6.0 CONCLUSION

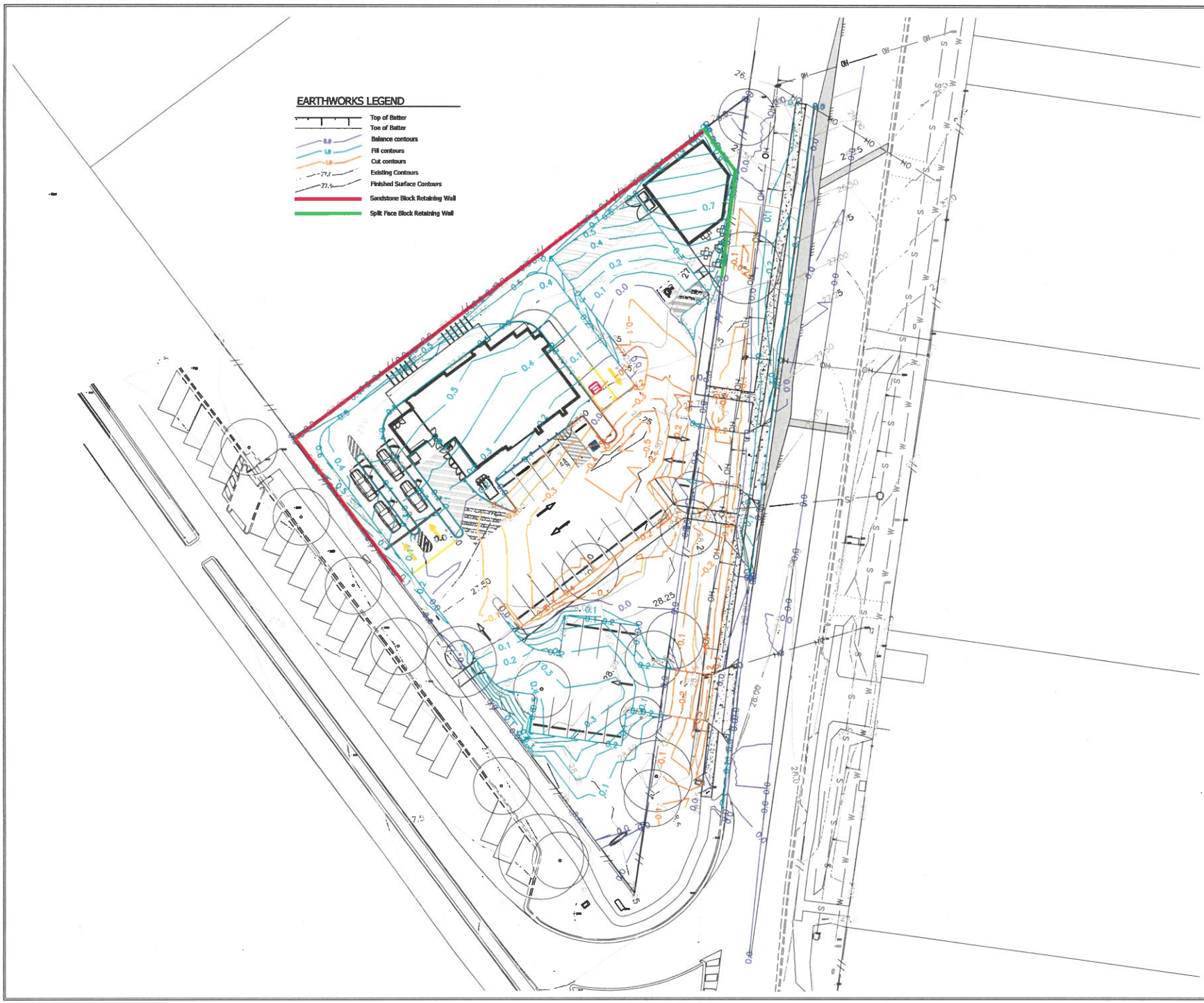
There appears to be no engineering infrastructure difficulties with the proposed Food and Drink outlets located on the corner of Lawrie and John Street, Gracemere QLD. A review of the services proposed for this development and their impact on existing services indicated that there is no impediment to development.

There is a suitable design strategy for roadworks, sewer, and water supply, Minor alterations in design are expected to eventuate from future operational works applications and detailed design phase where all design objectives are co-ordinated, however the fundamentals of this design strategy ensures that service provisions will not pose a serious constraint to the proposed development.

DAVEY ENGINEERING SOLUTIONS

APPENDIX 1

Engineering Sketches & Existing Infrastructure Plan



DAVEY ENGINEERING SOLUTIONS

CAPRICORN COAST
23 Dune Circle
LAMMERMOOR
Queensland 4703

Telephone: +61 419 872 040
Email: admin@daveyes.com.au

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DESIGN		DRAWN	
RLS		RLS	
NAME	SIGNATURE		R.P.E.Q.
J. DAVEY			8386

for & on behalf of Davey Engineering Solutions Pty Ltd

SCALES:

0 2.5 10.0m 1:500

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DATUM: AHD
COORDINATES: GDA94

CAPRICORN SURVEY GROUP
132 Victoria Pde, Rockhampton 4700
PH:(07)49275199
E: reception@csgcq.com.au

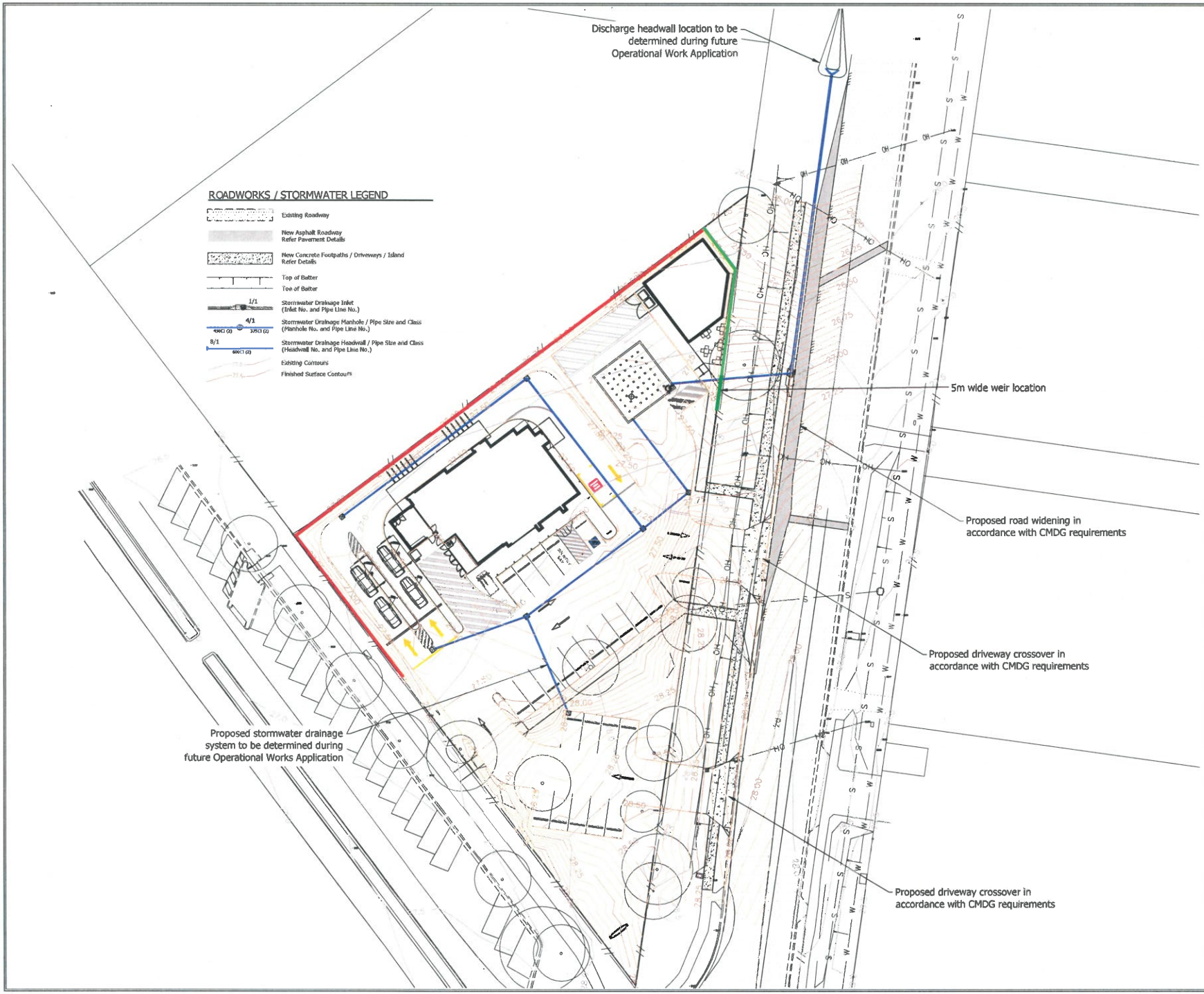
GIBB GROUP DEVELOPMENT MANAGEMENT PTY LTD

HUNGRY JACKS GRACEMERE
CNR JOHN & LAWRIE STREETS
GRACEMERE

EARTHWORKS LAYOUT

FILE No.	22-002
DWG No.	22-002-SK1 B

DO NOT SCALE - IF IN DOUBT ASK



DAVEY ENGINEERING SOLUTIONS

CAPRICORN COAST
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Queensland 4703

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J. DAVEY			8386

for & on behalf of Davey Engineering Solutions Pty Ltd

SCALES:

0 2.5 10.0m 1:500

N

DATUM: AHD
COORDINATES: GDA94

CAPRICORN SURVEY GROUP
132 Victoria Pde, Rockhampton 4700
PH:(07)49275199
E: reception@csgcq.com.au

GIBB GROUP DEVELOPMENT MANAGEMENT PTY LTD

HUNGRY JACKS GRACEMERE
CNR JOHN & LAWRIE STREETS
GRACEMERE

ROADWORKS/STORMWATER LAYOUT

FILE No. 22-002

DWG No. 22-002-SK2 B

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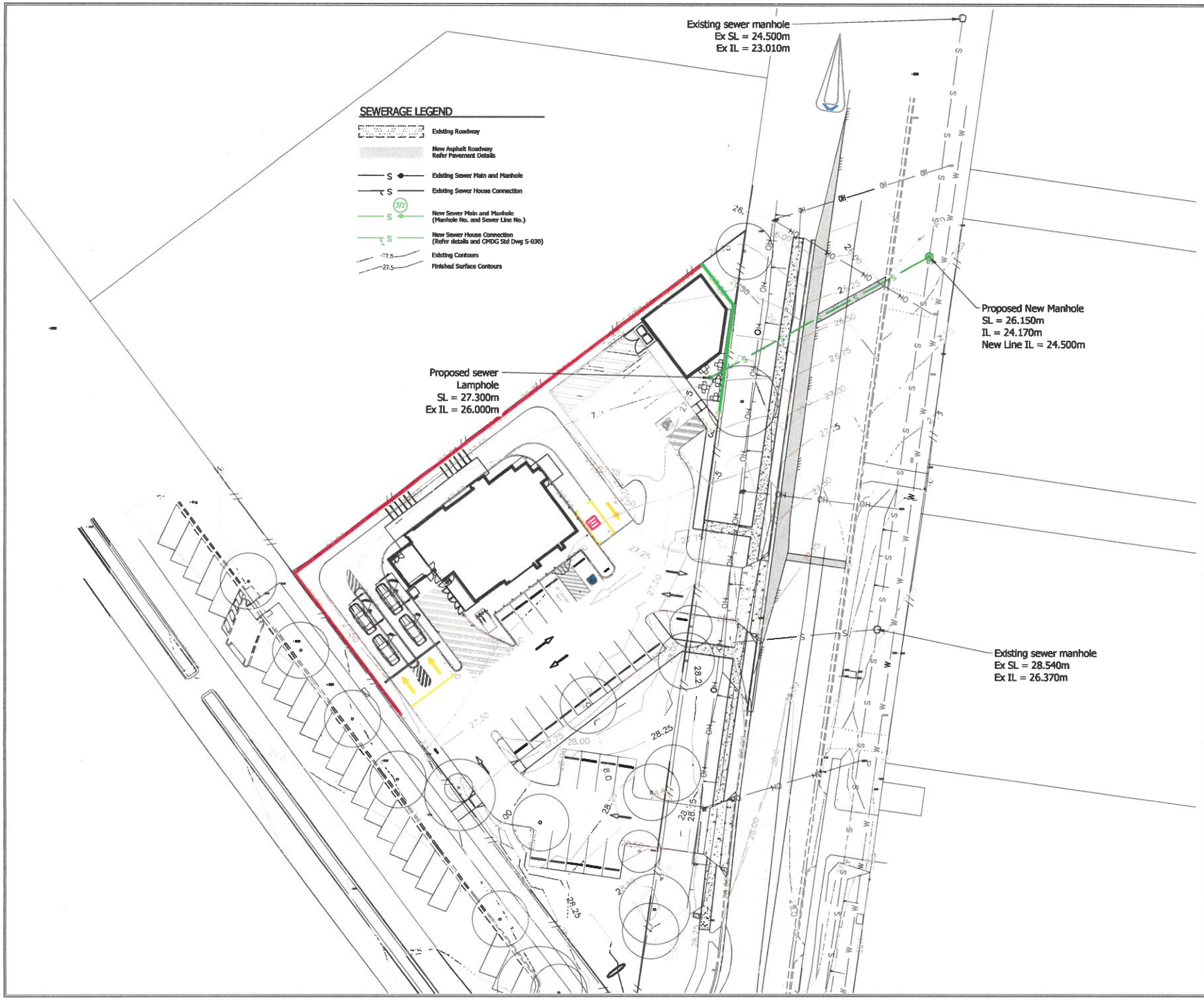

DAVEY ENGINEERING SOLUTIONS

CAPRICORN COAST
23 Dune Circle
LAMMERMOOR
Queensland 4703

Telephone: +61 419 872 040
Email: admin@daveyes.com.au

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NAME	**SIGNATURE**		**R.P.E.Q.**
J. DAVEY			8386

for & on behalf of Davey Engineering Solutions Pty Ltd

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DATUM: AHD
COORDINATES: GDA94

CAPRICORN SURVEY GROUP
132 Victoria Pde, Rockhampton 4700
PH:(07)49275199
E: reception@csgcq.com.au

GIBB GROUP DEVELOPMENT MANAGEMENT PTY LTD

HUNGRY JACKS GRACEMERE
CNR JOHN & LAWRIE STREETS
GRACEMERE

SEWERAGE RETICULATION LAYOUT

FILE No. 22-002

DWG No. 22-002-SK3 B

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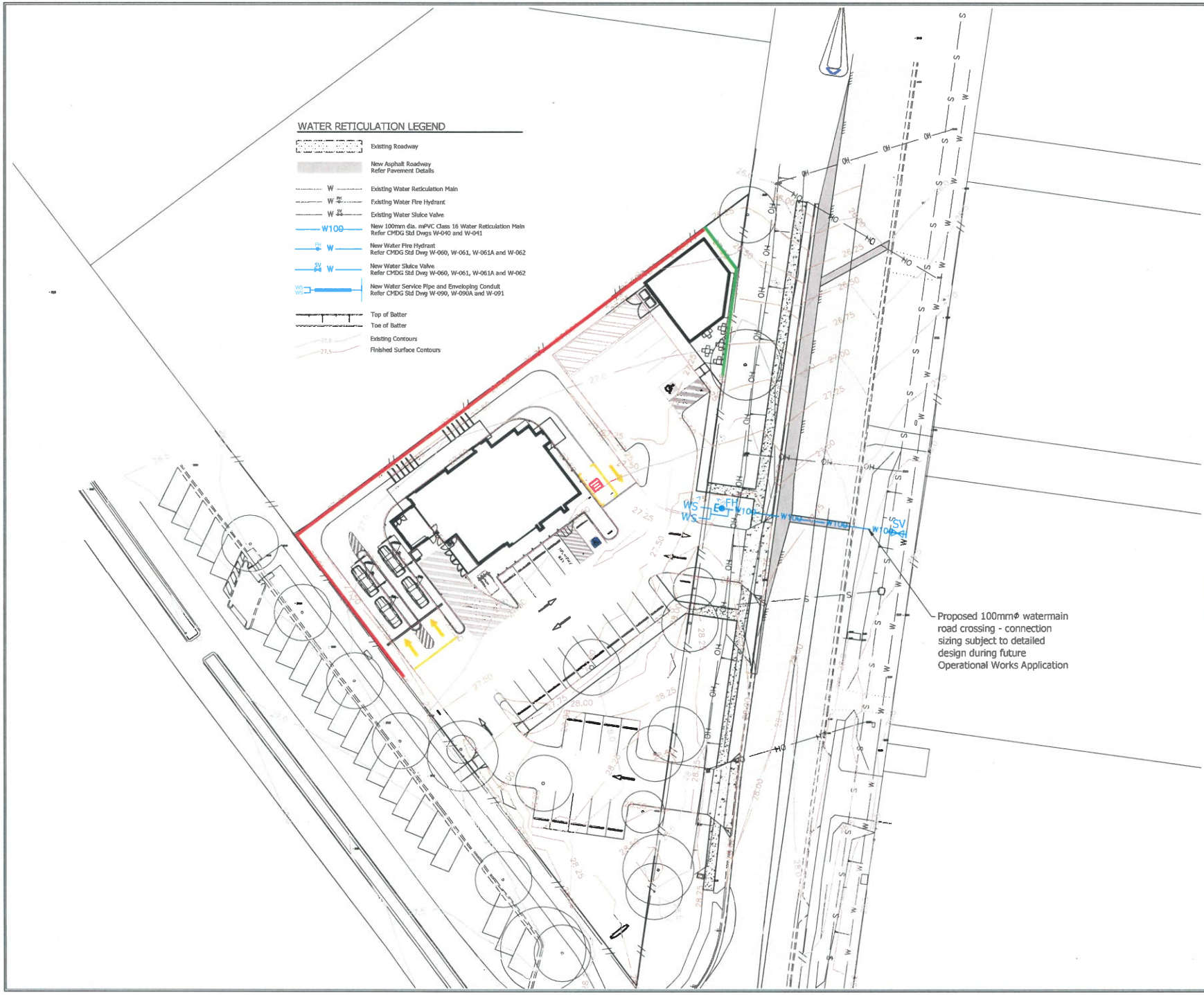

DAVEY ENGINEERING SOLUTIONS
CAPRICORN COAST
23 Dune Circle
LAMMERMOOR
Queensland 4703
Telephone: +61 419 872 040
Email: admin@daveyes.com.au

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for & on behalf of Davey Engineering Solutions Pty Ltd

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CAPRICORN SURVEY GROUP
132 Victoria Pde, Rockhampton 4700
PH:(07)49275199
E: reception@csgcq.com.au

GIBB GROUP DEVELOPMENT MANAGEMENT PTY LTD

HUNGRY JACKS GRACEMERE
CNR JOHN & LAWRIE STREETS
GRACEMERE

WATER RETICULATION LAYOUT

FILE No. 22-002

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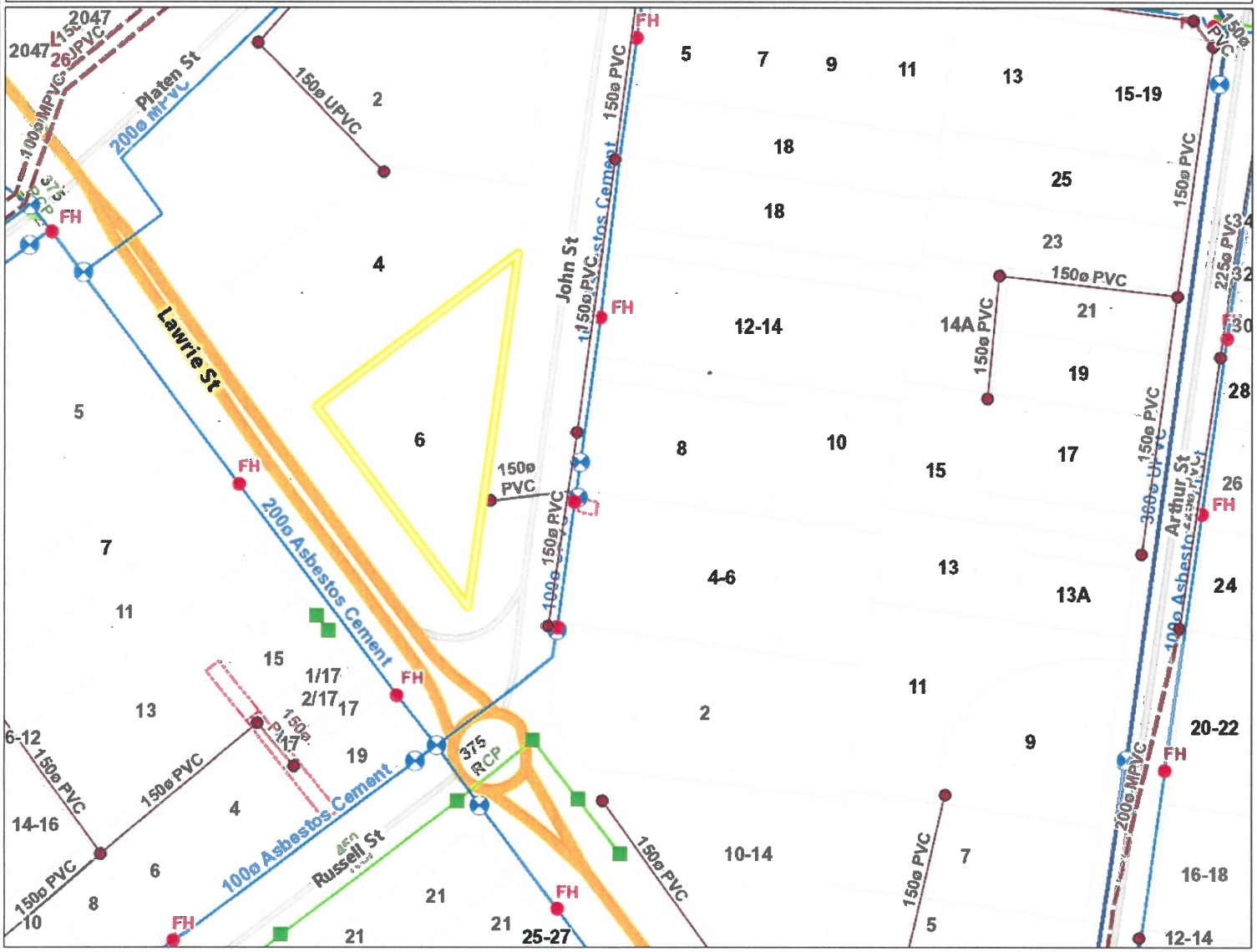
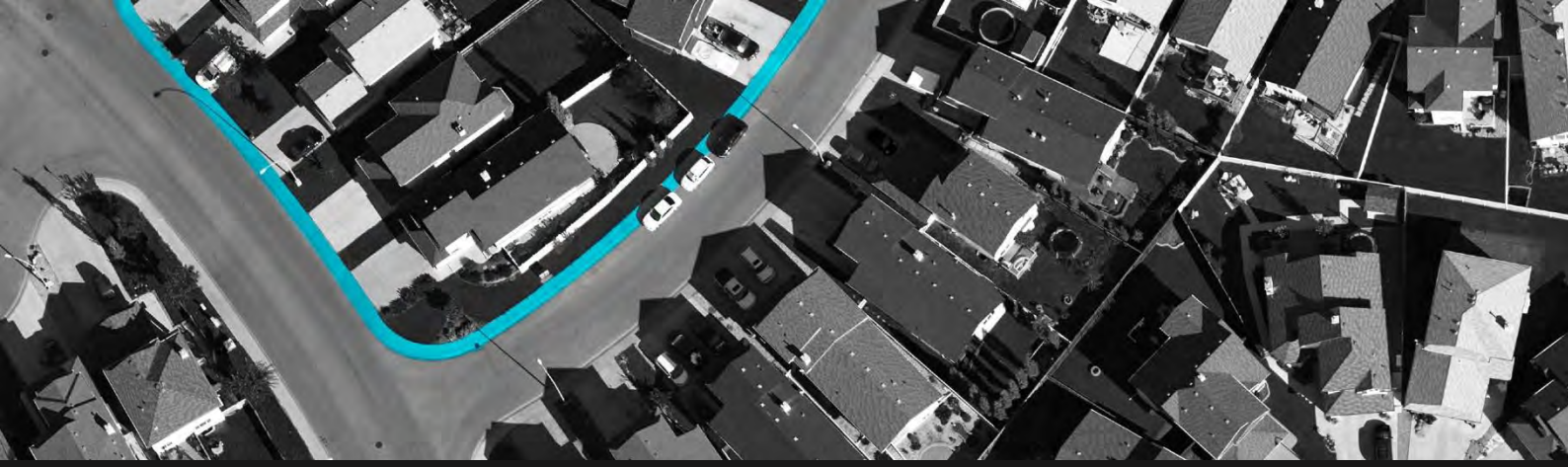


Legend

- Sewer Gravity Mains
  - Combined
  - Reticulation Main
  - Trunk Main
- Sewer Rising Mains
- Sewer Access Chambers
  - Access Chambers
  - Roll Over
  - Lamp Hole | Inspection Opening
  - Overflow Chambers
- Hydrants
- Water Valves
  - Other Valve Type
  - Gate, Sluice, Butterfly
  - Air Valve
  - Ball Cock, Stop Cock
  - Ball Valve
  - Motor Sluice Valve
  - Non Return Valve
  - Pressure Reducing Valve
  - RPZ Valve
  - Reflux Valve
  - Scour Valve
  - Sluice Bypass Valve
  - Tap
- Water Mains
  - Other Main Type
  - Trunk Main
  - Reticulation Main
  - Raw Water Main
  - Scour Line
- Culverts
- Stormwater Junctions
  - Inlets
  - Access Chambers
- Stormwater Pipes
  - Open Channel

GDA 2020

Rockhampton Regional Council



PROPOSED FOOD & DRINK OUTLETS
6 LAWRIE STREET, GRACEMERE
TRAFFIC IMPACT ASSESSMENT

7 APRIL 2022

PREPARED FOR
GIBB GROUP

TRAFFIC & TRANSPORT ENGINEERING

DOCUMENT CONTROL RECORD

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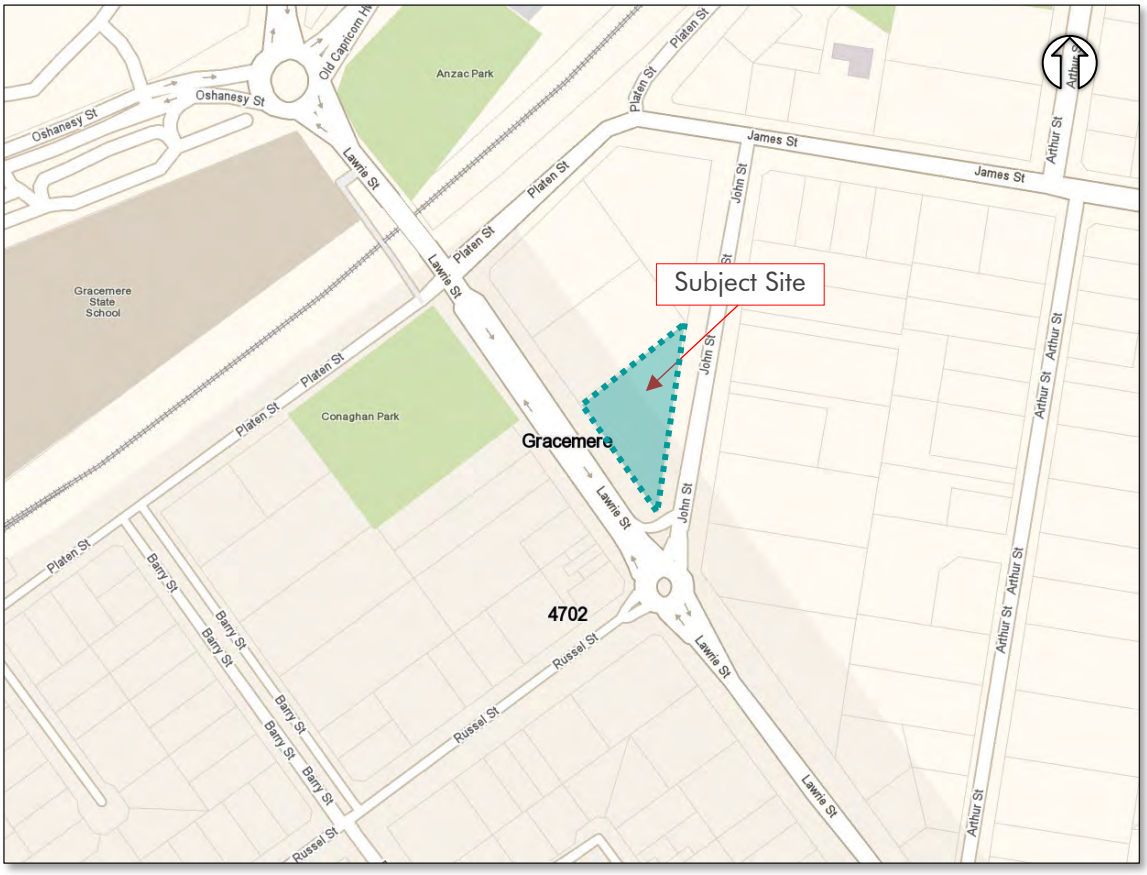
CONTENTS

1.0 INTRODUCTION

1.1 BACKGROUND

In August 2021, Pekol Traffic and Transport (PTT) was commissioned by Gibb Group to undertake a traffic impact assessment for proposed food and drink outlets at 6 Lawrie Street, Gracemere. The location of the subject site is shown in Figure 1.1.

Figure 1.1: SITE LOCALITY



1.2 AIM

The aim of this assessment is to evaluate the proposed development in terms of its access, car parking and servicing arrangements, pedestrian / cyclist facilities, peak hour traffic generation and impact on the surrounding road network.

1.3 SCOPE OF REPORT

This report begins by summarising the characteristics of the existing road network (Chapter 2), followed by a description of the scope and scale of the development, including a consideration of the site access arrangements, parking provision and design, servicing arrangements and pedestrian / cyclist facilities (Chapter 3). The likely traffic generation of the site is quantified, and its impact considered (Chapter 4). A road safety assessment has been undertaken (Chapter 5) and the report concludes with a summary of key findings (Chapter 6).

2.0 EXISTING CONDITIONS

2.1 SUBJECT SITE

The subject site is located at 6 Lawrie Street, Gracemere and is formally described as Lot 604 on R2642. According to the Rockhampton Regional Council (RRC) Planning Scheme (2015), the site is within the District Centre Zone. The subject site comprises a total area of 3,187m^2 and is currently vacant, as shown in Figure 2.1.

Figure 2.1: SUBJECT SITE

The subject site is bounded as follows:

- to the north by the Gracemere Presbyterian Church
- to the east by John Street
- to the south and west by Lawrie Street

The surrounding area consists primarily of residential, community and commercial uses. A child care centre is located immediate to the east of the subject site at 4 John Street (Lot 505 on R2642).

2.2 ACCESS

The site currently has no formal points of vehicular access on either the John Street or Lawrie Street frontages.

2.3 ROAD NETWORK

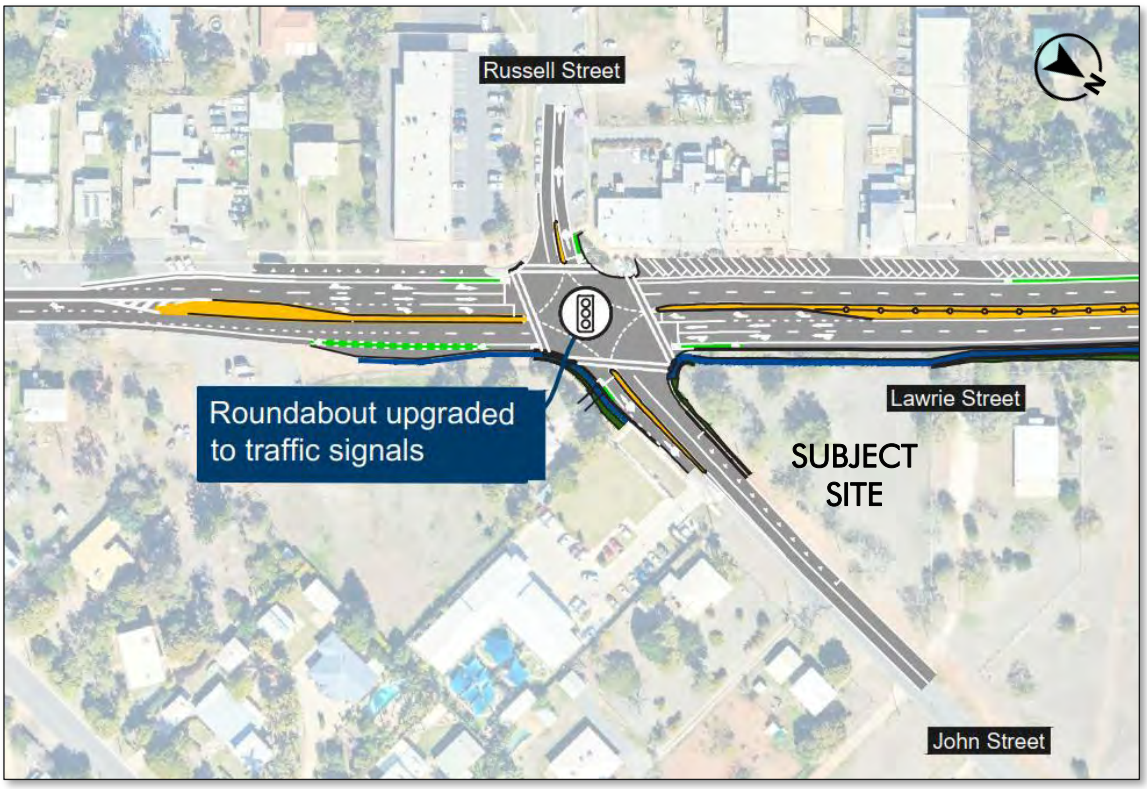
Key attributes of the surrounding road network are summarised in Table 2.1.

Table 2.1: ROAD NETWORK ATTRIBUTES

ATTRIBUTE	LAWRIE STREET	JOHN STREET
Road Hierarchy	Arterial	Major Urban Collector
Jurisdiction	TMR	RRC
Speed Limit (km/h)	60	50
Predominant Land Uses	Commercial / Residential	Residential / Community
Cross-section	Divided, with two lanes of traffic in each direction	Undivided, with one lane of traffic in each direction
On-Street Parking	Yes	Yes
Footpaths	Yes	In Part
Bicycle Lanes	Yes	No
Bus Route	Yes	No

To the south of the subject site, Lawrie Street meets John Street at a four-way intersection, with Russell Street forming the other approach. This intersection was previously configured as a roundabout but is currently being upgraded by the Department of Transport and Main Roads (TMR) to traffic signals. A concept layout of the upgraded intersection configuration is shown in Figure 2.2.

Figure 2.2: UPGRADED LAWRIE ST/JOHN ST/ RUSSELL ST INTERSECTION



2.4 TRAFFIC VOLUMES

To assist in the quantification of existing road network operations proximate to the site, turning movement surveys have been obtained from TMR for the Lawrie Street / John Street / Russell Street intersection from 6:00am to 6:00pm on Thursday 22 March 2018. The peak periods for the above intersections are shown in Table 2.2, along with the key operational attributes of the intersections. The volumes shown represent all vehicle movements through the intersection in the peak hour periods. The raw survey data is attached in Appendix A.

Table 2.2: INTERSECTION ATTRIBUTES

ATTRIBUTE	WEEKDAY MORNING PEAK	WEEKDAY EVENING PEAK
Lawrie Street / John Street / Russell Street		
Peak Hour	8:00am – 9:00am	3:00pm – 4:00pm
Volume (vph)	1,610	1,710
% Heavy Vehicles	2.2%	4.2%
Peak Flow Factor	96.2%	93.7%

2.5 INTERSECTION OPERATIONS

2.5.1 Intersection Assessment Parameters

A series of SIDRA analyses have been conducted to quantify the existing traffic operations at the Lawrie Street / John Street / Russell Street intersection. The analyses were based on the traffic count data presented in Appendix A, with:

- Peak Flow Factors (PFF), as detailed in Table 2.1
- the observed proportion of heavy vehicles (%HV) as detailed in Table 2.1
- traffic signal phasing based on a single diamond overlap arrangement
- a intersection cycle time as optimised by SIDRA
- SIDRA default values for other parameters

The results are presented in terms of the degree of saturation (DOS), 95th percentile vehicle queues, and critical movement at the intersection. The degree of saturation for a movement is defined as the ratio of traffic demand to the capacity of the movement. The critical movement relates to the approach or movement with the highest degree of saturation. Table 2.3 is an extract from the SIDRA manual and defines the operational rating and level of service for all intersection types.

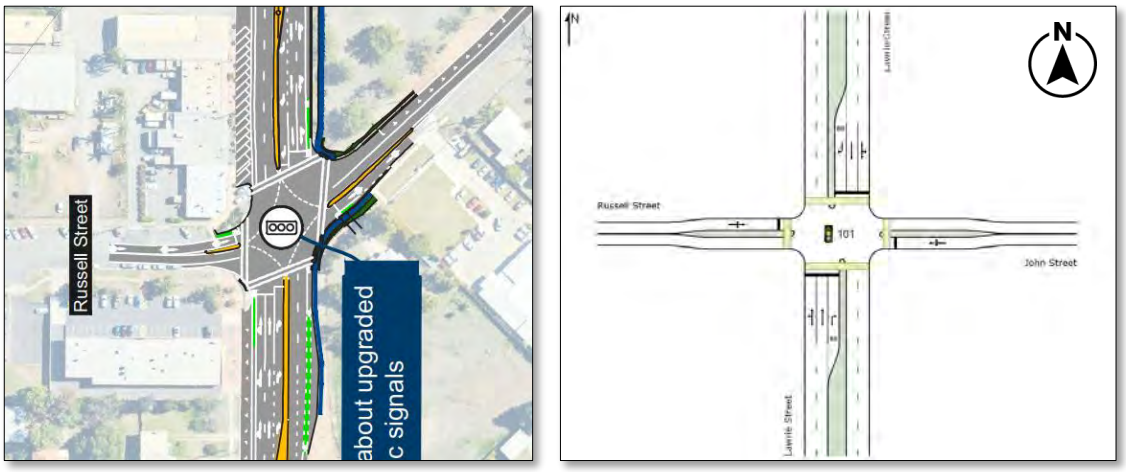
Table 2.3: SIDRA INTERSECTION RATINGS

LEVEL OF SERVICE	DEGREE OF SATURATION		
	SIGNALS	ROUNDABOUT	PRIORITY
LOS A	x ≤ 60%	x ≤ 60%	x ≤ 60%
LOS B	60% < x ≤ 70%	60% < x ≤ 70%	60% < x ≤ 70%
LOS C	70% < x ≤ 90%	70% < x ≤ 85%	70% < x ≤ 80%
LOS D	90% < x ≤ 95%	85% < x ≤ 95%	80% < x ≤ 90%
LOS E	95% < x ≤ 100%	95% < x ≤ 100%	90% < x ≤ 100%
LOS F	100% < x	100% < x	100% < x

2.5.2 *Lawrie Street / John Street / Russell Street Intersection*

The adopted Lawrie Street / John Street / Russell Street traffic signal-controlled intersection layout and equivalent SIDRA representation are shown in Figure 2.3.

Figure 2.3: LAWRIE STREET / JOHN STREET / RUSSELL STREET INTERSECTION



The results of the Lawrie Street / John Street / Russell Street intersection analysis are summarised in Table 2.4 and included in Appendix C. The results indicate that the intersection currently experiences LOS A operations under existing weekday morning and evening peak hour conditions.

Table 2.4: LAWRIE ST / JOHN ST / RUSSELL ST INTERSECTION OPERATIONS

PEAK HOUR	CYCLE TIME	DOS	AVG DELAY	95% QUEUE	CRITICAL APPROACH
Weekday Morning	90s	68%	29.4s	17.5 vehicles	South: Lawrie Street
Weekend Evening	90s	69%	28.1s	17.5 vehicles	North: Lawrie Street

2.6 ACTIVE AND PUBLIC TRANSPORT

2.6.1 Pedestrians and Cyclists

In the vicinity of the subject site, pedestrian footpaths are provided on both sides of Lawrie Street. There is currently a footpath on the southern side of John Street, which extends to the northern boundary of 4 John Street (Lot 505 on R2642). However, there is currently no pedestrian footpath in the site frontage on John Street. The Lawrie Street / John Street / Russell Street signal-controlled intersection will have pedestrian crossings on all approaches.

There are on-road cycle lanes on both sides of Lawrie Street and on all approaches to the Lawrie Street / John Street / Russell Street intersection.

2.6.2 Public Transport

There are public bus stops on both sides of Lawrie Street, located within approximately 200m of the subject site (ie a two-minute walk to / from the site). These stops are serviced by the 21 and 22 bus routes, which are operated by Young's Bus Service and run between Gracemere, Rockhampton, Bouldercombe and Mt Morgan. These services provide a frequency of approximately one bus service per hour in each direction of travel on weekdays and weekends. Accordingly, the site is served by public transport.

3.0 PROPOSED DEVELOPMENT

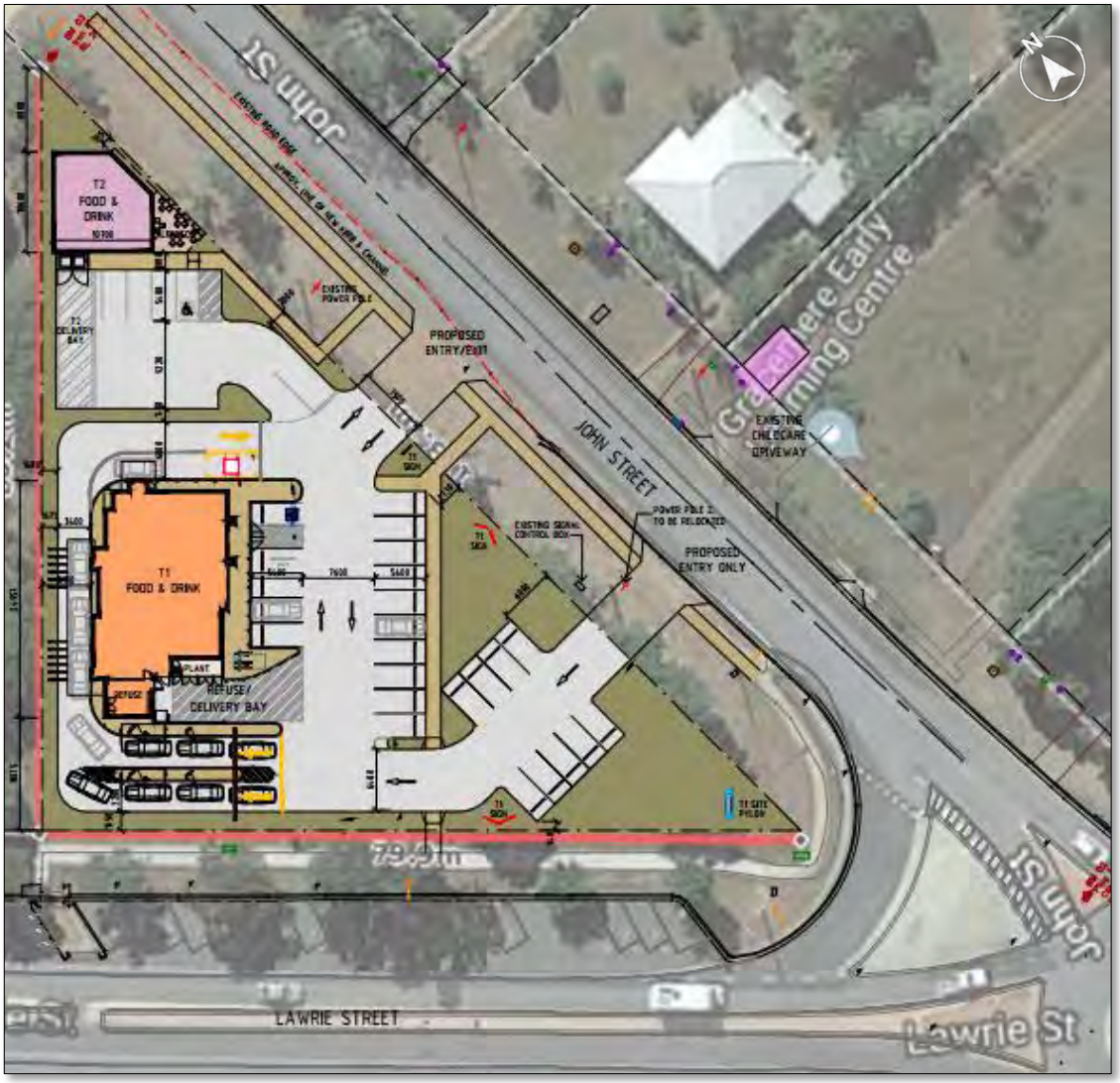
3.1 SITE LAYOUT

The proposed development comprises a material change of use for two food and drink outlets as follows:

- Tenancy 1: 282m^2 GFA with a drive-through
- Tenancy 2: 102m^2 GFA

The development would be supported by a total of 29 on-site car parking spaces. The proposed site layout is shown in Figure 3.1, with plans of development attached in Appendix B.

Figure 3.1: PROPOSED SITE LAYOUT



3.2 ACCESS

3.2.1 Location

Vehicular access to the site is proposed via two driveway crossovers on John Street as follows:

- Northern driveway: all movements
- Southern driveway: entry movements only

The intent of the entry-only southern driveway on John Street is to facilitate direct access to the Tenancy 1 drive-through and the loading bay, in order to minimise internal conflicts within the on-site car parking area. The proposed entry driveway is located approximately 30m north of the intersection with Lawrie Street. The separation between the site access and the Lawrie Street intersection complies with:

- Australian Standards AS2890.1 for Off-Street Car Parking (AS2890.1), which requires that access driveways be located a minimum of 6m from the kerb tangent point of adjacent intersections
- common practice for an access driveway on a minor road (ie John Street) to be located a minimum of 20m from the property boundary of the intersecting major road (ie Lawrie Street)

The proposed northern access driveway would be located approximately 25m from the southern driveway and 50m from the northern property boundary. Therefore, the location of the northern driveway complies with relevant standards in terms of separation from neighbouring driveways and distance from adjacent property boundaries.

The southern driveway requires the relocation of an existing pole, as identified in the development layout plans.

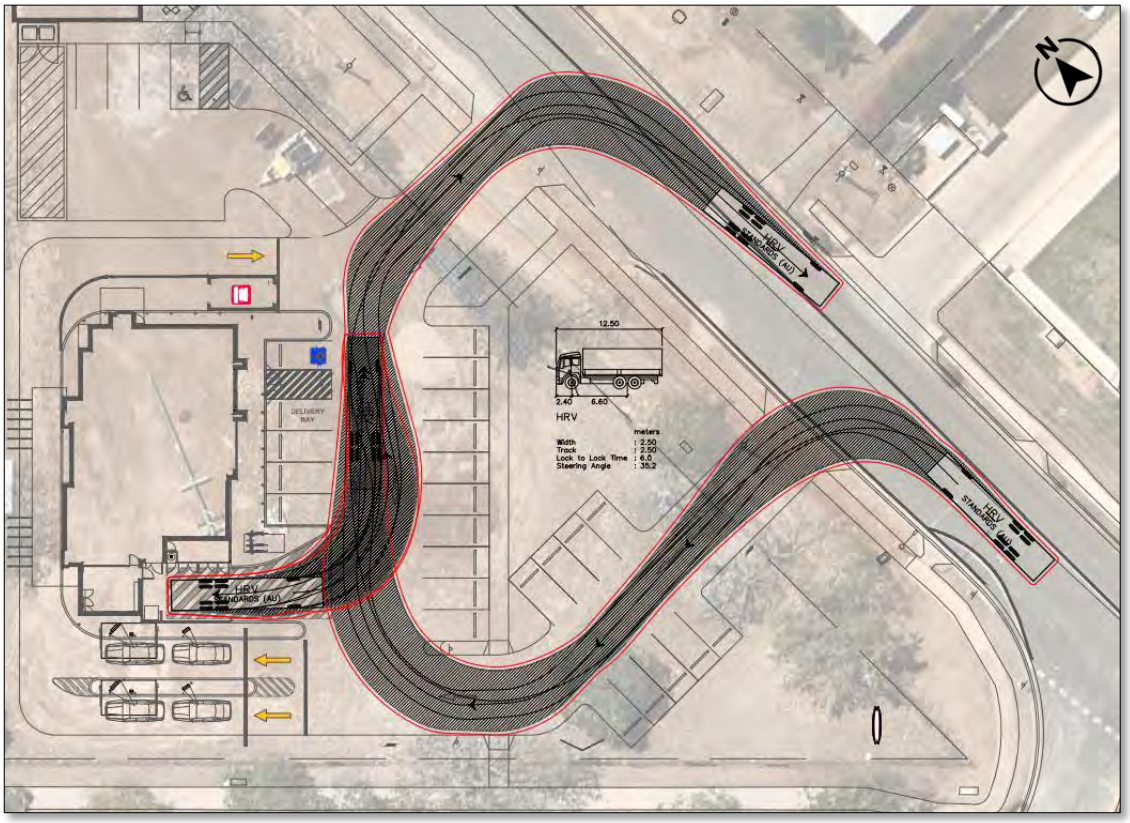
3.2.2 Design

The design of the driveway crossovers are generally in accordance with the Institute of Public Works IPWEA Standard Drawing as follows:

- Northern driveway (entry only): 6.5m wide Type General Wide
- Southern driveway (all movements): 7.5m wide Type General Wide

The design vehicle is a 12.5m long heavy rigid vehicle (HRV), which would enter the subject site via the southern driveway and exit via the northern driveway. A swept path analysis of a HRV entering and exiting the site is shown in Figure 3.2.

Figure 3.2: HRV VEHICLE ACCESS AND EGRESS



3.2.3 *Sight Distance*

On a 50km/h road (ie John Street), Australian Standard AS2890.1 requires a desirable sight distance of 83m. Based a review of aerial mapping, it is estimated that the available sight distance at the proposed northern driveway location on John Street (measured from a point 2.5m back from the edge of the through carriageway) to be approximately 140m to / from the north and 90m to / from the south. Accordingly, the available sight distance at the proposed access driveway would comfortably meet the desirable sight distance requirements.

3.3 PARKING

3.3.1 *Council Requirement*

The RRC Access, Parking and Transport Code (Section 9.3.1 of the Planning Scheme) identifies minimum on-site car parking requirements for a food and drink outlet of one space per 15m^2 GFA for seating areas (including outdoor seating areas), with on-site queuing for at least 10 vehicles where involving a drive through facility.

As shown in Table 3.1, the development would require a minimum provision of 14 car parking spaces based on the RRC Access, Parking and Transport Code rates.

Table 3.1: COUNCIL PARKING REQUIREMENT

USE	SCALE	PARKING RATE	REQUIREMENT
Food & Drink: T1	283m^2 GFA with a 100m^2 seating area	1 space per 15m^2 seating area	8 spaces
Food & Drink: T2	102m^2 GFA with a 90m^2 seating area	1 space per 15m^2 seating area	6 spaces
Total			**14 spaces**

3.3.2 Provision

The proposed layout provides 29 on-site car parking spaces including:

- 27 standard car parking bays
- two person with disability (PWD) bays
- one drive-through customer waiting bay

Accordingly, the car parking provision for the development layout complies with the minimum RRC Planning Scheme Policy requirements and is expected to be sufficient to meet peak car parking demand.

The drive-through queuing provision (ie 11 vehicles) exceeds the minimum queuing capacity identified in the RRC Access, Parking and Transport Code (ie 10 vehicles).

3.3.3 Design

The proposed on-site parking facilities have been designed consistently with the requirements of AS2890.1 and Australian Standards AS2890.6 Parking Facilities Part 6: Off-Street Parking for People with Disabilities (AS2890.6), in terms of minimum parking space and aisle dimensions, and are typified by:

- general car parking spaces dimensioned 2.6m wide by 5.4m long (Class 3 parking)
- PWD space dimensioned 2.4m wide by 5.4m long, with an adjacent 2.4m wide shared area
- parking aisles dimensioned (minimum) 6.2m wide
- end of aisle treatment comprising a 9.2m wide aisle in the blind adjacent to Tenancy 2

3.4 QUEUING

AS2890.1 recommends that queuing be provided in order to allow a free influx of traffic which will not adversely affect traffic or pedestrian flows on the frontage road. For a car parking area of 29 spaces both AS2890.1 requires a minimum queue length of two vehicles (ie 12m).

Consistent with this requirement, the proposed layout has been designed to provide 12m of queuing space, measured between the site boundary and first conflict point on-site across the two points of access (ie approximately 6m of clear queuing provision provided at both accesses). Therefore, the proposed queuing provision is consistent with the requirements of AS2890.1.

3.5 SERVICING

The RRC Planning Scheme does not specify a design vehicle for a food and drink outlet. Based on the scale of the proposed tenancies, the following design vehicles are expected based on operational requirements:

- Tenancy 1: a heavy rigid vehicle (HRV) and a refuse collection vehicle (RCV)
- Tenancy 2: a small rigid vehicle (SRV) and a RCV

The proposed layout for Tenancy 1 provides a dedicated loading bay (3.5m wide by 12.5m long), which is capable of accommodating a HRV / RCV (as demonstrated in Figure 3.2).

Tenancy 2 would provide a loading area (4.0m wide by 7.0m long) at the northern end of the parking aisle, which is sufficient to accommodate a SRV, as demonstrated in Figure 3.3 (and attached in Appendix D).

In terms of refuse collection for Tenancy 2, this could be undertaken on-site, with a RCV able to enter and egress the subject site in a forward gear to / from John Street. The vehicle swept paths shown in Figure 3.4 and attached in Appendix D, demonstrate that a 10.3m long (front-lift) RCV can enter the site from John Street in a forward gear, access the bin storage area, perform a three-point turn within the site and then exit back to John Street in a forward gear. To ensure safe and efficient servicing operations for Tenancy 2, it is recommended that refuse collection occurs outside the proposed hours of operation.

Figure 3.3: SRV SERVICING ARRANGEMENTS

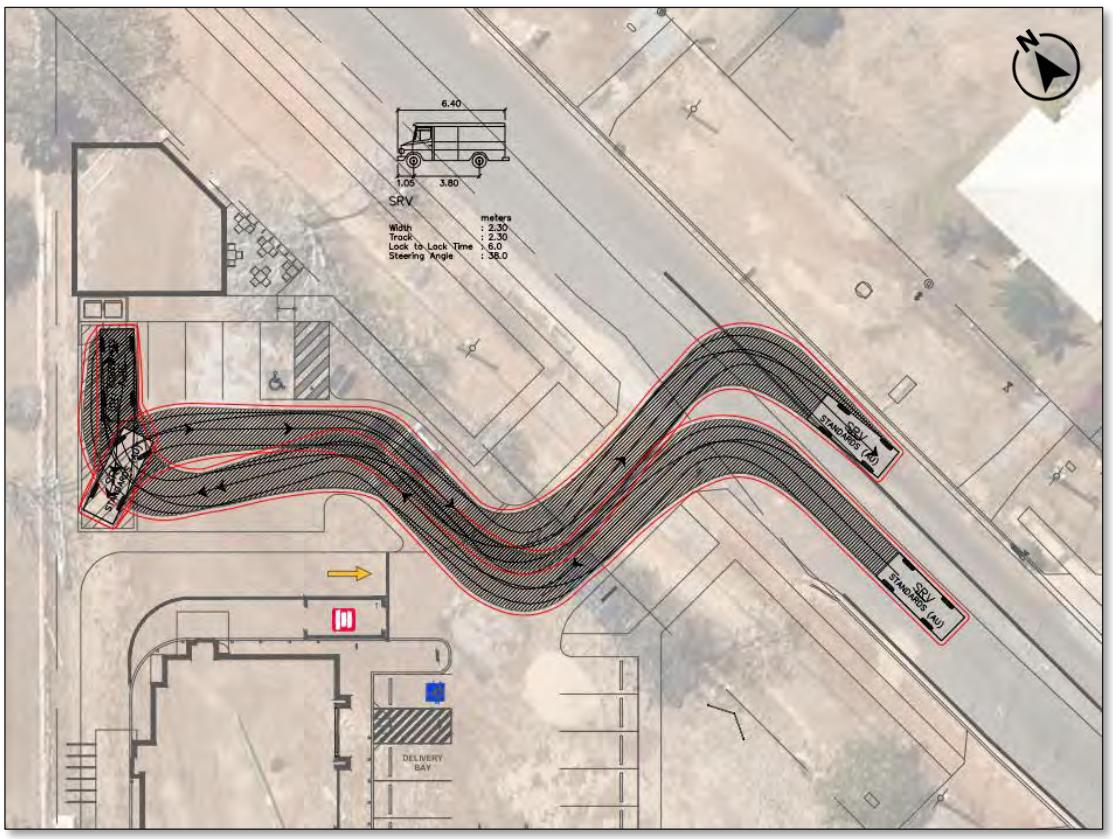
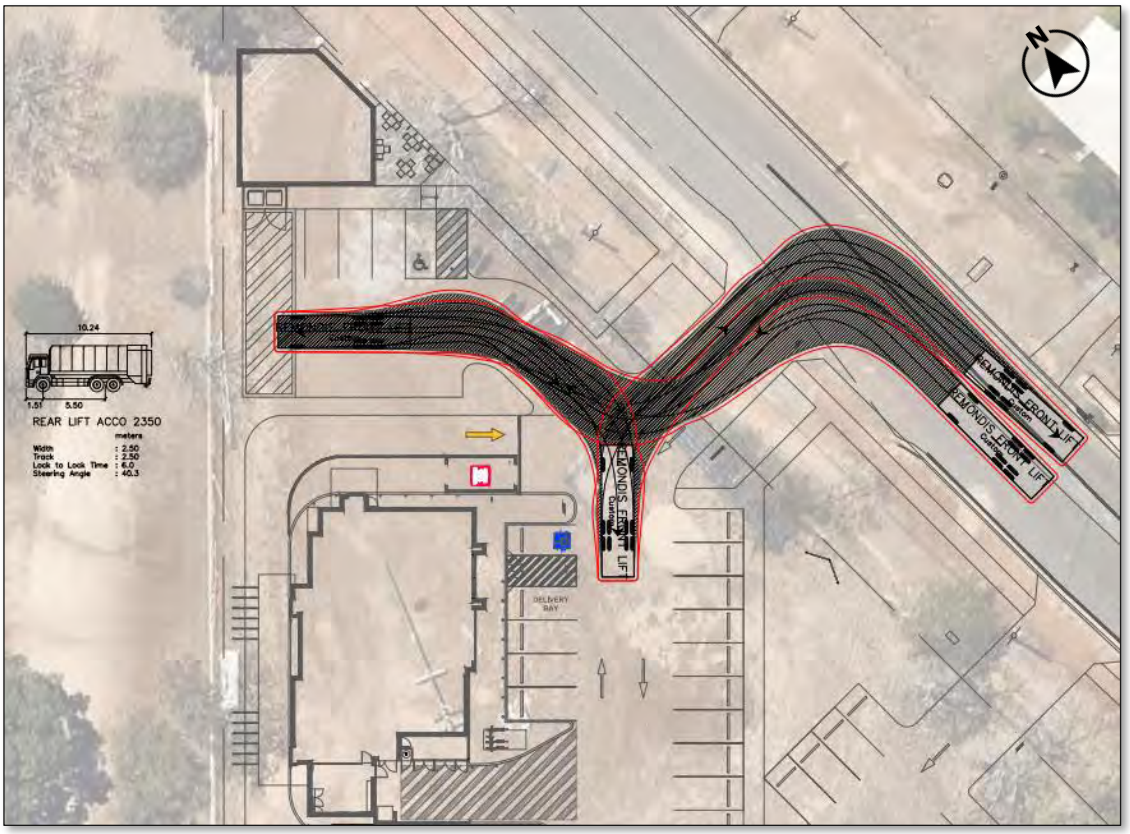


Figure 3.4: RCV SERVICING ARRANGEMENTS



3.6 ACTIVE TRANSPORT

3.6.1 Pedestrians

Pedestrian access to the site is proposed via dedicated pedestrian entrances (ie separate from the driveways) on both the Lawrie Street and John Street frontages.

AS2890.1 requires that 2.0m wide by 2.5m long pedestrian sight splays be provided on the egress side of adjacent to driveways to ensure adequate visibility between drivers exiting the site and pedestrians on the footpath. The proposed development layout complies with this requirement, with no obstructions on the egress side of the northern driveway. It is recommended that the landscaping within the pedestrian sight splay be limited to appropriate species (ie low vegetation) that are unlikely to encroach on sight lines.

3.6.2 Cyclists

The Austroads 'Cycling Aspects of Austroads Guides' identifies a bicycle parking rate of one space per 100m^2 GFA for restaurant use. Accordingly, it is recommended that bicycle parking for the proposed tenancies be provided as follows:

- Tenancy 1: four spaces
- Tenancy 2: two spaces

3.7 ROAD UPGRADES

There is currently no kerb and channel on the western side of John Street. Accordingly, it is recommended that John Street be upgraded along the site frontage to provide kerb and channel and a pedestrian footpath (say 1.5m wide).

4.0 TRAFFIC OPERATIONS

4.1 DEVELOPMENT STAGING

4.1.1 Timing

It is standard practice when analysing future year traffic operations to adopt a ten-year design horizon from the year of full occupation. Therefore, the following development staging has been adopted:

- Traffic Counts: 2018
- Development Application: 2022
- Construction and Occupation: 2023
- Occupation plus 10 years: 2033

4.1.2 Assessment Scenarios

On the basis that the proposed development would not have direct access to the state-controlled road network, the following assessment scenarios have been considered:

- opening year (2023) pre-development
- opening year (2023) post-development

4.1.3 Background Traffic Growth

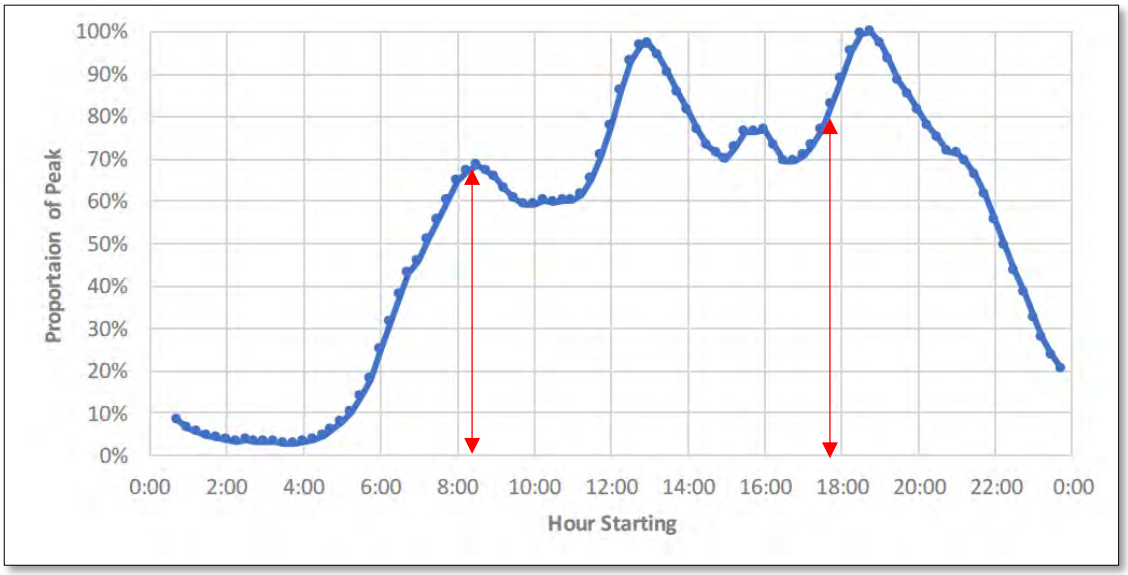
The background traffic growth for the impact assessment area has been estimated based on the 10-year growth in Average Annual Daily Traffic (AADT) as reported by TMR for Lawrie Street, just to the south of Oshannesy Street (identification number 60111). A background growth rate of 3.0% per annum has been adopted, which equates to a 15.9% increase in background traffic volumes between 2018 and 2023.

4.2 TRAFFIC GENERATION

The predicated peak hour traffic generation associated with the proposed development has been based on the 85th percentile trip generation rate for food and drink outlets, sourced from the Queensland Government traffic generation data (2004-2019) available via the Open Data Portal. There are 26 fast food outlets (with a drive-through) in the data and the derived 85th percentile trip rate using all site is 55 trips per 100m^2 GFA. An in:out split of 50:50 has been adopted during the weekday morning and evening peak hours.

In addition, the Queensland Government traffic generation data available via the Open Data Portal has been used to estimate the traffic generation for fast food outlets by time of day as shown in Figure 4.1.

Figure 4.1: PREDICTED WEEKDAY PEAK-HOUR FAST-FOOD TRAFFIC GENERATION



In terms of the expected traffic generation during a weekday morning and evening peak hours (ie the road network peaks), the data shows that:

- the traffic generation in the weekday morning peak hour (ie 8am – 9am) is typically around 70% of the peak
- the traffic generation in the weekday evening peak hour (ie 5pm – 6pm) is typically around 80% of the peak

It is also standard practice to take into account undiverted (linked) trips for food and drink outlets (ie accounting for those trips that are already on the network). Consistent with typical practice, we have assumed that 50% of trips associated with the food and drink use would be undiverted drop-in trips. This is consistent with the recommendations of the NSW RMS' Trip Generation and Parking Demand Surveys of Fast Food Outlets: Analysis Report and Commentary 8 of the Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments.

The predicted increase in peak hour traffic generation attributable to the proposed development is summarised in Table 4.1. As shown, the development is expected to generate 148 trips (comprising 74 new trips) in the weekday morning peak hour and 170 trips (comprising 85 new trips) in the weekday evening peak hour.

Table 4.1: TRAFFIC GENERATION

LAND USE	SCALE	TRIP GENERATION RATE	TRIPS (VPH)	IN:OUT SPLIT
Morning Peak Hour				
Food and Drink	385m² GFA	0.7 x 55 trips per 100m² GFA	148	74 : 74
Evening Peak Hour				
Food and Drink	385m² GFA	0.8 x 55 trips per 100m² GFA	170	85: 85

4.3 DIRECTIONAL DISTRIBUTION

The distribution of development related traffic on the existing road network has been estimated based on the directional split inherent in the traffic surveys and expectations regarding the origins and destinations of the proposed use given its convenience nature. The resulting distribution of development related traffic for the new tips and diverted trips are shown in Figures 4.2 and 4.3 respectively.

Figure 4.2: DEVELOPMENT DISTRIBUTION OF NEW TRIPS

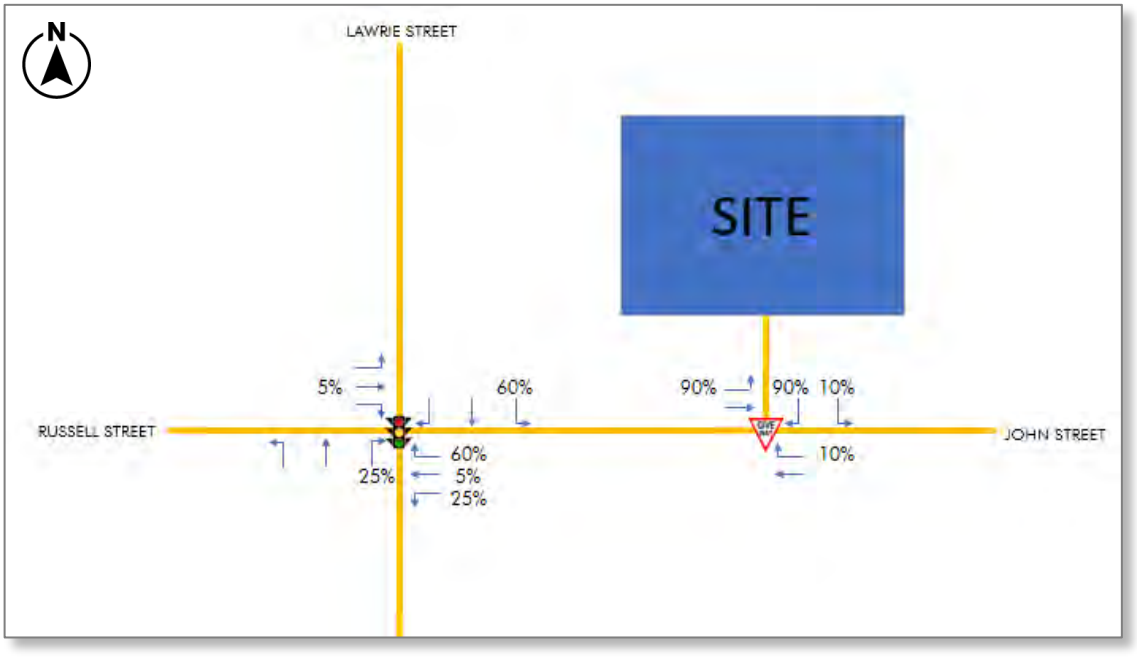
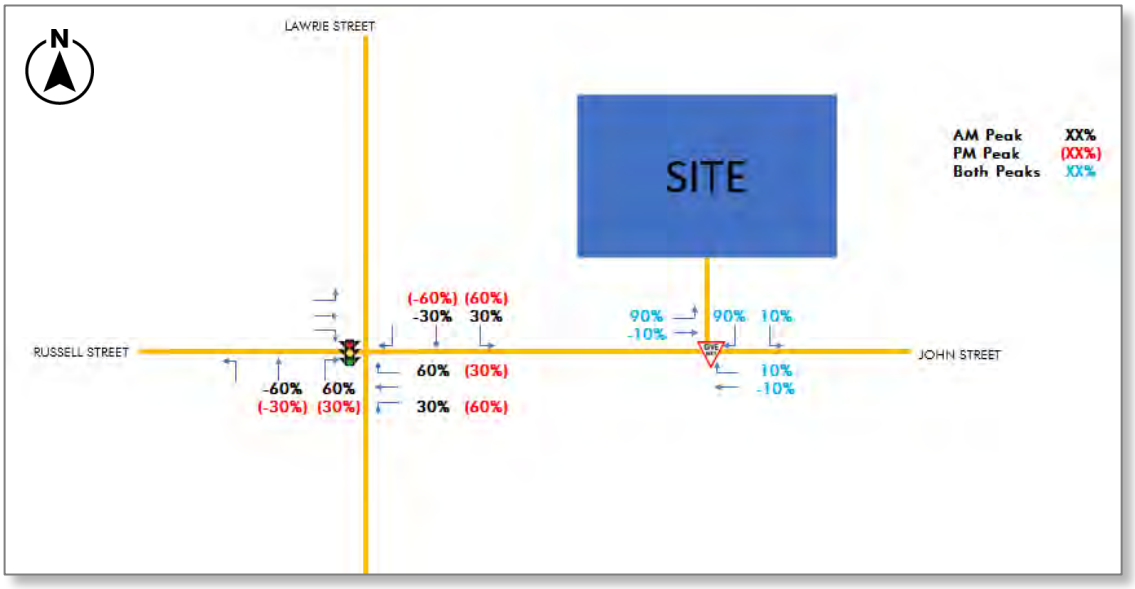


Figure 4.3: DEVELOPMENT DISTRIBUTION OF UNDIVERTED TRIPS



4.4 INTERSECTION OPERATIONS

The likely impact of the proposed development on the peak hour operations on the surrounding road network has been assessed using SIDRA. These analyses are based on the peak hour turning movement forecasts presented in Appendix E.

4.4.1 Lawrie Street / John Street / Russell Street Intersection

The results of the SIDRA analyses of the Lawrie Street / John Street / Russell Street intersection are attached in Appendix C and summarised in Table 4.2. These results are based on the SIDRA representation of the intersection shown in Figure 2.3. The results indicate that the intersection is expected to experience LOS D operations (or better) during the weekday morning and evening peak hours, under 2023 pre and post development conditions. The addition of development generated traffic is not expected to have a significant adverse impact on the intersection operations.

Table 4.2: LAWRIE STREET / JOHN STREET / RUSSELL STREET INTERSECTION

PEAK HOUR	DOS	CYCLE TIME	AVG DELAY	95% QUEUE	CRITICAL APPROACH
Weekday Morning					
2023 Pre Development	65%	120s	32.9s	24.7 vehicles	South: Lawrie Street
2023 Post Development	72%	120s	36.6s	26.2 vehicles	East: John Street
Weekend Evening					
2023 Pre Development	71%	100s	28.6s	22.1 vehicles	North: Lawrie Street
2023 Post Development	73%	100s	30.3s	22.9 vehicles	North: Lawrie Street

4.5 INTERSECTION DELAY

4.5.1 Aggregate Delay Impacts

The TMR Guide to Traffic Impact Assessment (2018) (GTIA) defines the impact assessment area for intersection delay and road safety as all intersections on the state-controlled road network where development traffic exceeds more than 5% of the base traffic for any movement in the year of opening (ie 2023).

The methodology for calculating the impact of a development in terms of intersection delay is discussed in Section 11.2 of the TMR GTIA. Consistent with the GTIA, net-change in delay is calculated across the impact assessment area for the opening year (2023).

TMR's GTIA outlines the following desired outcome with respect to intersection delay:

> *"The desired outcome is to ensure that the sum of intersection delays on base traffic in the impact assessment area does not significantly worsen (ie does not increase average delay be more than 5% in aggregate). In other words, the additional delays created by traffic generated by the development need to be mitigated by upgrades to intersection in the impact assessment area which reduce delays (in aggregate) to at least pre-development levels."*

Net-change in delay is calculated by summing the total vehicle minutes at the intersection for all design peak periods assessed for the pre-development scenario. The post-development delay is calculated by multiplying the post-development average delay per movement to the pre-development volume on each movement.

The expected net change in delay has been calculated for the Lawrie Street / John Street / Russell Street signalised intersection, as indicated in Table 4.3.

Table 4.3: NET CHANGE IN DELAY

PEAK HOUR	PRE-DEV VOLUME	DELAY (VEH-MIN)		INCREASE IN DELAY
		PRE-DEV	POST-DEV	
Weekday Morning	4,670vph	1,066	1,147	+7.7%
Weekday Evening	4,355vph	971	983	+1.2%
Total	9,025vph	2,037	2,130	+4.6%

Table 4.5 indicates that the additional development generated traffic would result in a 4.6% increase in average delay for pre-development traffic at the Lawrie Street / John Street / Russell Street intersection. Therefore, the addition of development generated traffic does not warrant mitigation works to be undertaken on the state-controlled road network.

5.0 ROAD SAFETY ASSESSMENT

5.1 REQUIREMENT

The TMR GTIA requires a risk assessment of the likelihood and consequence of safety risks being increased on the state-controlled road network, due to the addition of site accesses and development generated traffic, pedestrians or cyclists. A risk assessment has been undertaken using the methodology prescribed in Section 9.3.2 of the GTIA, to assess the potential impacts of the proposal on the safety of the intersections.

5.2 METHODOLOGY

The risks inherent on the existing state-controlled road network and associated with the addition of development generated traffic were scored using the risk scoring matrix outlined in TMR's GTIA, as reproduced in Figure 5.1. In undertaking the risk assessment:

- the likelihood of a crash was determined based on the number of similar crashes reported in the historical crash data
- the consequence of a crash was based on the Fatal and Serious Injury (FSI) Indexes reported in Part 4 of TMR's Manual of Uniform Traffic Control Devices (MUTCD) for different crash types / DCA Codes

Figure 5.1: SAFETY RISK SCORE MATRIX

		Potential consequence				
		Property only (1)	Minor injury (2)	Medical treatment (3)	Hospitalisation (4)	Fatality (5)
Potential likelihood	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

5.3 CRASH DATA

Historic crash data for the past five years (January 2015 – December 2019) was sourced from TMR for the Lawrie Street / John Street / Russell Street intersection. The data indicates that a total of two crashes were recorded. A summary of the crash data is provided in Table 5.1.

However, it is noted that the historic intersection crash data relates to the previous roundabout configuration and not the upgraded traffic signal layout, which limits the value of the data in terms of future crash evaluation

Table 5.1: CRASH DATA SUMMARY

CRASH TYPE	DCA	SEVERITY	YEAR
Lawrie Street / John Street / Russell Street			
Vehicles same direction, rear end	301	Minor injury	2018
Vehicles same direction, right rear	303	Hospitalisation	2017

5.4 RISK ASSESSMENT

The increase in traffic at the Lawrie Street / John Street / Russell Street intersection may increase the likelihood of the following safety risks:

- rear-end crashes between associated with additional left and right-turning vehicles at the intersection (DCA Code 302 and 303)
- queuing in the Lawrie Street right turn lanes exceeding the available storage capacity, resulting in rear end crashes (DCA Code 301)

The outcomes of the road safety assessment are identified in Table 5.2 and are discussed below.

Table 5.2: ROAD SAFETY RISK ASSESSMENT

RISK ITEM	PRE DEVELOPMENT			POST DEVELOPMENT			COMMENT
	LIKELIHOOD	CONSEQUENCE	RISK	LIKELIHOOD	CONSEQUENCE	RISK	
Increased risk of rear-end crashes between left-turning vehicles (DCA 302)	1	2	L	2	2	L	The minor increase in left turn volumes has been judged to result in a slight increase in likelihood with no increase in consequence.
Increased risk of rear-end crashes between right-turning vehicles (DCA 303)	1	2	L	2	2	L	The minor increase in right turn volumes has been judged to result in a slight increase in likelihood with no increase in consequence.
Queuing in the Lawrie Street right turn lanes exceeding the available storage capacity (DCA 302)	1	2	L	1	2	L	This risk has been judged to have a rare likelihood of occurring as the SIDRA intersection assessment has demonstrated that queueing will not extend out of the right turn lanes on Lawire Street in any scenarios.

As shown in Table 5.2, the proposed development is not expected to increase the risk score of the state-controlled road network. Accordingly, the safety risk assessment has not identified the need for any mitigation works.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The proposed development at 6 Lawrie Street, Gracemere has been evaluated in terms of the site access arrangements, parking provision and design, servicing arrangements, pedestrian / cyclist facilities and likely traffic impact. The main points to note are:

- the proposal involves a material change of use for two food and drink outlets
- access is proposed via two driveway crossovers on John Street, with the northern driveway accommodating all movements and the southern driveway limited to entry movements only
- the access driveways are located in accordance with AS2890.1 requirements and are expected to operate safely and efficiently
- both crossovers on John Street would be in a General Wide design accordance with IPWEA Standard Drawing RS-051
- the access arrangements comply with AS2890.1 requirements in terms of sight distance and queuing provision
- the proposed parking provision of 29 spaces is adequate to accommodate the predicted peak parking demand and on-site parking areas have been designed consistently with AS2890.1 requirements
- the proposed layout provides dedicated loading bays for both tenancies and can accommodate on-site refuse collection
- pedestrian access to the development is proposed via dedicated pedestrian entrances on Lawrie Street and John Street
- the proposed development is expected to generate 148 vehicle trips in the weekday morning peak hour (74 in and 74 out) during the weekday morning and 170 vehicle trips in the weekday morning peak hour (85 in and 85 out) during the weekday evening peak hour
- the addition of development generated traffic is not expected to have a significant adverse impact on the operation of the surrounding road network
- the proposed development is not expected to result in any significant adverse impact on the safety of the surrounding road network

6.2 RECOMMENDATIONS

Based on our assessment, it is recommended that

- waste collection for Tenancy 2 occurs outside the proposed hours of operation
- landscaping within the pedestrian sight splay at the northern access driveway be limited to appropriate species (ie low vegetation) that are unlikely to encroach on sight lines
- a minimum of four bicycle parking spaces be provided for Tenancy 1 and two bicycle parking spaces for Tenancy 2
- John Street be upgraded along the site frontage to provide kerb and channel and a pedestrian footpath (say 1.5m wide)

APPENDIX A
TRAFFIC SURVEYS

Site No:	60873	**Leg No:**	1	**Intersection ID:**	14325
Location:	Gavial - Gracemere Rd (Lawrie St			**Desc:**	Lawrie St & John St(R)/Russell St
Day/Date					

TIME	Pedestrian		Left			Through			Right			U-Turn		
(1/4 hr end)	All Pedestrians	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
0600	0	0	1	0	1	40	1	41	1	1	2			1
0615	0	0	3	0	3	39	2	41	0	1	1			4
0630	0	0	0	0	0	39	6	45	0	0	0			3
0645	0	0	0	0	0	63	2	65	5	0	5			6
0700	2	2	2	0	2	40	4	44	3	0	3			2
0715	5	5	1	0	1	54	3	57	8	0	8			4
0730	0	0	0	0	0	45	6	51	6	0	6			5
0745	0	0	1	0	1	59	4	63	10	0	10			8
0800	0	0	1	1	2	64	4	68	7	0	7			6
0815	0	0	1	0	1	103	2	105	11	1	12			7
0830	0	0	1	0	1	113	6	119	10	1	11			7
0845	0	0	2	0	2	123	4	127	12	1	13			9
0900	1	1	3	0	3	111	7	118	20	0	20			8
0915	0	0	3	0	3	92	5	97	5	2	7			6
0930	1	1	0	0	0	92	4	96	4	0	4			3
0945	2	2	3	0	3	108	5	113	11	1	12			5
1000	0	0	1	1	2	92	6	98	14	0	14			7
1015	0	0	0	0	0	111	6	117	4	0	4			6
1030	0	0	2	0	2	89	6	95	11	0	11			10
1045	0	0	3	0	3	120	5	125	15	1	16			9
1100	0	0	3	0	3	110	9	119	9	0	9			5
1115	0	0	1	0	1	107	7	114	3	2	5			2
1130	0	0	4	0	4	117	4	121	10	0	10			8
1145	0	0	1	0	1	124	4	128	7	2	9			13
1200	2	2	1	0	1	130	4	134	11	1	12			9
1215	0	0	1	0	1	136	4	140	8	0	8			7
1230	0	0	1	0	1	131	3	134	11	1	12			2
1245	1	1	1	0	1	125	5	130	8	0	8			14
1300	0	0	2	0	2	111	4	115	6	0	6			12
1315	0	0	2	0	2	109	6	115	8	1	9			5
1330	0	0	1	0	1	130	8	138	11	0	11			6
1345	0	0	1	0	1	114	4	118	7	3	10			5
1400	0	0	0	0	0	114	7	121	8	0	8			7
1415	0	0	1	0	1	118	7	125	10	0	10			10
1430	0	0	1	0	1	136	7	143	12	0	12			7
1445	0	0	0	0	0	154	5	159	5	1	6			12
1500	0	0	7	0	7	180	8	188	7	0	7			9
1515	0	0	5	0	5	208	14	222	15	0	15			14
1530	0	0	0	0	0	229	10	239	20	0	20			10
1545	0	0	2	0	2	194	9	203	10	0	10			7
1600	0	0	2	0	2	214	7	221	7	0	7			4
1615	0	0	3	0	3	212	2	214	13	0	13			11
1630	0	0	5	0	5	221	4	225	9	1	10			5
1645	0	0	1	0	1	211	10	221	14	0	14			7
1700	1	1	5	0	5	254	1	255	13	0	13			4
1715	0	0	2	0	2	230	3	233	10	0	10			4
1730	1	1	4	0	4	214	2	216	11	0	11			4
1745	0	0	0	0	0	189	3	192	8	0	8			10
SUM Totals	16	16	85	2	87	6119	249	6368	428	21	449	0	0	329

Site No:	60875	**Leg No:**	2	**Intersection ID:**	14325
Location:	John St (to James St)			**Desc:**	Lawrie St & John St(R)/Russell St
Day/Date					

TIME	Pedestrian		Left			Through			Right			U-Turn		
(1/4 hr end)	All Pedestrians	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
0600		0	1	0	1	0	0	0	14	0	14			0
0615		0	0	0	0	0	0	0	22	0	22			0
0630		0	0	0	0	0	0	0	17	0	17			0
0645		0	1	0	1	1	0	1	23	0	23			0
0700		0	0	0	0	0	0	0	17	0	17			0
0715		0	3	0	3	0	0	0	27	0	27			0
0730		0	3	0	3	0	0	0	59	0	59			0
0745		0	4	0	4	3	0	3	66	0	66			1
0800		0	5	0	5	0	0	0	51	0	51			0
0815		0	1	0	1	3	0	3	44	0	44			0
0830		0	7	0	7	1	0	1	40	0	40			1
0845		0	1	0	1	0	0	0	26	0	26			0
0900		0	1	0	1	1	0	1	24	0	24			0
0915		0	1	0	1	1	0	1	22	0	22			0
0930		0	0	0	0	0	0	0	20	0	20			0
0945		0	0	0	0	0	0	0	19	0	19			0
1000		0	2	0	2	0	0	0	11	0	11			0
1015		0	0	0	0	0	0	0	18	0	18			0
1030		0	1	0	1	1	0	1	21	0	21			0
1045		0	1	0	1	1	0	1	11	0	11			0
1100		0	1	0	1	2	0	2	13	0	13			0
1115		0	1	0	1	0	0	0	24	0	24			0
1130		0	1	0	1	0	0	0	20	0	20			0
1145		0	0	0	0	0	0	0	14	0	14			0
1200		0	0	0	0	1	0	1	14	4	18			0
1215		0	2	0	2	0	0	0	12	0	12			0
1230		0	2	0	2	0	0	0	16	0	16			0
1245		0	2	0	2	0	0	0	8	0	8			0
1300		0	1	0	1	0	0	0	12	0	12			0
1315		0	1	0	1	0	0	0	11	0	11			0
1330		0	0	0	0	0	0	0	13	0	13			0
1345		0	1	0	1	0	0	0	16	0	16			0
1400		0	0	0	0	3	0	3	17	0	17			0
1415		0	2	0	2	0	0	0	19	1	20			0
1430		0	3	0	3	1	0	1	25	0	25			0
1445		0	4	0	4	1	0	1	17	0	17			0
1500		0	3	0	3	0	0	0	11	1	12			0
1515		0	7	1	8	1	0	1	28	0	28			0
1530		0	2	0	2	0	0	0	18	0	18			0
1545		0	3	0	3	1	0	1	9	0	9			0
1600		0	2	0	2	2	0	2	18	0	18			0
1615		0	1	0	1	1	0	1	11	0	11			0
1630		0	4	0	4	0	0	0	15	0	15			0
1645		0	4	0	4	1	0	1	22	0	22			0
1700		0	3	0	3	1	0	1	20	0	20			1
1715		0	4	0	4	0	0	0	11	0	11			0
1730		0	8	0	8	0	0	0	20	0	20			0
1745		0	1	0	1	0	0	0	22	0	22			0
SUM Totals	0	0	95	1	96	27	0	27	1008	6	1014	0	0	3

Site No:	60876	**Leg No:**	3	**Intersection ID:**	14325
Location:	To Burnett Hwy & Bruce Hwy			**Desc:**	Lawrie St & John St(R)/Russell St
Day/Date					

TIME	**Pedestrian**		**Left**			**Through**			**Right**			**U-Turn**		
(1/4 hr end)	All Pedestrians	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
0600	0	0	0	0	0	104	3	107	0	0	0			107
0615	0	0	0	1	1	111	10	121	0	0	0			122
0630	0	0	2	0	2	139	3	142	1	0	1			145
0645	0	0	1	0	1	130	1	131	0	0	0			132
0700	0	0	2	0	2	135	8	143	0	0	0			145
0715	0	0	1	1	2	171	4	175	6	0	6			184
0730	1	1	2	1	3	220	8	228	5	0	5			236
0745	0	0	1	0	1	195	7	202	4	0	4			209
0800	0	0	0	0	0	225	7	232	4	0	4			239
0815	0	0	2	1	3	222	1	223	4	0	4			231
0830	0	0	1	0	1	220	3	223	6	0	6			230
0845	0	0	2	0	2	199	2	201	3	0	3			208
0900	0	0	2	0	2	124	7	131	3	0	3			138
0915	0	0	3	1	4	120	6	126	3	0	3			133
0930	0	0	1	0	1	136	13	149	0	0	0			151
0945	0	0	3	0	3	106	3	109	3	0	3			116
1000	0	0	2	0	2	118	4	122	0	0	0			125
1015	0	0	2	0	2	106	7	113	0	0	0			116
1030	0	0	1	0	1	128	6	134	0	0	0			135
1045	0	0	2	1	3	114	4	118	1	0	1			124
1100	0	0	3	0	3	111	5	116	2	0	2			121
1115	0	0	1	0	1	112	6	118	3	0	3			124
1130	0	0	2	0	2	119	8	127	0	0	0			129
1145	0	0	4	0	4	104	5	109	1	0	1			114
1200	0	0	2	0	2	103	4	107	1	0	1			112
1215	0	0	0	0	0	118	3	121	1	0	1			122
1230	0	0	1	2	3	107	6	113	1	0	1			119
1245	0	0	1	0	1	122	7	129	1	0	1			134
1300	0	0	2	0	2	109	6	115	0	0	0			118
1315	0	0	2	1	3	105	8	113	0	0	0			118
1330	0	0	3	0	3	108	3	111	0	0	0			114
1345	0	0	3	0	3	102	8	110	2	0	2			115
1400	0	0	1	0	1	134	3	137	0	0	0			139
1415	0	0	1	0	1	151	8	159	0	0	0			161
1430	0	0	3	0	3	178	4	182	3	0	3			189
1445	0	0	1	1	2	136	11	147	1	1	2			152
1500	0	0	7	1	8	185	3	188	7	0	7			205
1515	0	0	2	0	2	149	7	156	3	0	3			166
1530	0	0	3	0	3	156	12	168	5	0	5			178
1545	0	0	2	0	2	116	4	120	5	1	6			132
1600	0	0	3	0	3	126	4	130	3	0	3			139
1615	0	0	4	0	4	123	3	126	3	0	3			137
1630	0	0	2	0	2	130	3	133	3	0	3			142
1645	0	0	5	0	5	121	2	123	5	1	6			136
1700	0	0	4	0	4	123	3	126	6	0	6			140
1715	0	0	3	0	3	134	2	136	4	1	5			144
1730	0	0	0	0	0	149	5	154	8	0	8			165
1745	0	0	2	0	2	112	0	112	2	0	2			118
SUM Totals	1	1	97	11	108	6566	250	6816	113	4	117	0	0	7109

Site No:	60877	**Leg No:**	4	**Intersection ID:**	14325
Location:	Russsel St (to Fisher St)			**Desc:**	Lawrie St & John St(R)/Russell St
Day/Date					

TIME	Pedestrian		Left			Through			Right			U-Turn		
(1/4 hr end)	All Pedestrians	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
0600	2	2	2	0	2	0	0	0	0	0	0			0
0615	2	2	2	0	2	0	0	0	0	0	0			1
0630	2	2	1	0	1	1	0	1	0	0	0			0
0645	1	1	3	0	3	1	0	1	1	0	1			0
0700	4	4	2	0	2	0	0	0	2	0	2			0
0715	0	0	5	0	5	0	0	0	1	0	1			0
0730	0	0	20	4	24	0	0	0	1	0	1			0
0745	3	3	26	0	26	1	0	1	1	0	1			0
0800	0	0	19	1	20	1	0	1	1	0	1			0
0815	1	1	20	0	20	0	0	0	1	0	1			0
0830	1	1	9	0	9	1	0	1	3	0	3			0
0845	1	1	5	1	6	2	0	2	1	0	1			0
0900	4	4	11	2	13	1	0	1	2	0	2			0
0915	1	1	8	0	8	2	0	2	0	1	1			0
0930	0	0	7	0	7	0	0	0	1	0	1			0
0945	1	1	5	0	5	0	0	0	2	0	2			0
1000	0	0	7	0	7	1	0	1	4	2	6			0
1015	2	2	5	0	5	0	0	0	3	0	3			0
1030	1	1	9	0	9	0	0	0	2	0	2			0
1045	2	2	5	0	5	1	0	1	3	0	3			0
1100	1	1	1	1	2	1	0	1	1	1	2			0
1115	1	1	4	1	5	0	0	0	1	0	1			0
1130	5	5	6	2	8	0	0	0	1	0	1			0
1145	1	1	7	0	7	0	0	0	2	1	3			0
1200	1	1	6	0	6	0	0	0	2	0	2			0
1215	0	0	2	1	3	2	0	2	1	0	1			0
1230	2	2	11	0	11	1	0	1	1	0	1			0
1245	1	1	9	0	9	0	0	0	0	0	0			0
1300	1	1	4	1	5	0	0	0	4	0	4			0
1315	0	0	1	0	1	0	0	0	2	0	2			0
1330	0	0	3	2	5	0	1	1	1	0	1			0
1345	0	0	4	1	5	0	0	0	0	0	0			0
1400	1	1	2	0	2	0	1	1	1	1	2			0
1415	5	5	8	0	8	1	0	1	2	0	2			0
1430	2	2	6	1	7	0	0	0	3	0	3			0
1445	0	0	1	0	1	0	0	0	2	0	2			0
1500	0	0	8	0	8	2	0	2	3	1	4			0
1515	3	3	7	0	7	0	0	0	1	0	1			0
1530	9	9	6	0	6	0	0	0	2	0	2			0
1545	6	6	3	0	3	1	0	1	2	0	2			0
1600	1	1	4	0	4	0	0	0	2	0	2			0
1615	1	1	7	0	7	1	0	1	1	0	1			0
1630	1	1	8	0	8	0	0	0	1	0	1			0
1645	0	0	3	0	3	2	0	2	0	0	0			0
1700	8	8	16	0	16	1	0	1	1	0	1			0
1715	3	3	6	0	6	0	0	0	1	0	1			0
1730	6	6	11	0	11	4	0	4	1	0	1			0
1745	2	2	7	0	7	1	0	1	1	0	1			0
SUM Totals	89	89	332	18	350	29	2	31	69	7	76	0	0	1

SURVEY PARAMETERS

INTERSECTION ID		14325	Lawrie St & John St(R)/Russell St(L)	Clear
TARS SITE ID /LEG	1	60873	Gavial - Gracemere Rd (Lawrie St) To Gracemere CBD	Clear
	2	60875	John St (to James St)	Clear
	3	60876	To Burnett Hwy & Bruce Hwy	Clear
	4	60877	Russel St (to Fisher St)	Clear
TIME INTERVAL		15 Minutes		
DATE (dd/mm/yyyy)		22/03/2018	START TIME 0600 (24 HR) HH:MM	FINISH TIME 1745
TRAFFIC DATA		2 BINS	Light / Heavy Vehicles	
PEDESTRIAN DATA		1 BIN	All Pedestrians	

Create Intersection Diagram

TDF FILES

TDF Output Folder

C:\

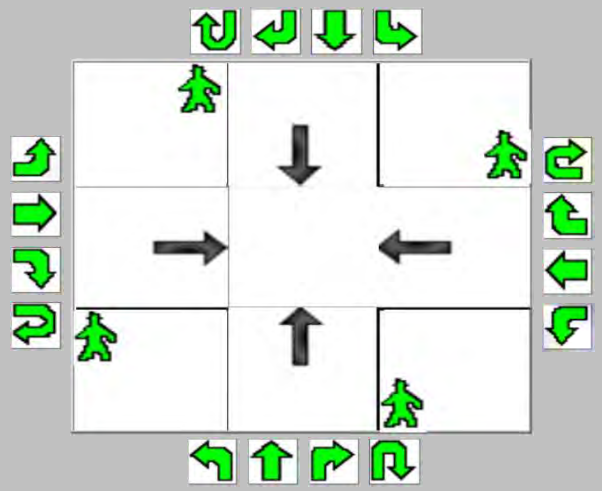
Browse ...

Create TDF Files

INTERSECTION DIAGRAM

Site Id 60873

Site Id 60877



Site Id 60875

Site Id 60876

Save Spreadsheet As ...

Create Traffic Count Tabs

SIDRA INPUTS

AM Peak Bounds

START

FINISH

PM Peak Bounds

START

FINISH

Process Sidra Inputs

APPENDIX B
DEVELOPMENT LAYOUT PLANS

PRELIMINARY

RPD
LOT 604 ON R2642

COUNCIL: ROCKHAMPTON

DEVELOPMENT ASSESSMENT

SITE AREA	- 3,204m²
LANDSCAPE AREA	- 788m²
BLDG SITE COVER (INCLUDES ALL ROOFED AREAS)	- 13%

IMPERVIOUS AREA

- PRE DEVELOPMENT - 0m²
- POST DEVELOPMENT - 2,416m²

BUILDING AREAS - GFA

- T1 - FOOD & DRINK - 283m² (INCLUDES INTERNAL REFUSE ENCLOSURE 22m2)
- T2 - FOOD & DRINK - 102m²

TOTAL BUILDING AREA - 385m²

EXTERNAL AREAS

- T1 - PLANT - 10m²
- T2 - ALFRESCO - 20m²

CAR PARKING

- PARKING *REQUIRED* - *
  * REFER TO TRAFFIC REPORT
- PARKING *PROVIDED* - 28

EXISTING GREENFIELD SITE (NTS)

Consulting Engineer

VERVE BUILDING DESIGN CO.
BUILDING DESIGNERS LICENCE No. 1002212 PH. 07 3857 0942
OFFICE 2, LEVEL 1, 488 LUTWYCHE ROAD, LUTWYCHE QLD 4030 E: info@vervebd.com.au
imagine □ create □ deliver

- commercial / industrial / retail
- fast food restaurant design
- travel centre / service stations
- project concept to completion

Revision and approvals				
Code	Date	Drn	Description	Dwn
P2	24.03.2022	GN	PRELIMINARY ISSUE	

Project Description
PROPOSED MIXED USE DEVELOPMENT
6 LAWRIE STREET, GRACEMERE, QLD.

Drawing Title
SITE PLAN

Scale 1:250 @ A1 / 1:500 @ A3
Drawn
Approved
Issued

Drawing Number 20009–DA01

Revision P2

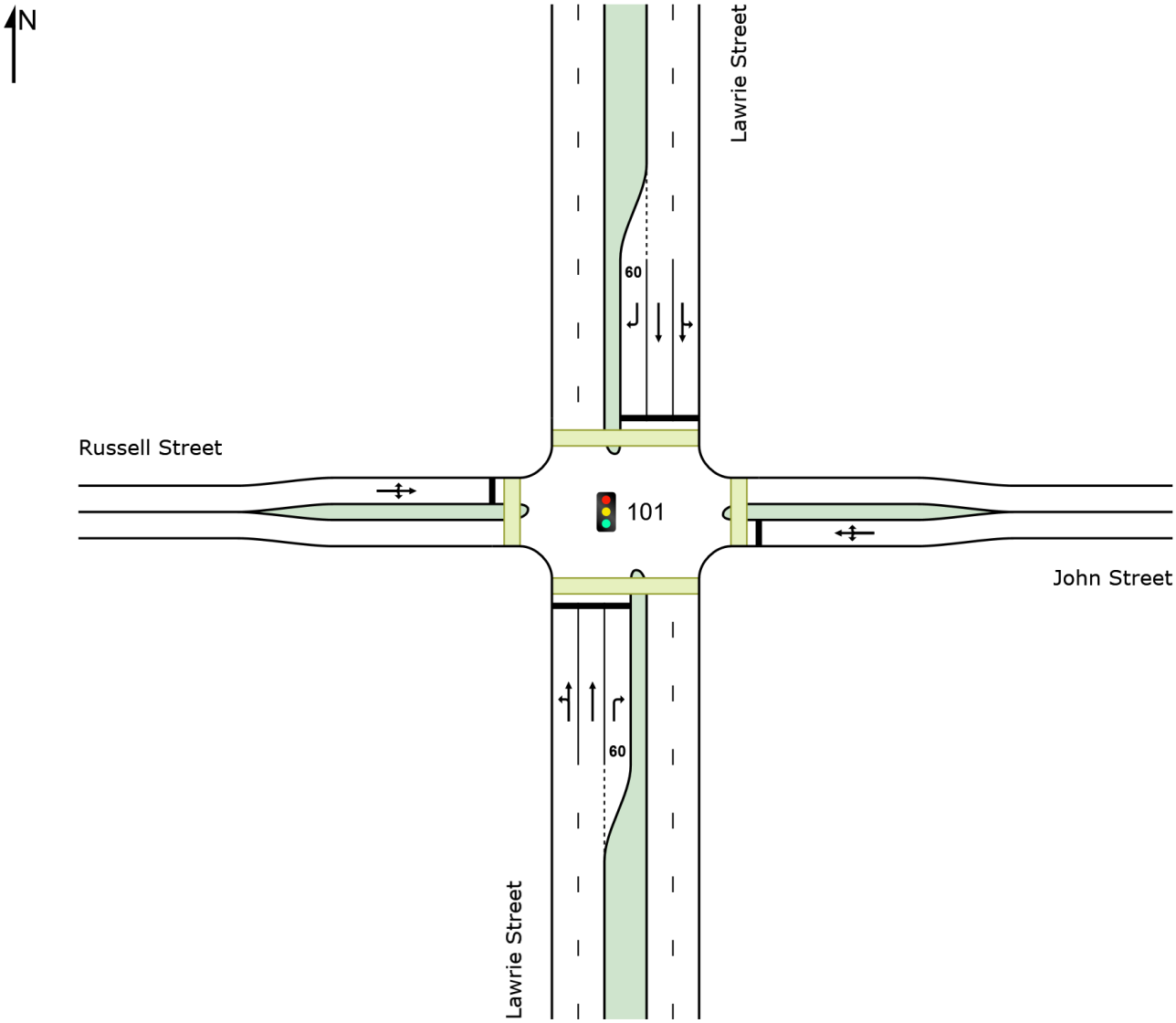
APPENDIX C
INTERSECTION ANALYSES

SITE LAYOUT

Site: 101 [2018 AM Existing (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 101 [2018 AM Existing (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawrie Street														
1	L2	6	2.2	6	2.2	0.680	32.3	LOS C	17.5	124.5	0.91	0.80	0.91	40.8
2	T1	879	2.2	914	2.2	* 0.680	26.6	LOS C	17.5	124.5	0.91	0.79	0.91	41.7
3	R2	17	2.2	18	2.2	0.145	50.8	LOS D	0.8	5.5	0.97	0.69	0.97	32.1
Approach		902	2.2	938	2.2	0.680	27.1	LOS C	17.5	124.5	0.91	0.79	0.91	41.4
East: John Street														
4	L2	14	2.2	15	2.2	0.653	46.1	LOS D	8.1	57.6	0.99	0.83	1.04	33.6
5	T1	4	2.2	4	2.2	* 0.653	40.5	LOS D	8.1	57.6	0.99	0.83	1.04	34.2
6	R2	161	2.2	167	2.2	0.653	46.1	LOS D	8.1	57.6	0.99	0.83	1.04	33.7
Approach		179	2.2	186	2.2	0.653	46.0	LOS D	8.1	57.6	0.99	0.83	1.04	33.7
North: Lawrie Street														
7	L2	6	2.2	6	2.2	0.323	28.3	LOS C	7.1	50.4	0.77	0.65	0.77	42.6
8	T1	419	2.2	436	2.2	0.323	22.8	LOS C	7.1	50.5	0.77	0.65	0.77	43.6
9	R2	43	2.2	45	2.2	* 0.367	52.1	LOS D	2.0	14.4	0.99	0.74	0.99	31.7
Approach		468	2.2	486	2.2	0.367	25.5	LOS C	7.1	50.5	0.79	0.66	0.79	42.1
West: Russell Street														
10	L2	55	2.2	57	2.2	0.237	42.5	LOS D	2.7	19.1	0.92	0.75	0.92	34.9
11	T1	4	2.2	4	2.2	* 0.237	36.9	LOS D	2.7	19.1	0.92	0.75	0.92	35.5
12	R2	6	2.2	6	2.2	0.237	42.5	LOS D	2.7	19.1	0.92	0.75	0.92	34.9
Approach		65	2.2	68	2.2	0.237	42.1	LOS D	2.7	19.1	0.92	0.75	0.92	34.9
All Vehicles		1614	2.2	1678	2.2	0.680	29.4	LOS C	17.5	124.5	0.88	0.75	0.89	40.3

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lawrie Street												
P1	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	208.9	220.5	1.06
East: John Street												
P2	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.3	210.6	1.05
North: Lawrie Street												

P3	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	208.9	220.5	1.06
West: Russell Street												
P4	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.3	210.6	1.05
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	205.1	215.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2023 AM Pre Dev (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawrie Street														
1	L2	7	2.2	7	2.2	0.649	34.2	LOS C	24.7	176.5	0.85	0.76	0.85	39.9
2	T1	1019	2.2	1059	2.2	* 0.649	28.4	LOS C	24.7	176.5	0.84	0.75	0.84	40.8
3	R2	20	2.2	21	2.2	0.227	68.3	LOS E	1.2	8.9	0.99	0.70	0.99	27.8
Approach		1046	2.2	1087	2.2	0.649	29.2	LOS C	24.7	176.5	0.85	0.75	0.85	40.4
East: John Street														
4	L2	16	2.2	17	2.2	0.644	55.3	LOS E	11.9	85.2	0.98	0.83	0.98	31.0
5	T1	5	2.2	5	2.2	* 0.644	49.8	LOS D	11.9	85.2	0.98	0.83	0.98	31.5
6	R2	187	2.2	194	2.2	0.644	55.3	LOS E	11.9	85.2	0.98	0.83	0.98	31.0
Approach		208	2.2	216	2.2	0.644	55.2	LOS E	11.9	85.2	0.98	0.83	0.98	31.0
North: Lawrie Street														
7	L2	6	2.2	6	2.2	0.307	29.2	LOS C	9.7	68.8	0.70	0.60	0.70	42.2
8	T1	486	2.2	505	2.2	0.307	23.6	LOS C	9.7	68.9	0.70	0.60	0.70	43.1
9	R2	50	2.2	52	2.2	* 0.569	70.4	LOS E	3.2	23.0	1.00	0.76	1.05	27.4
Approach		542	2.2	563	2.2	0.569	28.0	LOS C	9.7	68.9	0.72	0.61	0.73	41.0
West: Russell Street														
10	L2	64	2.2	67	2.2	0.323	57.5	LOS E	4.3	30.6	0.95	0.76	0.95	30.5
11	T1	5	2.2	5	2.2	* 0.323	51.9	LOS D	4.3	30.6	0.95	0.76	0.95	31.0
12	R2	7	2.2	7	2.2	0.323	57.5	LOS E	4.3	30.6	0.95	0.76	0.95	30.5
Approach		76	2.2	79	2.2	0.323	57.1	LOS E	4.3	30.6	0.95	0.76	0.95	30.5
All Vehicles		1872	2.2	1946	2.2	0.649	32.9	LOS C	24.7	176.5	0.83	0.72	0.83	38.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lawrie Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98
East: John Street												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Lawrie Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Russell Street											
P4 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
All Pedestrians	200	211	54.3	LOS E	0.2	0.2	0.95	0.95	220.1	215.6	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2023 AM Post Dev (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawrie Street														
1	L2	7	2.2	7	2.2	0.702	37.7	LOS D	26.2	186.9	0.90	0.80	0.90	38.4
2	T1	997	2.2	1036	2.2	*0.702	31.7	LOS C	26.2	186.9	0.89	0.79	0.89	39.4
3	R2	51	2.2	53	2.2	*0.580	70.5	LOS E	3.3	23.5	1.00	0.77	1.06	27.3
Approach		1055	2.2	1097	2.2	0.702	33.6	LOS C	26.2	186.9	0.89	0.79	0.89	38.5
East: John Street														
4	L2	37	2.2	38	2.2	0.718	54.1	LOS D	15.9	113.6	0.99	0.86	1.02	31.3
5	T1	6	2.2	6	2.2	*0.718	48.5	LOS D	15.9	113.6	0.99	0.86	1.02	31.8
6	R2	231	2.2	240	2.2	0.718	54.1	LOS D	15.9	113.6	0.99	0.86	1.02	31.4
Approach		274	2.2	285	2.2	0.718	53.9	LOS D	15.9	113.6	0.99	0.86	1.02	31.4
North: Lawrie Street														
7	L2	40	2.2	42	2.2	0.349	32.3	LOS C	10.8	76.8	0.74	0.66	0.74	40.4
8	T1	475	2.2	494	2.2	0.349	26.7	LOS C	10.9	77.4	0.74	0.64	0.74	41.4
9	R2	50	2.2	52	2.2	0.569	70.4	LOS E	3.2	23.0	1.00	0.76	1.05	27.4
Approach		565	2.2	587	2.2	0.569	31.0	LOS C	10.9	77.4	0.77	0.66	0.77	39.6
West: Russell Street														
10	L2	64	2.2	67	2.2	0.335	57.6	LOS E	4.5	31.9	0.95	0.77	0.95	30.5
11	T1	8	2.2	8	2.2	*0.335	52.0	LOS D	4.5	31.9	0.95	0.77	0.95	31.0
12	R2	7	2.2	7	2.2	0.335	57.6	LOS E	4.5	31.9	0.95	0.77	0.95	30.6
Approach		79	2.2	82	2.2	0.335	57.0	LOS E	4.5	31.9	0.95	0.77	0.95	30.6
All Vehicles		1973	2.2	2051	2.2	0.718	36.6	LOS D	26.2	186.9	0.87	0.76	0.88	37.2

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lawrie Street												
P1	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98
East: John Street												
P2	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
North: Lawrie Street												
P3	Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	223.9	220.5	0.98

West: Russell Street											
P4 Full	50	53	54.3	LOS E	0.2	0.2	0.95	0.95	216.3	210.6	0.97
All Pedestrians	200	211	54.3	LOS E	0.2	0.2	0.95	0.95	220.1	215.6	0.98

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2018 PM Existing (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawrie Street														
1	L2	15	4.2	16	4.2	0.499	30.2	LOS C	11.6	84.2	0.83	0.72	0.83	41.6
2	T1	632	4.2	657	4.2	0.499	24.6	LOS C	11.6	84.4	0.83	0.72	0.83	42.6
3	R2	21	4.2	22	4.2	0.182	51.1	LOS D	1.0	7.0	0.98	0.70	0.98	32.0
Approach		668	4.2	694	4.2	0.499	25.5	LOS C	11.6	84.4	0.84	0.72	0.84	42.2
East: John Street														
4	L2	16	4.2	17	4.2	0.315	43.1	LOS D	3.6	25.8	0.93	0.77	0.93	34.6
5	T1	2	4.2	2	4.2	* 0.315	37.5	LOS D	3.6	25.8	0.93	0.77	0.93	35.2
6	R2	67	4.2	70	4.2	0.315	43.1	LOS D	3.6	25.8	0.93	0.77	0.93	34.6
Approach		85	4.2	88	4.2	0.315	43.0	LOS D	3.6	25.8	0.93	0.77	0.93	34.6
North: Lawrie Street														
7	L2	14	4.2	15	4.2	0.688	32.4	LOS C	17.5	126.8	0.91	0.80	0.91	40.6
8	T1	852	4.2	886	4.2	* 0.688	26.6	LOS C	17.5	126.8	0.90	0.79	0.90	41.7
9	R2	52	4.2	54	4.2	* 0.450	52.5	LOS D	2.5	17.9	1.00	0.75	1.00	31.6
Approach		918	4.2	954	4.2	0.688	28.1	LOS C	17.5	126.8	0.91	0.79	0.91	40.9
West: Russell Street														
10	L2	24	4.2	25	4.2	0.133	41.7	LOS D	1.5	10.5	0.90	0.72	0.90	35.1
11	T1	3	4.2	3	4.2	* 0.133	36.1	LOS D	1.5	10.5	0.90	0.72	0.90	35.8
12	R2	9	4.2	9	4.2	0.133	41.7	LOS D	1.5	10.5	0.90	0.72	0.90	35.2
Approach		36	4.2	37	4.2	0.133	41.2	LOS D	1.5	10.5	0.90	0.72	0.90	35.2
All Vehicles		1707	4.2	1774	4.2	0.688	28.1	LOS C	17.5	126.8	0.88	0.76	0.88	40.9

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lawrie Street												
P1	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	208.9	220.5	1.06
East: John Street												
P2	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.3	210.6	1.05
North: Lawrie Street												

P3	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	208.9	220.5	1.06
West: Russell Street												
P4	Full	50	53	39.3	LOS D	0.1	0.1	0.94	0.94	201.3	210.6	1.05
All Pedestrians		200	211	39.3	LOS D	0.1	0.1	0.94	0.94	205.1	215.6	1.05

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2023 PM Pre Dev (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawrie Street														
1	L2	17	4.2	18	4.2	0.514	29.9	LOS C	14.3	103.9	0.81	0.71	0.81	41.7
2	T1	733	4.2	762	4.2	0.514	24.3	LOS C	14.4	104.1	0.81	0.71	0.81	42.7
3	R2	24	4.2	25	4.2	0.231	57.1	LOS E	1.2	9.0	0.98	0.71	0.98	30.4
Approach		774	4.2	805	4.2	0.514	25.5	LOS C	14.4	104.1	0.81	0.71	0.81	42.2
East: John Street														
4	L2	16	4.2	17	4.2	0.326	47.7	LOS D	4.0	28.8	0.94	0.77	0.94	33.1
5	T1	2	4.2	2	4.2	*0.326	42.1	LOS D	4.0	28.8	0.94	0.77	0.94	33.7
6	R2	67	4.2	70	4.2	0.326	47.7	LOS D	4.0	28.8	0.94	0.77	0.94	33.2
Approach		85	4.2	88	4.2	0.326	47.5	LOS D	4.0	28.8	0.94	0.77	0.94	33.2
North: Lawrie Street														
7	L2	16	4.2	17	4.2	0.713	32.7	LOS C	22.1	160.6	0.90	0.80	0.90	40.5
8	T1	988	4.2	1027	4.2	*0.713	26.7	LOS C	22.1	160.6	0.89	0.79	0.89	41.6
9	R2	60	4.2	62	4.2	*0.576	59.1	LOS E	3.2	23.4	1.00	0.78	1.06	29.9
Approach		1064	4.2	1106	4.2	0.713	28.7	LOS C	22.1	160.6	0.90	0.79	0.90	40.7
West: Russell Street														
10	L2	28	4.2	29	4.2	0.157	46.3	LOS D	1.9	13.4	0.91	0.73	0.91	33.6
11	T1	3	4.2	3	4.2	*0.157	40.7	LOS D	1.9	13.4	0.91	0.73	0.91	34.2
12	R2	10	4.2	10	4.2	0.157	46.3	LOS D	1.9	13.4	0.91	0.73	0.91	33.7
Approach		41	4.2	43	4.2	0.157	45.9	LOS D	1.9	13.4	0.91	0.73	0.91	33.7
All Vehicles		1964	4.2	2042	4.2	0.713	28.6	LOS C	22.1	160.6	0.86	0.75	0.87	40.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lawrie Street												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	213.9	220.5	1.03
East: John Street												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	206.3	210.6	1.02
North: Lawrie Street												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	213.9	220.5	1.03

West: Russell Street											
P4 Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	206.3	210.6	1.02
All Pedestrians	200	211	44.3	LOS E	0.1	0.1	0.94	0.94	210.1	215.6	1.03

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [2023 PM Post Dev (Site Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Lawrie Street														
1	L2	17	4.2	18	4.2	0.505	29.8	LOS C	14.0	101.6	0.80	0.70	0.80	41.8
2	T1	720	4.2	748	4.2	0.505	24.2	LOS C	14.0	101.8	0.80	0.70	0.80	42.8
3	R2	48	4.2	50	4.2	0.461	58.3	LOS E	2.5	18.4	1.00	0.74	1.00	30.1
Approach		785	4.2	816	4.2	0.505	26.4	LOS C	14.0	101.8	0.82	0.70	0.82	41.7
East: John Street														
4	L2	54	4.2	56	4.2	0.668	51.1	LOS D	8.8	63.5	1.00	0.84	1.05	32.1
5	T1	4	4.2	4	4.2	*0.668	45.5	LOS D	8.8	63.5	1.00	0.84	1.05	32.7
6	R2	116	4.2	121	4.2	0.668	51.1	LOS D	8.8	63.5	1.00	0.84	1.05	32.2
Approach		174	4.2	181	4.2	0.668	51.0	LOS D	8.8	63.5	1.00	0.84	1.05	32.2
North: Lawrie Street														
7	L2	67	4.2	70	4.2	0.732	33.0	LOS C	22.9	165.8	0.91	0.82	0.91	40.1
8	T1	962	4.2	1000	4.2	*0.732	27.1	LOS C	22.9	165.8	0.90	0.80	0.90	41.3
9	R2	60	4.2	62	4.2	*0.576	59.1	LOS E	3.2	23.4	1.00	0.78	1.06	29.9
Approach		1089	4.2	1132	4.2	0.732	29.2	LOS C	22.9	165.8	0.90	0.80	0.91	40.4
West: Russell Street														
10	L2	28	4.2	29	4.2	0.168	46.4	LOS D	2.0	14.4	0.91	0.73	0.91	33.7
11	T1	6	4.2	6	4.2	*0.168	40.8	LOS D	2.0	14.4	0.91	0.73	0.91	34.3
12	R2	10	4.2	10	4.2	0.168	46.4	LOS D	2.0	14.4	0.91	0.73	0.91	33.8
Approach		44	4.2	46	4.2	0.168	45.6	LOS D	2.0	14.4	0.91	0.73	0.91	33.8
All Vehicles		2092	4.2	2175	4.2	0.732	30.3	LOS C	22.9	165.8	0.88	0.77	0.89	39.8

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

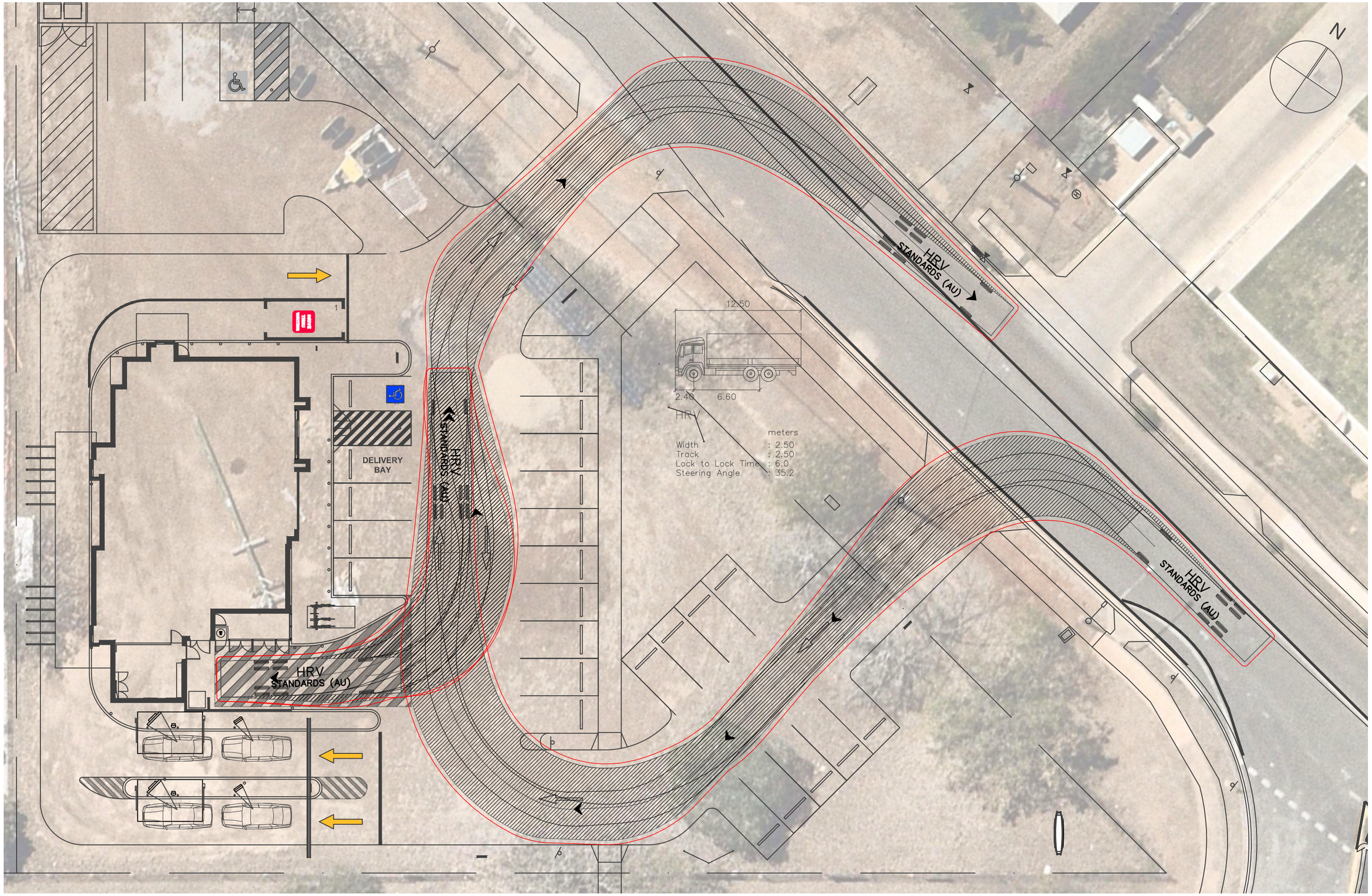
Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lawrie Street												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	213.9	220.5	1.03
East: John Street												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	206.3	210.6	1.02
North: Lawrie Street												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	213.9	220.5	1.03

West: Russell Street											
P4 Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	206.3	210.6	1.02
All Pedestrians	200	211	44.3	LOS E	0.1	0.1	0.94	0.94	210.1	215.6	1.03

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

APPENDIX D
VEHICLE SWEPT PATHS



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REV.	AMENDMENTS	DRN	DATE

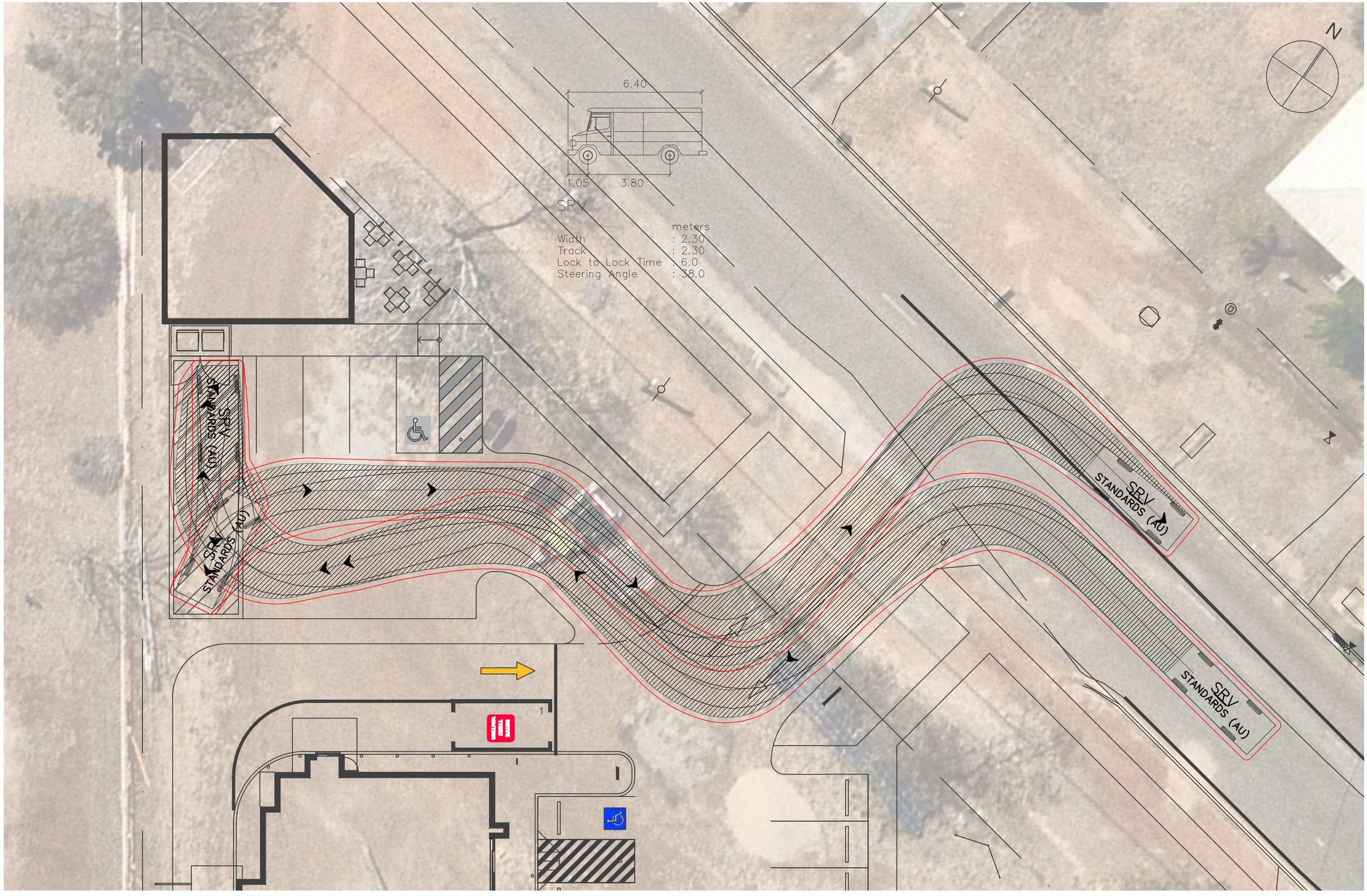
PROJECT TITLE: 6 LAWRIE STREET, GRACEMERE

DRAWING TITLE: HRV ACCESS AND MANOEUVRING

CLIENT: GIBB GROUP

DATE:	SCALE:	DRAWN:	APPROVED:
07/04/2022	1:250@A3	CB	JG

DRAWING NO.	REV	JOB NO.
22-496-001		22-496



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REV.	AMENDMENTS	DRN	DATE

PROJECT TITLE: 6 LAWRIE STREET, GRACEMERE

DRAWING TITLE: SRV ACCESS AND MANOEUVRING

CLIENT: GIBB GROUP

DATE:	SCALE:	DRAWN:	APPROVED:
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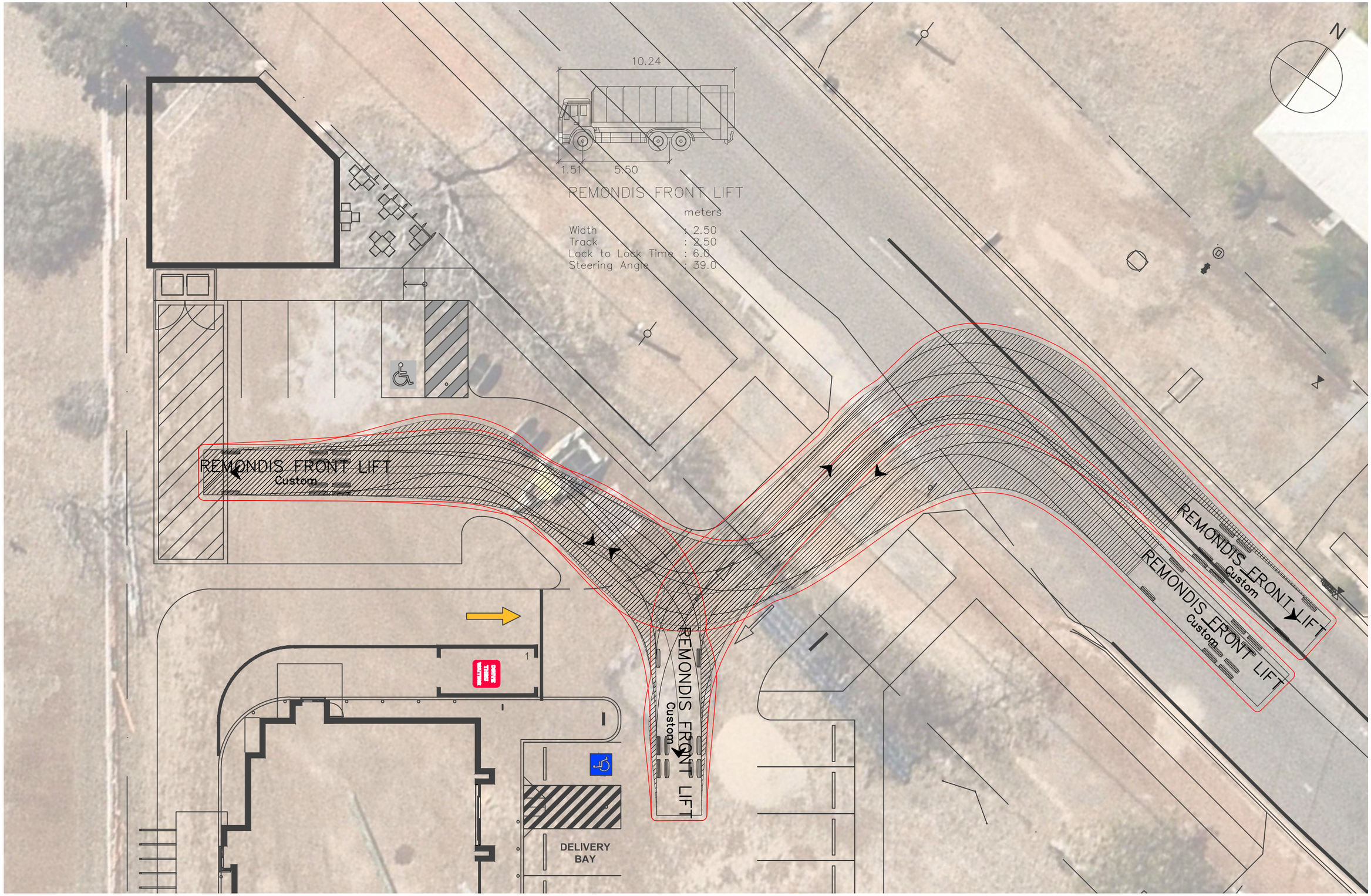
DRAWING NO.	REV	JOB NO.
22-496-002		22-496



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REV.	AMENDMENTS	DRN	DATE

PROJECT TITLE: 6 LAWRIE STREET, GRACEMERE

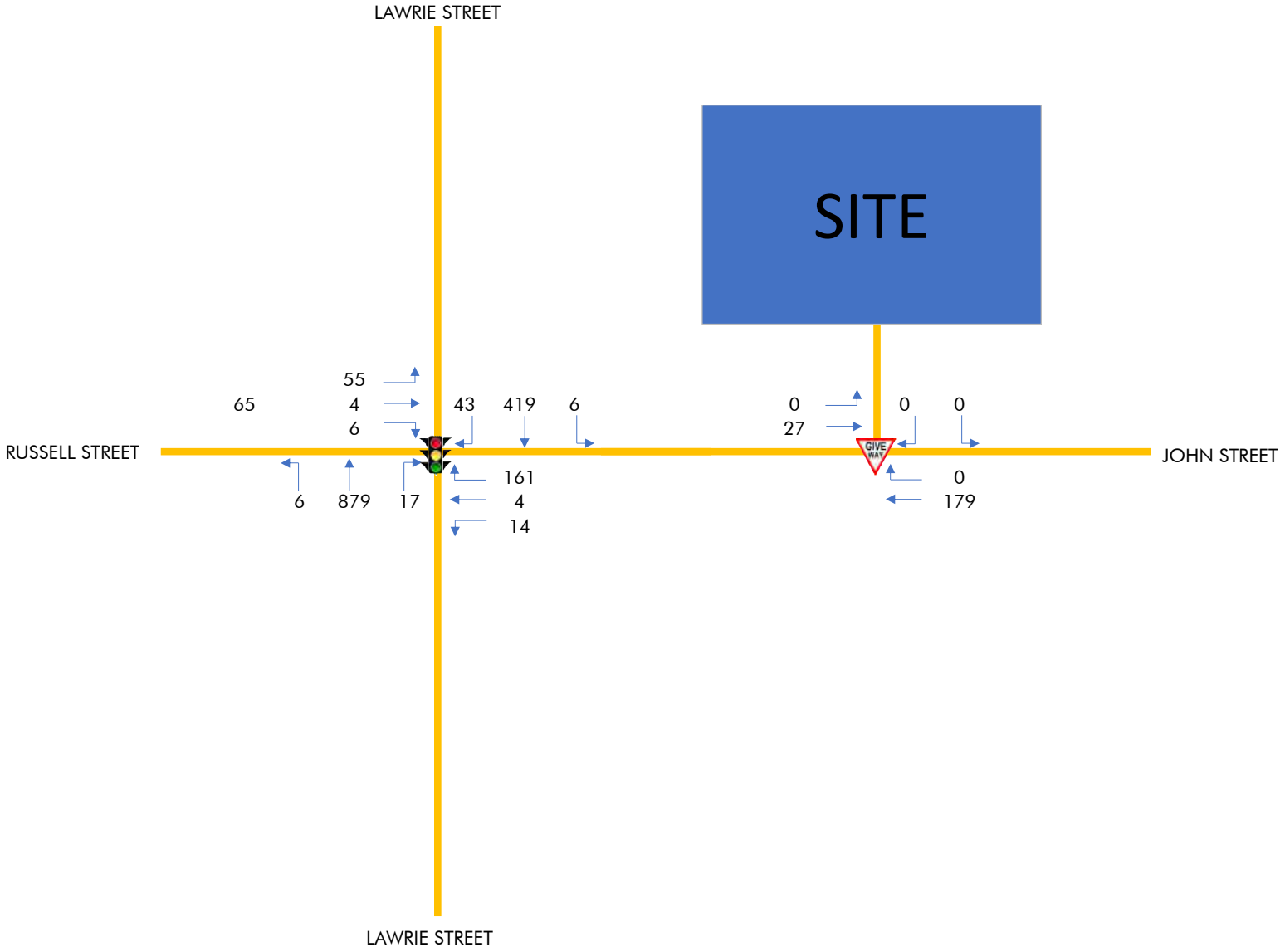
DRAWING TITLE: RCV ACCESS AND MANOEUVRING

CLIENT: GIBB GROUP

DATE:	SCALE:	DRAWN:	APPROVED:
07/04/2022	1:200@A3	CB	JG

DRAWING NO.	REV	JOB NO.
22-496-003		22-496

APPENDIX E
TURNING MOVEMENT FORECASTS



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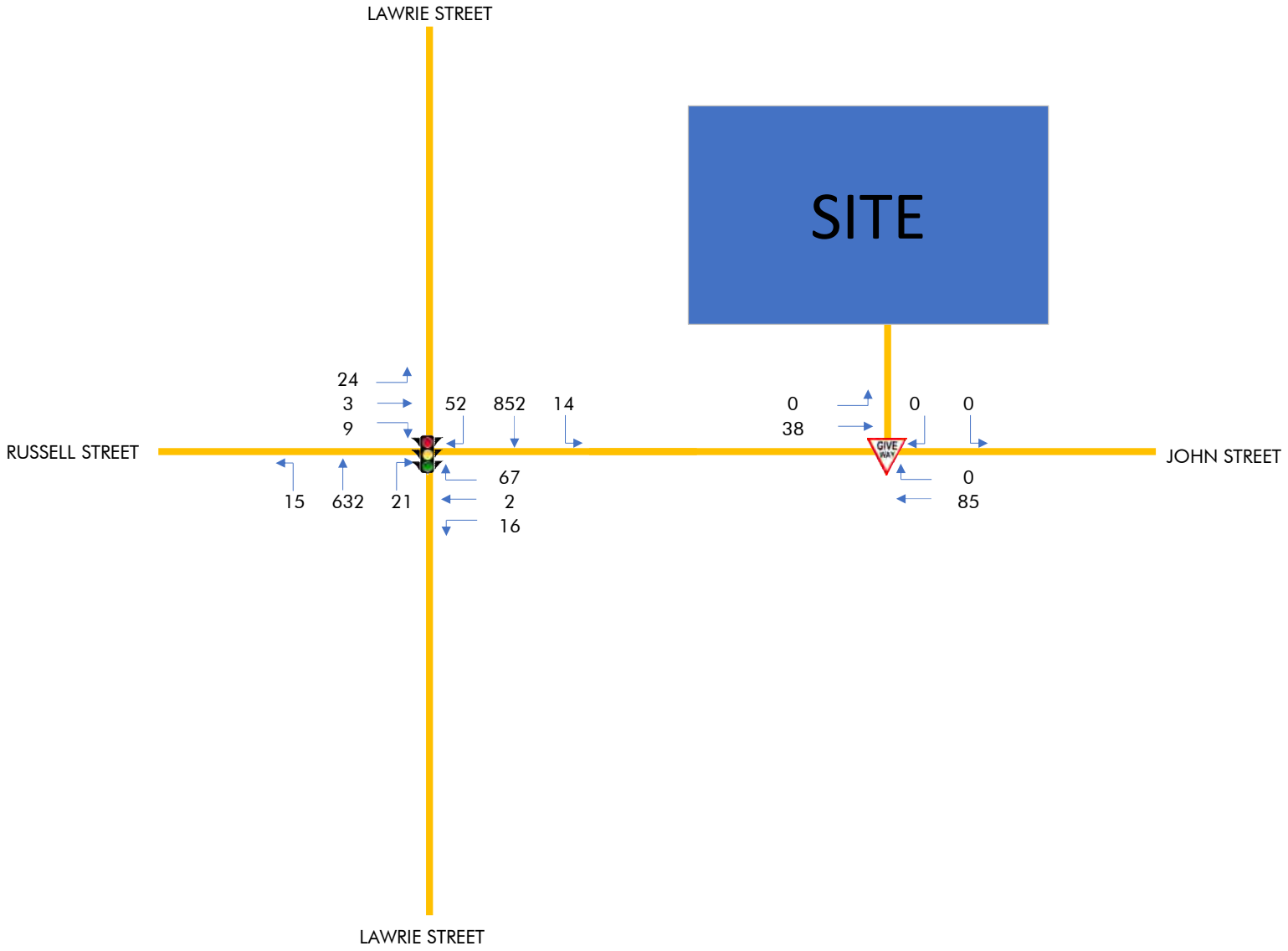
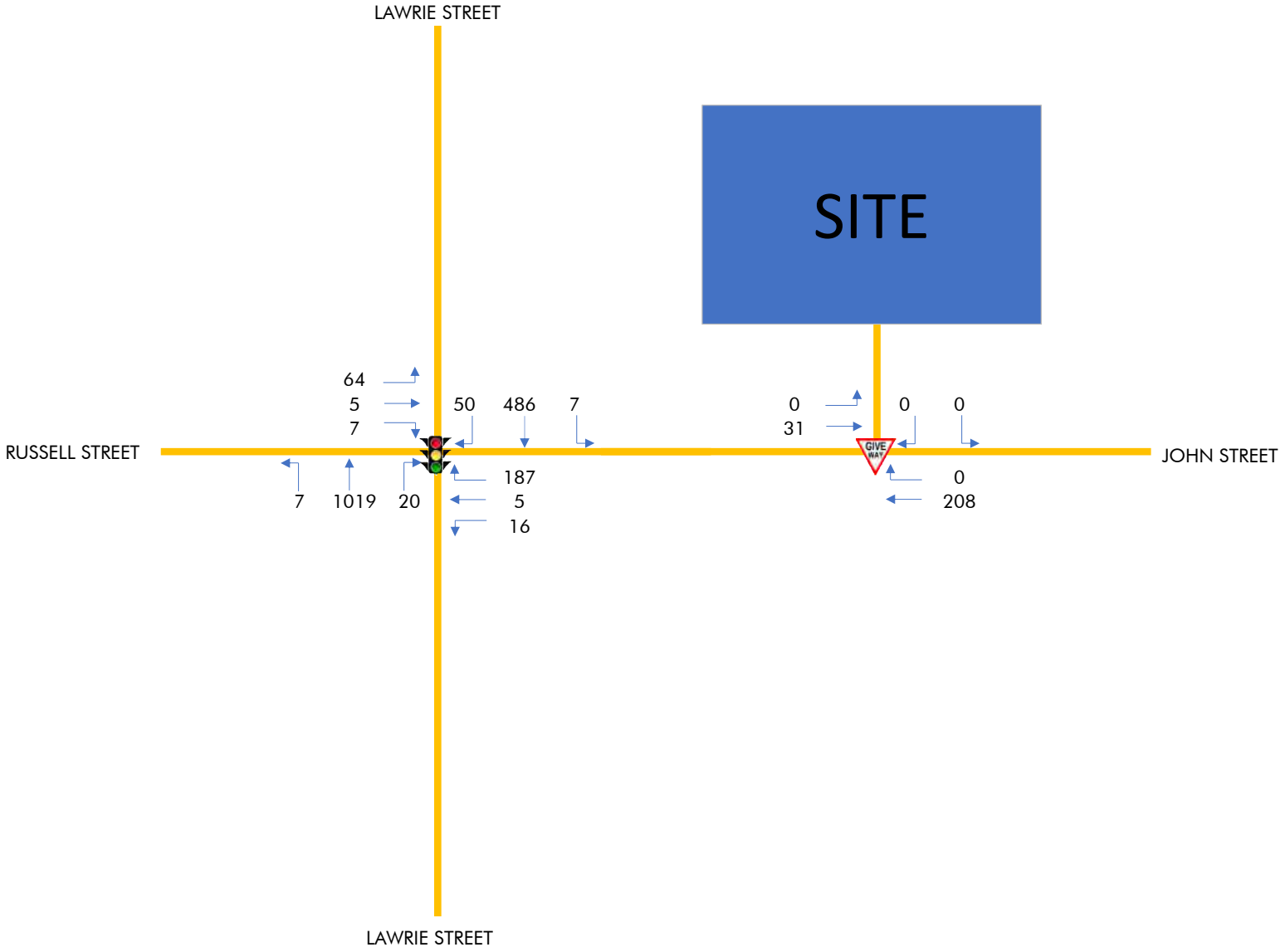
Client	Gibb Group			**Project**	6 Lawrie Street, Gracemere
Date	11/03/2022	**Figure**	Figure 1	**Job No.**	22-496
2018 Existing Morning Peak Hour					



PTT TRAFFIC & TRANSPORT ENGINEERING PTT ABN 96 067 593 962 P 07 3839 6771 WWW.PTT.COM.AU Level 2, 62 Astor Tce, Spring Hill QLD 4000	**Client** Gibb Group		**Project** 6 Lawrie Street, Gracemere
	Date 11/03/2022	**Figure** Figure 2	**Job No.** 22-496
	2018 Existing Evening Peak Hour		



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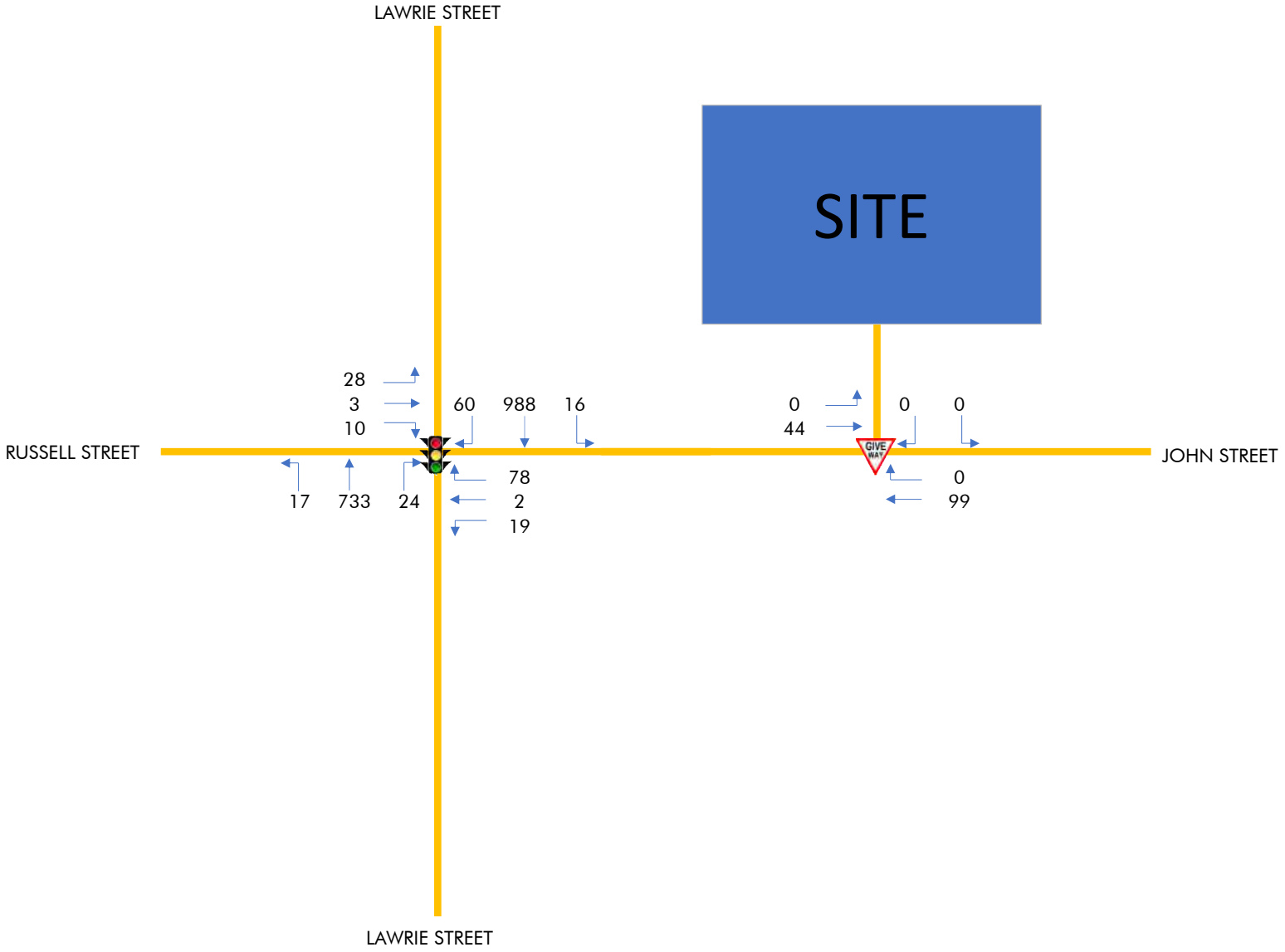
Client	Gibb Group			**Project**	6 Lawrie Street, Gracemere
Date	11/03/2022	**Figure**	Figure 3	**Job No.**	22-496
2023 Pre-Development Morning Peak Hour					



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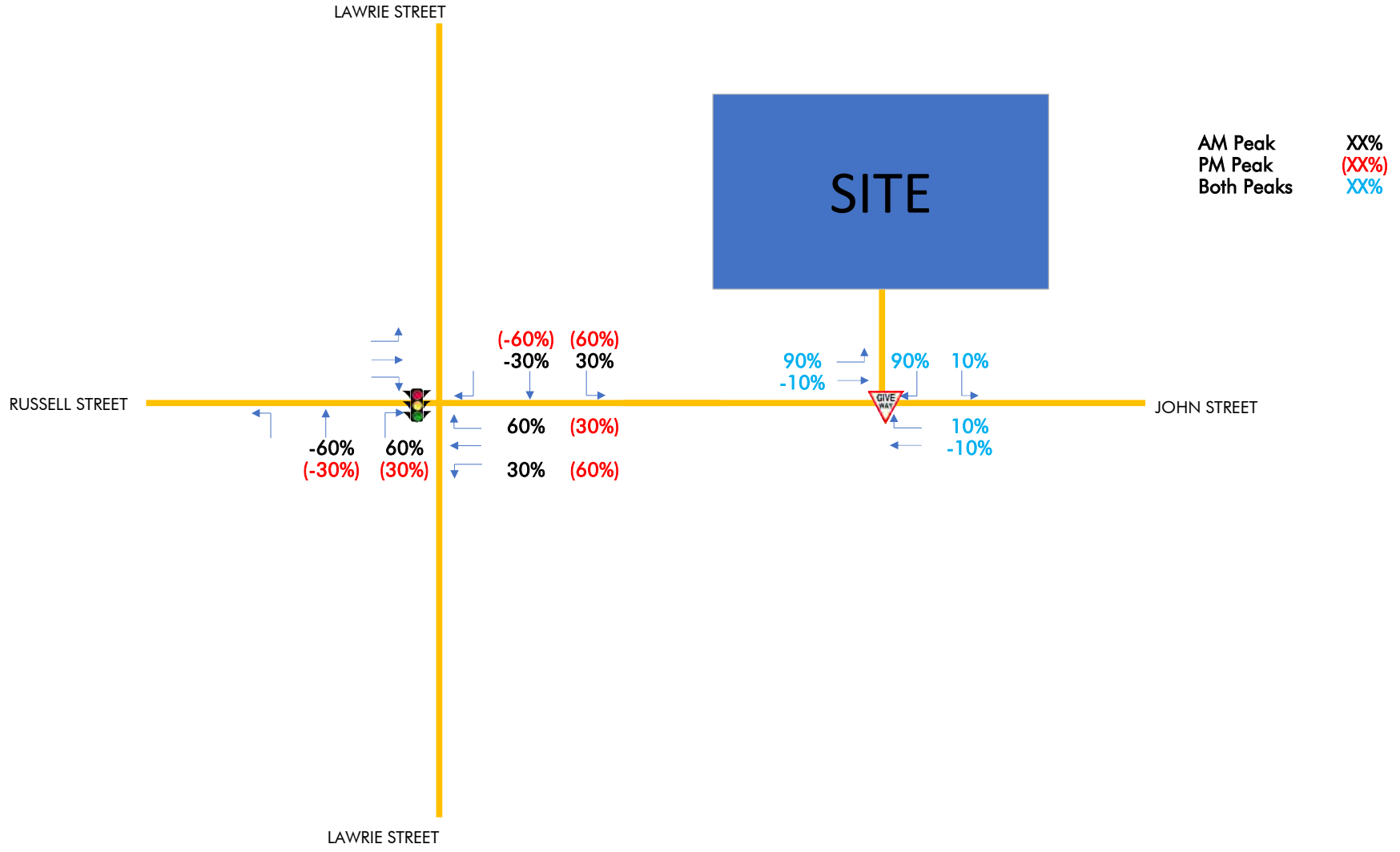
Client	Gibb Group			**Project**	6 Lawrie Street, Gracemere
Date	11/03/2022	**Figure**	Figure 4	**Job No.**	22-496
2023 Pre-Development Evening Peak Hour					



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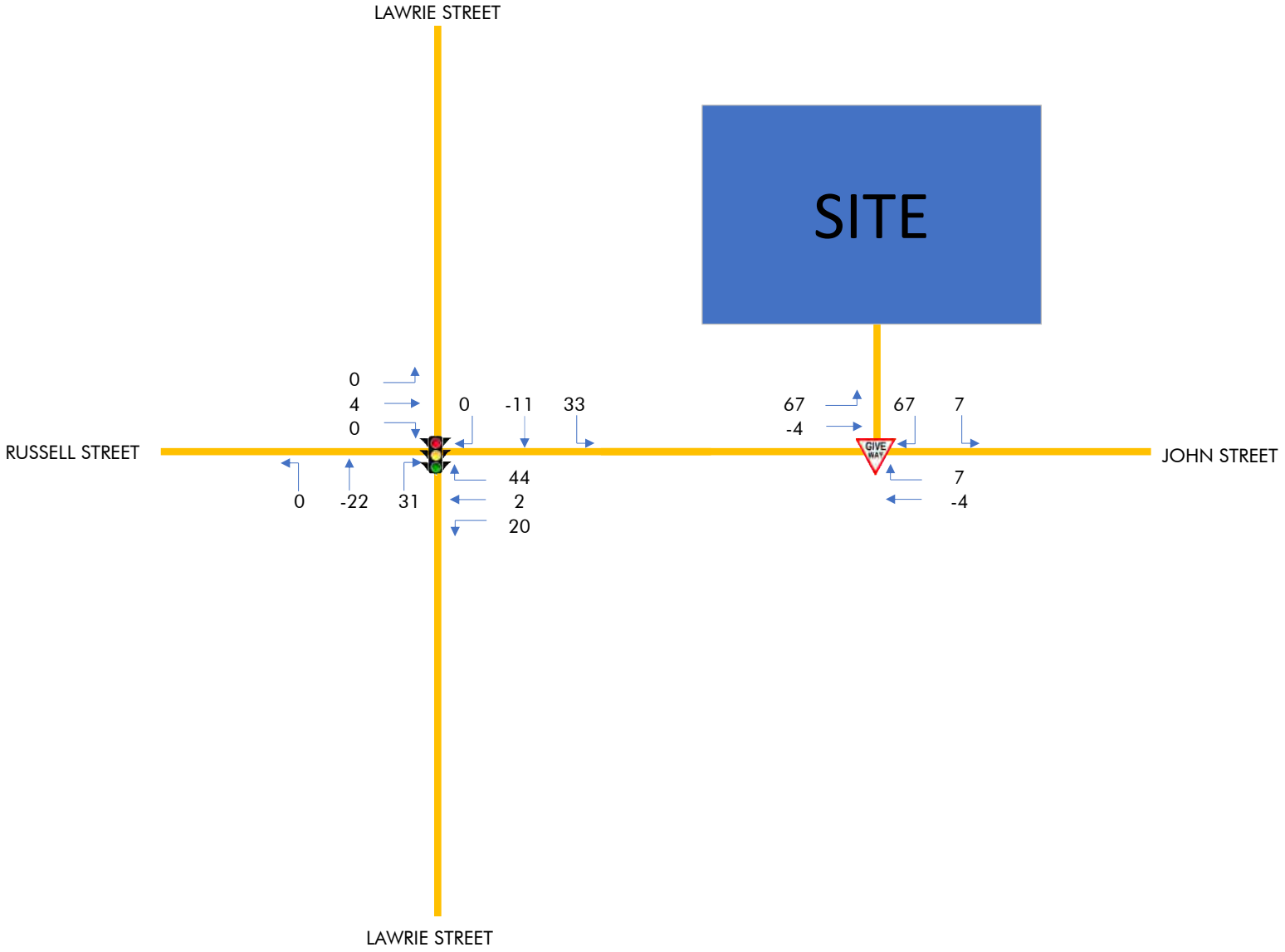
Client	Gibb Group	Project	6 Lawrie Street, Gracemere
Date	11/03/2022	Figure	Figure 5
Job No.	22-496		

Development Traffic Distribution



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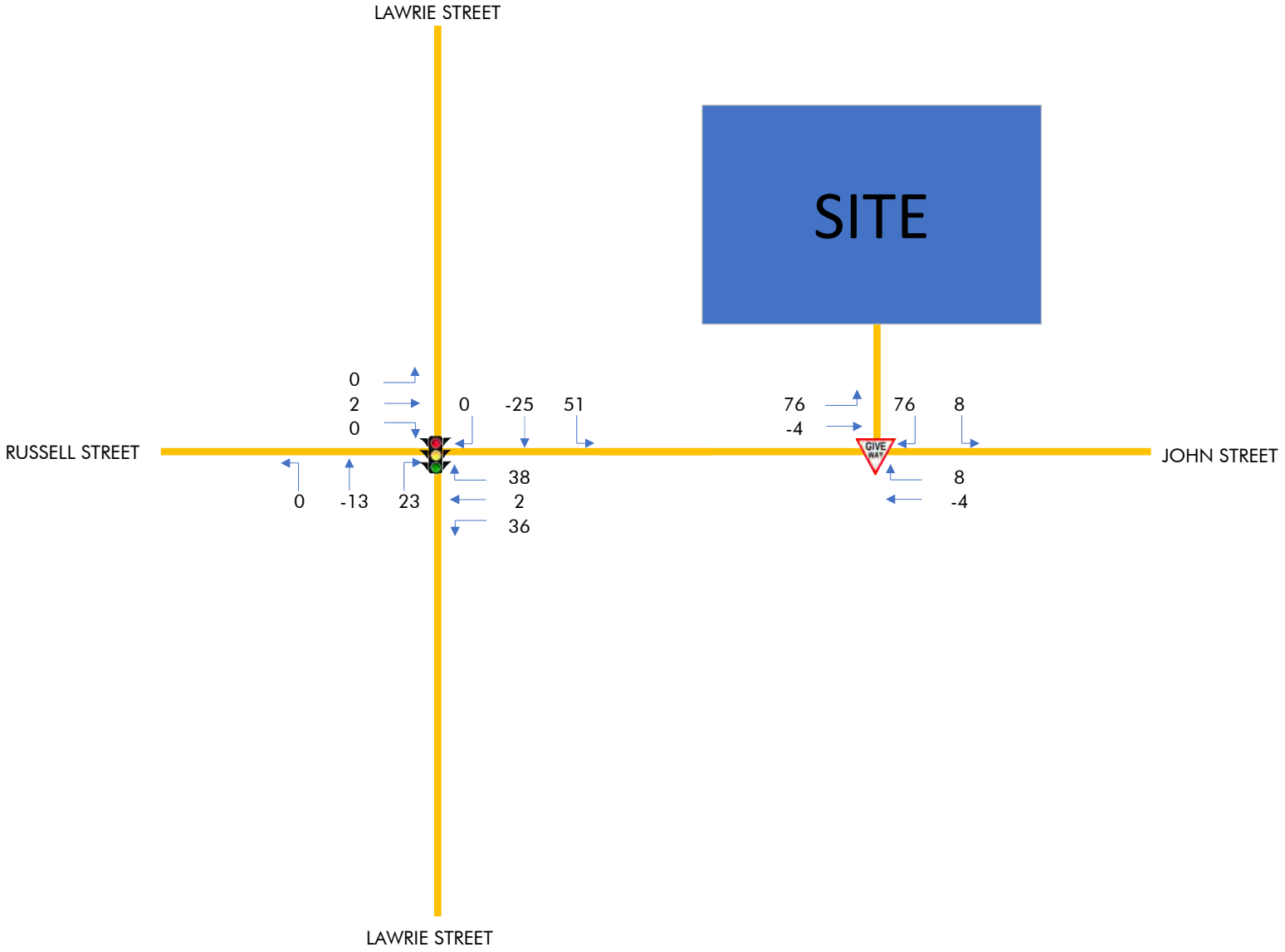
Client	Gibb Group			**Project**	6 Lawrie Street, Gracemere
Date	11/03/2022	**Figure**	Figure 6	**Job No.**	22-496
Development Traffic Generation - Morning Peak Hour					



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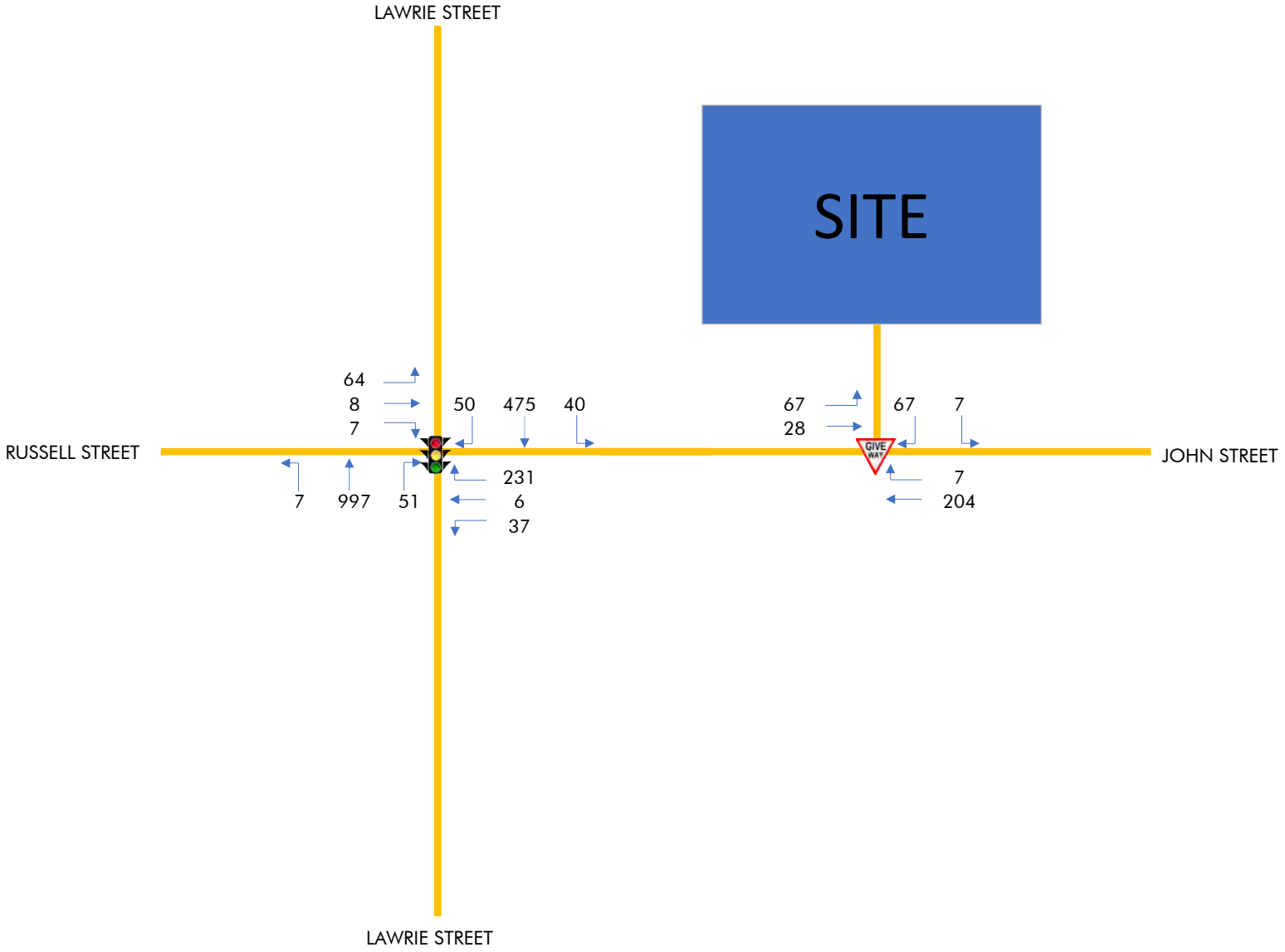
Client	Gibb Group			**Project**	6 Lawrie Street, Gracemere
Date	11/03/2022	**Figure**	Figure 7	**Job No.**	22-496
Development Traffic Generation - Evening Peak Hour					



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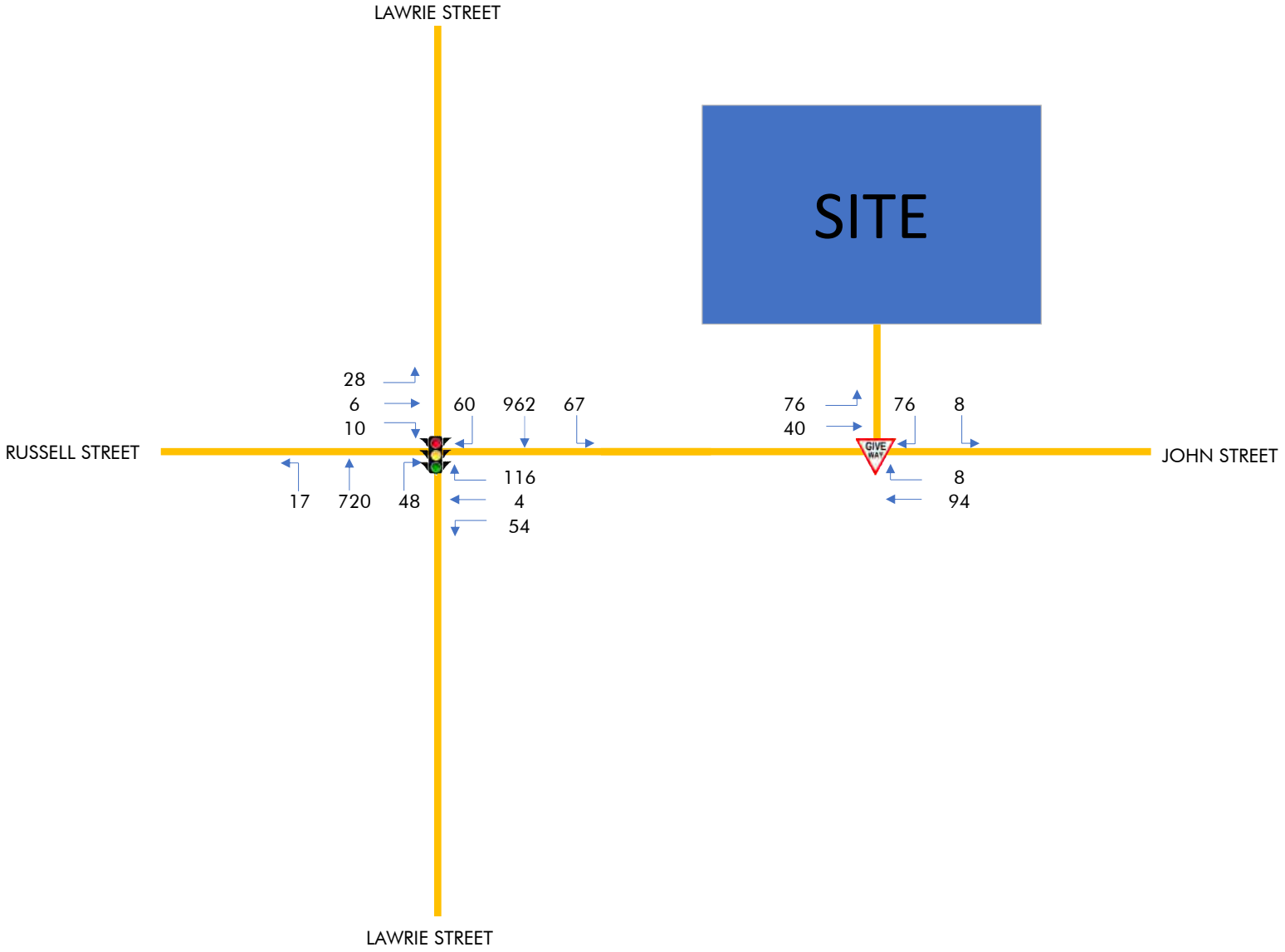
Client	Gibb Group			**Project**	6 Lawrie Street, Gracemere
Date	11/03/2022	**Figure**	Figure 8	**Job No.**	22-496
2023 Post-Development Morning Peak Hour					



PTT TRAFFIC & TRANSPORT ENGINEERING PTT ABN 96 067 593 962 P 07 3839 6771 WWW.PTT.COM.AU Level 2, 62 Astor Tce, Spring Hill QLD 4000	**Client**	Gibb Group	**Project**	6 Lawrie Street, Gracemere	
	Date	11/03/2022	**Figure**	Figure 9	**Job No.** 22-496
	2023 Post-Development Evening Peak Hour				