APPENDIX C

Engineering Services Report

Prepared by:

Neon Consulting

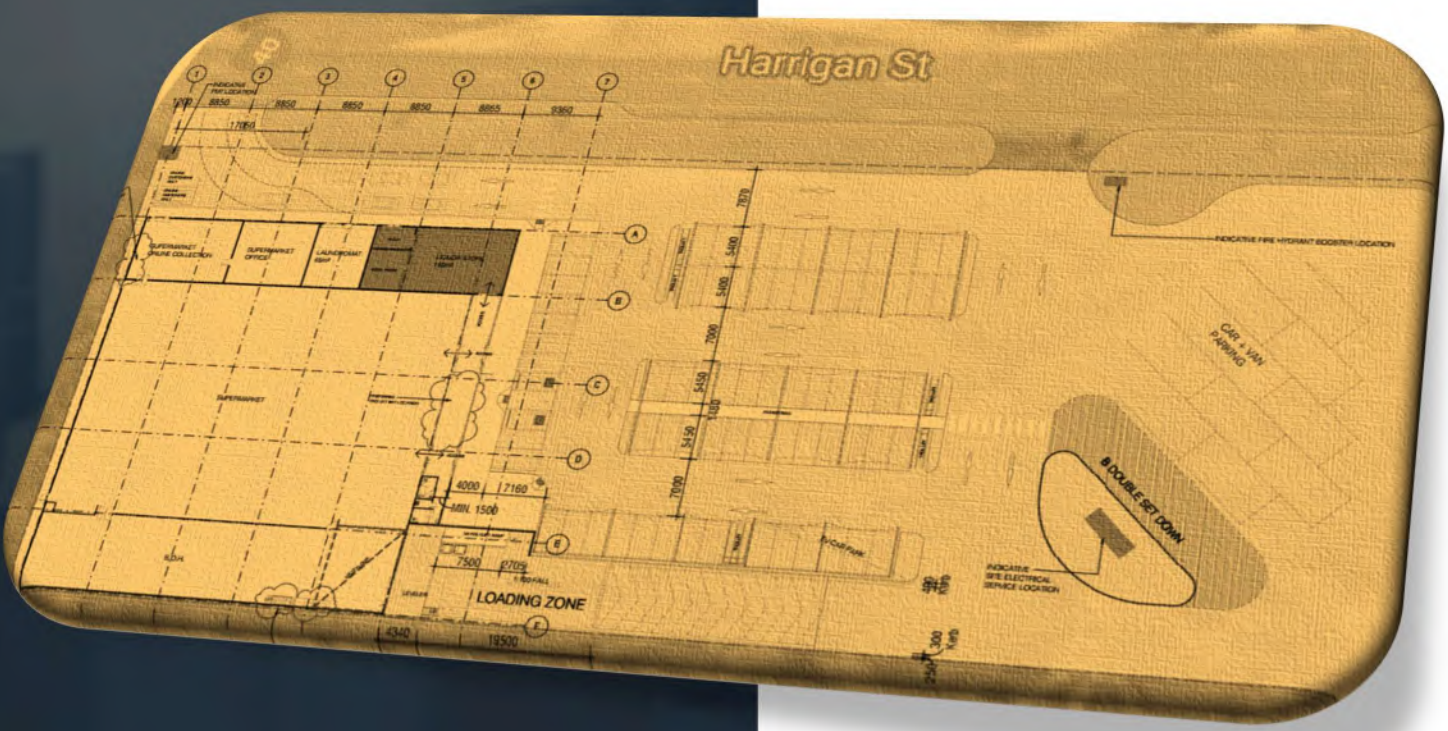
Cooktown IGA - 81 Savage Street, Cooktown

Engineering Services Report

999-2201-R-001 | Revision C

24 August 2023

Kwikbridge Pty Ltd



Project Name	Cooktown IGA - 81 Savage Street, Cooktown
Project Address	81 Savage Street, Cooktown (Lot 212 C17915)
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Report prepared by
Craig Caplick | Principal Engineer | RPEng RPEQ 25102 | +61 402 568 698 | Craig@ConsultNeon.com.au

Revision History

Rev	Date	Description
A	21/06/2023	Draft
B	17/07/2023	For Approval
C	24/08/2023	Updated GFA

Contents

1. Introduction

Neon Consulting has been engaged to prepare an Engineering Services Report to support a Development Application for a development at 81 Savage Street, Cooktown (Lot 212 C17915).

Figure 1 - Locality Aerial Image (image sourced from Qld Globe)

Figure 2 - Project Site Aerial Image (image sourced from Qld Globe)

The development proposal, shown in Appendix A, is to create a new commercial development to relocate the Cootown IGA Supermarket. The Gross Floor Areas (GFA) of each of the proposed uses of the development are summarised below.

	GFA (m^2)
Supermarket	2,028
Liquor Store	150
Laundromat	83
Total	**2,261**

Table 1 – Development GFA

The following report addresses the civil engineering elements of a development application to determine the development constraints, in particular:

- Traffic and Access
- Wastewater Disposal
- Water Supply
- Site Grading
- Stormwater and Flooding
- Electrical and Telecommunications

2. Traffic and Access

2.1 Surrounding Road Network

The site has frontage to the council road network at Harrigan Street and Savage Street. It is proposed to provide direct access to the development from Harrigan Street via an all movements access, an egress onto Harrigan Street at the northern end of the site and large vehicle access via Savage Street to accommodate the site loading dock and any larger vehicles, such as caravans utilising the development. The proposed development accesses are illustrated in Figure 4.

Key attributes of the existing local road networks associated with the proposed intersection are summarised below.

Attribute	Harrigan Street	Savage Street
Road Hierarchy	Urban Collector	Urban Access
Jurisdiction	Cook Shire Council	Cook Shire Council
Posted Speed (km/h)	60km/h	Unsigned (Default 50km/h)
Predominant Land Use	Residential	Residential
Kerb and Channel	Yes	Yes
Dedicated On-Street Parking	No	No
Concrete Footpath	No	No
Principal Cycle Network	No	No
Bus Route	No	No
Heavy Vehicle Access Route	No	No

Table 2 - Key Road Attributes

2.1.1 Harrigan Street

Harrigan Street is approximately 460m long. Harrigan Street runs north-south, connecting Charlotte Street/Boundary Street to the north and Hope Street/Savage Street to the south, as shown in Figure 3.

Harrigan Street is a two-way, two-lane urban collector road with roadside kerbing. Harrigan Street average sealed width is approximately 7.0m wide (measurement from QLD Globe aerial imagery).

2.1.2 Savage Street

Savage Street is approximately 430m long. Savage Street runs east-west, connecting Harrigan Street to the east and Mason Street to the west, as shown in Figure 3.

Savage Street is a two-way, two-lane urban access road with roadside kerbing. Savage Street average sealed width is approximately 7.0m wide (measurement from QLD Globe aerial imagery).

Figure 3 – Surrounding Road Network (image sourced from Qld Globe)

2.2 Site Access

Currently, no formal access crossovers or driveways are provided to the subject site from Harrigan Street or Savage Street.

2.2.1 Proposed Development Vehicular Access Arrangement

Three (3) new vehicular accesses will be provided to service the development, as follows:

- Access Driveway 1 - egress-only access at Harrigan Street;
- Access Driveway 2 - all-movement access (i.e. ingress and egress) access at Harrigan Street; and
- Access Driveway 3 - all-movement access (i.e. ingress and egress) access at Savage Street.

The proposed development accesses are illustrated in Figure 4 below.

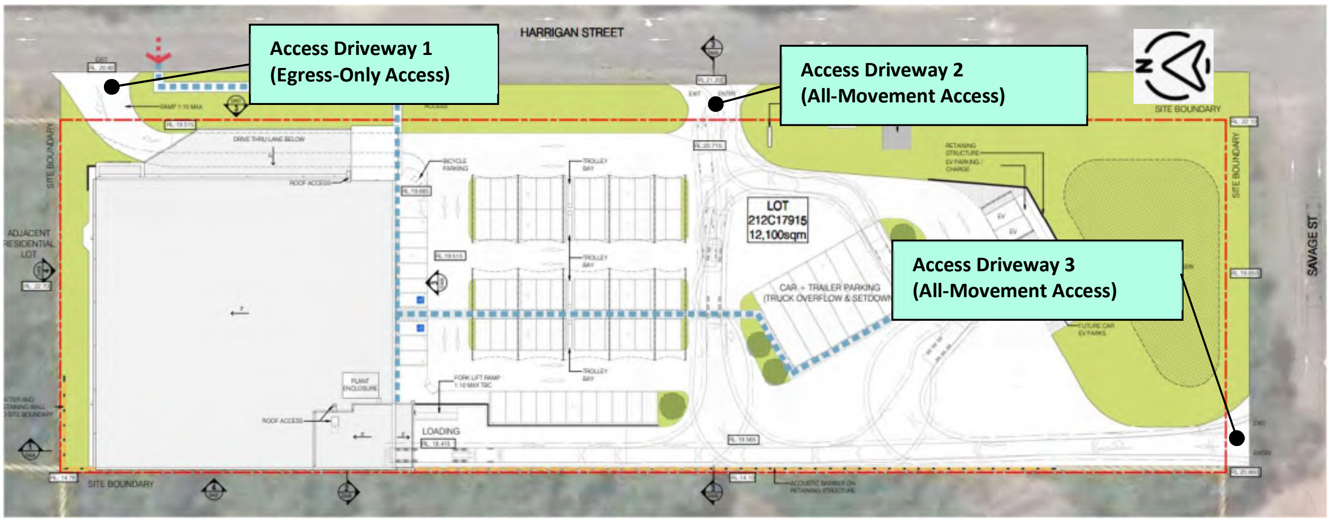


Figure 4 – Proposed Access Driveways

The proposed access driveways are located:

- Access Driveway 1 - ≈210m north of Harrigan Street/Savage Street intersection;
- Access Driveway 2 - ≈110m north of Harrigan Street/Savage Street intersection; and
- Access Driveway 3 - ≈60m west of Harrigan Street/Savage Street intersection.

The proposed driveway access locations comply with the Australian Standard AS2890.1:2004 Parking Facilities – Part 1: Off-Street Car Parking - Access Driveway Location requirement, as shown in Figure 5 below.

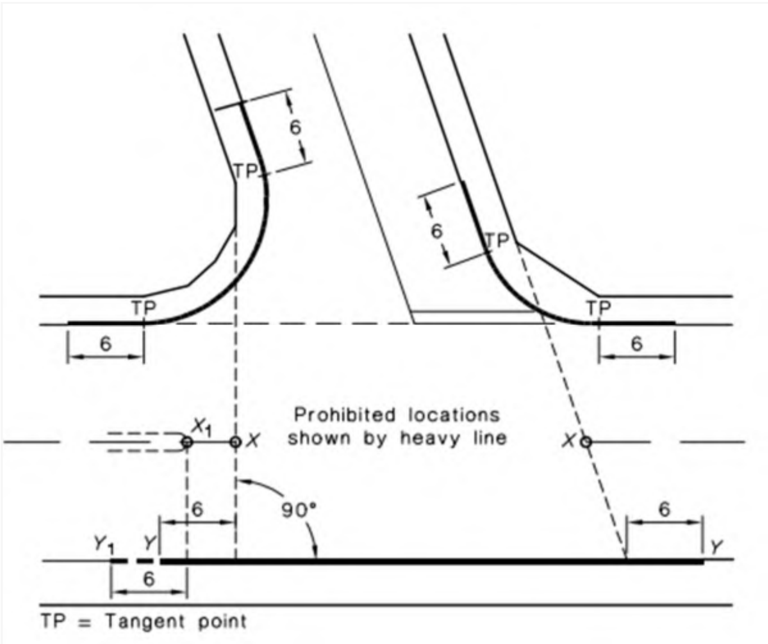


Figure 5 – Prohibited Locations of Access Driveways (Source:AS2890.1:2004, Figure 3.1)

2.3 Assessment Methodology and Scenarios

2.3.1 Methodology

As indicated earlier, the primary access to the proposed development will be via Harrigan Street where Savage Street is restricted to oversize vehicle access only.

Hence, considering the low development traffic generation at Savage Street proposed access, this traffic assessment will solely focus on the development traffic impact on Harrigan Street. Safety performance will be assessed for all proposed access driveways.

The overall methodology adopted for the traffic impact assessment is outlined below:

1. Assess the Harrigan Street background traffic using:
    - Cook Shire Council provided historical traffic count data; and
    - Queensland Government Open Data Portal website – Traffic Census for the Queensland State-Declared Road Networks.
2. Assess the development traffic generation at Harrigan Street proposed accesses;
3. Determine the overall daily and peak hour traffic generation and distribution (for background and development traffic) at Harrigan Street proposed accesses;
4. Conduct an assessment of the Harrigan Street proposed accesses, including:
    - Turn treatment warrants; and
    - Lighting warrants.
5. Analyse and assess the performance of the intersections using SIDRA 9.0 software package for peak-hour traffic;
6. Conduct road safety assessment for Harrigan Street and Savage Street proposed accesses, including:
    - Historical crash analysis;
    - Sight distance; and
    - Risk assessment.
7. Determine the impact (if any) of the development traffic on:
    - Harrigan Street – traffic and safety performance; and
    - Savage Street – safety performance.
8. Determine the mitigation measures (if required).

2.3.2 Assessment Scenarios

The proposed development is anticipated to commence operation in mid-late 2024, subject to development approval and construction period. The impact assessment has considered the following scenarios:

- Opening year (2024) Background + development; and
- 10 years Design Horizon (2034) Background + Development.

2.4 Traffic Generation and Distribution

2.4.1 Background Traffic (Harrigan Street)

Harrigan Street traffic count data was not available from Cook Shire Council. However, Cook Shire Council has provided the historical traffic count data of the following surrounding road network to Harrigan Street:

- Mulligan Highway - 2021 AADT: 1460 veh/day (based on DTMR 2021 Annual Average Daily Traffic (AADT) - Traffic Census)
- Charles Street - 2023 Daily Traffic: 237 veh/day
- Boundary Street - 2008 Daily Traffic: 484 veh/day
- Howard Street - 2022 Daily Traffic: 411 veh/day
- Charlotte Street - 2021 Daily Traffic: 3,275 veh/day

The traffic count of the surrounding road network directly connecting to Harrigan Street (i.e. Mulligan Highway, Boundary Street and Charlotte Street) is summarised and illustrated in Figure 6.

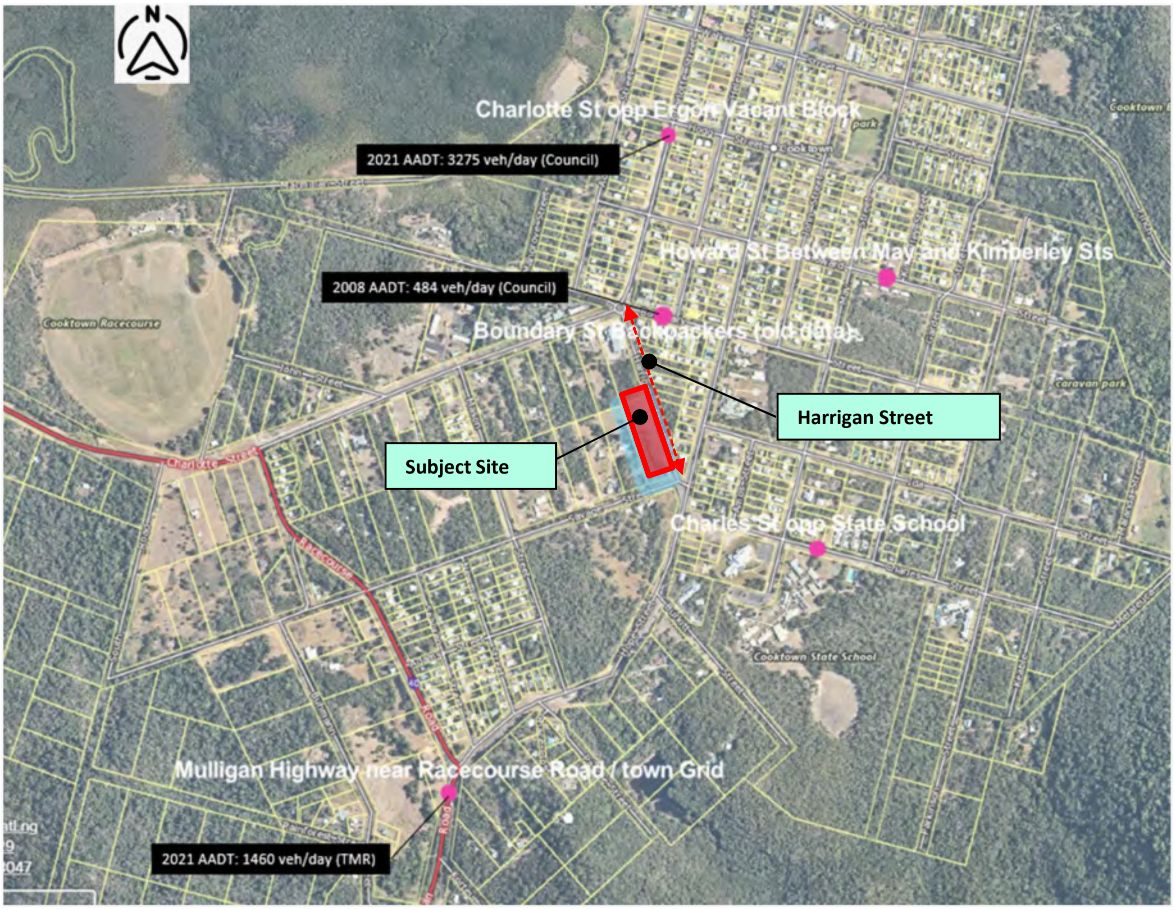


Figure 6 – Surrounding Roads Traffic Count Data

The DTMR 2020 AADT segment report indicated that the directional traffic split, HV%, peak rate and traffic growth at Mulligan Highway were as follows:

- Directional Split:
  - Gazettal (northbound): 50.46%
  - Against Gazettal: 49.54%
- HV% ≈ 10%
- Peak Rate:
  - Morning (AM) Peak (average 9.1% of AADT)
  - Afternoon (PM) Peak (average 8.9% of AADT)
- Annual segment growth:
  - Growth last year: -7.96%
  - Growth in the last 5 years: -4.59%
  - Growth in the last 10 years: N/A

A copy of the Cook Shire Council traffic count data (Boundary Street and Charlotte Street) and DTMR 2020 AADT segment report (Mulligan Highway) is included in Appendix B.

The following assumptions were adopted to project Mulligan Highway, Boundary Street and Charlotte Street traffic to year 2024 (Opening Year) and 2034 (10-Years Design Horizon):

- 1.0% traffic growth per annum (compound growth pattern); and
- Average peak rate 9% of AADT/Daily Traffic.

The projected 2024 and 2034 daily and peak hour traffic for Mulligan Highway, Boundary Street and Charlotte Street is summarised in Table 3.

		2024	2034
Mulligan Highway	Daily Traffic (veh/day)	1,504	1,662
	Peak Hour (veh/hour)	135	150
Boundary Street	Daily Traffic (veh/day)	568	627
	Peak Hour (veh/hour)	51	56
Charlotte Street	Daily Traffic (veh/day)	3,374	3,727
	Peak Hour (veh/hour)	304	334

Table 3 - Mulligan Highway, Boundary Street and Charlotte Street Projected Background Traffic

It is assumed that:

- 25% of Mulligan Highway, Boundary Street and Charlotte Street traffic generated to/from Harrigan Street.; and
- 50:50 directional split for the Harrigan Street northbound and southbound traffic.

The estimated Harrigan Street traffic is summarised in Table 3:

Year	Daily Traffic (veh/day)			Peak Hour (veh/hr)		
	Two-way	North Bound	South Bound	Two-way	North Bound	South Bound
2024	1,362	681	681	123	61	61
2034	1,504	752	752	135	68	68

Table 4 - Harrigan Street Background Traffic

2.4.2 Development Generated Traffic

The proposed development layout, including the GFA is illustrated in Figure 7 with the development uses defined in Table 1.

Figure 7 – Proposed Development and GFAs

The proposed development daily and peak hour traffic were estimated using the following sources/guidelines:

- *2006-2017 (Queensland) Open Data* (using the data from regional location); and
- *RTA Guide to Traffic Generating Developments (Version 2.2).*

The 2006-2017 (Queensland) Open Data for the similar development uses, i.e. "Stand Alone Supermarket" and "Taverns and Bottle Shops" is summarised in Figure 8.

Traffic generation data – 2006–2017 (Queensland) Open Data

Year	Land use	Suburb	Local Government Area	Variable Units	Variable Value	Average Weekday Volume	Average Weekend Volume	Weekday Peak Volume	Weekend Peak Volume	Weekday Peak (vehicles per $100m^2$ GLFA)	Weekend Peak (vehicles per $100m^2$ GLFA)	Average Weekday Volume (vehicles per $100m^2$ GLFA)	Average Weekend Volume (vehicles per $100m^2$ GLFA)
2009	Taverns and Bottle Shops	CABOOLTURE SOUTH	Moreton Bay Regional	GLFA	4606	2930	2648	312	304	6.8	6.6	63.6	57.5
2010	Taverns and Bottle Shops	BARGARA	Bundaberg Regional	GLFA	1142	370	479	47	57	4.1	5.0	32.4	41.9
2011	Stand Alone Supermarket	GORDONVALE	Cairns Regional	GLFA	1587	2403	2405	261	243	16.4	15.3	151.4	151.5
2011	Taverns and Bottle Shops	CAIRNS NORTH	Cairns Regional	GLFA	2975	868	806	131	93	4.4	3.1	29.2	27.1
2011	Taverns and Bottle Shops	BUNGALOW	Cairns Regional	GLFA	2230	1077	652	145	76	6.5	3.4	48.3	29.2
2011	Taverns and Bottle Shops	WOREE	Cairns Regional	GLFA	2013	733	718	91	75	4.5	3.7	36.4	35.7
2015	Stand Alone Supermarket	BONGAREE	Moreton Bay Regional	GLFA	1744	1903	1939	243	263	13.9	15.1	109.1	111.2
2016	Stand Alone Supermarket	AVOCA	Bundaberg Regional	GLFA	1766	2434	2220	257	297	14.6	16.8	137.8	125.7
2016	Stand Alone Supermarket	MARYBOROUGH	Fraser Coast Regional	GLFA	1601	2186	2059	239	300	14.9	18.7	136.5	128.6
2016	Stand Alone Supermarket	URRAWEEN	Fraser Coast Regional	GLFA	1605	2557	2601	305	355	19.0	22.1	159.3	162.1
2016	Taverns and Bottle Shops	ANDERGROVE	Mackay Regional	GLFA	2117	748	883	83	101	3.9	4.8	35.3	41.7
2016	Taverns and Bottle Shops	ALLENSTOWN	Rockhampton Regional	GLFA	3356	2047	1925	249	228	7.4	6.8	61.0	57.4
2016	Taverns and Bottle Shops	BARGARA	Bundaberg Regional	GLFA	1452	268	308	36	50	2.5	3.4	18.5	21.2
2016	Taverns and Bottle Shops	URRAWEEN	Fraser Coast Regional	GLFA	2464	3124	3099	335	381	13.6	15.5	126.8	125.8
2017	Stand Alone Supermarket	KEARNEYS SPRING	Toowoomba Regional	GLFA	1630	1997	2164	170	291	10.4	17.9	122.5	132.8
2017	Stand Alone Supermarket	HARLAXTON	Toowoomba Regional	GLFA	1735	1748	1737	197	244	11.4	14.1	100.7	100.1
2018	Stand Alone Supermarket	AVOCA	Bundaberg Regional	GLFA	1766	1707	1417	180	202	10.2	11.4	96.7	80.2
2018	Stand Alone Supermarket	KEPNOCK	Bundaberg Regional	GLFA	1539	1557	1548	212	207	13.8	13.5	101.2	100.6
2018	Stand Alone Supermarket	MARYBOROUGH	Fraser Coast Regional	GLFA	1601	2138	1893	227	264	14.2	16.5	133.5	118.2
2018	Stand Alone Supermarket	URRAWEEN	Fraser Coast Regional	GLFA	1605	2128	1960	256	311	16.0	19.4	132.6	122.1
2019	Stand Alone Supermarket	KEARNEYS SPRING	Toowoomba Regional	GLFA	1630	2138	2491	219	334	13.4	20.5	131.2	152.8
2019	Stand Alone Supermarket	HARLAXTON	Toowoomba Regional	GLFA	1735	1934	2159	205	327	11.8	18.8	111.5	124.4

Note: GLFA – Gross Leaseable Floor Area

Figure 8 – 2006-2017 (Queensland) Open Data ("Stand Alone Supermarket" and "Taverns sand Bottle Shops" Uses)

Based on Figure 8., the average traffic generation rate (weekday and weekend) for Stand-Alone Supermarket" and "Taverns sand Bottle Shops" uses were:

- Stand Alone Supermarket:
  - Daily Rate - 124.4 per 100m2 GLFA
  - Peak Rate - 15.4 per 100m2 GLFA
- Taverns sand Bottle Shops:
  - Daily Rate - 49.4 per 100m2 GLFA
  - Peak Rate - 5.9 per 100m2 GLFA

There is no specific traffic generation rate for "Laundromat" use. It is conservatively assumed that the "Laundromat" has the same traffic generation rate as "Taverns and Bottle Shops". It shall also be noted that the trip generation obtained from the 2006-2017 (Queensland) Open Data, for "Taverns and Bottle Shops" use included food serving and drive-through facility. Therefore, the assessed trip generation rate is considered conservative for the proposed liquor store development.

The RTA guideline further stipulated that:

> *"The generation rates given are based on (GLFA) which provides a better indication of trip generation than gross floor area. As a general guide, 100m2 gross floor area equals 75m2 gross leasable floor area."*

<u>Development Traffic Generation</u>

The estimated development traffic generation is summarised in Table 5.

Development Use	GFA (m^2)	GLFA (75% of GFA) (m^2)	Peak Rate (per 100m^2 GLFA)	Peak Hour Traffic (veh/hr)	Daily Rate (per 100m^2 GLFA)	Daily Traffic (veh/day)
Supermarket	2,028	1,521	15.4	242.7	124.4	1962.1
Liquor Store	150	113	5.9	6.7	49.4	55.8
Laundromat	83	62	5.9	3.4	49.4	28.2
Total				252.7		2045.9

Table 5 - Development Traffic Generation

<u>Development Traffic Distribution</u>

The development's daily and peak hour traffic distribution at the Harrigan Street proposed access driveways is based on the following assumptions:

- Entering Traffic
  - 50% of the development traffic arriving at the development site via Access Driveway 2;
  - 70% of the arriving development traffic generated from the north; and
  - 30% of the arriving development traffic generated from the south.
- Exiting Traffic
  - 50% of the development traffic leaving the development site via Access Driveway 1 and Access Driveway 2;
  - 70% of the exiting development traffic generated to the north;
  - 30% of the exiting development traffic generated to the south;
  - For development traffic exiting to the north:
    - 70% of the development traffic exiting via Access Driveway 2; and
    - 30% of the development traffic exiting via Access Driveway 1.

- For development traffic exiting to the south:
  - 70% of the development traffic exiting via Access Driveway 2; and
  - 30% of the development traffic exiting via Access Driveway 1.

<u>Overall Development Traffic Generation and Distribution</u>

The overall development traffic generation and distribution is summarised in Table 6 and illustrated in the below figures.

Entering Traffic — 50% of PH Traffic

From		via	Movement	Split	Peak Hour Traffic (vph)	Daily Traffic (vpd)
From North	70%	Access Driveway 2 (All-Movement Access)	RIGHT IN from Harrigan St (N)	100%	84.9	687.5
From South	30%	Access Driveway 2 (All-Movement Access)	LEFT IN from Harrigan St (S)	100%	36.4	294.6
				TOTAL	121.3	982.2

Exiting Traffic — 50% of PH Traffic

To		via	Movement	Split	Peak Hour Traffic (vph)	Daily Traffic (vpd)
To North	70%	Access Driveway 2 (All-Movement Access)	LEFT OUT to Harrigan St (N)	70%	59.4	481.3
		Access Driveway 1 (Egress-Only Access)	LEFT OUT to Harrigan St (N)	30%	25.5	206.3
To South	30%	Access Driveway 2 (All-Movement Access)	RIGHT OUT to Harrigan St (S)	70%	25.5	206.3
		Access Driveway 1 (Egress-Only Access)	RIGHT OUT to Harrigan St (S)	30%	10.9	88.4
				TOTAL	121.3	982.2

Table 6 - Overall Development Traffic Generation and Distribution

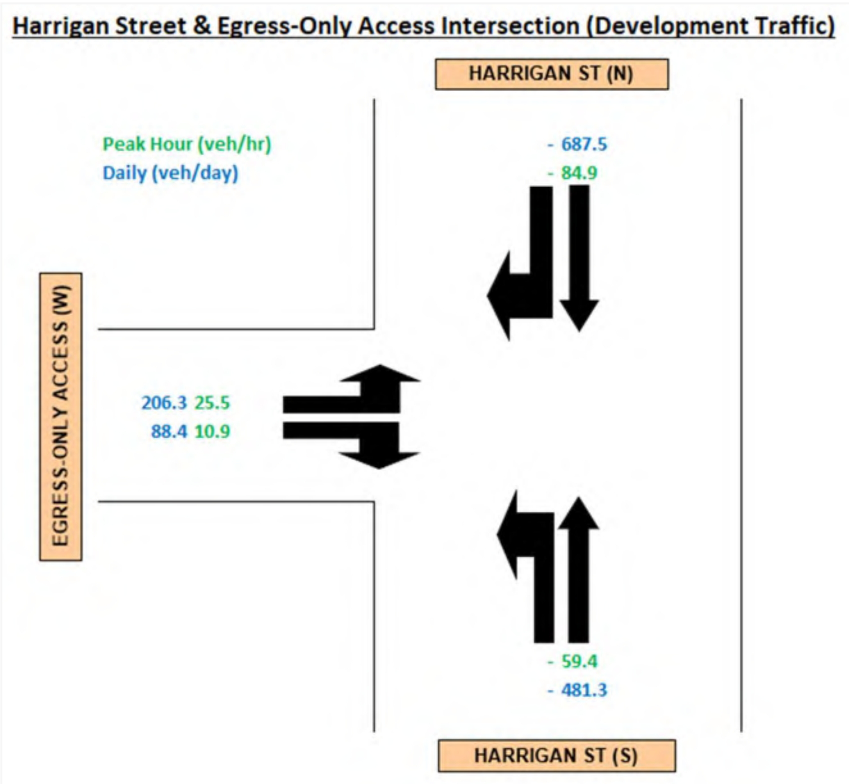


Figure 9 – Development Traffic Generation and Distribution (Access Driveway 1)

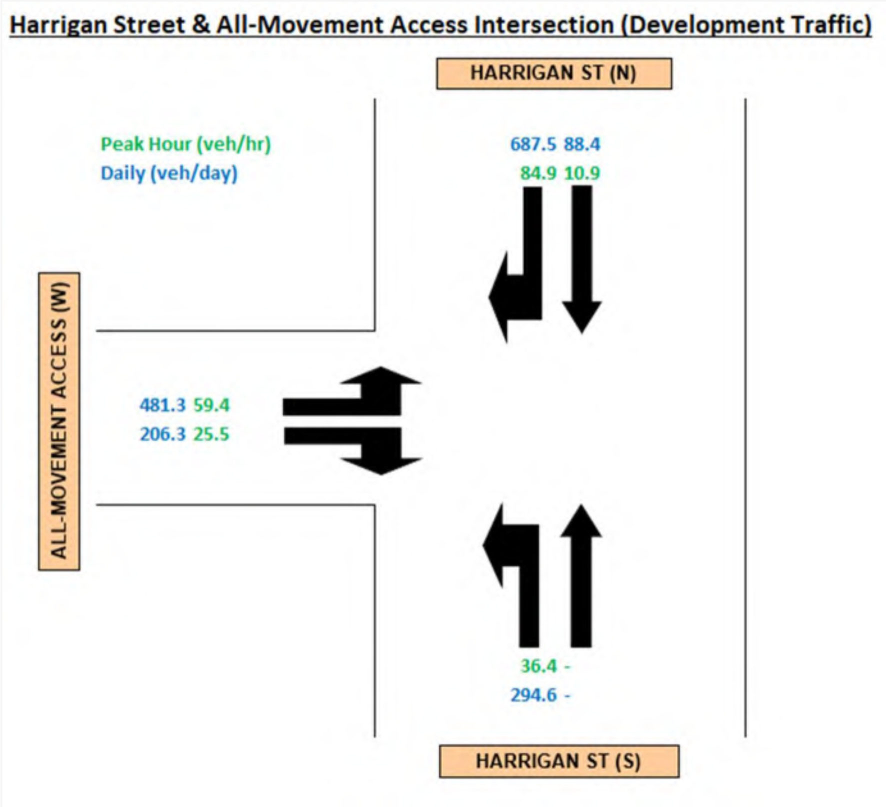


Figure 10 – Development Traffic Generation and Distribution (Access Driveway 2)

2.4.3 Overall Traffic Generation (Background and Development)

Building on the data and assumptions outlined above, the traffic generation and distribution figures adopted for the proposed access driveways at Harrigan Street were derived.

The resulting 2024 and 2034 daily and peak hour traffic movements adopted for the assessment are shown in Figures 11, 12, 13 and 14.

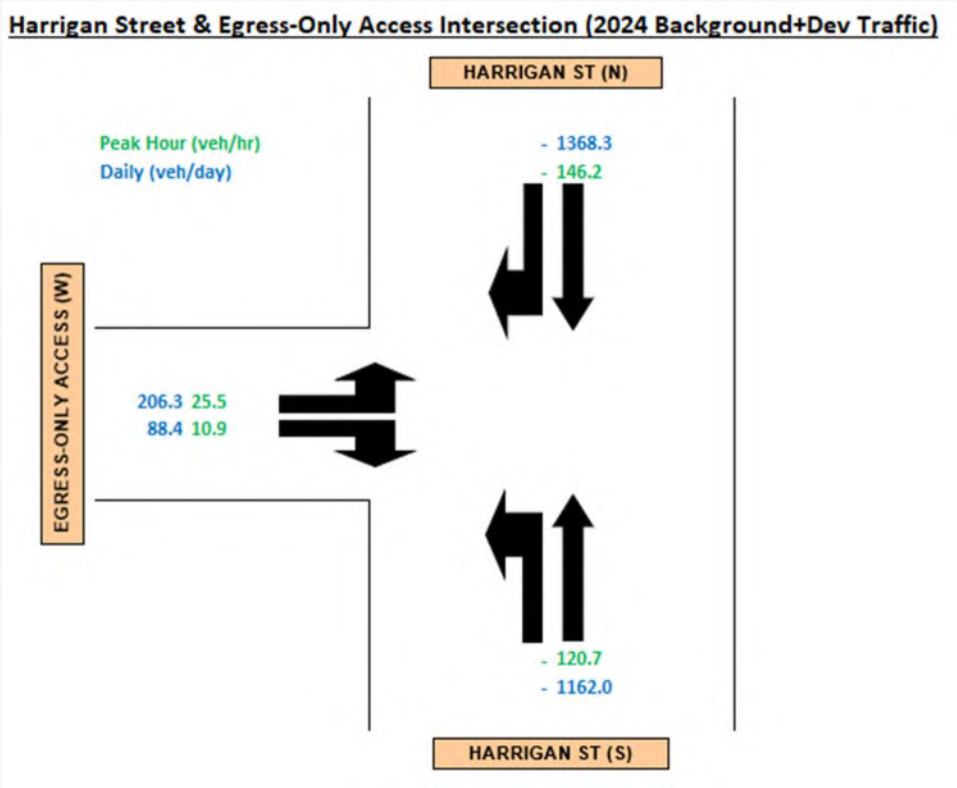


Figure 11 – 2024 Overall Background & Development Traffic (Access Driveway 1)

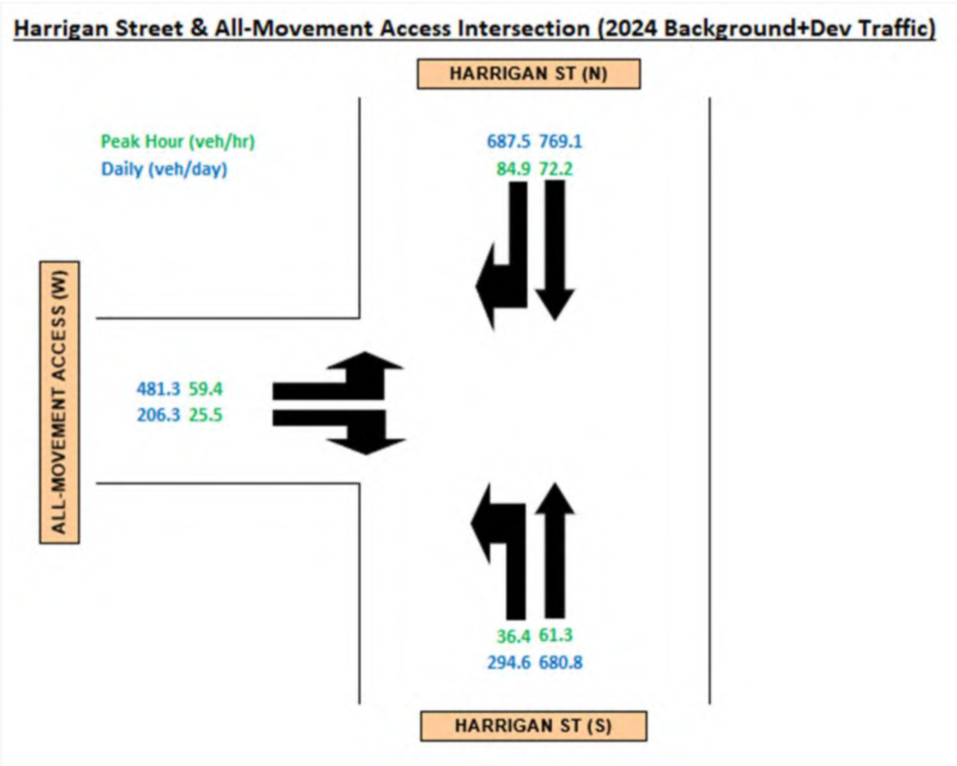


Figure 12 – 2024 Overall Background & Development Traffic (Access Driveway 2)

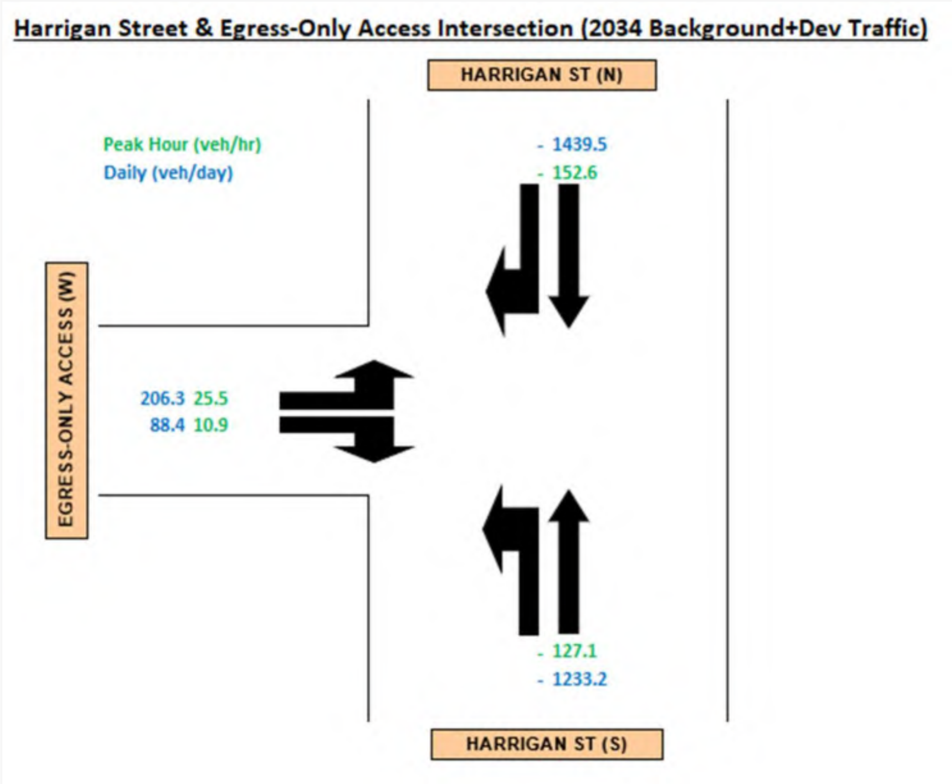


Figure 13 – 2034 Overall Background & Development Traffic (Access Driveway 1)

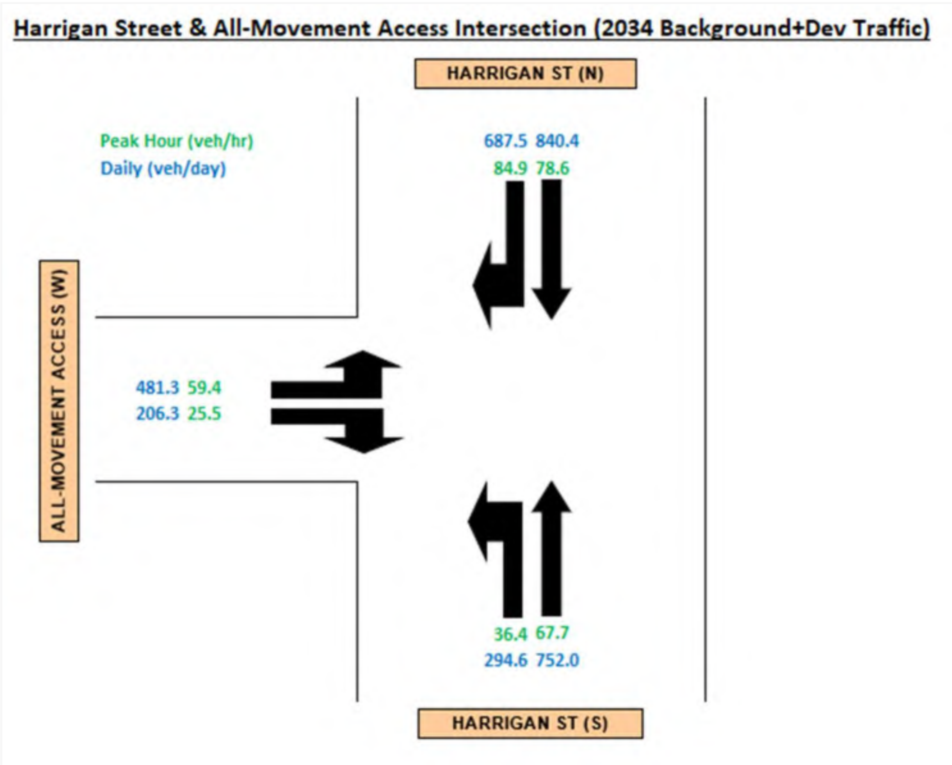


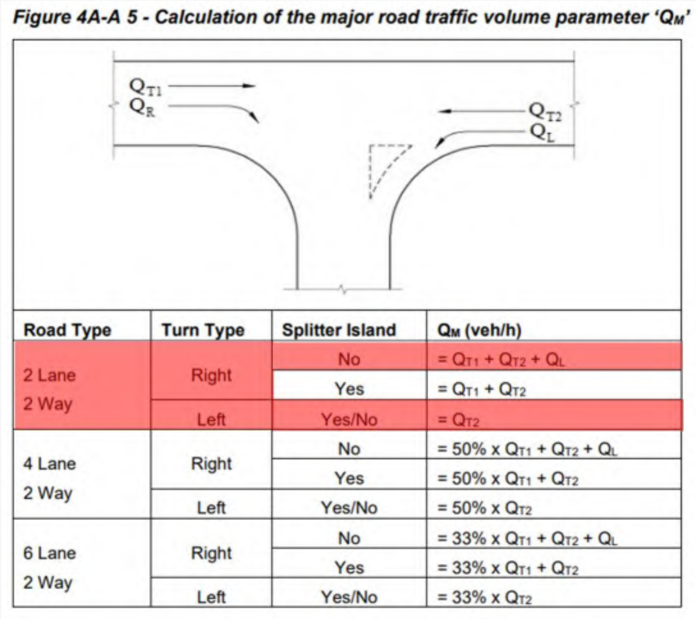
Figure 14 – 2034 Overall Background & Development Traffic (Access Driveway 2)

2.5 Turn Treatment Warrant Assessment

Intersection turns warrant assessment were conducted in accordance with DTMR Supplement to Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, for the proposed Access Driveway 2 (All-movement access) at Harrigan Street. The assessment of the warrants is based on the Extended Design Domain (EDD) criteria for a road with a design speed ≤70km/h.

A turn warrant assessment was not conducted on Access Driveway 1 as this driveway is an egress-only access.

The major road traffic volumes (QM) for the assessment were calculated in accordance with Figure 15.



Road Type	Turn Type	Splitter Island	Q_M (veh/h)
2 Lane 2 Way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes/No	$= Q_{T2}$
4 Lane 2 Way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes/No	$= 50\% \times Q_{T2}$
6 Lane 2 Way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes/No	$= 33\% \times Q_{T2}$

Figure 15 – Calculation of the Major Road Traffic Volumes (Source: DTMR)

The calculated traffic volumes at the Access Driveway 1 are summarised in Table 7.

Parameter	2024 Peak Hour (veh/hr)	2034 Peak Hour (veh/hr)
Q_{T1}	72	79
Q_{T2}	61	68
Q_L	36	36
Q_R	85	85
Q_M (Right Turn)	170	183

Table 7 - Turn Warrant Traffic Volumes

Figure 16 demonstrates that for the 2024 opening year and throughout the 10 years design horizon (2034), a Basic Let (BAL) and Basic Right (BAR) treatments are warranted.

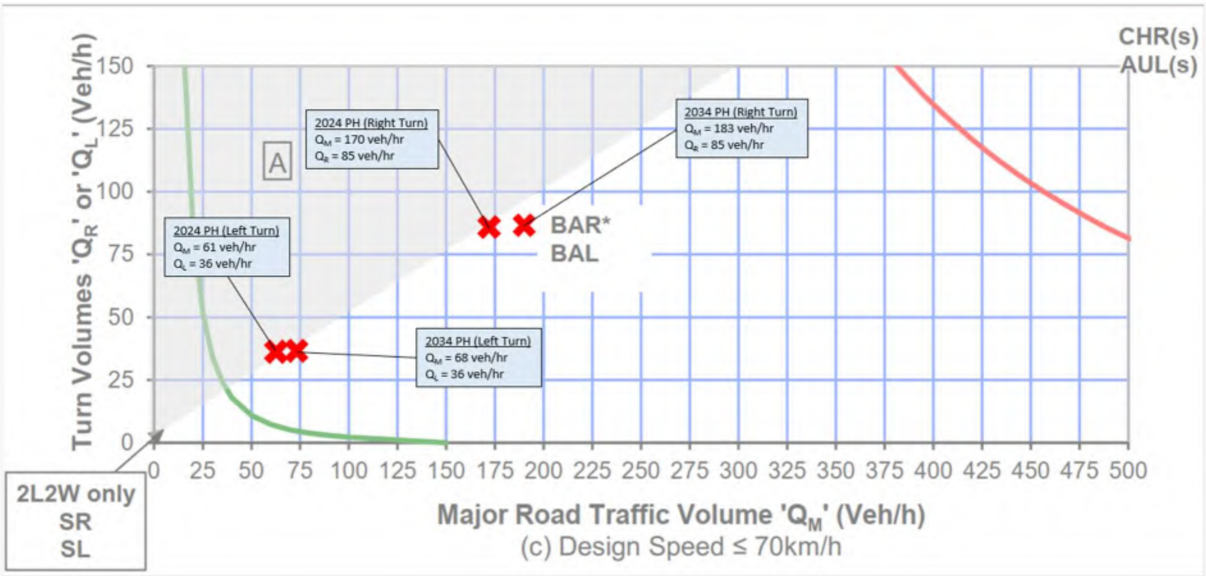


Figure 16 – Turn Treatment Warrants (Source: DTMR)

2.6 Lighting Warrant Assessment

Lighting warrant assessment were conducted in accordance with DTMR Road Planning and Design Manual (2nd Edition) - Lighting, for both the proposed Access Driveway 1 and Access Driveway 2 at Harrigan Street.

The through road and side road daily traffic (i.e. proposed accesses) is summarised in Table 8.

Parameter	Access Driveway 1		Access Driveway 2	
	2024	2034	2024	2034
Side Road (veh/day)	295	295	688	688
Through Road (veh/day)	2,530	2,673	2,432	2,574

Table 8 - Proposed Access Driveways (Side and Through Road Traffic Volumes)

Figure 17 demonstrates that for the 2024 opening year and throughout the 10 years design horizon (2034), intersection lighting are warranted for consideration.

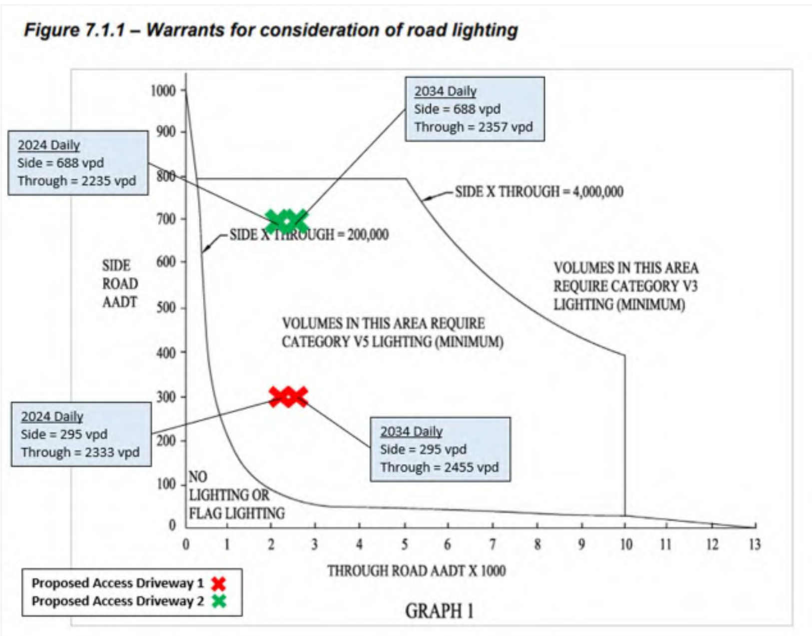


Figure 17 – Lighting Warrants (Source: DTMR)

It is noted that currently, there is existing street lighting located in the vicinity of the proposed access driveways at Harrigan Street, as shown in Figure 18. It is recommended that the existing street lighting is assessed for adequacy by the project lighting designer in detailed design.

Figure 18 – Existing Street Lighting (Source: QLD Globe)

2.7 SIDRA Analysis

The proposed access driveways at Harrigan Street were analysed using the SIDRA 9.0 software package. This software package calculates the operation of intersections based on input parameters, including geometry and traffic volumes. As an output, SIDRA 9.0 provides values for the Degree of Saturation (DoS), Average Delays, Queue Length and Level of Service (LOS) as defined below:

- Degree of Saturation (DoS) – is the ratio of demand flow (or number of vehicles) to the physical capacity of the intersection or approach and is usually represented by a value between zero and one. A DoS in excess of 1.0 indicates that the intersection will operate above capacity and that long delays and congestion will occur.
- Average Delay - is usually defined as the difference in time between interrupted and uninterrupted travel times through an intersection.
- Queue Length - is the 95th percentile back of queue length. This is the length to the back of the queue for a particular approach which 95% of all observed queue lengths fall below.
- Level of Service (LOS) – an index of the operational performance of traffic on traffic lane, approach, intersection, route or network, based on measures such as delay, degree of saturation, density, speed, congestion coefficient, speed efficiency or travel time index during a given flow period. This provides a quantitative stratification of a performance measure or measures that represent the quality of service, measured on an A to F scale, with LOS A representing the best operating conditions from the traveller's perspective and LOS F the worst.

2.7.1 Intersection Performance Assessment Criteria

The four (4) key performance measurements adopted to assess the access intersections operational conditions were Degree of Saturation (DoS), delay, queue length and Level of Service (LOS).

In general, the intersection capacity DoS, where it is considered that the operation of the intersection is constrained, are:

- 0.80 (80%) for un-signalised intersections;
- 0.85 (85%) for roundabouts; and
- 0.90 (90%) for signalised intersections.

The typical LOS, its characteristics and rating are defined in Table 9.

LOS	Description	Rating
A	Free, unrestrictive flow	Very good
B	Mostly free flow, few disruptions	Very good
C	Stable flow	Good
D	Mostly stable flow, some delays	Acceptable
E	Congested	Bad
F	Forced flow	Bad

Table 9 - Level of Service (LOS) Ratings

2.7.2 Intersection Performance

This section summarises the SIDRA assessment outputs of the proposed access intersections. The detailed SIDRA outputs (Movement Summary) are included in Appendix B. The SIDRA layout of the proposed access intersections are shown in Figure 19 and Figure 20. For assessment, 3% and 10% Heavy Vehicles are adopted at the proposed access driveways and Harrigan Street.

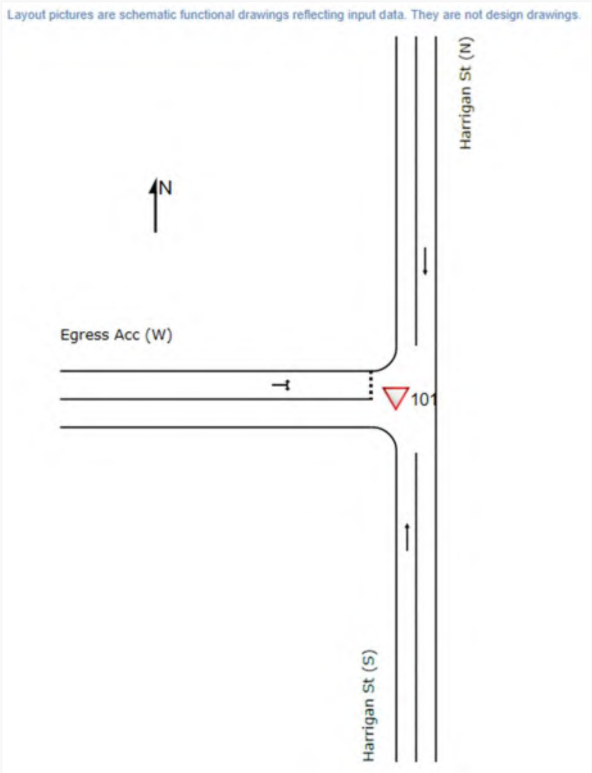


Figure 19 – Proposed Harrigan Street/Access Driveway 1 (Egress-Only Access)

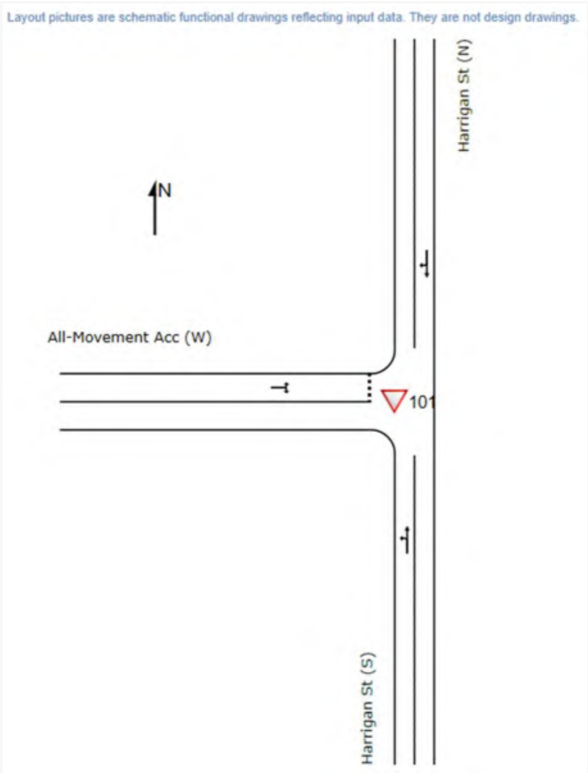


Figure 20 – Proposed Harrigan Street/Access Driveway 2 (All-Movement Access)

The SIDRA assessment results for the scenarios during AM/PM peak is summarised below.

Scenario	2024 Background + Development			2034 Background + Development		
Approach	Harrigan St (S)	Harrigan St (N)	Egress Only Access (W)	Harrigan St (S)	Harrigan St (N)	Egress Only Access (W)
Overall DoS	0.069	0.083	0.030	0.072	0.087	0.031
LOS	A (through)	A (through)	A (left) A (right)	A (through)	A (through)	A (left) A (right)
Average Delay (sec)	0.0	0.0	4.1	0.0	0.0	4.1
Queue Length (m)	0.0	0.0	0.3	0.0	0.0	0.3

Table 10 - Summary of Results - Proposed Harrigan Street/Access Driveway 1

Scenario	2024 Background + Development			2034 Background + Development		
Approach	Harrigan St (S)	Harrigan St (N)	All Movement Access (W)	Harrigan St (S)	Harrigan St (N)	All Movement Access (W)
Overall DoS	0.056	0.097	0.068	0.059	0.101	0.068
LOS	A (left) A (through)	A (through) A (right)	A (left) A (right)	A (left) A (through)	A (through) A (right)	A (left) A (right)
Average Delay (sec)	1.7	3.2	3.9	1.8	3.3	3.9
Queue Length (m)	0.0	1.3	1.7	0.0	1.3	0.7

Table 11 - Summary of Results - Proposed Harrigan Street/Access Driveway 2

Based on the SIDRA analysis:

1. Opening Year (2024):
   - The overall DoS is approx. 0.097 during the peak hour, with a surplus capacity of 90%;
   - Harrigan Street approaches operated at LOS A with minimal delay (i.e. 1.8 to 3.3 secs; and
   - Maximum vehicle queue length at Harrigan Street is 1.3m (less than 1 car length).
2. 10 Years Design Horizon (2034):
   - The overall DoS is approx. 0.101 during the peak hour, with a surplus capacity of 90%;
   - Harrigan Street approaches operated at LOS A with minimal delay (i.e. 1.7 to 3.2 secs; and
   - Maximum vehicle queue length at Harrigan Street is 1.3m (less than 1 car length).

Overall, at post-development (2024) and throughout the 10 years design horizon (2034), the proposed access intersections operate under free and unrestrictive flow conditions.

In summary, the results of the intersection analysis indicated that both the proposed access intersections operate well with the addition of the development traffic. Therefore, the proposed development is deemed to have a minimal adverse impact to the operational efficiency of Harrigan Street.

2.8 Road Safety Assessment

2.8.1 Crash Records

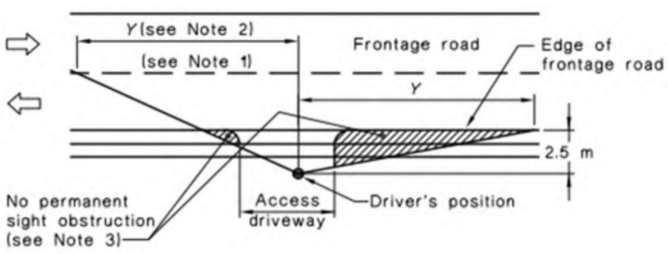
The QLD Globe crash data indicated no crashes recorded along Harrigan Street and Savage Street sections fronting the development site for the past 10 years.

This indicated that the road users are not experiencing difficulty negotiating at Harrigan Street and Savage Street, and are familiar with the traffic condition/environment in the area.

2.8.2 Sight Distance

2.8.2.1 Proposed Development Access Driveways

The sight distance requirements for access driveways, in accordance with the Australian Standard AS2890.1:2004 Parking Facilities – Part 1: Off-Street Car Parking, is illustrated below.



Frontage road speed (Note 4) km/h	Distance (Y) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

Figure 21 – Sight Distance Requirements at Access Driveways

Access Driveway 1 (Egress-Only Access)

For a 60km/h speed environment, the minimum required SSD for Harrigan Street through traffic ranges from 65m to 83m. The minimum SSD at the Access Driveway 1 is illustrated in Figure 22.

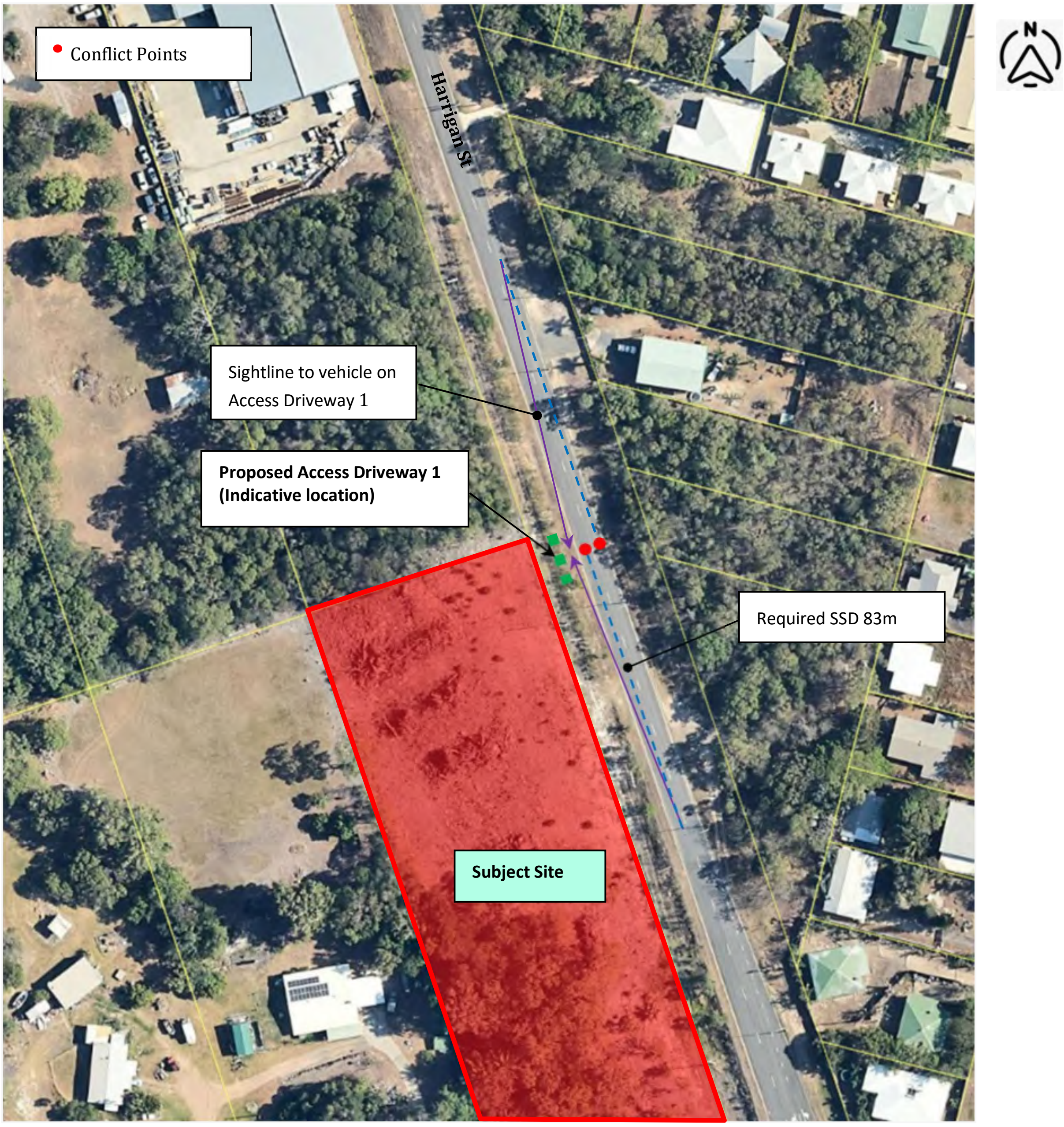


Figure 22 – SSD Assessment - Proposed Access Driveway 1

The Harrigan Street through traffic has sufficient line of sight to observe a vehicle at the Access Driveway 1 or the conflict point, and to decelerate to a stop before reaching the collision point, if required. The available sight distances to the Access Driveway 1 are consistent with AS2890.1 requirements and is expected to be adequate.

Access Driveway 2 (All-Movement Access)

For a 60km/h speed environment, the minimum required SSD for Harrigan Street through traffic is ranged from 65m to 83m. The minimum SSD at the Access Driveway 2 is illustrated in Figure 23.

Figure 23 – SSD Assessment - Proposed Access Driveway 2

Harrigan Street through traffic has sufficient line of sight to observe a vehicle at the Access Driveway 2 or the conflict point, and to decelerate to a stop before reaching the collision point, if required. The available sight distances to the Access Driveway 2 are consistent with AS2890.1 requirements and is expected to be adequate.

Access Driveway 3 (All-Movement Access)

For a 50km/h speed environment, the minimum required SSD for Savage Street through traffic is ranged from 45m to 69m. The minimum SSD at the Access Driveway 3 is illustrated in Figure 24.

Figure 24 – SSD Assessment - Proposed Access Driveway 3

The Savage Street through traffic has sufficient line of sight to observe a vehicle at the Access Driveway 3 or the conflict point, and to decelerate to a stop before reaching the collision point, if required. The available sight distances to the Access Driveway 3 are consistent with AS2890.1 requirements and is expected to be adequate.

2.8.2.2 Existing Harrigan Street/Savage Street Intersection

A Safe Intersection Sight Distance (SISD) has been conducted on the existing Harrigan Street/Savage Street intersection in accordance with Austroads - Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, Section 3.2.2.

For a 60km/h speed environment (i.e. 70km/h design speed), the desirable SISD is 151m. The desirable SISD and sight line is illustrated in Figure 22.

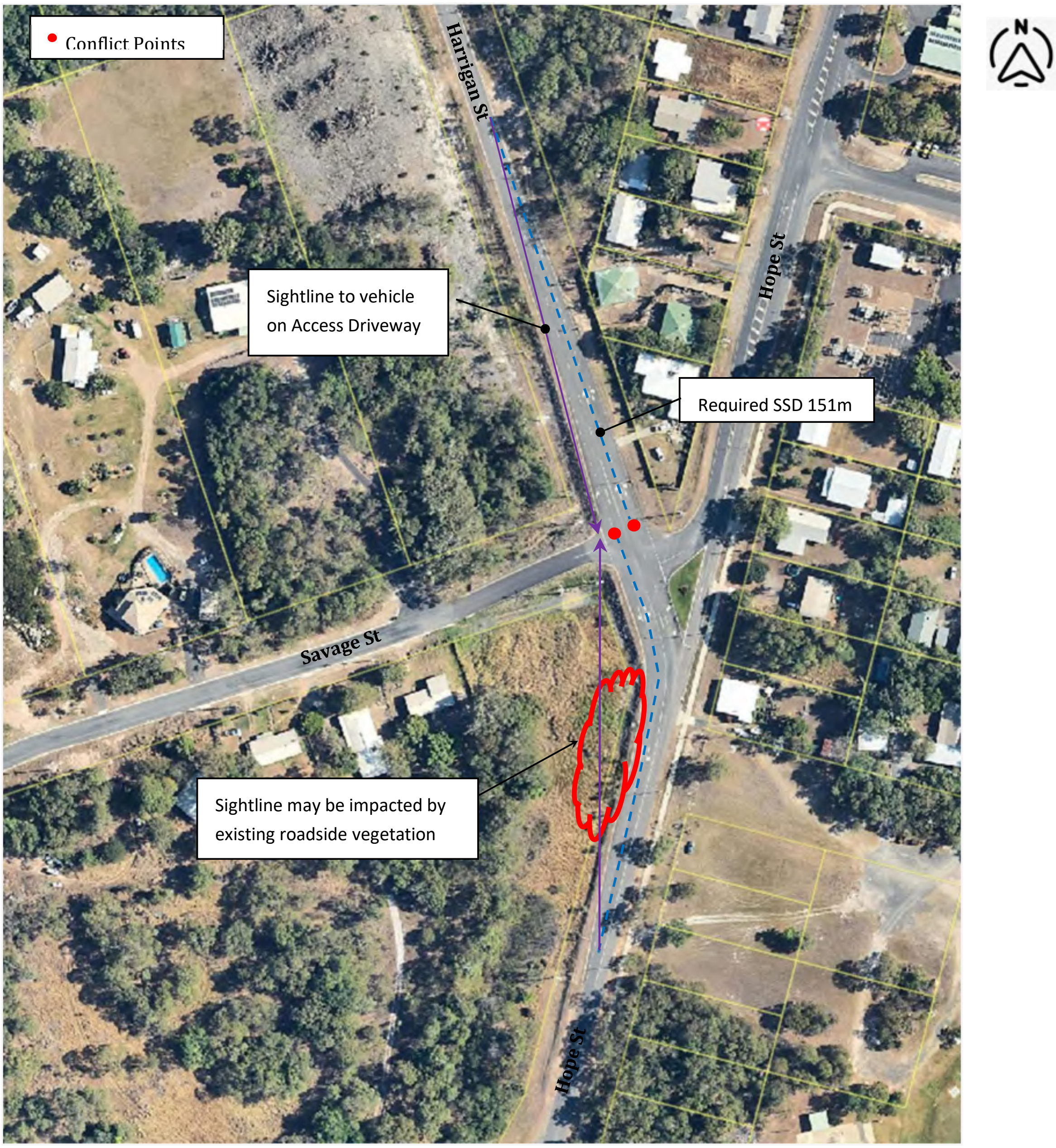


Figure 25 – SSD Assessment - Harrigan Street/Savage Street Intersection

The Harrigan Street southbound through traffic has sufficient line of sight to observe a vehicle at the Harrigan Street/Savage Street intersection or the conflict point, and to decelerate to a stop before reaching the collision point, if required.

However, the Harrigan Street (or Hope Street) northbound through traffic sightline may be impacted by the existing roadside vegetation, as shown in Figure 25 and 26.

Figure 26 – Existing Roadside Vegetation (Source: Google Map Aerial Image - Sept 2022)

It is recommended that the existing vegetation to be removed to improve the Harrigan Street (or Hope Street) northbound through traffic sightline.

2.8.2.3 Existing Harrigan Street/Hope Street Road Curve

It is noted that the existing road curve approaching Harrigan Street/Savage Street intersection is considered substandard. The existing road curve radii is approximately R70m (measurement from Google Aerial Imagery).

In accordance with AGRD Part 3: Geometric Design (2016), Table 7.12 (refer Figure 24), the minimum road curve radii with 3% adverse crossfall, for 60km/h speed environment is R95m.

Speed (km/h)	New roads[1]		Existing urban roads	
	Max side friction factor[2]	Minimum radii (m) for 3.0% adverse crossfall	Max side friction factor	Minimum radii (m) for 3.0% adverse crossfall
40	0.20	75	0.35	40
50	0.20	120	0.35	60
60	0.16	220	0.33	95
70	0.13	400	0.31	140
80	0.11	660	–	–
90	0.09	1150	–	–
100	0.08	1600	–	–
110	0.08	2000	–	–
120	0.07	2700	–	–
130	0.07	3100	–	–

1 *May also include temporary roads, side tracks and temporary connections on rural roads and freeways.*
2 *Based on 2/3 of the desirable maximum values of side friction for cars.*

Note: Does not apply to intersections where higher friction demand may be required.

Figure 27 - Minimum Radii with Adverse Crossfall (Source: Austroads)

Considering the above and existing side road junctions (i.e. Savage Street and Hope Street) located at the road curve, it is recommended that the existing Harrigan Street/Hope Street road curve to be provided with "Side Road Junction on a Curve (W2-15B)" warning sign supplement with "Advisory Speed (W8-2B (50km/h))" sign.

2.8.3 Risk Assessment (Proposed Development Access Driveways)

A road safety risk assessment has been undertaken in accordance with TMR's *Guide to Traffic Impact Assessment (GTIA) (2018)*. The GTIA outlines that:

> *"Safety is not readily quantifiable as efficiency and is scored based on expert opinion on the changes to likelihood and/or consequence of a risk being realised.*
>
> *The condition of road cannot be defined absolutely as being safe or unsafe. Rather, road safety is a relative measure benchmarked against an existing condition or an acceptable risk threshold."*

The traffic safety risks were identified and then scored using the risk scoring matrix outlined in the GTIA, as shown in Figure 28. These identified risks relate to the traffic movements at the proposed access driveways associated with the development.

		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

Figure 28 - Safety Risk Score Matrix (Source: TMR's GTIA)

The risk assessment has been conducted for the proposed development access driveways which specifically address the:

1. Proposed Access Driveway 1 (Egress-Only Access)
    - Item 1 - Left turns out of the site (crash with adjacent through movements); and
    - Item 2 - Right turns out of the site (crash with adjacent through movements).
2. Proposed Access Driveway 2 and 3 (All-Movement Access)
    - Item 3 - Left turns into the site (rear-end crash with left turn entry);
    - Item 4 - Right turn into the site (rear-end crash with right turn entry);
    - Item 5 - Left turns out of the site (crash with adjacent through movements); and
    - Item 6 - Right turns out of the site (crash with adjacent through movements).

The results of the risk assessment are summarised below.

Risk Item	Without Development: Likelihood	Without Development: Consequence	Without Development: Risk Score	With Development: Likelihood	With Development: Consequence	With Development: Risk Score	Mitigation Measures	With development & Mitigation: Likelihood	With development & Mitigation: Consequence	With development & Mitigation: Risk Score
Proposed Access Driveway 1 (Egress-Only Access)										
Item 1: Left turns out of the site (crash with adjacent through movements)	-	-	-	2	2	L	Sufficient SSD No action required.	2	2	L
Item 2: Right turns out of the site (crash with adjacent through movements)	-	-	-	2	2	L	Sufficient SSD. No action required.	2	2	L
Proposed Access Driveway 2 (All-Movement Access)										
Item 3: Left turns into the site (rear-end crash with left turn entry)	-	-	-	2	2	L	Provide BAL turn treatment for left turning traffic. Sufficient SSD	1	2	L
Item 4: Right turn into the site (rear-end crash with right turn entry)	-	-	-	2	2	L	Provide BAR turn treatment for right turning development traffic. Sufficient SSD	1	2	L
Item 5: Left turns out of the site (crash with adjacent through movements)	-	-	-	2	2	L	Sufficient SSD. No action required.	2	2	L
Item 6: Right turns out of the site (crash with adjacent through movements)	-	-	-	2	2	L	Sufficient SSD. No action required.	2	2	L
Proposed Access Driveway 3 (All-Movement Access)										
Item 3: Left turns into the site (rear-end crash with left turn entry)	-	-	-	2	2	L	Low traffic and speed environment (i.e. 50km/h). Sufficient SSD. No action required.	2	2	L
Item 4: Right turn into the site (rear-end crash with right turn entry)	-	-	-	2	2	L	Low traffic and speed environment (i.e. 50km/h). Sufficient SSD. No action required.	2	2	L
Item 5: Left turns out of the site (crash with adjacent through movements)	-	-	-	2	2	L	Low traffic and speed environment (i.e. 50km/h). Sufficient SSD. No action required.	2	2	L
Item 6: Right turns out of the site (crash with adjacent through movements)	-	-	-	2	2	L	Low traffic and speed environment (i.e. 50km/h). Sufficient SSD. No action required.	2	2	L

Table 12 - Road Safety Risk Assessment (Proposed Access Driveways)

The development traffic is expected to increase as a result of the proposal and thus the likelihood of crashes associated with the site accesses increases, compared to the pre-development case. However, this increase in likelihood is not expected to have a significant impact on road safety with the proposed mitigation measures.

2.9 Traffic Assessment Findings

The proposed development has been evaluated in terms of its site accesses arrangement and impact on the surrounding road network and safety. The main points to note are:

- The proposed development consists of a new supermarket, liquor store and laundromat with the following GFA and GLFA:
  - IGA Supermarket: 2,028m^2 GFA or 1,521m^2 GLFA (75% of GFA)
  - Liquor store: 150m^2 GFA or 112.5m^2 GLFA (75% of GFA)
  - Laundromat: 83m^2 GFA or 57m^2 GLFA (75% of GFA)
- It is anticipated the proposed development will commence operation in mid-late 2024, subject to development approval and construction;
- Three (3) new vehicular accesses will be provided to service the development, as follows:
  - Access Driveway 1 - egress-only access at Harrigan Street;
  - Access Driveway 2 - all-movement access (i.e. ingress and egress) access at Harrigan Street; and
  - Access Driveway 3 - all-movement access (i.e. ingress and egress) access at Savage Street.;
- The proposed driveway access locations comply with the Australian Standard AS2890.1:2004 Parking Facilities – Part 1: Off-Street Car Parking - Access Driveway Location requirement;
- The proposed development is expected to generate:
  - Peak hour traffic – 252.9 veh/hr
  - Daily traffic – 2045.8 veh/day
- Considering the low development traffic generation using the proposed Savage Street access and the low background traffic, the traffic assessment solely focuses on the development traffic impact on Harrigan Street in terms of traffic performance perspective;
- The safety performance for all proposed access driveways is assessed as satisfactory;
- Turn treatment warrant assessment demonstrates that for the 2024 opening year and throughout the 10 years design horizon (2034), a Basic Let (BAL) and Basic Right (BAR) treatments are warranted for Access Driveway 2;
- A turn warrant assessment was not conducted on Access Driveway 1 as this driveway is egress-only;
- The lighting warrant assessment indicated that for the 2024 opening year and throughout the 10 years design horizon (2034), intersection lighting is warranted for consideration for Access Driveway 1 and 2;
- It is noted that currently, there is existing street lighting located in Harrigan Street near the the proposed access driveways. It is recommended that the existing street lighting to be against the warranted V5 category;
- SIDRA analysis indicates that at post-development (2024) and throughout the 10 years design horizon (2034), the proposed access intersections are operating under free and unrestrictive flow conditions, with minimal delay and queue length;
- The QLD Globe crash data indicated no crashes recorded along Harrigan Street and Savage Street sections fronting the development site for the past 10 years;
- Stopping Sight Distance (SSD) at the proposed access driveways consistent with the Australian Standard AS2890.1:2004 Parking Facilities – Part 1: Off-Street Car Parking requirements;
- Safe Intersection Sight Distance (SISD) assessment for the existing Harrigan Street/Savage Street intersection indicated that:
  - Harrigan Street southbound through traffic has sufficient sight line to observe a vehicle at the Harrigan Street/Savage Street intersection or the conflict point and to decelerate to a stop before reaching the collision point, if required; and
  - Hope Street northbound through traffic sightlines are impeded by the existing roadside vegetation, therefore it is recommended that existing vegetation to be removed to improve the traffic sightline.
- It is also recommended that warning signage be installed to the substandard Harrigan Street/Hope Street road curve.
  - “Side Road Junction on a Curve (W2-15B)” warning sign supplemented with “Advisory Speed (W8-2B (50km/h))”

- The development traffic is expected to increase as a result of the proposal and thus the likelihood of crashes associated with the site accesses increases, compared to the pre-development case. However, this increase in likelihood is not expected to have a significant impact on road safety with the above-mentioned mitigation measures/recommendation (i.e. turn treatment, warning signs, lighting etc.).

Based on the traffic assessment, the proposed development is not expected to have any adverse impact on the safety or operational efficiency of surrounding road networks, at the Opening Year (2024) and throughout the 10 years design horizon period (2034).

3. Wastewater Disposal

The proposed development cannot be serviced by gravity sewer without significant filling across the site. The floor level of the proposed building is approximately 2 meters below the invert level of the nearby municipal gravity sewer.

The development proposal is to provide a private low-pressure sewer system within the site which can lift effluent up to the nearby gravity system. The system will be designed as part of the building hydraulics in detailed design.

The expected sewage generation from the development is tabulated below.

Design Criteria	
GFA	2,261m^2
FNQROC Table 7.1 – Shops / Offices	1 EP per 90m^2 GFA
EP - Equivalent Persons	25.1
EDC - Equivalent Domestic Connections	9.0
Generation per Equivalent Person	270 L/day
ADWF - Average Dry Weather Flow	0.079 L/s
Peaking Factor C_2	3.35
PDWF – Peak Dry Weather Flow	0.263 L/s
Peaking Factor C_1	8.99
PWWF – Peak Dry Weather Flow	0.706 L/s

Table 13 - Development Sewage Generation

The adjacent sewer is identified as trunk and as such the capacity has not been assessed.

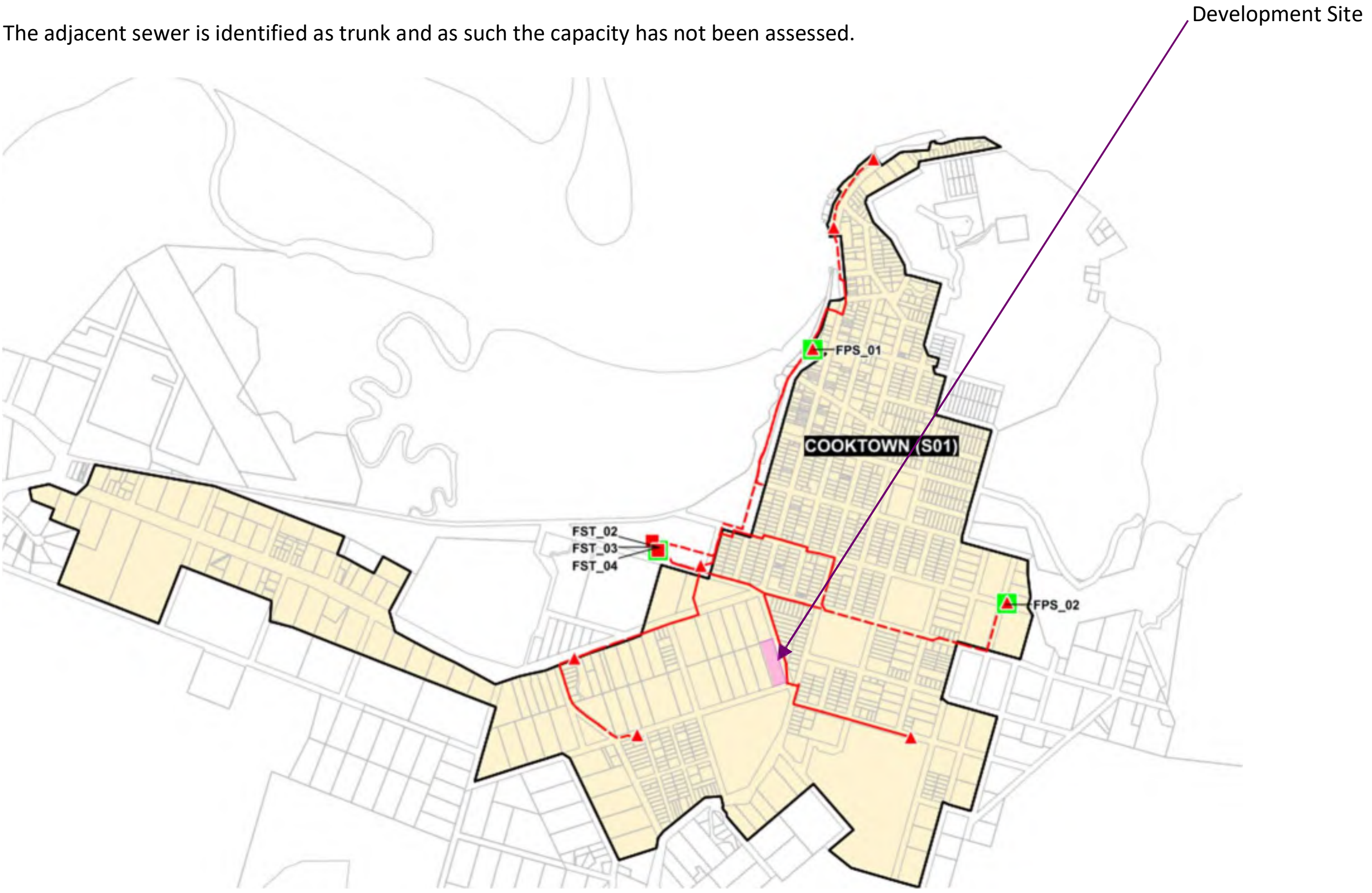


Figure 29- Extract of Cook Shire Council – Plans for Trunk Infrastructure – Sewerage Network

4. Potable and Firefighting Water

Municipal potable water infrastructure is available within the verge of Savage Street in the southern verge. A new road crossing is required to the northern verge of Savge Street where a water meter and internal water reticulation can be provided for this development.

The expected water demand from the development is tabulated below.

Design Criteria	
Approximate GFA	2,261m^2
FNQROC Table 6.1 – Shops / Offices	1 EP per 90m^2 GFA
EP - Equivalent Population	25.1
EDC - Equivalent Domestic Connections	9.0
Demand per Equivalent Person	500 L/day
AD – Average Daily Demand	12.55 kL/day
MDMM – Mean Day Maximum Month Demand	18.83 kL/day
PD – Peak Day Demand	28.24 kL/day
PH – Peak Hour Demand	0.654 L/s
FF – Fire Flow	30 L/s

Table 14 - Development Water Demand

The development will be required to provide firefighting on-site for the development to comply with the relevant Building Codes. This will be designed as part of the building hydraulics in subsequent applications. When the ultimate firefighting requirements are known a water network analysis can be undertaken to determine any impacts that the development will have on the surrounding network.

5. Site Grading and Clearing

The development site is presently undeveloped, partially cleared, and unused for any current activities. LIDAR survey of the site and site inspection shows that the site falls to the west into a flow path roughly midway along the western boundary.

The development intent is to provide a useable space for the intended development, i.e. a supermarket and commercial space with car parking while also achieving;

- Compliance with the FNQROC Development Manual - Design Guideline D2
- Efficient and economical design noting the gradient across the site presently and that earthworks and retaining will be a higher than usual cost compared to a typical development of this type.
- Stormwater drainage compliant with FNQROC Development Manual - Design Guideline D4 and QUDM, especially with regard to the location of discharge and the mitigation of peak flows
- Safe access to and from the site for pedestrians and vehicles.
- Design compliant with the requirements of the relevant standards, in particular AS1428.1 Design for Access and Mobility and AS2890.1 Off Street Carparking.

A bulk earthworks design has been submitted to Council for approval. Detailed site grading will be documented as part of the future Operational Works application.

Earthwork compaction testing will comply with AS3798 – Guidelines on Earthworks for Commercial and Residential Development and the Far North Queensland Regional Organisation of Councils (FNQROC) Design Guideline D2. Topsoil from the site will be stockpiled before earthworks and spread over the zones identified for grass and landscaping.

6. Stormwater and Flooding

6.1 Regional Flooding

The site is not subject to inundation in the regional flood or storm surge event.

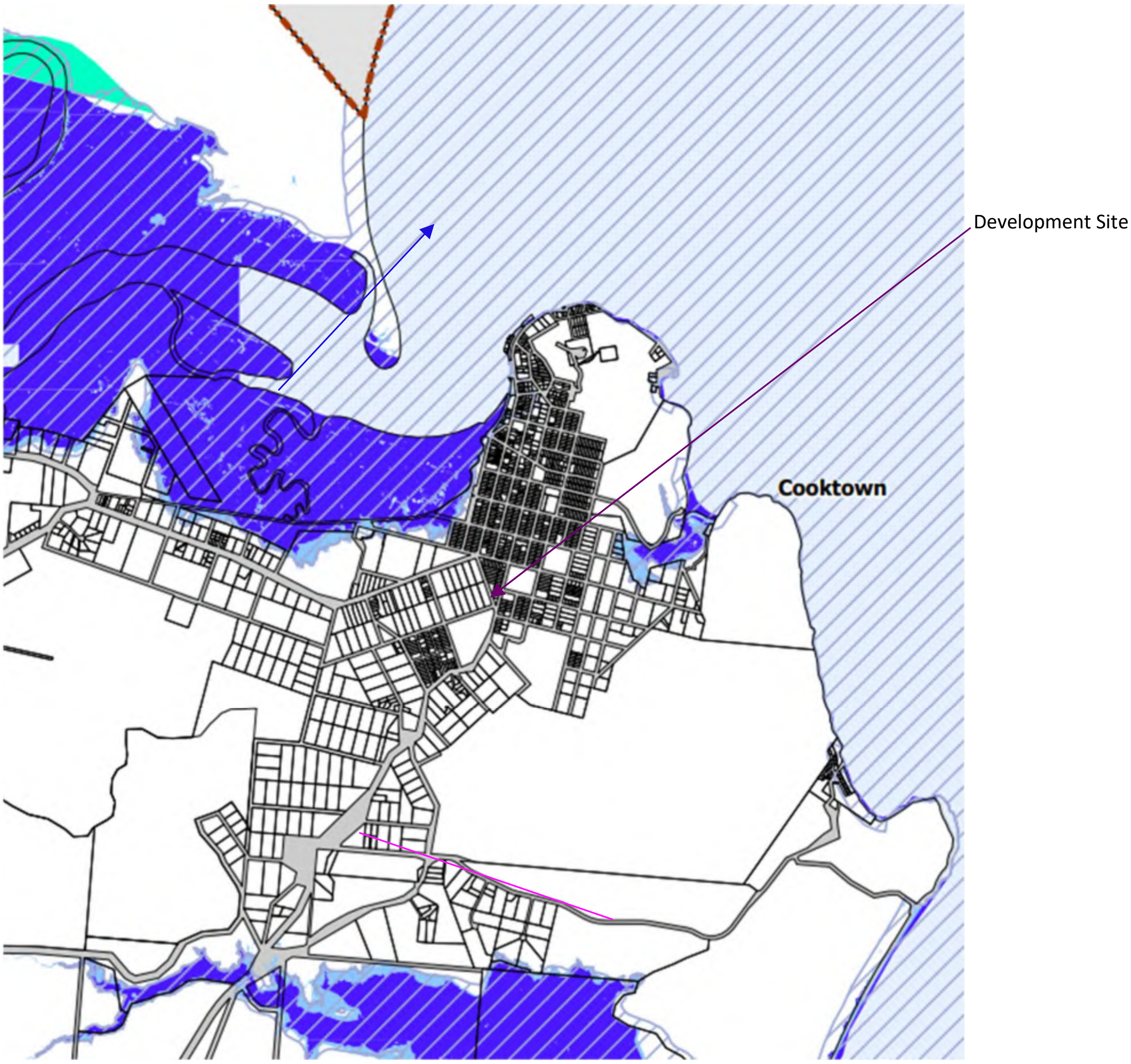


Figure 30 – Extract of Cook Shire Council – Planning Scheme Overlay Map – Flood and Other Coastal Hazards Overlay

6.2 Local Dainage Philosophy

An external catchment of 11.1 hectares (1% AEP approximately 5.24m^3/s) flows into the site from Savage Street before discharging from the property at the midpoint of the western boundary into an existing vegetated flow path. Although not defined as an easement, this location is the logical point of discharge for the development as any other discharge location would require onerous reshaping of the topography and result in major changes to other catchments.

A detention basin will be provided on-site between Savage Street and the proposed carpark to limit stormwater discharging from the development in 1% AEP events to pre-development (1% AEP approximately 5.24m^3/s) and minimise any impact to downstream properties.

A stormwater catchment plan is included as Appendix D.

7. Electricity and Telecommunication

Electricity infrastructure is located nearby within Harrigan Street and Savage Street as overhead power. Power and communications will be provided as required by the respective services authorities to service the development. The vertical clearance from the site access to the overhead power will be confirmed with survey.

Negotiations have commenced with Ergon.

Intent to Supply offers from electrical and telecommunication providers will be provided to Council during the future project phases.

8. Recommendations

Based on the calculations and information collated in this report, it is concluded that this development can be serviced in accordance with the statutory requirements and appropriate engineering solutions. In summary;

- Earthworks and site re-grading over the site can achieve the project requirements and relevant standards without impacting surrounding properties or the nearby road network. A bulk earthworks application has already been submitted.
- This development is free from inundation in the regional flood event
- Stormwater runoff from the site and the external catchment will discharge into Lot 11 SP21303 at the existing flow path but without an easement.
- On-site detention will be provided to limit the stormwater discharge to pre-development levels in the 1% AEP event.
- On-site carparking can comply with the requirements of AS2890.1
- Warning signage be installed to the substandard Harrigan Street/Hope Street road curve.
    - "Side Road Junction on a Curve (W2-15B)" warning sign supplemented with "Advisory Speed (W8-2B (50km/h))"
- Hope Street northbound through traffic sightlines are impacted by the existing roadside vegetation, therefore it is recommended that existing vegetation to be removed to improve the traffic sightline.
- Safe access to and from the site can be achieved from Harrigan and Savage Streets with the proposed access driveways.
- Connection to Council's potable water network is available and should achieve the required pressure requirements.
- The development can connect to Council's gravity sewer network by a private pumping solution.
- The site has access to nearby electrical networks to provide connection.

It is recommended the development be approved with standard, relevant and reasonable conditions.

Appendix A. Preliminary Development Plans

KWIK BRIDGE PTY LTD

2022-072 COOKTOWN - CORNETTS SUPERMARKET

81 SAVAGE ST, COOKTOWN, QLD , 4895

21/08/23
DEVELOPMENT APPLICATION

i2C inspiring ideas to enhance human experience

SYNDEY MELBOURNE BRISBANE PERTH
1800 422 533 i2C.COM.AU

THE SITE IS STRATEGICALLY SITUATED AT THE ENTRY OF COOKTOWN ON THE FRINGE OF THE ESTABLISHED ACTIVITY CENTRE. THE PROPOSED DEVELOPMENT FEATURES A SUPERMARKET (IGA) THAT IS COMPLIMENTED BY A RANGE OF SPECIALTY SHOPS INCLUDING A LIQUOR STORE AND LAUNDROMAT. KEY FEATURES OF THE SITE INCLUDE CONVENIENT LOCATION AND ACCESSIBILTY.

no.	date	ISSUE / revision	by
TP2	21/08/23	DEVELOPMENT APPLICATION	MHa
TP1	11/08/23	PRELIMINARY TOWN PLANNING	MHa
D2	27/04/23	UPDATED	PCH
D1	24/04/23	PRELIMINARY	PCH
2	21/04/23	UPDATED	PCH
1	19/04/23	PRELIMINARY	PCH

21/08/2023 2:26:12 PM

KWIK BRIDGE PTY LTD

COOKTOWN - CORNETTS SUPERMARKET

81 SAVAGE ST, COOKTOWN, QLD , 4895

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LOCALITY PLAN

PRELIMINARY ISSUE

project	drawing no.	issue
2022-072	DA01	TP2
scale @ A1	designed	checked
1 : 2000	MHa	RRo

EXISTING INFORMATION:
SUBJECT TO SITE CADASTRAL SURVEY. ALL INDICATED LEVELS, SITE BOUNDARY AND SERVICES BASED DRAWING XR-01-DESIGN-230727 PREPARED BY 5KF. WHILST ALL REASONABLE CARE HAS BEEN TAKEN i2C ARCHITECTS DO NOT TAKE RESPONSIBILTY FOR THE ACCURACY OF RECEIVED SURVEY INFORMATION.

EXISTING SITE PLAN

STREET VIEW FROM LOCATION A

no.	date	ISSUE / revision	by
TP2	21/08/23	DEVELOPMENT APPLICATION	MHa
TP1	11/08/23	PRELIMINARY TOWN PLANNING	MHa
A	21/02/22	CONCEPT	

21/08/2023 2:26:28 PM

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EXISTING SITE PLAN
DEVELOPMENT APPLICATION

project	drawing no.	issue
2022-072	DA02	TP2

scale @ A1	designed	checked
As indicated	MHa	RRo

COOK SHIRE COUNCIL - PLANNING SCHEME

SC1.2 ADMINISTRATIVE TERMS AND DEFINITIONS

GROSS FLOOR AREA

GROSS FLOOR AREA, FOR A BUILDING, MEANS THE TOTAL FLOOR AREA OF ALL STOREYS OF THE BUILDING, MEASURED FROM
THE OUTSIDE OF THE EXTERNAL WALLS AND THE CENTRE OF ANY COMMON WALLS OF THE BUILDING, OTHER THAN AREAS USED FOR—
(A) BUILDING SERVICES, PLANT OR EQUIPMENT; OR
(B) ACCESS BETWEEN LEVELS; OR
(C) A GROUND FLOOR PUBLIC LOBBY; OR
(D) A MALL; OR
(E) PARKING, LOADING OR MANOEUVRING VEHICLES; OR
(F) UNENCLOSED PRIVATE BALCONIES, WHETHER ROOFED OR NOT.

NOTE:
ALL PROPOSED RETAINING STRUCTURES AND CIVIL LEVELS SUBJECT TO FUTURE DETAIL DEVELOPMENT

NOTE:
REFER TO ACOUSTIC REPORT FOR ALL ACOUSTIC DETAILS

9.4.2 PARKING AND ACCESS CODE

SCHEDULE 1 - VEHICLE PARKING AND SERVICE VEHICLE REQUIREMENTS

USE	MINIMUM NUMBER OF CAR PARKING SPACES
SHOP	
(A) WHERE LESS THAN 200M² GFA (B) OTHERWISE	(A) 1 SPACE PER 20M² GFA (B) 1 SPACE PER 50M² GFA

SCHEDULE 2 - VEHICLE PARKING AND SERVICE VEHICLE REQUIREMENTS

MINIMUM SERVICE PROVISIONS	WIDTH	LENGTH	VEHICLE CLEARANCE
SMALL RIGID VEHICLE	3.5m	7.0m	3.5m
HEAVY RIGID VEHICLE	3.5m	11.5m	4.5m

PARKING RATES

GFA SCHEDULE & REQUIRED PARKING

	SHOP (GFA)	RATE	REQUIRED	PROVIDED
SUPERMARKET (BOH, ONLINE COLLECT, OFFICE)	$2028m^2$	$1/50m^2$	40.5	
LAUNDRY	$83m^2$	$1/20m^2$	4.15	
LIQUOR STORE	$150m^2$	$1/20m^2$	7.5	
BICYCLE			TBC	6
TOTAL	$2261m^2$		53	83 INCLUDING: • 2 ACCESSIBLE PARKING • 7 TRAILER TRUCK PARKING • 4 EV PARKING

LAND USE

- LANDSCAPE AREA REFER TO L/ARCH. FOR FURTHER DETAIL incl SPECIFIC SHADE TREES
- SPECIALITY (LAUNDRY SHOP)
- RETAIL(SUPERMARKET)
- LIQUOR
- PLANT / LOBBY

KEY

- PEDESTRIAN ROUTES
- PEDESTRIAN SITE ACCESS
- ACOUSTIC BARRIER
- RETAINING STRUCTURE

COVERAGE:

- SITE COVER (ROOFED AREA) = 2,977sqm (25%)
- IMPERVIOUS AREA (ROOFED AREA + HARDSTAND) = 2,977+ 6,320sqm (77%)
- LANDSCAPE AREA = 2,657 (22%)

EXISTING INFORMATION:

SUBJECT TO SITE CADASTRAL SURVEY. ALL INDICATED LEVELS, SITE BOUNDARY AND SERVICES BASED DRAWING XR-01-DESIGN-230727 PREPARED BY 5KF. WHILST ALL REASONABLE CARE HAS BEEN TAKEN i2C ARCHITECTS DO NOT TAKE RESPONSIBILTY FOR THE ACCURACY OF RECEIVED SURVEY INFORMATION.

SWEPT PATHS:

VEHICLE SWEPT PATHS SHOWN INDICATIVELY ONLY. SUBJECT TO TRAFFIC ENGINEER REVIEW AND APPROVAL

no.	date	ISSUE / revision	by
TP2	21/08/23	DEVELOPMENT APPLICATION	MHa
TP1	11/08/23	PRELIMINARY TOWN PLANNING	MHa
D3	12/07/23	PRELIMINARY	FKi
D2	27/04/23	UPDATED	PCH
D1	24/04/23	PRELIMINARY	PCH
1	24/04/23	UPDATED	PCH

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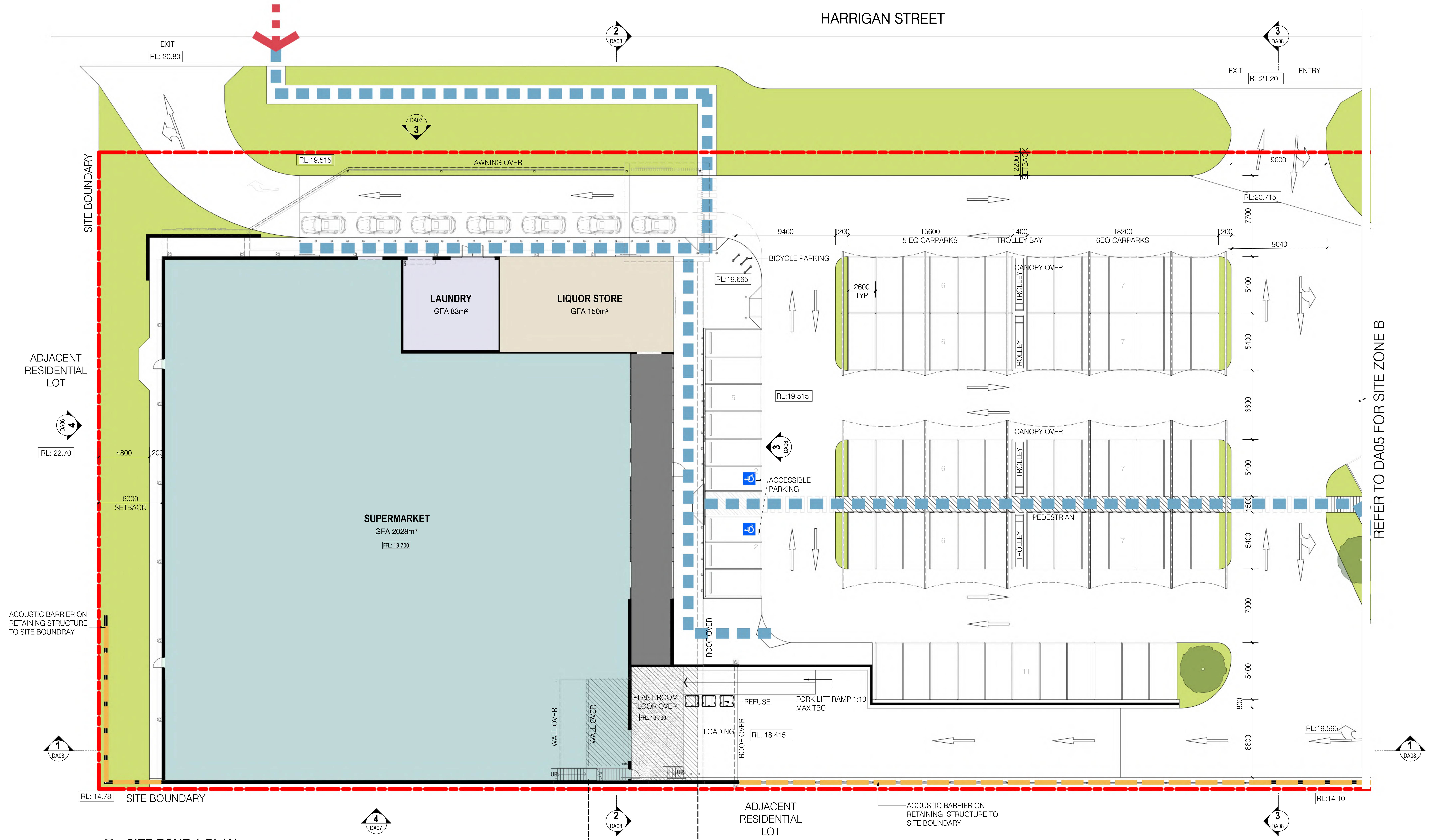
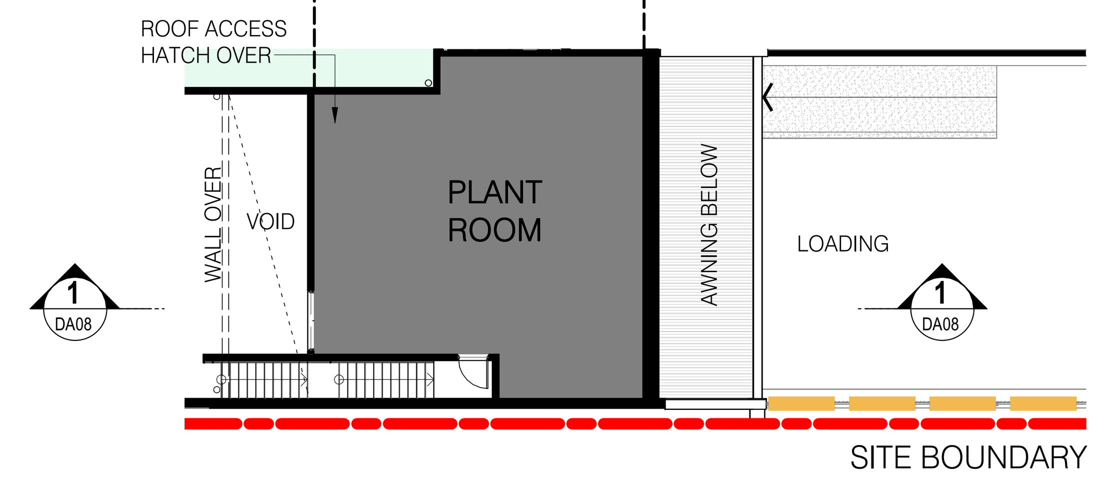
PROPOSED SITE PLAN

PRELIMINARY ISSUE

project	drawing no.	issue
2022-072	DA03	TP2
scale @ A1	designed	checked
As indicated	PCH	Checker



SITE ZONE A PLAN
1 : 200



MEZZANINE PLANT ROOM
1 : 200

LAND USE

- LANDSCAPE AREA REFER TO L/ARCH. FOR FURTHER DETAIL incl SPECIFIC SHADE TREES
- SPECIALITY (LAUNDRY SHOP)
- RETAIL(SUPERMARKET)
- LIQUOR
- PLANT / LOBBY (NOT incl IN GFA)

KEY

- PEDESTRIAN ROUTE
- PEDESTRIAN SITE ACCESS
- ACOUSTIC BARRIER
- RETAINING STRUCTURE

EXISTING INFORMATION:
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SWEPT PATHS:
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NOTE:
ALL PROPOSED RETAINING STRUCTURES AND CIVIL LEVELS SUBJECT TO FUTURE DETAIL DEVELOPMENT

NOTE:
REFER TO ACOUSTIC REPORT FOR ALL ACOUSTIC DETAILS

PARKING RATES

GFA SCHEDULE & REQUIRED PARKING

	SHOP (GFA)	RATE	REQUIRED	PROVIDED
SUPERMARKET (BOH, ONLINE COLLECT, OFFICE)	2028m²	1/50m²	40.5	
LAUNDRY	83m²	1/20m²	4.15	
LIQUOR STORE	150m²	1/20m²	7.5	
BICYCLE			TBC	6
TOTAL	**2261m²**		53	**83** INCLUDING: • 2 ACCESSIBLE PARKING • 7 TRAILER TRUCK PARKING • 4 EV PARKING

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3	24/04/23	UPDATED	PCH
2	21/04/23	UPDATED	PCH
1	19/04/23	PRELIMINARY	PCH

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PROPOSED SITE ZONE A
DEVELOPMENT APPLICATION

project	drawing no.	issue
2022-072	**DA04**	**TP2**

scale @ A1	designed	checked
As indicated	JHa	PCh

1 DA06 **SITE ZONE B PLAN**
1 : 200

LAND USE

- LANDSCAPE AREA REFER TO L/ARCH. FOR FURTHER DETAIL incl SPECIFIC SHADE TREES
- SPECIALITY (LAUNDRY SHOP)
- RETAIL(SUPERMARKET)
- LIQUOR
- PLANT / LOBBY (NOT incl IN GFA)

KEY

- PEDESTRIAN ROUTE
- PEDESTRIAN SITE ACCESS
- ACOUSTIC BARRIER
- RETAINING STRUCTURE

EXISTING INFORMATION:
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SWEPT PATHS:
VEHICLE SWEPT PATHS SHOWN INDICATIVELY ONLY. SUBJECT TO TRAFFIC ENGINEER REVIEW AND APPROVAL

NOTE:
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NOTE:
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PROPOSED SITE ZONE B

PRELIMINARY ISSUE

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project	drawing no.	issue
2022-072	DA05	TP2
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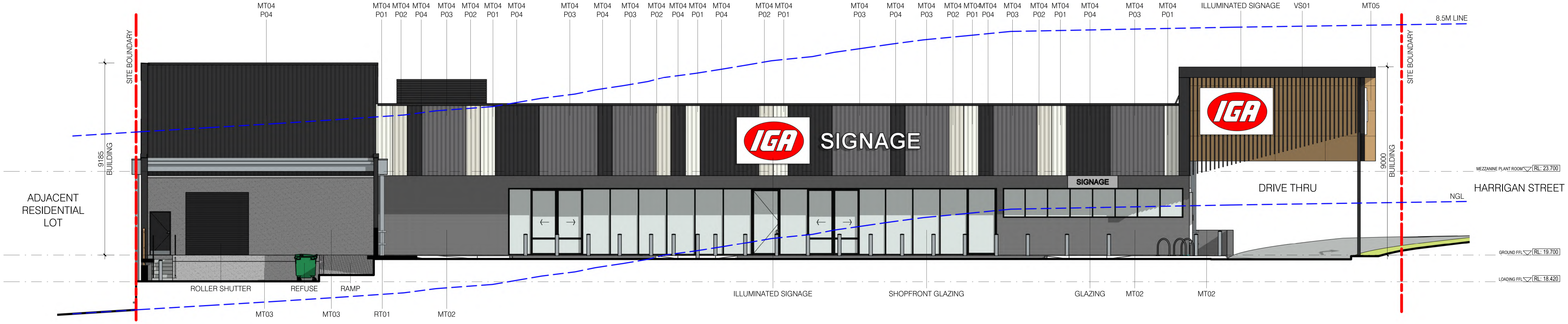
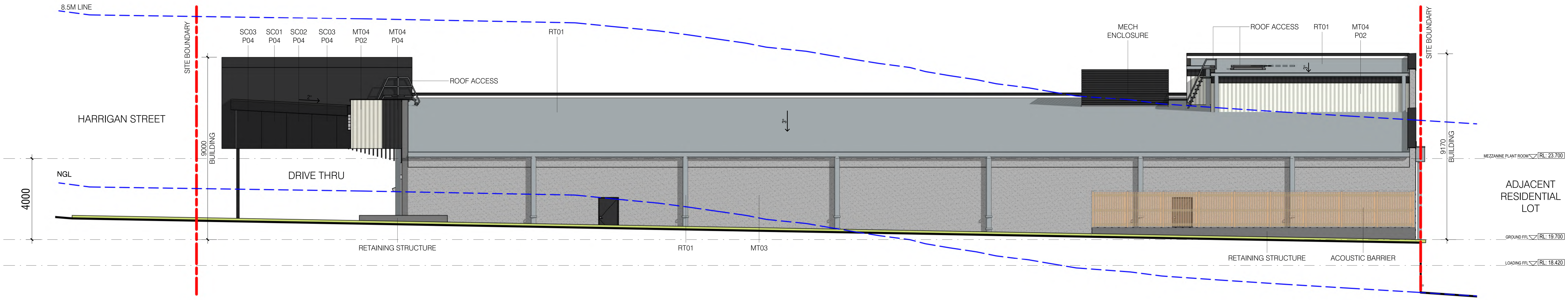
As indicated	PCH	Checker



3 DA03 **SOUTH ELEVATION**
1 : 100



4 DA03 **NORTH ELEVATION**
1 : 100

MATERIAL PALLETE

MT01 BLOCKWORK TYPE 1
MT02 BLOCKWORK TYPE 2
MT03 OFF FORM CONCRETE
MT04 PROFILED METAL CLADDING
MT05 CFC CLADDING TIMBER LOOK
RT01 ZINCALUME ROOF & RAINWATER GOODS
VS01 ALUMINIUM BATTENS

COLOUR PALLETE

P01 WHITE
P02 OFF WHITE
P03 MEDIUM GREY
P04 DARK GREY

no.	date	ISSUE / revision	by
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D2	27/04/23	UPDATED	PCH
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3	24/04/23	UPDATED	PCH
2	21/04/23	UPDATED	PCH
1	19/04/23	PRELIMINARY	PCH

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PROPOSED ELEVATIONS
DEVELOPMENT APPLICATION

project	drawing no.	issue
2022-072	DA06	TP2
scale @ A1: 1 : 100	designed: MHa	checked: RRo

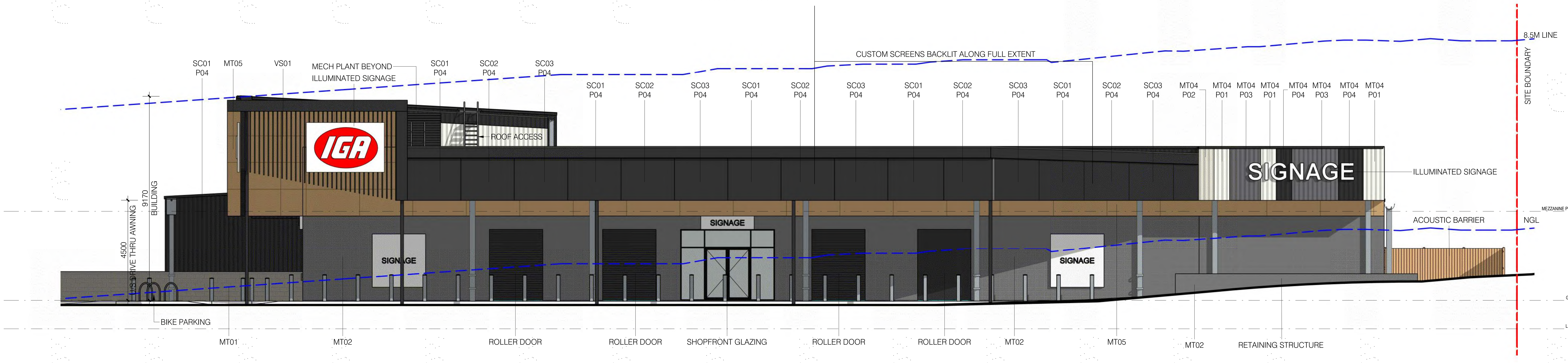
CUSTOM SCREEN

SC01 PERFORATED METAL SCREEN TYPE 1

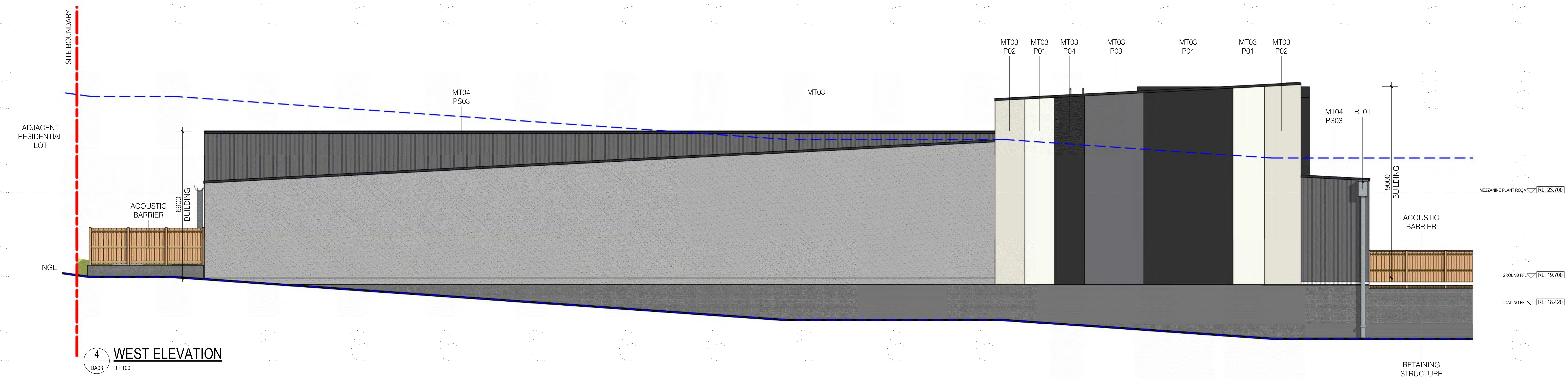
SC02 PERFORATED METAL SCREEN TYPE 2

SC01 PERFORATED METAL SCREEN TYPE 3

*ARTISTIC IMAGES SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. FINAL IMAGES SUBJECT TO DESIGN AND APPROVAL



3 **EAST ELEVATION**
DA03 1 : 100



4 **WEST ELEVATION**
DA03 1 : 100

MATERIAL PALLETE

WT01 BLOCKWORK TYPE 1

MT02 BLOCKWORK TYPE 2

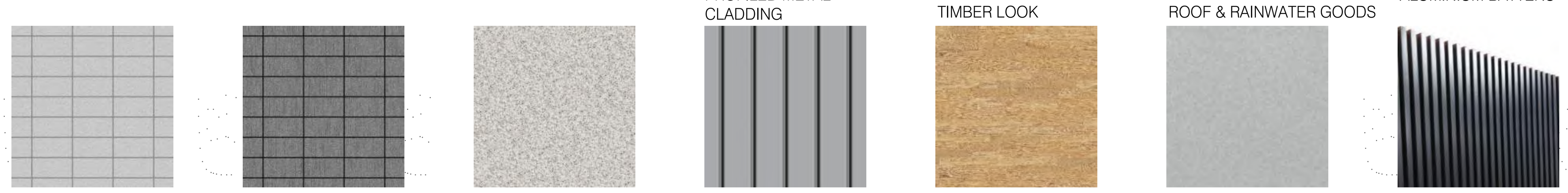
MT03 OFF FORM CONCRETE

MT04 PROFILED METAL CLADDING

MT05 CFC CLADDING TIMBER LOOK

RT01 ZINCALUME ROOF & RAINWATER GOODS

VS01 ALUMINIUM BATTENS



COLOUR PALLETE

P01 WHITE

P02 OFF WHITE

P03 MEDIUM GREY

P04 DARK GREY

no.	date	ISSUE / revision	by
TP2	21/08/23	DEVELOPMENT APPLICATION	MHa
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PROPOSED ELEVATIONS

DEVELOPMENT APPLICATION

project	drawing no.	issue
2022-072	DA07	TP2
scale @ A1 1 : 100	designed MHa	checked RRo

1 DA03 SITE SECTION 01 1 : 250

2 DA03 SITE SECTION 02 1 : 100

3 DA03 SITE SECTION 03 1 : 100

no.	date	ISSUE / revision	by
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TP1	11/08/23	PRELIMINARY TOWN PLANNING	MHa

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PROPOSED SECTIONS

DEVELOPMENT APPLICATION

project	drawing no.	issue
2022-072	DA08	TP2
scale @ A1: As indicated	designed: TTi	checked: Checker

Appendix B. Traffic Count Data

Traffic Counter Readings

Location: Boundary Street (Backpackers)

Date	Reading	Days in Period	Traffic in Period	Average Vehicles / Day
22-Jan-08	0	0	0	#DIV/0!
23-Jan-08	505	1	505	505
25-Jan-08	1665	2	1160	580
29-Jan-08	3388	4	1723	431
29-Jan-08	3388	7	3388	484

484 **veh/day (average)**

Charlotte St just south of Hogg St

Date	Reading	Days in Period	Traffic in Period	Average Vehicles / Day		
03-Dec-18	62776	21	62776	2989	Nov-18	Counter installed on 9/11/2018 so only captured last 21 days of month
07-Jan-19	79203	31	79203	2555	Dec-18	
01-Feb-19	77873	31	77873	2512	Jan-19	
28-Feb-19	77335	28	77335	2762	Feb-19	
01-Apr-19	80489	31	80489	2596	Mar-19	
07-May-19	80397	30	80397	2680	Apr-19	
03-Jun-19	87627	31	87627	2827	May-19	
02-Aug-19	96015	30	96015	3201	Jun-19	
02-Aug-19	105880	31	105880	3415	Jul-19	
02-Sep-19	79716	31	79716	2571	Aug-19	Split hose replaced
01-Oct-19	35658	11	35658	3242	Sep-19	
04-Nov-19	89651	30	89651	2988	Oct-19	
09-Dec-19	87165	30	87165	2906	Nov-19	
03-Feb-20	80134	31	80134	2585	Dec-19	
03-Feb-20	79748	31	79748	2573	Jan-20	
02-Mar-20	77469	29	77469	2671	Feb-20	
02-Apr-20	21850	9	21850	2428	Mar-20	Not counting on one hose, changed both hoses on 6/4/2020
05-May-20	53638	24	53638	2235	Apr-20	
02-Jun-20	77016	31	77016	2484	May-20	
01-Jul-20	77484	30	77484	2583	Jun-20	
01-Aug-20	99406	31	99406	3207	Jul-20	
01-Sep-20	107891	31	107891	3480	Aug-20	
01-Oct-20	104087	30	104087	3470	Sep-20	
01-Nov-20	103239	31	103239	3330	Oct-20	
01-Dec-20	60406	30	60406	2014	Nov-20	Hole in hose replaced both hoses on 3/12/2020
01-Jan-21	135241	31	135241	4363	Dec-20	
01-Feb-21	97361	31	97361	3141	Jan-21	**3275** **veh/day (average)**
01-Mar-21	77547	28	77547	2770	Feb-21	
01-Apr-21	87644	31	87644	2827	Mar-21	
15-Apr-21	40431	14	40431	2888	Apr-21	Counter removed for charlotte st upgrade and sealing.

Queensland Government

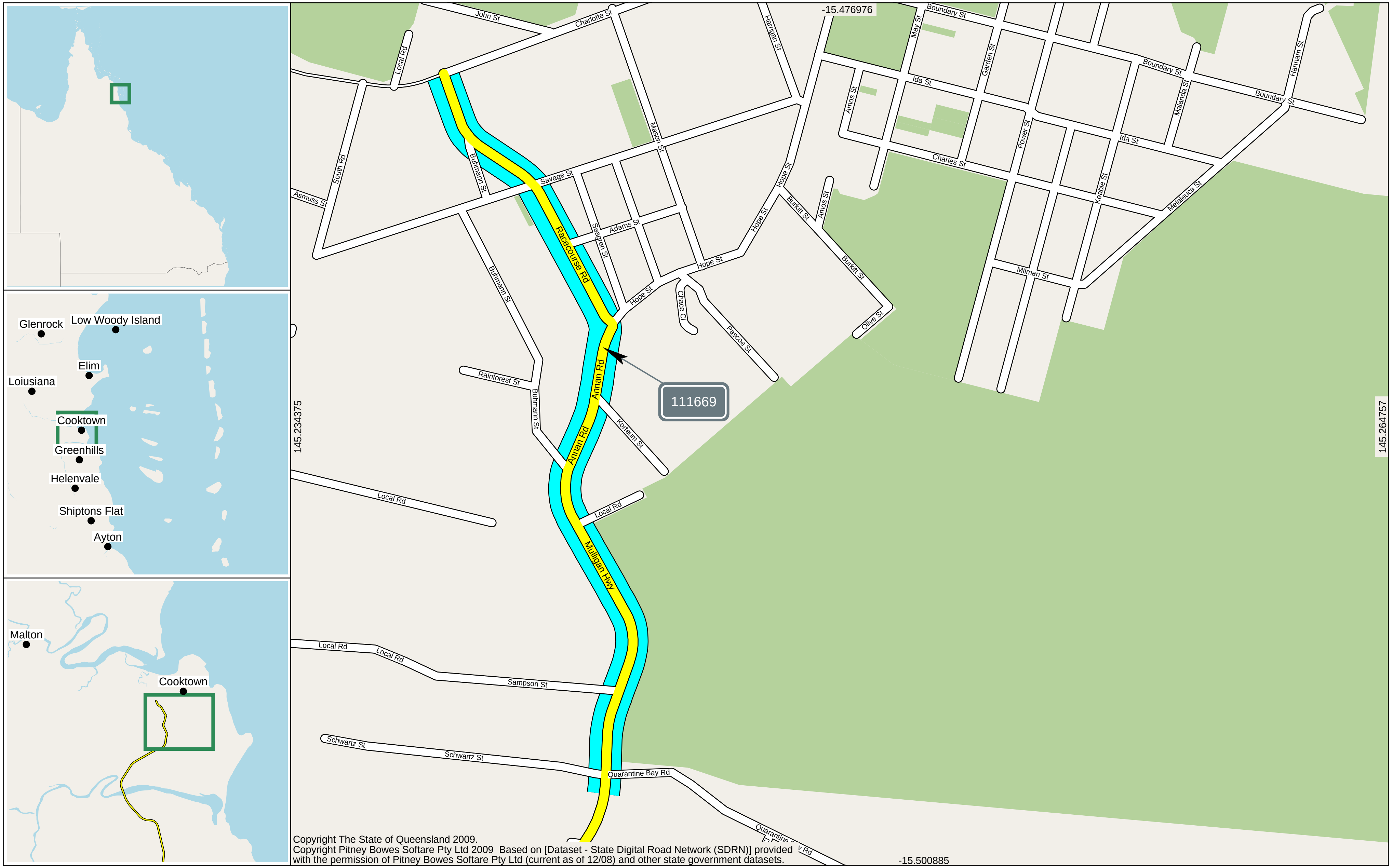
Traffic Analysis and Reporting System

AADT Segment Report

TARS

Area 403 - Far North District   Road Section 34C - MULLIGAN HIGHWAY (LAKELAND - COOKTOWN)

24-Jun-2021 15:14   Road Segment from 75.802km to 78.253km   Segment Site 111669   Traffic Year 2020   Data Collection Year 2020



AADT Segment Report

Area 403 - Far North District   Road Section 34C - MULLIGAN HIGHWAY (LAKELAND - COOKTOWN)

Road Segment from 75.802km to 78.253km   Segment Site 111669   Traffic Year 2020   Data Collection Year 2020

Site 111669. Point 310001074.
Cooktown 100m West of Racecourse Rd.

77.25 km

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

75.80 km
Start Point 310001120. Quarantine Bay Road.

78.25 km
End Point 310001076. Endeavour Valley Road.

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

All Vehicles (00)

G	607	100%
A	596	100%
B	1,203	100%

Light Vehicles (0A)

G	547	90.12%
A	537	90.10%
B	1,084	90.11%

Heavy Vehicles (0B)

G	60	9.88%
A	60	10.07%
B	120	9.98%

Short Vehicles (1A)

G	547	90.12%
A	537	90.10%
B	1,084	90.11%

Trucks and Buses (1B)

G	46	7.58%
A	46	7.72%
B	92	7.65%

Articulated Vehicles (1C)

G	12	1.98%
A	12	2.01%
B	24	2.00%

Road Trains (1D)

G	2	0.33%
A	2	0.34%
B	4	0.33%

AADT Segment Annual Volume Report
Provides summary data for the selected AADT Segment of a Road Section. Summary data is presented as both directional information and a combined bi-directional figure. The data is then broken down by Traffic Class, when available. The report also includes maps displaying the location of both the AADT Segment and the traffic count site.

Annual Average Daily Traffic (AADT)
Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

AADT Segments
The State declared road network is broken into Road Sections and then further broken down into AADT Segments. An AADT Segment is a sub-section of the declared road network where traffic volume is similar along the entire AADT Segment.

Area
For administration purposes the Department of Transport and Main Roads has divided Queensland into 12 Districts. The Area field in TSDM reports displays the District Name and Number.

District Name	District
Central West District	401
Darling Downs District	402
Far North District	403
Fitzroy District	404
Mackay/Whitsunday District	405
Metropolitian District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

AADT Values
AADT values are displayed by direction of travel as:

G Traffic flow in gazettal direction
A Traffic flow against gazettal direction
B Traffic flow in both directions

Data Collection Year
Is the most recent year that data was collected at the data collection site.

Please Note:
Due to location and/or departmental policy, some sites are not counted every year.

Gazettal Direction
Is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

Maps
Display the selected location from a range of viewing levels, the start and end position details for the AADT Segment and the location of the traffic count site.

Road Section
Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazettal Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

Segment Site
Is the unique identifier for the traffic count site representing the traffic flow within the AADT Segment.

Site
The physical location of a traffic counting device. Sites are located at a specified Through Distance along a Road Section.

Site Description
The description of the physical location of the traffic counting device.

Start and End Point
The unique identifier for the Through Distance along a Road Section.

Vehicle Class
Traffic is categorised as per the Austroads Vehicle Classification scheme. Traffic classes are in the following hierarchical format:

Volume or All Vehicles
00 = 0A + 0B

Light Vehicles
0A = 1A
1A = 2A + 2B

Heavy Vehicles
0B = 1B + 1C + 1D
1B = 2C + 2D + 2E
1C = 2F + 2G + 2H + 2I
1D = 2J + 2K + 2L

The following classes are the categories for which data can be captured:

Volume
00 All vehicles

2-Bin
0A Light vehicles
0B Heavy vehicles

4-Bin
1A Short vehicles
1B Truck or bus
1C Articulated vehicles
1D Road train

12-Bin
2A Short 2 axle vehicles
2B Short vehicles towing
2C 2 axle truck or bus
2D 3 axle truck or bus
2E 4 axle truck
2F 3 axle articulated vehicle
2G 4 axle articulated vehicle
2H 5 axle articulated vehicle
2I 6 axle articulated vehicle
2J B double
2K Double road train
2L Triple road train

Queensland Government

24-Jun-2021 15:14

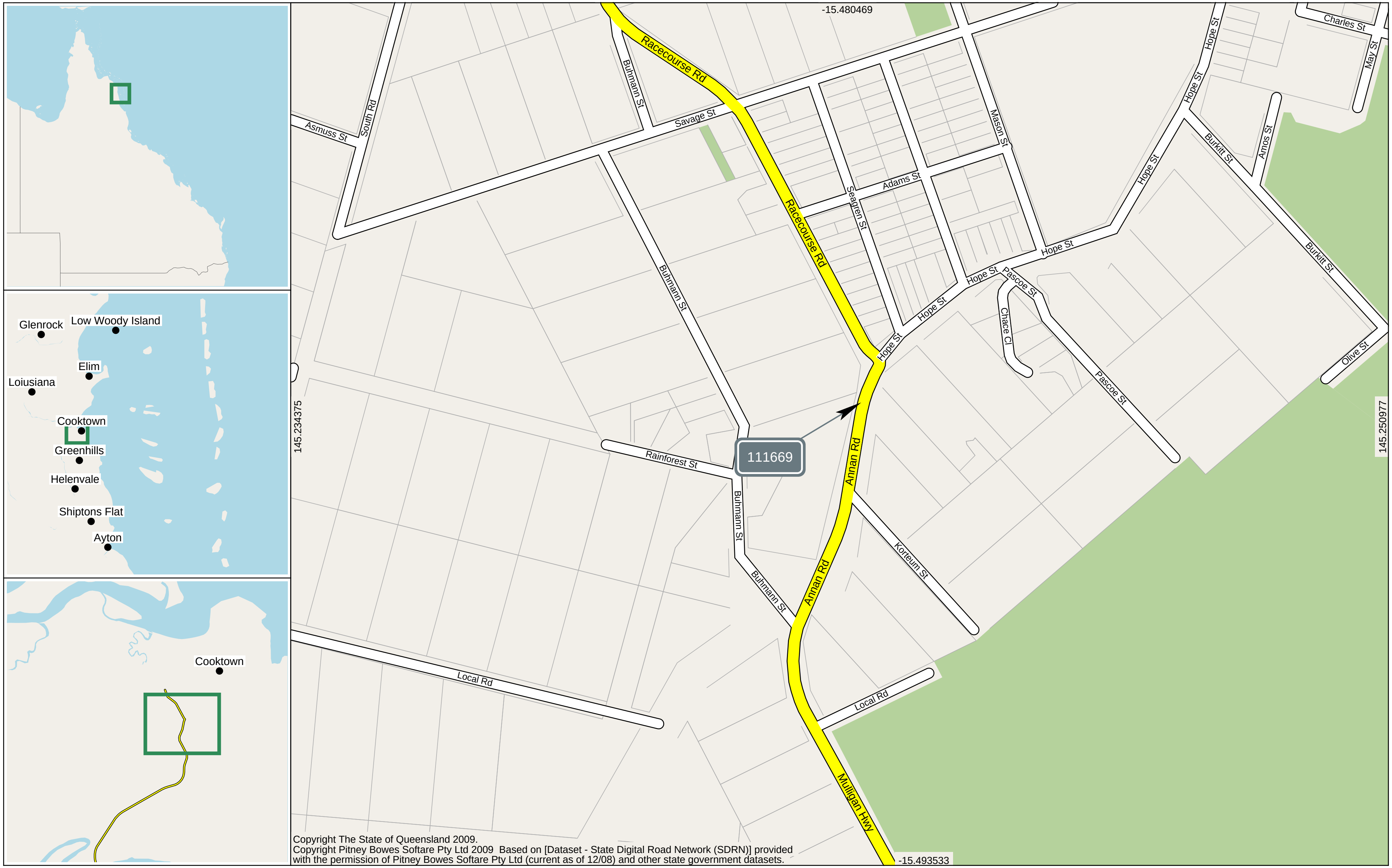
TARS

Traffic Analysis and Reporting System

Annual Volume Report

Area 403 - Far North District Road Section 34C - MULLIGAN HIGHWAY (LAKELAND - COOKTOWN)

Site 111669 - Cooktown 100m West of Racecourse Rd TDist 77.252km Speed Limit 60

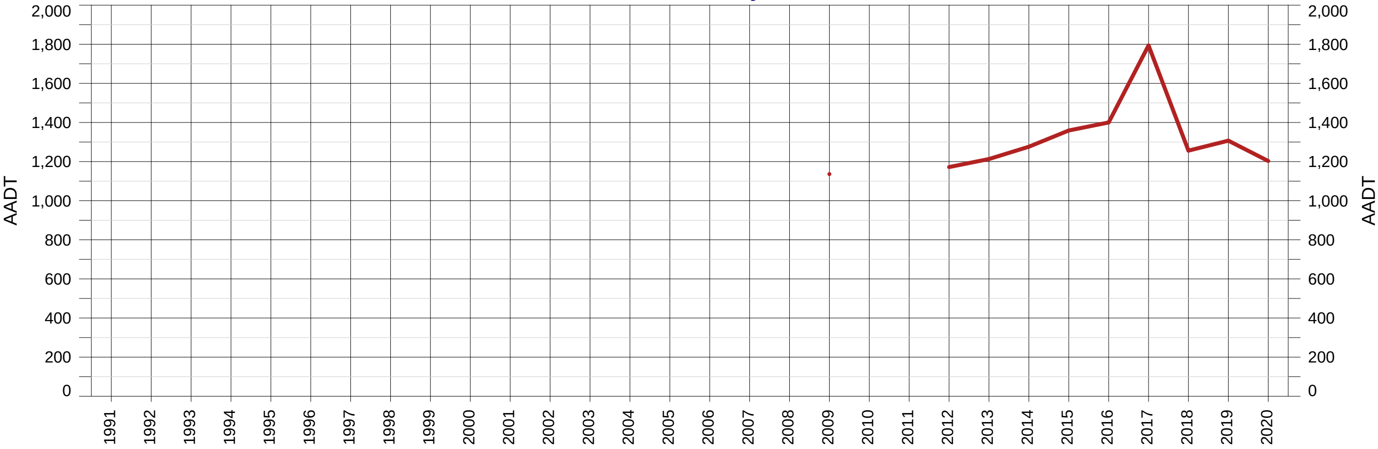


Annual Volume Report

Area	403 - Far North District
Road Section	34C - MULLIGAN HIGHWAY (LAKELAND - COOKTOWN)
Site	111669 - Cooktown 100m West of Racecourse Rd
Thru Dist	77.252
Type	C - Coverage
Stream	TB - Bi-directional traffic flow

Year	2020	Growth last Year	-7.96%
AADT	1,203	Growth last 5 Yrs	-4.59%
Avg Week Day	1,311	Growth last 10 Yrs	
Avg Weekend Day	1,142		

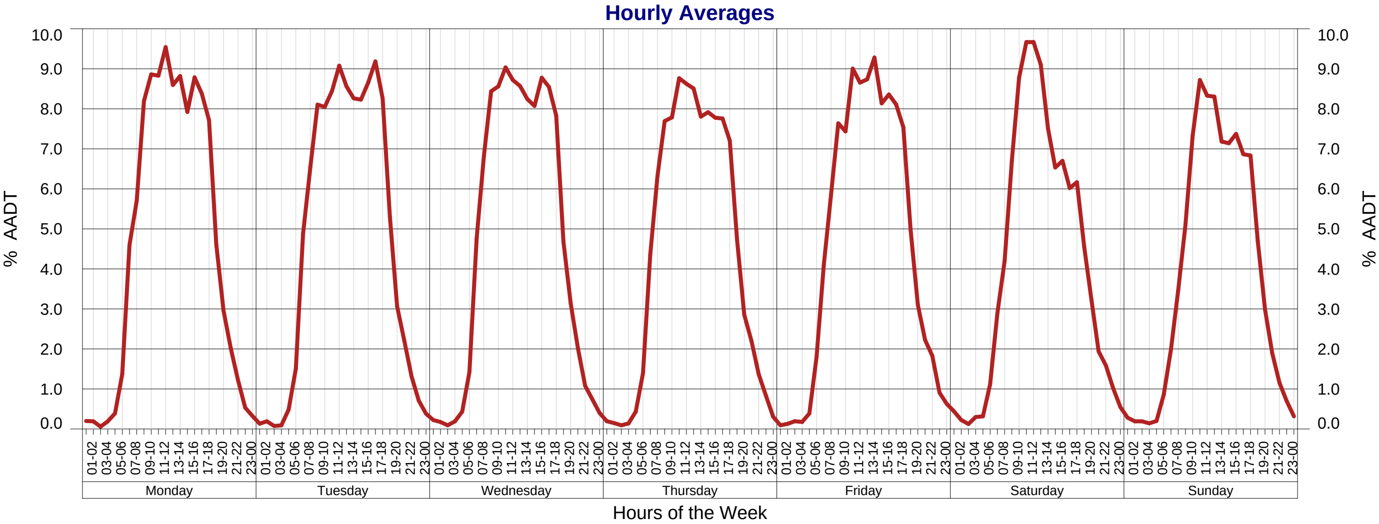
AADT History



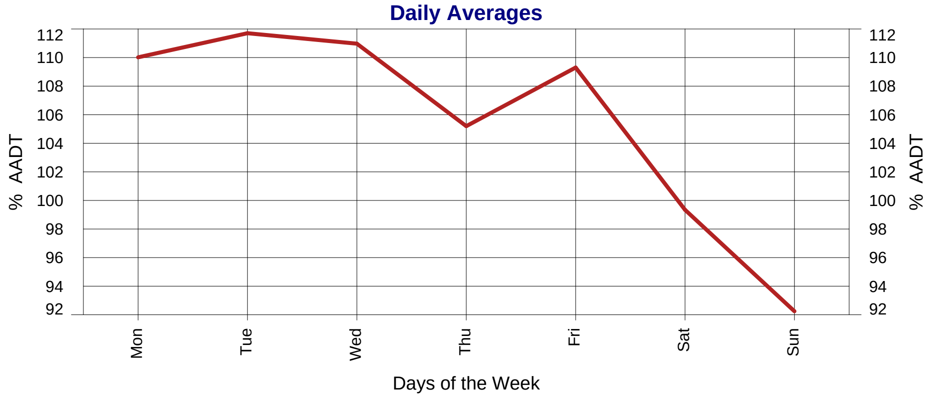
Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2020	1,203	-7.96%	-4.59%	
2019	1,307	4.06%	-1.51%	0.74%
2018	1,256	-29.99%	-1.26%	
2017	1,794	28.14%	10.56%	
2016	1,400	3.02%		
2015	1,359	6.50%		
2014	1,276	5.19%	2.71%	
2013	1,213	3.50%		
2012	1,172			
2011				
2010				
2009	1,136			
2008				
2007				
2006				

Year	AADT	1-Year Growth	5-Year Growth	10-Year Growth
2005				
2004				
2003				
2002				
2001				
2000				
1999				
1998				
1997				
1996				
1995				
1994				
1993				
1992				
1991				

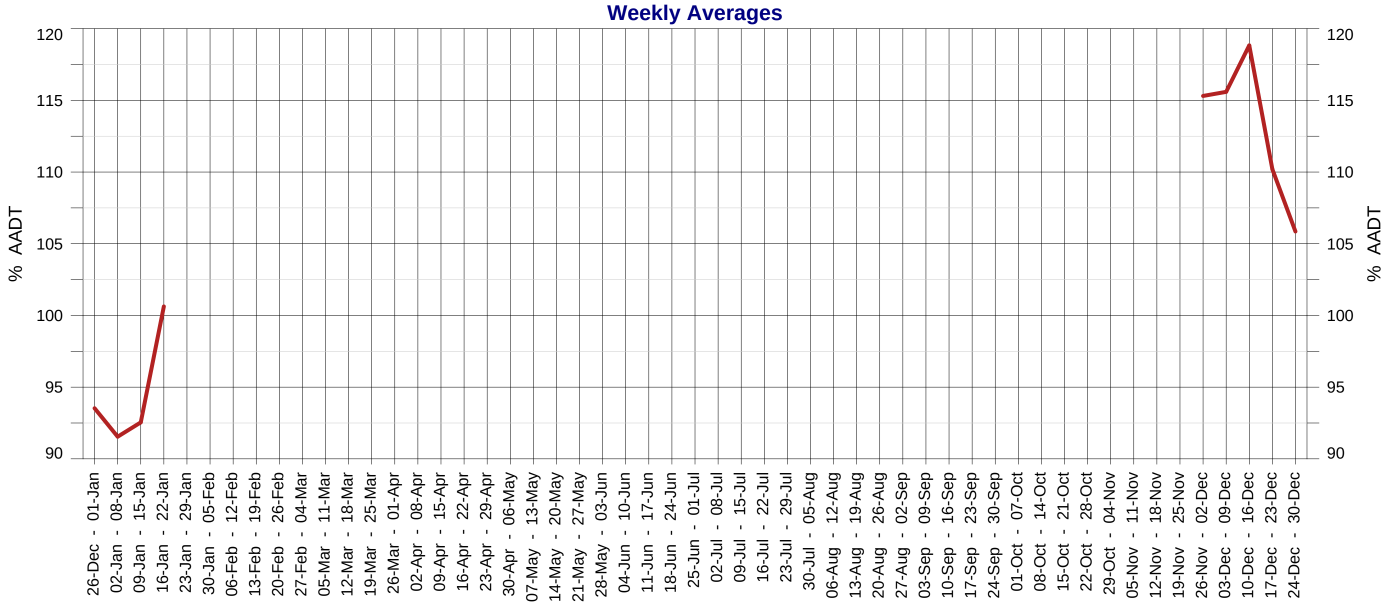
Hourly Averages



Daily Averages



Weekly Averages



2020 Calendar

January

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

February

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	

March

M	T	W	T	F	S	S
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

April

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

May

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

June

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

July

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August

M	T	W	T	F	S	S
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

September

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

October

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

November

M	T	W	T	F	S	S
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

December

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Days on which traffic data was collected.

Annual Volume Report
Displays AADT history with hourly, daily and weekly patterns by Stream in addition to annual data for AADT figures with 1 year, 5 year and 10 year growth rates.

Annual Average Daily Traffic (AADT)
Annual Average Daily Traffic (AADT) is the number of vehicles passing a point on a road in a 24 hour period, averaged over a calendar year.

AADT History
Displays the years when traffic data was collected at this count site.

Area
For administration purposes the Department of Transport and Main Roads has divided Queensland into 12 Districts. The Area field in TSDM reports displays the District Name and Number.

District Name	District
Central West District	401
Darling Downs District	402
Far North District	403
Fitzroy District	404
Mackay/Whitsunday District	405
Metropolitian District	406
North Coast District	407
North West District	409
Northern District	408
South Coast District	410
South West District	411
Wide Bay/Burnett District	412

Avg Week Day
Average daily traffic volume during the week days, Monday to Friday.

Avg Weekend Day
Average daily traffic volume during the weekend, Saturday and Sunday.

Calendar
Days on which traffic data was collected are highlighted in green.

Gazettal Direction
The Gazettal Direction is the direction of the traffic flow. It can be easily recognised by referring to the name of the road eg. Road Section: 10A Brisbane - Gympie denotes that the gazettal direction is from Brisbane to Gympie.

G Traffic flowing in Gazettal Direction
A Traffic flowing against Gazettal Direction
B The combined traffic flow in both Directions

Growth Percentage
Represents the increase or decrease in AADT, using a exponential fit over the previous 1, 5 or 10 year period.

Hour, Day & Week Averages
The amount of traffic on the road network will vary depending on the time of day, the day of the week and the week of the year. The ebb and flow of traffic travelling through a site over a period of time forms a pattern. The Hour, Day and Week Averages are then used in the calculation of AADT.

Road Section
Is the Gazetted road from which the traffic data is collected. Each Road Section is given a code, allocated sequentially in Gazettal Direction. Larger roads are broken down into sections and identified by an ID code with a suffix for easier data collection and reporting (eg. 10A, 10B, 10C). Road Sections are then broken into AADT Segments which are determined by traffic volume.

Site
The unique identifier and description of the physical location of a traffic counting device. Sites are located at a Through Distance along a Road Section.

Stream
The lane in which the traffic is travelling in. This report provides data for the combined flow of traffic in both directions.

Thru Dist or TDist
The distance from the beginning of the Road Section, in kilometres.

Type
There are two types of traffic counting sites, Permanent and Coverage. Permanent means the traffic counting device is in place 24/7. Coverage means the traffic counting device is in place for a specified period of time.

Year
Is the current year for the report. Where an AADT Year record is missing a traffic count has not been conducted, for that year.

Appendix C. SIDRA outputs (Movement Summary)

MOVEMENT SUMMARY

▽ Site: 101 [Harrigan St/Egress Access Intersection (2024 Peak) (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Harrigan St/All-Movement Access Intersection
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Harrigan St (S)																
2	T1	All MCs	130	10.0	130	10.0	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			130	10.0	130	10.0	0.070	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: Harrigan St (N)																
8	T1	All MCs	158	10.0	158	10.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			158	10.0	158	10.0	0.085	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
West: Egress Acc (W)																
10	L2	All MCs	28	3.0	28	3.0	0.032	3.8	LOS A	0.1	0.8	0.25	0.46	0.25	37.8
12	R2	All MCs	12	3.0	12	3.0	0.032	4.6	LOS A	0.1	0.8	0.25	0.46	0.25	31.4
Approach			40	3.0	40	3.0	0.032	4.1	LOS A	0.1	0.8	0.25	0.46	0.25	36.2
All Vehicles			327	9.1	327	9.1	0.085	0.5	NA	0.1	0.8	0.03	0.06	0.03	56.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Harrigan St/All-Movement Access Intersection (2024 Peak) (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Harrigan St/All-Movement Access Intersection
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Harrigan St (S)															
1	L2	All MCs	40	3.0	40	3.0	0.057	4.7	LOS A	0.0	0.0	0.00	0.22	0.00	27.2
2	T1	All MCs	65	10.0	65	10.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	51.2
Approach			104	7.3	104	7.3	0.057	1.8	NA	0.0	0.0	0.00	0.22	0.00	39.7
North: Harrigan St (N)															
8	T1	All MCs	76	10.0	76	10.0	0.099	0.0	LOS A	0.5	3.3	0.20	0.34	0.20	44.1
9	R2	All MCs	93	3.0	93	3.0	0.099	6.1	LOS A	0.5	3.3	0.20	0.34	0.20	35.8
Approach			169	6.2	169	6.2	0.099	3.3	NA	0.5	3.3	0.20	0.34	0.20	39.2
West: All-Movement Acc (W)															
10	L2	All MCs	65	3.0	65	3.0	0.071	3.6	LOS A	0.3	1.9	0.18	0.45	0.18	32.1
12	R2	All MCs	28	3.0	28	3.0	0.071	4.5	LOS A	0.3	1.9	0.18	0.45	0.18	29.2
Approach			93	3.0	93	3.0	0.071	3.9	LOS A	0.3	1.9	0.18	0.45	0.18	31.3
All Vehicles			367	5.7	367	5.7	0.099	3.0	NA	0.5	3.3	0.14	0.33	0.14	37.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Harrigan St/Egress Access Intersection (2034 Peak) (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Harrigan St/All-Movement Access Intersection
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Harrigan St (S)															
2	T1	All MCs	136	10.0	136	10.0	0.074	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			136	10.0	136	10.0	0.074	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
North: Harrigan St (N)															
8	T1	All MCs	164	10.0	164	10.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			164	10.0	164	10.0	0.089	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
West: Egress Acc (W)															
10	L2	All MCs	28	3.0	28	3.0	0.032	3.9	LOS A	0.1	0.8	0.26	0.47	0.26	37.8
12	R2	All MCs	12	3.0	12	3.0	0.032	4.7	LOS A	0.1	0.8	0.26	0.47	0.26	31.4
Approach			40	3.0	40	3.0	0.032	4.1	LOS A	0.1	0.8	0.26	0.47	0.26	36.2
All Vehicles			341	9.2	341	9.2	0.089	0.5	NA	0.1	0.8	0.03	0.05	0.03	56.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

▽ Site: 101 [Harrigan St/All-Movement Access Intersection (2034 Peak) (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

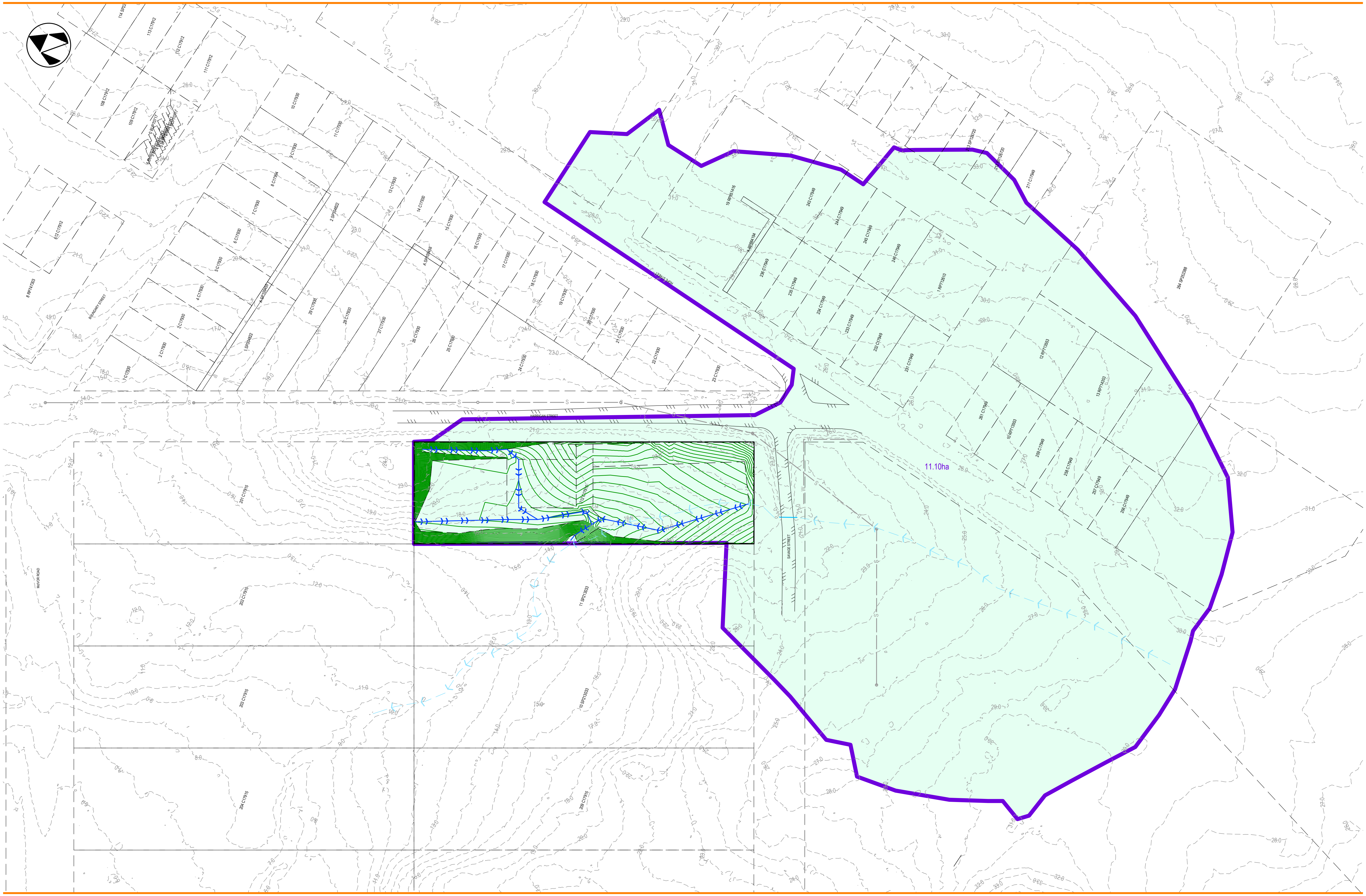
Harrigan St/All-Movement Access Intersection
Site Category: Proposed Design 1
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival 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	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Harrigan St (S)															
1	L2	All MCs	40	3.0	40	3.0	0.060	4.7	LOS A	0.0	0.0	0.00	0.21	0.00	27.3
2	T1	All MCs	71	10.0	71	10.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	51.6
Approach			111	7.5	111	7.5	0.060	1.7	NA	0.0	0.0	0.00	0.21	0.00	40.6
North: Harrigan St (N)															
8	T1	All MCs	83	10.0	83	10.0	0.103	0.0	LOS A	0.5	3.4	0.21	0.33	0.21	44.4
9	R2	All MCs	93	3.0	93	3.0	0.103	6.2	LOS A	0.5	3.4	0.21	0.33	0.21	36.0
Approach			176	6.3	176	6.3	0.103	3.2	NA	0.5	3.4	0.21	0.33	0.21	39.6
West: All-Movement Acc (W)															
10	L2	All MCs	65	3.0	65	3.0	0.071	3.7	LOS A	0.3	1.9	0.19	0.45	0.19	32.0
12	R2	All MCs	28	3.0	28	3.0	0.071	4.6	LOS A	0.3	1.9	0.19	0.45	0.19	29.1
Approach			93	3.0	93	3.0	0.071	3.9	LOS A	0.3	1.9	0.19	0.45	0.19	31.2
All Vehicles			380	5.8	380	5.8	0.103	3.0	NA	0.5	3.4	0.14	0.33	0.14	37.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix D. Stormwater Catchment Plan



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NEON CONSULTING

KWIK BRIDGE PTY LTD

COOKTOWN IGA
81 SAVAGE STREET, COOKTOWN
CATCHMENT PLAN - OVERALL

Rev	Date	Revision Notes
A	12.06.23	INITIAL ISSUE

Drawn	Design	Check'd	Apprv'd	RPEQ: 25102	A3 Full Size (Scale as shown)		
PAM	PAM	CJC	CJC	C.J.CAPLICK	-	999-2201-01-DRG-9002	A

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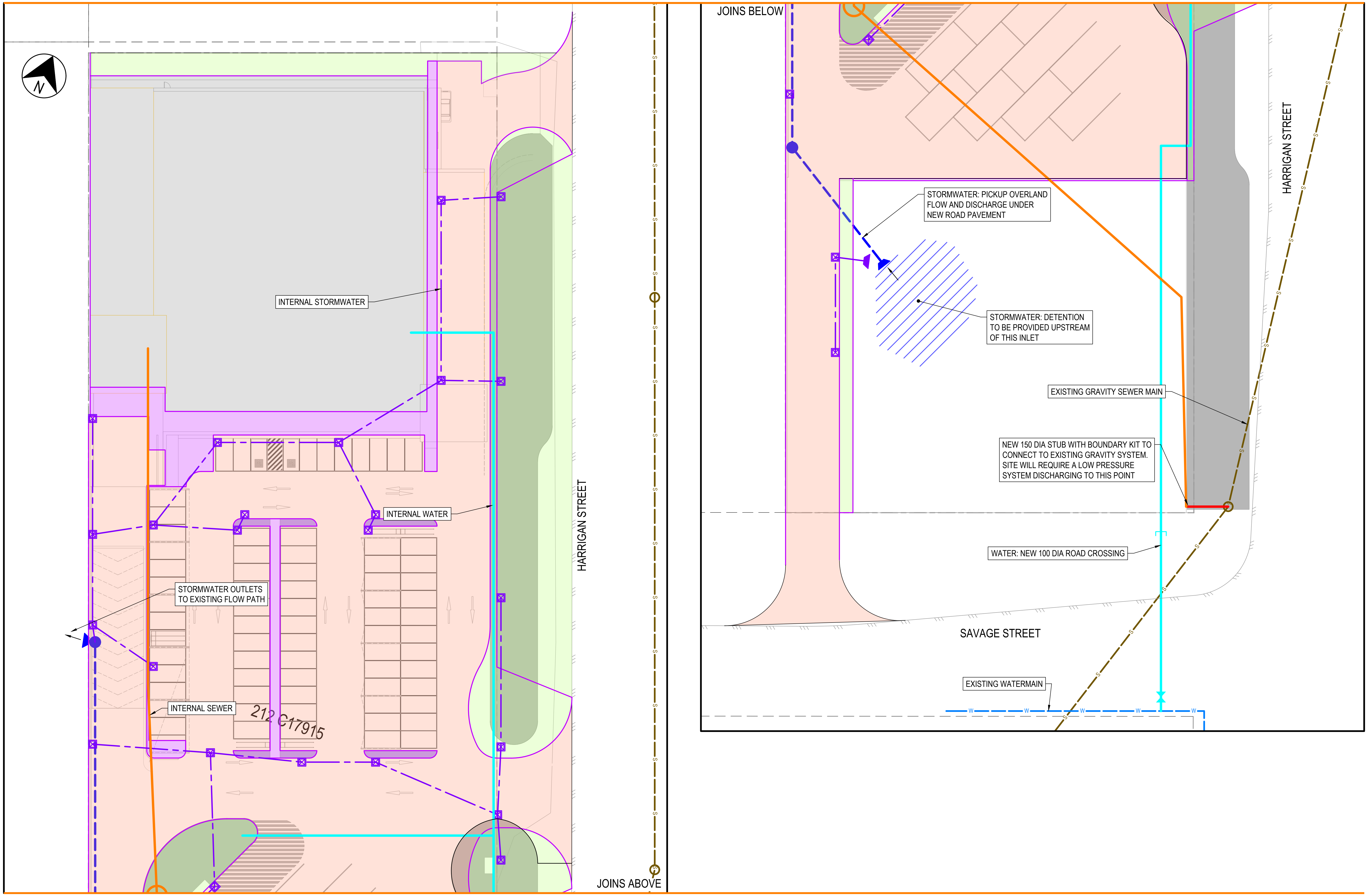
Appendix E. Engineering Concept Plans



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NEON CONSULTING

81 SAVAGE STREET, COOKTOWN

CONCEPT ENGINEERING SERVICES PLAN

Rev	Date	Revision Notes
A	19.07.23	INITIAL ISSUE

Drawn	Design	Check'd	Appr'd
PAM	PAM	CJC	CJC

A3 Full Size (Scale as shown)
19.07.23

022-2201-00-SK-0001 A

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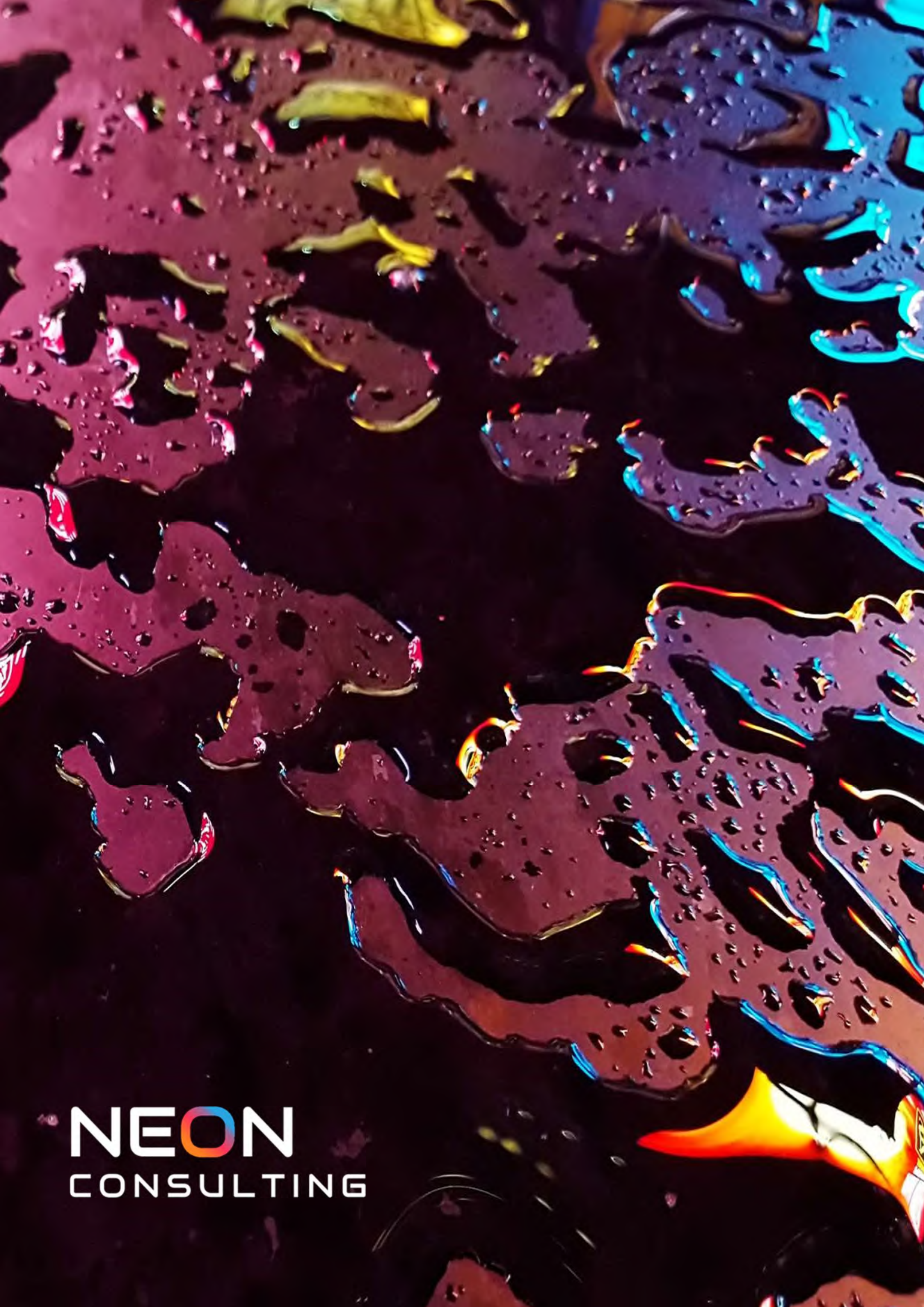
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