

TRAFFIC IMPACT ASSESSMENT REPORT EMERALD CREEK SERVICE STATION

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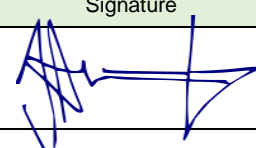
<p>ARO Industries Pty Ltd</p> <p>Cairns Office:</p> <p>51 Sheridan Street</p> <p>Cairns QLD 4870</p> <p>Atherton Office:</p> <p>57B Mabel Street</p> <p>Atherton QLD 4883</p> <p>Telephone: (07) 4281 6897</p> <p>www.aroindustries.com.au</p>	<p>Title: ARO0218 - Emerald Creek Service Station Traffic Impact Assessment</p> <p>Project Manager: Andrew Armstrong</p> <p>Author: Andrew Armstrong</p> <hr/> <p>Client: Sutariya Brothers Pty Ltd</p> <p>Client Contact: c/- Clarke and Prince Steve Cahill</p> <hr/> <p>Synopsis: Traffic Impact Assessment on the proposed service station and caretakers' residence on Malone Road</p>
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CONTENTS

1. INTRODUCTION AND SUMMARY	1
2. PROPOSED DEVELOPMENT	1
3. EXISTING AREA CONDITIONS.....	1
4. PROJECTED TRAFFIC	5
5. TRANSPORTATION ANALYSIS	8
6. IMPROVEMENTS	9
7. CONCLUSIONS.....	9
APPENDIX A: TRAFFIC COUNT	
APPENDIX B: SIDRA ANALYSIS OUTPUT	

1. INTRODUCTION AND SUMMARY

This Traffic Impact Assessment has been prepared in accordance with Austroads Guide to Traffic Management Part 12, to support the development of a service station on the corner of Malone Road and Kennedy Highway, in Mareeba.

The site of the proposed Service Station is Lot 15 on RP846956 located on the corner of the Kennedy Highway and Malone Road in Mareeba. The service station development consists of:

- 1 x Caretaker's residence
- 12 x Fuel Bowsers
- 1 x Shop (325m² GFA)

The impact of the development on the performance of the Malone Road and the intersection with the Kennedy Highway has been assessed. A SIDRA analysis was conducted to assess the performance of Malone Road with the development traffic.

The analysis shows that the development does not have an adverse impact on the operation of Malone Road. However, the trips generated by the development requires upgrading of the pavement and form of Malone Road.

It is recommended that a Basic Right Turn treatment is provided at the entrance to the development and pavement in Malone Road is increased to 300mm.

2. PROPOSED DEVELOPMENT

The proposed development consists of a service station and caretaker's residence. The development is on the vacant lot located on the corner of Malone Road and the Kennedy Highway in Mareeba.

The service station provides twelve (12) fuel bowsers and convenience store with a Gross Floor Area (GFA) of 325m². It is expected that trading will commence early 2025.

3. EXISTING AREA CONDITIONS

The study area will include the development access on Malone Road and the intersection of the Kennedy Highway and Malone Road.

The Kennedy Highway is a State Controlled Road which is the main connection between Cairns and Mareeba. Malone Road is a local government rural road that services rural and rural residential properties. Precinct A, as shown in the Image below, may be further developed into a higher density rural residential development at some time in the future.

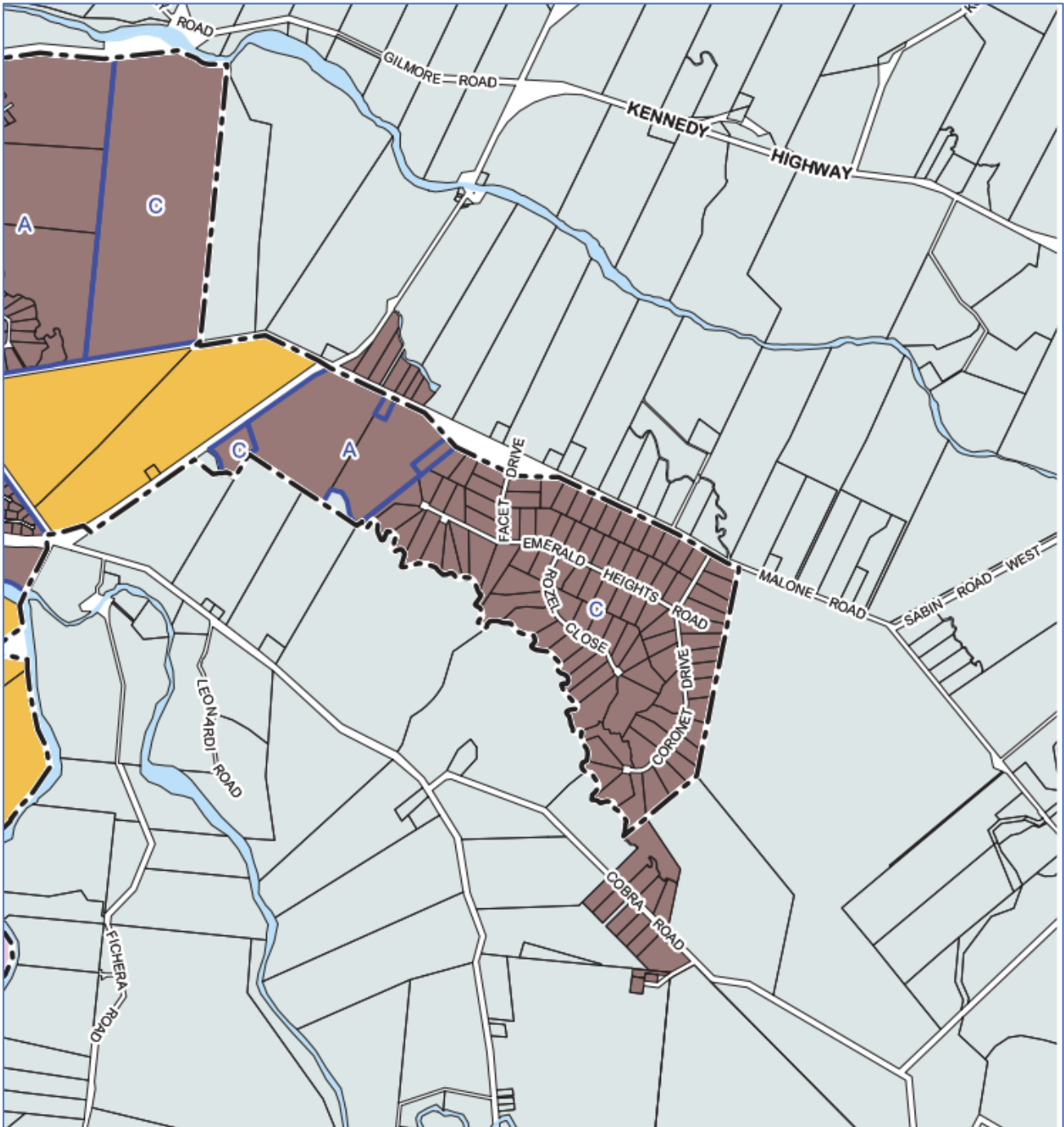


Image 1: Malone Road Zoning (Zone Map 16A)

A traffic count was conducted on the 2 October 2024 at the Kennedy Highway and Malone Road intersection during the AM and PM peaks. The Counts are provided in Appendix A and summarised in the Diagrams below.

A conservative growth rate of 2% per annum has been applied to the traffic count to forecast the background traffic volumes to 2025.

The Average Annual Daily Traffic (AADT) has been determined by extrapolation using the normalised diurnal traffic volumes for each road. The AADT is provided in table 1 below.

Table 1: Average Annual Daily Traffic

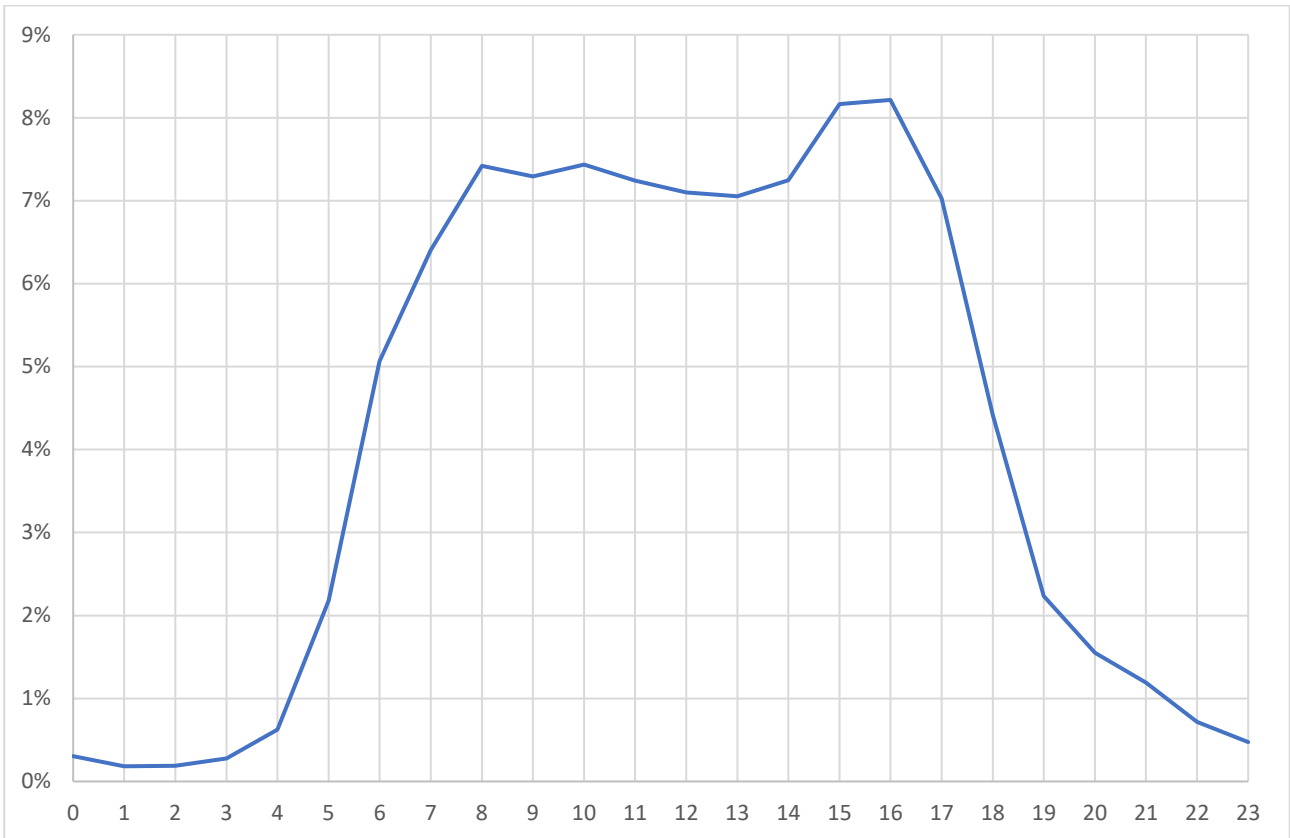
Year	Kennedy Highway AADT	Malone Road AADT
2025	7831	1346
2035	9397	1615



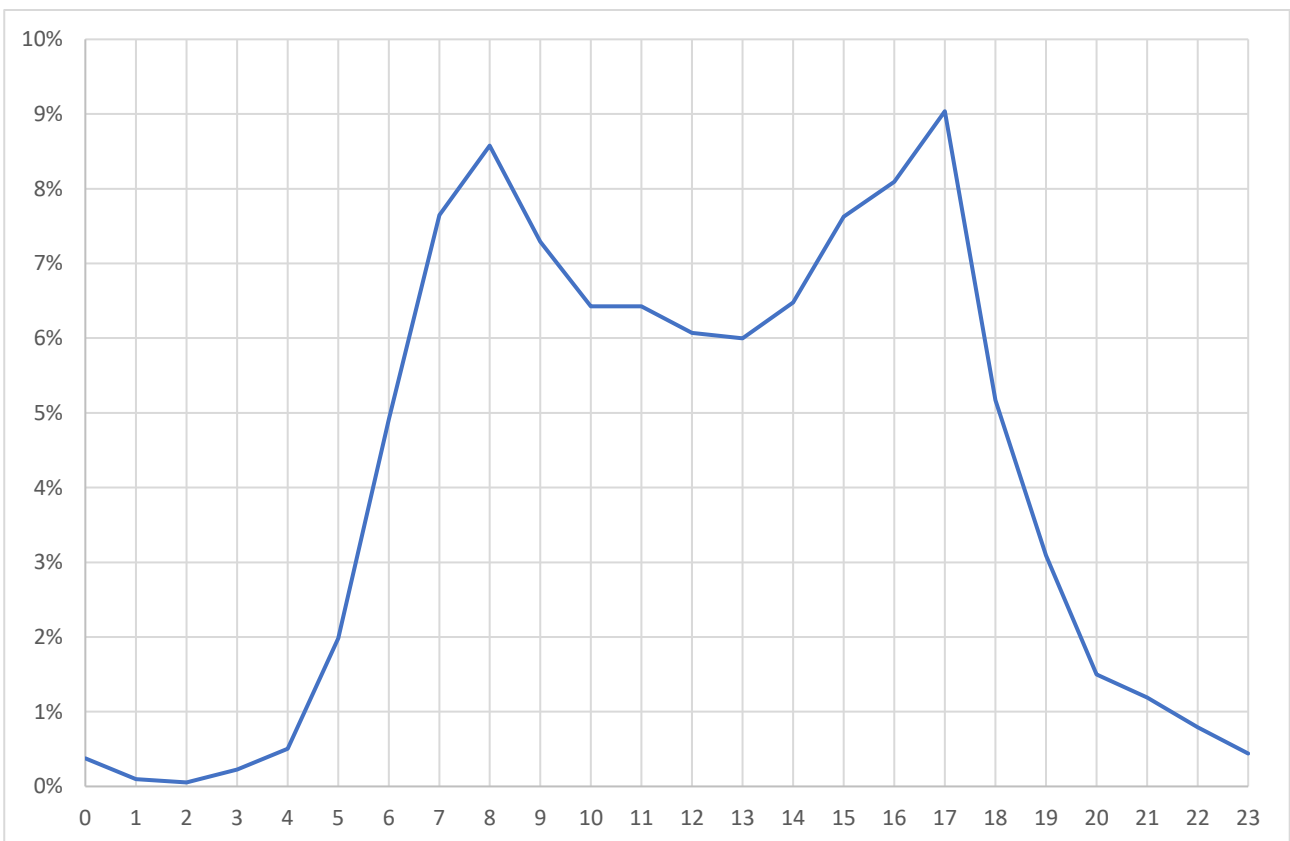
Diagram 1: Existing Traffic volumes during the AM Peak (Forecast to 2025)



Diagram 2: Existing Traffic volumes during the PM Peak (Forecast to 2025)



Graph 1: Normalised diurnal traffic volume on Kennedy Highway (32A) (2021)



Graph 2: Normalised diurnal traffic volume on Malone Road (32A) (2019)

4. PROJECTED TRAFFIC

Trip generation rates for the development have been sourced from the Department of Transport and Main Roads traffic generation data from the Queensland Government Open Data Portal. The data provides traffic generation rates for various development, in particular hourly rates for services stations of various sizes.

Year	Land use	SITE	Suburb	Local Government Area	Variable Units	Variable Value	Start Date	End Date	Average Wk	Average Weekend Volume	Weekday Peak Hour Start	Weekday Peak Hour End	Weekday Peak Volume	Weekend Peak Hour Start	Weekend Peak Hour End	Weekend Peak Volume
2021	Service Station	2021S51	REDBANK PLAINS	Ipswich City	GLFA	450	24/05/2021	30/05/2021	1553	1465	5:00:00	6:00:00	109	9:45:00	10:45:00	119
2021	Service Station	2021S52	REDBANK PLAINS	Ipswich City	GLFA	470	24/05/2021	30/05/2021	1140	1057	8:15:00	9:15:00	70	10:30:00	11:30:00	94
2021	Service Station	2021S53	CORNUBIA	Logan City	GLFA	250	22/05/2021	28/05/2021	1940	2011	5:30:00	6:30:00	163	9:00:00	10:00:00	197
2021	Service Station	2021S54	EIGHT MILE PLAINS	Brisbane City	GLFA	620	19/04/2021	25/04/2021	1244	1296	17:00:00	18:00:00	64	11:15:00	12:15:00	104

Image 2: Traffic Generation Data Extract

The trip generation rates for the development have been calculated as 23.5 trips/100m² GFA during the peak Period and 294 trips/100m² GFA daily. A 'linked' trip discount of 80% is typically adopted for service station development. Conservatively, it has been assumed that 50% of the trips associated with the proposed development will be passing trade with the remaining 50% being primary trips (new trips on the network). This discount has been applied to the Kennedy Highway traffic only.

In addition to the service station the caretaker's residence will produce 1 trip during each peak period. A summary of the trip generation rates is provided in the table below.

Table 2 – Development trip generation

Development	Size (m ² GFA)	Trip generation rate	Peak trips	Peak Primary trips (addition to Kennedy Highway)
Service station with Convenience Store	325	23.5/100m ² GFA	76	38
Caretakers Residence	N/A	1	1	1
Total			77 trips/hr	39 trips/hr

The trips have been distributed commensurate with the background traffic distribution. Similarly, it has been assumed that the modal split will be the same proportion as the background traffic. The development trip distribution is shown in diagrams 3 and 4, below. Note that the linked trip discount is shown as negative numbers on the through traffic on the Kennedy Highway.

The combined traffic volumes for the AM and PM peak are shown in Diagrams 5 and 6.



Diagram 3: Development Trip distribution - AM Peak



Diagram 4: Development Trip distribution - PM Peak



Diagram 5: Combined Traffic - AM Peak



Diagram 6: Combined Traffic - PM Peak

5. TRANSPORTATION ANALYSIS

SIDRA Intersection has been used to analyse the impact of the development on the surrounding road network, specifically the development access and the Kennedy Highway and Malone Road intersection. The following horizon years have been assessed:

- 2025 (pre-development)
- 2025 (post-development)
- 2035

The SIDRA intersection output is provided in Appendix B and summarised in Table 3 and 4, below.

Table 3 – Intersection Analysis Summary – AM Peak Period

Scenario	Intersection Delay	Critical Movement	Average Delay	95 th % queue length	Level of Service
2025 pre-development	1.6 secs	Right turn from Malone Road	9.2 secs	2.7m	LOS A
2025 post-development	2.9 secs	Right turn from Malone Road	9.7 secs	6.6m	LOS A
2035 post development	3.3 secs	Right turn from Malone Road	11.0 secs	10.2m	LOS B
2025 Malone Rd Access	0.9 secs	Right turn	1.7 secs	0.3m	LOS A
2035 Malone Rd Access	0.9 secs	Right turn	1.7 secs	0.4m	LOS A

Table 4 – Intersection Analysis Summary – PM Peak Period

Scenario	Intersection Delay	Critical Movement	Average Delay	95 th % queue length	Level of Service
2025 pre-development	1.6 secs	Right turn from Malone Road	9.0 secs	1.7m	LOS A
2025 post-development	2.3 secs	Right turn from Malone Road	10.0 secs	3.2m	LOS A
2035 post development	2.5 secs	Right turn from Malone Road	11.1 secs	4.5m	LOS B
2025 Malone Rd Access	0.7 secs	Right turn	1.2 secs	0.1m	LOS A
2035 Malone Rd Access	0.7 secs	Right turn	1.2 secs	0.2m	LOS A

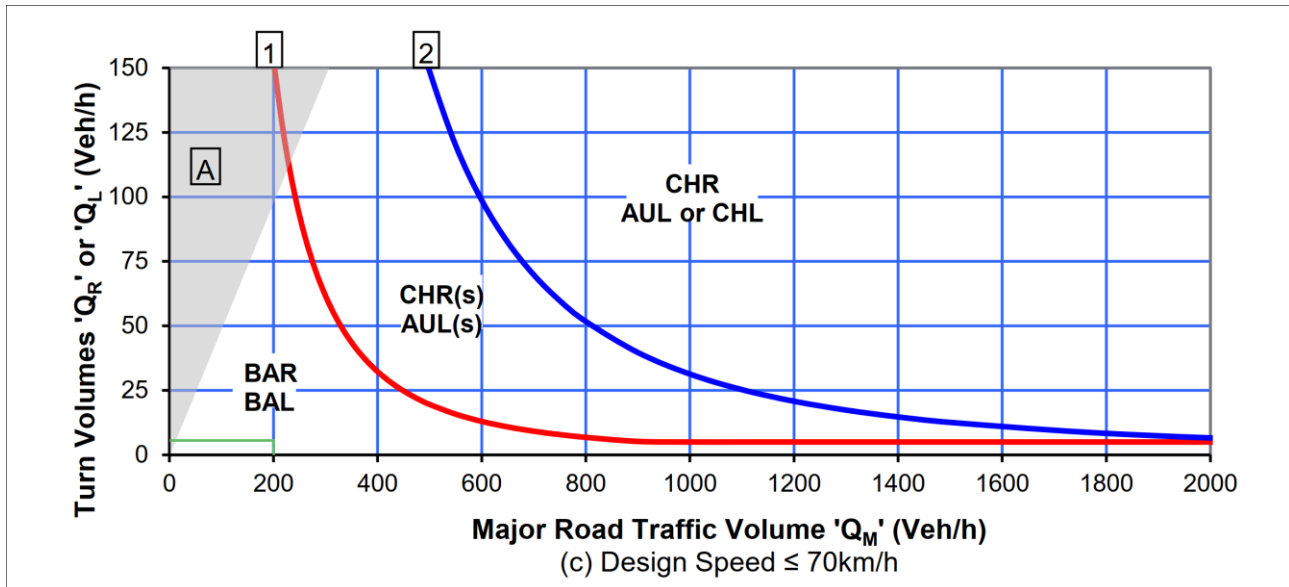
The analysis shows an insignificant impact on the Kennedy Highway with the right turn queue length increasing to 2.76m during the PM peak, which is significantly less than length of the turn lane.

The development increases the delay on Malone Road at the intersection with the Kennedy Highway. This delay results in an increase of 1.8 seconds delay and a 95th percentile queue length of 10.2m during the AM peak period. The increased queue length at the intersection does not adversely impact access to the development or the safe operation of the network.

Malone Road and the intersection with the Kennedy Highway will operate at an acceptable level of service.

The average daily traffic volume on Malone Road, adjacent the site, is 2300 vehicles. According to the FNQROC Development Manual, Malone Road would be considered a Rural Collector which consists of an 8m sealed pavement with 1m unsealed shoulders.

The turn treatment for development ingress has been assessed against the Austroads Guide to Road Design Part 6, Section 3.3.6 using the traffic distribution from section 4 of this report. It was determined that Basic Turn treatments (BAR/BAL) are required as demonstrated in Graph 1 below. The green line represents the Left-turn volume and the purple line represents the right turn volumes.



Graph 3: Warrants for turn treatments on major road at unsignalized intersections

The bowser configuration will allow 12 passenger vehicles to fill simultaneously with an additional 6 waiting vehicle. Assuming each vehicle is stopped at a bowser for 5 minutes, the service station will have the capacity to cater for twice the peak hour traffic generation. Circulation is adequate so as not to cause cueing issues on Malone Road.

6. IMPROVEMENTS

A basic right-turn treatment (BAR) designed in accordance with the Austroads Guide to Road Design is proposed on Malone Road to facilitate safe manoeuvres around vehicles queued to turn into the development.

7. CONCLUSIONS

The proposed development of Lot 15 on RP846956, consisting of a caretaker's residence and Service Station with an attached convenience store, has been assessed as having a minor impact on the surrounding transport network. In accordance with the Guide to Traffic Impact Assessment, no upgrades are required to mitigate the impact of the development on the Malone Road / Kennedy Highway Intersection.

A Basic Right-turn (BAR) treatment is required on Malone Road at the entrance to the development to allow safe passing of vehicles queued to turn right into the service station.



ARO0218 - Emerald Creek Service Station
Malone Road and Kennedy Highway Traffic Count
 Traffic Survey Summary

Conducted: Wednesday, 2 October 2024

Movement sets	7am - 8am								8am - 9am								Peak Hour Traffic		Total Vehicles surveyed		
	7:00 - 7:15		7:15 - 7:30		7:30 - 7:45		7:45 - 8:00		8:00 - 8:15		8:15 - 8:30		8:30 - 8:45		8:45 - 9:00		LV	HV	LV	HV	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	
Kennedy Hwy - North Bound	Straight	54	12	36	9	52	9	44	8	54	3	51	4	62	6	60	7	201	24	413	58
	Right turn	7	1	9	3	8	1	4	0	3	0	5	2	0	0	14	1	20	3	50	8
	Total	61	13	45	12	60	10	48	8	57	3	56	6	62	6	74	8	221	27	463	66
Quarterly Total	74		57		70		56		60		62		68		82		248		529		
Kennedy Hwy - South Bound	Straight	65	9	53	9	71	10	66	5	81	8	67	12	69	9	64	11	285	35	536	73
	Left turn	2	1	0	0	2	0	2	0	2	0	0	0	1	0	0	1	6	0	9	2
	Total	67	10	53	9	73	10	68	5	83	8	67	12	70	9	64	12	291	35	545	75
Quarterly Total	77		62		83		73		91		79		79		76		326		620		
Malone Rd - North Bound	Left turn	12	1	12	4	13	1	20	2	18	2	17	0	13	0	9	1	68	5	114	11
	Right turn	2	0	2	1	3	0	1	0	0	0	1	0	1	0	4	0	5	0	14	1
	Total	14	1	14	5	16	1	21	2	18	2	18	0	14	0	13	1	73	5	128	12
Quarterly Total	15		19		17		23		20		18		14		14		78		140		

2025	
Peak Hour Traffic	
LV	HV
205	24
20	3
225	27
252	
291	36
6	0
297	36
333	
69	5
5	0
74	5
79	

2035	
Peak Hour Traffic	
LV	HV
246	29
24	4
270	33
303	
349	43
7	0
356	43
399	
83	6
6	0
89	6
95	

Movement sets	4pm - 5pm								5pm - 6pm								Peak Hour Traffic		Total Vehicles surveyed		
	4:00 - 4:15		4:15 - 4:30		4:30 - 4:45		4:45 - 5:00		5:00 - 5:15		5:15 - 5:30		5:30 - 5:45		5:45 - 6:00		LV	HV	LV	HV	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	
Kennedy Hwy - North Bound	Straight	57	7	88	8	70	5	66	5	69	4	56	3	53	4	56	1	257.5	18.5	515	37
	Right turn	9	0	18	0	17	0	11	0	10	0	21	3	12	0	6	0	52	1.5	104	3
	Total	66	7	106	8	87	5	77	5	79	4	77	6	65	4	62	1	309.5	20	619	40
Quarterly Total	73		114		92		82		83		83		69		63		329.5		659		
Kennedy Hwy - South Bound	Straight	58	3	68	1	88	2	62	6	73	0	75	5	62	0	69	3	277.5	10	555	20
	Left turn	1	0	2	0	0	0	3	0	2	1	1	0	2	0	4	0	7.5	0.5	15	1
	Total	59	3	70	1	88	2	65	6	75	1	76	5	64	0	73	3	285	10.5	570	21
Quarterly Total	62		71		90		71		76		81		64		76		295.5		591		
Malone Rd - North Bound	Left turn	15	2	6	1	8	0	9	0	5	1	22	2	12	1	9	0	43	3.5	86	7
	Right turn	1	0	2	0	1	0	1	0	1	0	1	0	0	0	1	0	4	0	8	0
	Total	16	2	8	1	9	0	10	0	6	1	23	2	12	1	10	0	47	3.5	94	7
Quarterly Total	18		9		9		10		7		25		13		10		50.5		101		

2025	
Peak Hour Traffic	
LV	HV
263	19
53	2
316	21
337	
283	10
8	1
291	11
302	
44	4
4	0
48	4
52	

2035	
Peak Hour Traffic	
LV	HV
316	23
64	2
380	25
405	
340	12
10	1
350	13
363	
53	5
5	0
58	5
63	

LANE SUMMARY

Site: 101 [2025 Background AM (Site Folder: AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m				
SouthEast: Malonne Road															
Lane 1	83	6.3	83	6.3	822	0.101	100	9.2	LOS A	0.4	2.7	Full	500	0.0	0.0
Approach	83	6.3	83	6.3		0.101		9.2	LOS A	0.4	2.7				
NorthEast: Kennedy Highway															
Lane 1	6	0.0	6	0.0	1876	0.003	100	7.8	LOS A	0.0	0.0	Short	150	0.0	NA
Lane 2	344	11.0	344	11.0	1839	0.187	100	0.1	LOS A	0.0	0.0	Full	2000	0.0	0.0
Approach	351	10.8	351	10.8		0.187		0.2	NA	0.0	0.0				
SouthWest: Kennedy Highway															
Lane 1	241	10.5	241	10.5	1845	0.131	100	0.0	LOS A	0.0	0.0	Full	2000	0.0	0.0
Lane 2	24	13.0	24	13.0	883	0.027	100	9.7	LOS A	0.1	0.8	Short	185	0.0	NA
Approach	265	10.7	265	10.7		0.131		0.9	NA	0.1	0.8				
All Vehicles	699	10.2	699	10.2		0.187		1.6	NA	0.4	2.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)

SouthEast: Malonne Road									
Mov.	L2	R2	Total	%HV	Cap.	Deg.	Lane	Prob.	Ov.
From SE					veh/h	Satn	Util.	SL Ov.	Lane
To Exit:	SW	NE				v/c	%	%	No.
Lane 1	78	5	83	6.3	822	0.101	100	NA	NA
Approach	78	5	83	6.3		0.101			
NorthEast: Kennedy Highway									
Mov.	L2	T1	Total	%HV	Cap.	Deg.	Lane	Prob.	Ov.
From NE					veh/h	Satn	Util.	SL Ov.	Lane
To Exit:	SE	SW				v/c	%	%	No.
Lane 1	6	-	6	0.0	1876	0.003	100	0.0	2
Lane 2	-	344	344	11.0	1839	0.187	100	NA	NA
Approach	6	344	351	10.8		0.187			
SouthWest: Kennedy Highway									
Mov.	T1	R2	Total	%HV	Cap.	Deg.	Lane	Prob.	Ov.
From SW					veh/h	Satn	Util.	SL Ov.	Lane
To Exit:	NE	SE				v/c	%	%	No.
Lane 1	241	-	241	10.5	1845	0.131	100	NA	NA
Lane 2	-	24	24	13.0	883	0.027	100	0.0	1
Approach	241	24	265	10.7		0.131			
	Total	%HV	Deg.Satn (v/c)						
All Vehicles	699	10.2	0.187						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
------------------	---------------------	------------------------	--------------------------	-------	------------------	-----------------------	----------------------	----------------	---------------	----------------	-----------------

There are no Exit Short Lanes for Merge Analysis at this Site.

Variable Demand Analysis

Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
-----------------------	------------------------	-----------------------------------	----------------------

	veh	veh	sec	sec
SouthEast: Malonne Road				
Lane 1	0.0	0.0	0.0	0.0
NorthEast: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
SouthWest: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

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LANE SUMMARY

Site: 101 [2025 Development AM (Site Folder: AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Lane Use and Performance																
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %	
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m					
SouthEast: Malonne Road																
Lane 1	186	4.0	186	4.0	801	0.233	100	9.7	LOS A	0.9	6.6	Full	500	0.0	0.0	
Approach	186	4.0	186	4.0		0.233		9.7	LOS A	0.9	6.6					
NorthEast: Kennedy Highway																
Lane 1	22	0.0	22	0.0	1876	0.012	100	7.8	LOS A	0.0	0.0	Short	150	0.0	NA	
Lane 2	336	11.3	336	11.3	1836	0.183	100	0.1	LOS A	0.0	0.0	Full	2000	0.0	0.0	
Approach	358	10.6	358	10.6		0.183		0.5	NA	0.0	0.0					
SouthWest: Kennedy Highway																
Lane 1	234	9.5	234	9.5	1856	0.126	100	0.0	LOS A	0.0	0.0	Full	2000	0.0	0.0	
Lane 2	39	8.1	39	8.1	912	0.043	100	9.5	LOS A	0.2	1.2	Short	185	0.0	NA	
Approach	273	9.3	273	9.3		0.126		1.4	NA	0.2	1.2					
All Vehicles	817	8.6	817	8.6		0.233		2.9	NA	0.9	6.6					

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)

SouthEast: Malonne Road									
Mov. From SE To Exit:	L2	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	166	20	186	4.0	801	0.233	100	NA	NA
Approach	166	20	186	4.0		0.233			
NorthEast: Kennedy Highway									
Mov. From NE To Exit:	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	22	-	22	0.0	1876	0.012	100	0.0	2
Lane 2	-	336	336	11.3	1836	0.183	100	NA	NA
Approach	22	336	358	10.6		0.183			
SouthWest: Kennedy Highway									
Mov. From SW To Exit:	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	234	-	234	9.5	1856	0.126	100	NA	NA
Lane 2	-	39	39	8.1	912	0.043	100	0.0	1
Approach	234	39	273	9.3		0.126			
	Total	%HV	Deg. Satn (v/c)						
All Vehicles	817	8.6	0.233						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
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There are no Exit Short Lanes for Merge Analysis at this Site.

Variable Demand Analysis

Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
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	veh	veh	sec	sec
SouthEast: Malonne Road				
Lane 1	0.0	0.0	0.0	0.0
NorthEast: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
SouthWest: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

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LANE SUMMARY

Site: 101 [2035 Development AM (Site Folder: AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Design Life Analysis (Final Year): Results for 10 years

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m				
SouthEast: Malonne Road															
Lane 1	224	4.0	224	4.0	710	0.315	100	11.0	LOS B	1.4	10.2	Full	500	0.0	0.0
Approach	224	4.0	224	4.0		0.315		11.0	LOS B	1.4	10.2				
NorthEast: Kennedy Highway															
Lane 1	27	0.0	27	0.0	1876	0.014	100	7.8	LOS A	0.0	0.0	Short	150	0.0	NA
Lane 2	403	11.3	403	11.3	1836	0.220	100	0.1	LOS A	0.0	0.0	Full	2000	0.0	0.0
Approach	429	10.6	429	10.6		0.220		0.6	NA	0.0	0.0				
SouthWest: Kennedy Highway															
Lane 1	280	9.5	280	9.5	1856	0.151	100	0.1	LOS A	0.0	0.0	Full	2000	0.0	0.0
Lane 2	47	8.1	47	8.1	825	0.057	100	10.1	LOS B	0.2	1.6	Short	185	0.0	NA
Approach	327	9.3	327	9.3		0.151		1.5	NA	0.2	1.6				
All Vehicles	980	8.6	980	8.6		0.315		3.3	NA	1.4	10.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)										
SouthEast: Malonne Road										
Mov.	L2	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From SE To Exit:	SW	NE			Cap. veh/h	v/c	%	%		
Lane 1	200	24	224	4.0	710	0.315	100	NA	NA	
Approach	200	24	224	4.0		0.315				
NorthEast: Kennedy Highway										
Mov.	L2	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From NE To Exit:	SE	SW			Cap. veh/h	v/c	%	%		
Lane 1	27	-	27	0.0	1876	0.014	100	0.0	2	
Lane 2	-	403	403	11.3	1836	0.220	100	NA	NA	
Approach	27	403	429	10.6		0.220				
SouthWest: Kennedy Highway										
Mov.	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From SW To Exit:	NE	SE			Cap. veh/h	v/c	%	%		
Lane 1	280	-	280	9.5	1856	0.151	100	NA	NA	
Lane 2	-	47	47	8.1	825	0.057	100	0.0	1	
Approach	280	47	327	9.3		0.151				
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	980	8.6	0.315							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued	Residual Queued	Time for Residual	Duration of

	Demand veh	Demand veh	Demand to Clear sec	Oversatn sec
SouthEast: Malonne Road				
Lane 1	0.0	0.0	0.0	0.0
NorthEast: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
SouthWest: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

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LANE SUMMARY

Site: 101 [2025 Access AM (Site Folder: AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Lane Use and Performance																
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %	
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m					
SouthEast: Malone Road																
Lane 1	123	5.1	123	5.1	1888	0.065	100	0.5	LOS A	0.0	0.3	Full	500	0.0	0.0	
Approach	123	5.1	123	5.1		0.065		0.5	NA	0.0	0.3					
NorthWest: Malone Road																
Lane 1	63	1.7	63	1.7	1898	0.033	100	1.7	LOS A	0.0	0.0	Full	40	0.0	0.0	
Approach	63	1.7	63	1.7		0.033		1.7	NA	0.0	0.0					
All Vehicles	186	4.0	186	4.0		0.065		0.9	NA	0.0	0.3					

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)										
SouthEast: Malone Road										
Mov. From SE To Exit:	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	NW	NE								
Lane 1	116	7	123	5.1	1888	0.065	100	NA	NA	

Approach	116	7	123	5.1		0.065			
NorthWest: Malone Road									
Mov.	L2	T1	Total	%HV		Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
From NW To Exit:	NE	SE			Cap. veh/h				
Lane 1	33	31	63	1.7	1898	0.033	100	NA	NA
Approach	33	31	63	1.7		0.033			
	Total	%HV	Deg. Satn (v/c)						
All Vehicles	186	4.0	0.065						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
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There are no Exit Short Lanes for Merge Analysis at this Site.

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthEast: Malone Road				
Lane 1	0.0	0.0	0.0	0.0
NorthWest: Malone Road				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [2035 Access AM (Site Folder: AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Design Life Analysis (Final Year): Results for 10 years

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m				
SouthEast: Malone Road															
Lane 1	148	5.1	148	5.1	1887	0.078	100	0.5	LOS A	0.1	0.4	Full	500	0.0	0.0
Approach	148	5.1	148	5.1		0.078		0.5	NA	0.1	0.4				
NorthWest: Malone Road															
Lane 1	76	1.7	76	1.7	1898	0.040	100	1.7	LOS A	0.0	0.0	Full	40	0.0	0.0
Approach	76	1.7	76	1.7		0.040		1.7	NA	0.0	0.0				
All Vehicles	224	4.0	224	4.0		0.078		0.9	NA	0.1	0.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)										
SouthEast: Malone Road										
Mov.	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
From SE To Exit:	NW	NE								
Lane 1	139	9	148	5.1	1887	0.078	100	NA	NA	

Approach	139	9	148	5.1		0.078				
NorthWest: Malone Road										
Mov.	L2	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From NW To Exit:	NE	SE			Cap. veh/h	v/c	%	%		
Lane 1	39	37	76	1.7	1898	0.040	100	NA	NA	
Approach	39	37	76	1.7		0.040				
	Total	%HV	Deg. Satn (v/c)							
All Vehicles	224	4.0	0.078							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthEast: Malone Road				
Lane 1	0.0	0.0	0.0	0.0
NorthWest: Malone Road				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [2025 Background PM (Site Folder: PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Lane Use and Performance																
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %	
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m					
SouthEast: Malonne Road																
Lane 1	55	7.7	55	7.7	843	0.065	100	9.0	LOS A	0.2	1.7	Full	500	0.0	0.0	
Approach	55	7.7	55	7.7		0.065		9.0	LOS A	0.2	1.7					
NorthEast: Kennedy Highway																
Lane 1	9	11.1	9	11.1	1739	0.005	100	8.1	LOS A	0.0	0.0	Short	150	0.0	NA	
Lane 2	308	3.4	308	3.4	1928	0.160	100	0.1	LOS A	0.0	0.0	Full	5000	0.0	0.0	
Approach	318	3.6	318	3.6		0.160		0.4	NA	0.0	0.0					
SouthWest: Kennedy Highway																
Lane 1	297	6.7	297	6.7	1888	0.157	100	0.1	LOS A	0.0	0.0	Full	5000	0.0	0.0	
Lane 2	58	3.6	58	3.6	1007	0.058	100	9.0	LOS A	0.2	1.6	Short	30	0.0	NA	
Approach	355	6.2	355	6.2		0.157		1.6	NA	0.2	1.6					
All Vehicles	727	5.2	727	5.2		0.160		1.6	NA	0.2	1.7					

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)

SouthEast: Malonne Road									
Mov. From SE To Exit:	L2	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	SW	NE							
Lane 1	51	4	55	7.7	843	0.065	100	NA	NA
Approach	51	4	55	7.7		0.065			
NorthEast: Kennedy Highway									
Mov. From NE To Exit:	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	SE	SW							
Lane 1	9	-	9	11.1	1739	0.005	100	0.0	2
Lane 2	-	308	308	3.4	1928	0.160	100	NA	NA
Approach	9	308	318	3.6		0.160			
SouthWest: Kennedy Highway									
Mov. From SW To Exit:	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	NE	SE							
Lane 1	297	-	297	6.7	1888	0.157	100	NA	NA
Lane 2	-	58	58	3.6	1007	0.058	100	0.0	1
Approach	297	58	355	6.2		0.157			
	Total	%HV	Deg.Satn (v/c)						
All Vehicles	727	5.2	0.160						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
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There are no Exit Short Lanes for Merge Analysis at this Site.

Variable Demand Analysis

Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
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	veh	veh	sec	sec
SouthEast: Malonne Road				
Lane 1	0.0	0.0	0.0	0.0
NorthEast: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
SouthWest: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

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LANE SUMMARY

Site: 101 [2025 Development PM (Site Folder: PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m				
SouthEast: Malonne Road															
Lane 1	87	6.0	87	6.0	724	0.121	100	10.0	LOS A	0.4	3.2	Full	500	0.0	0.0
Approach	87	6.0	87	6.0		0.121		10.0	LOS A	0.4	3.2				
NorthEast: Kennedy Highway															
Lane 1	25	8.3	25	8.3	1771	0.014	100	8.1	LOS A	0.0	0.0	Short	150	0.0	NA
Lane 2	300	3.2	300	3.2	1931	0.155	100	0.1	LOS A	0.0	0.0	Full	5000	0.0	0.0
Approach	325	3.6	325	3.6		0.155		0.7	NA	0.0	0.0				
SouthWest: Kennedy Highway															
Lane 1	289	6.5	289	6.5	1890	0.153	100	0.1	LOS A	0.0	0.0	Full	5000	0.0	0.0
Lane 2	73	4.3	73	4.3	995	0.073	100	9.1	LOS A	0.3	2.1	Short	30	0.0	NA
Approach	362	6.1	362	6.1		0.153		1.9	NA	0.3	2.1				
All Vehicles	775	5.0	775	5.0		0.155		2.3	NA	0.4	3.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)

SouthEast: Malonne Road									
Mov. From SE To Exit:	L2	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	SW	NE							
Lane 1	68	19	87	6.0	724	0.121	100	NA	NA
Approach	68	19	87	6.0		0.121			
NorthEast: Kennedy Highway									
Mov. From NE To Exit:	L2	T1	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	SE	SW							
Lane 1	25	-	25	8.3	1771	0.014	100	0.0	2
Lane 2	-	300	300	3.2	1931	0.155	100	NA	NA
Approach	25	300	325	3.6		0.155			
SouthWest: Kennedy Highway									
Mov. From SW To Exit:	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
	NE	SE							
Lane 1	289	-	289	6.5	1890	0.153	100	NA	NA
Lane 2	-	73	73	4.3	995	0.073	100	0.0	1
Approach	289	73	362	6.1		0.153			
	Total	%HV	Deg.Satn (v/c)						
All Vehicles	775	5.0	0.155						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
------------------	---------------------	------------------------	--------------------------	-------	------------------	-----------------------	----------------------	----------------	---------------	----------------	-----------------

There are no Exit Short Lanes for Merge Analysis at this Site.

Variable Demand Analysis

Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
-----------------------	------------------------	-----------------------------------	----------------------

	veh	veh	sec	sec
SouthEast: Malonne Road				
Lane 1	0.0	0.0	0.0	0.0
NorthEast: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
SouthWest: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

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Project: T:\TotalSynergy - 2022 Synergy Projects\ARO0218 Emerald Creek Service Station OPW\3. Documentation\c. Technical\ARO0218 Emerald Creek Service Station SIDRA.sip9

LANE SUMMARY

Site: 101 [2035 Development PM (Site Folder: PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Design Life Analysis (Final Year): Results for 10 years

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m				
SouthEast: Malonne Road															
Lane 1	105	6.0	105	6.0	626	0.167	100	11.1	LOS B	0.6	4.5	Full	500	0.0	0.0
Approach	105	6.0	105	6.0		0.167		11.1	LOS B	0.6	4.5				
NorthEast: Kennedy Highway															
Lane 1	30	8.3	30	8.3	1771	0.017	100	8.1	LOS A	0.0	0.0	Short	150	0.0	NA
Lane 2	360	3.2	360	3.2	1931	0.186	100	0.2	LOS A	0.0	0.0	Full	5000	0.0	0.0
Approach	390	3.6	390	3.6		0.186		0.8	NA	0.0	0.0				
SouthWest: Kennedy Highway															
Lane 1	347	6.5	347	6.5	1890	0.184	100	0.2	LOS A	0.0	0.0	Full	5000	0.0	0.0
Lane 2	87	4.3	87	4.3	917	0.095	100	9.6	LOS A	0.4	2.7	Short	30	0.0	NA
Approach	435	6.1	435	6.1		0.184		2.1	NA	0.4	2.7				
All Vehicles	930	5.0	930	5.0		0.186		2.5	NA	0.6	4.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)										
SouthEast: Malonne Road										
Mov.	L2	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From SE To Exit:	SW	NE			Cap. veh/h	v/c	%	%		
Lane 1	82	23	105	6.0	626	0.167	100	NA	NA	
Approach	82	23	105	6.0		0.167				
NorthEast: Kennedy Highway										
Mov.	L2	T1	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From NE To Exit:	SE	SW			Cap. veh/h	v/c	%	%		
Lane 1	30	-	30	8.3	1771	0.017	100	0.0	2	
Lane 2	-	360	360	3.2	1931	0.186	100	NA	NA	
Approach	30	360	390	3.6		0.186				
SouthWest: Kennedy Highway										
Mov.	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From SW To Exit:	NE	SE			Cap. veh/h	v/c	%	%		
Lane 1	347	-	347	6.5	1890	0.184	100	NA	NA	
Lane 2	-	87	87	4.3	917	0.095	100	0.0	1	
Approach	347	87	435	6.1		0.184				
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	930	5.0	0.186							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued	Residual Queued	Time for Residual	Duration of

	Demand veh	Demand veh	Demand to Clear sec	Oversatn sec
SouthEast: Malonne Road				
Lane 1	0.0	0.0	0.0	0.0
NorthEast: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
SouthWest: Kennedy Highway				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

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Project: T:\TotalSynergy - 2022 Synergy Projects\ARO0218 Emerald Creek Service Station OPW\3. Documentation\c. Technical\ARO0218 Emerald Creek Service Station SIDRA.sip9

LANE SUMMARY

Site: 101 [2025 Access PM (Site Folder: PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue		Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
	[Total veh/h	HV] %	[Total veh/h	HV] %						[Veh	Dist] m				
SouthEast: Malone Road															
Lane 1	89	7.1	89	7.1	1859	0.048	100	0.2	LOS A	0.0	0.1	Full	500	0.0	0.0
Approach	89	7.1	89	7.1		0.048		0.2	NA	0.0	0.1				
NorthWest: Malone Road															
Lane 1	105	5.0	105	5.0	1874	0.056	100	1.2	LOS A	0.0	0.0	Full	40	0.0	0.0
Approach	105	5.0	105	5.0		0.056		1.2	NA	0.0	0.0				
All Vehicles	195	5.9	195	5.9		0.056		0.7	NA	0.0	0.1				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

Approach Lane Flows (veh/h)										
SouthEast: Malone Road										
Mov. From SE To Exit:	T1	R2	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
	NW	NE								
Lane 1	87	2	89	7.1	1859	0.048	100	NA	NA	

Approach	87	2	89	7.1		0.048			
NorthWest: Malone Road									
Mov.	L2	T1	Total	%HV					
From NW To Exit:	NE	SE			Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	38	67	105	5.0	1874	0.056	100	NA	NA
Approach	38	67	105	5.0		0.056			
	Total	%HV	Deg.Satn (v/c)						
All Vehicles	195	5.9	0.056						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthEast: Malone Road				
Lane 1	0.0	0.0	0.0	0.0
NorthWest: Malone Road				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [2035 Access PM (Site Folder: PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site

Site Category: (None)

Give-Way (Two-Way)

Design Life Analysis (Final Year): Results for 10 years

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg.	Lane	Aver.	Level of	95% Back Of Queue		Lane	Lane	Cap.	Prob.
	[Total	HV]	[Total	HV]						Satn	Util.				
	veh/h	%	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
SouthEast: Malone Road															
Lane 1	107	7.1	107	7.1	1857	0.058	100	0.2	LOS A	0.0	0.2	Full	500	0.0	0.0
Approach	107	7.1	107	7.1		0.058		0.2	NA	0.0	0.2				
NorthWest: Malone Road															
Lane 1	126	5.0	126	5.0	1874	0.067	100	1.2	LOS A	0.0	0.0	Full	40	0.0	0.0
Approach	126	5.0	126	5.0		0.067		1.2	NA	0.0	0.0				
All Vehicles	234	5.9	234	5.9		0.067		0.7	NA	0.0	0.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

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.

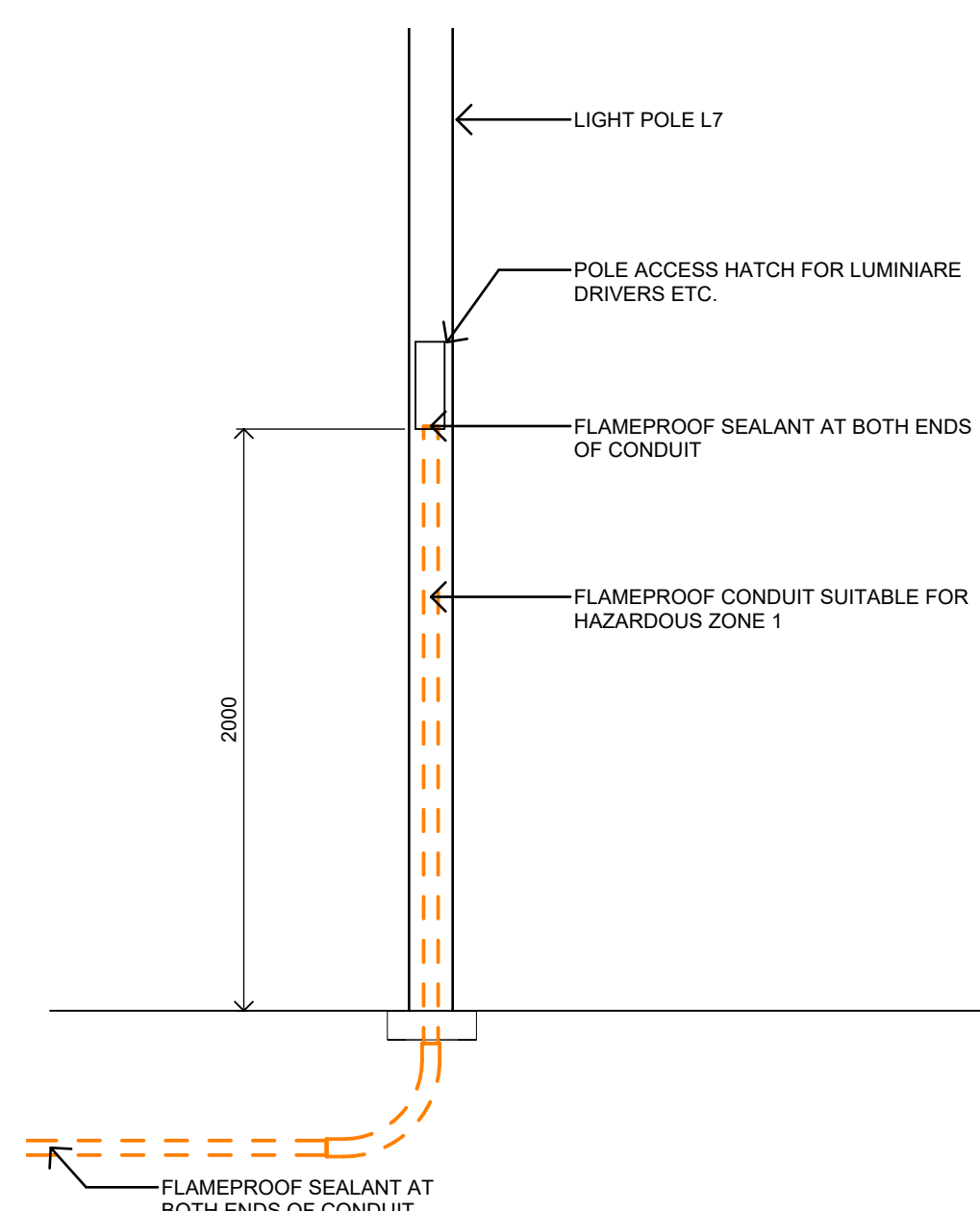
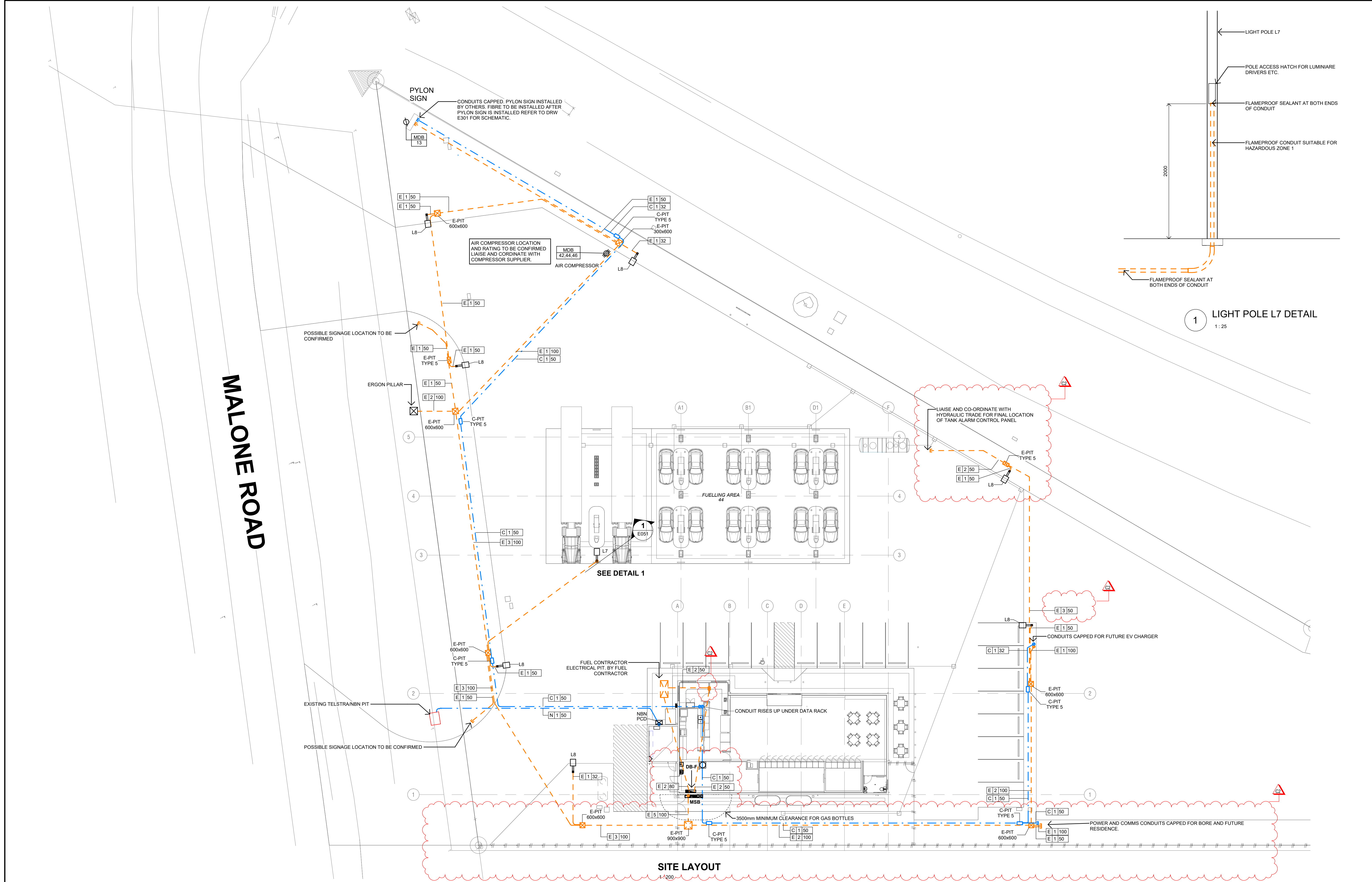
Approach Lane Flows (veh/h)										
SouthEast: Malone Road										
Mov.	T1	R2	Total	%HV	Cap.	Deg.	Lane	Prob.	Ov.	
From SE					veh/h	Satn	Util.	SL Ov.	Lane	
To Exit:	NW	NE				v/c	%	%	No.	
Lane 1	105	3	107	7.1	1857	0.058	100	NA	NA	

Approach	105	3	107	7.1		0.058				
NorthWest: Malone Road										
Mov.	L2	T1	Total	%HV						
From NW To Exit:	NE	SE			Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	45	81	126	5.0	1874	0.067	100	NA	NA	
Approach	45	81	126	5.0		0.067				
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	234	5.9	0.067							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h pcu/h		Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthEast: Malone Road				
Lane 1	0.0	0.0	0.0	0.0
NorthWest: Malone Road				
Lane 1	0.0	0.0	0.0	0.0



1 LIGHT POLE L7 DETAIL
1:25

REV:	DATE:	DESCRIPTION:	BY:
C1	20-06-24	CONSTRUCTION ISSUE	MM
C2	08-08-24	CONSTRUCTION ISSUE REVISED	NRF

DRAWING TO BE READ IN COLOUR

clarke and prince | ARCHITECTS

McCLINTOCK ENGINEERING GROUP Pty Ltd
BUILDING SERVICES ENGINEERING CONSULTANCY
www.megroup.com.au
Cairns | Townsville | Brisbane

PROJECT DESCRIPTION
PROPOSED SERVICE STATION KENNEDY
KENNEDY HIGHWAY, MARREBA

CLIENT:
SUTARIYA BROTHERS PTY LTD

ARCHITECT:
CLARKE AND PRINCE

Design Engineer: MM
Drawn: NRF
Checked: JULY 2022
Date: A1
Sheet Size: As indicated
Scale:

ELECTRICAL SERVICES

DRAWING TITLE
SITE LAYOUT

Drawing Number
8835- E051

Revision
C2

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PROPOSED SERVICE STATION 1532 KENNEDY HIGHWAY, MAREEBA



LOCATION PLAN
NTS

DRAWING LIST

Sheet Number	Sheet Name
E001	LOCATION PLAN, LEGEND AND DRAWING SCHEDULE
E051	SITE LAYOUT
E101	POWER AND COMMS LAYOUT - SHOP
E201	LIGHTING AND SECURITY LAYOUT - SHOP
E202	LIGHTING SECURITY LAYOUT - FUEL BOWSERS
E301	SINGLE LINE DIAGRAMS, SCHEDULES AND SCHEMATICS

ELECTRICAL SERVICES LEGEND

SITE SERVICES

ELEMENT	DESCRIPTION
	ORANGE HEAVY DUTY HD PVC POWER CONDUIT. COMPLETE WITH NYLON DRAW WIRE. REFER LAYOUTS FOR NUMBER AND SIZES.
	WHITE COMMUNICATIONS CONDUIT. COMPLETE WITH NYLON DRAW WIRE. REFER LAYOUTS FOR NUMBER AND SIZES.
	x - E - HEAVY DUTY ORANGE x - C - WHITE COMMUNICATIONS x - N - NBN WHITE COMMUNICATIONS y - DENOTES NUMBER OF CONDUITS z - DENOTES SIZE OF CONDUIT
	POWER PIT - (663x663x918D) COMPLETE WITH GALVANISED STEEL LID AND CONCRETE SURROUND AND FRAME TO CLASS B 80KN. LID TO BE MARKED "ELECTRICAL" TYPE: ACO CABLEMATE TYPE 66H
	POWER PIT - (713x463x635D) AS ACO CABLEMATE TYPE 5 PIT COMPLETE WITH GALVANISED STEEL LID AND CONCRETE SURROUND AND FRAME TO CLASS B 80KN. LID TO BE MARKED "ELECTRICAL" TYPE: ACO CABLEMATE TYPE 5
	COMMUNICATIONS PIT (713x463x635D) AS ACO CABLEMATE TYPE 5 PIT COMPLETE WITH GALVANISED STEEL LID AND CONCRETE SURROUND AND FRAME TO CLASS B 80KN. LID TO BE MARKED "COMMUNICATIONS"

POWER

ELEMENT	DESCRIPTION
	NEW ELECTRICAL SERVICES SWITCHBOARD. REFER SCHEMATICS, SCHEDULES AND SPECIFICATION.
	10A SINGLE SWITCHED SOCKET OUTLET (SSO) MOUNTED AT 500mm AFFL UNO. FINISH COLOUR WHITE. USE: CLIPSAL 'ICONIC' SERIES
	15A SINGLE SWITCHED SOCKET OUTLET MOUNTED AT 500mm AFFL UNO. FINISH COLOUR WHITE. USE: CLIPSAL 'ICONIC' SERIES
	10A DOUBLE SWITCHED SOCKET OUTLET (DSSO) MOUNTED AT 500mm AFFL UNO. FINISH COLOUR WHITE (UNO). USE: CLIPSAL 'ICONIC' SERIES
	SINGLE UNSWITCHED SOCKET OUTLET RATED 10A UNO. LOCATE WITHIN CEILING VOID AND INSTALL IN ACCORDANCE WITH AS3000. COORDINATE WITH MECHANICAL TRADE.
	IP66 WEATHERPROOF SINGLE PHASE SURFACE MOUNTED ISOLATOR. MOUNT AT 1000mm AFFL UNO. COORDINATE FINAL SELECTION OF ISOLATOR WITH THE ASSOCIATED EQUIPMENT. n = SIZE IN AMP. IF BLANK = 20A USE: CLIPSAL 56 SERIES
	IP66 WEATHERPROOF THREE PHASE SURFACE MOUNTED ISOLATOR. MOUNT AT 1000mm AFFL UNO. COORDINATE FINAL SELECTION OF ISOLATOR WITH THE ASSOCIATED EQUIPMENT. n = SIZE IN AMP. IF BLANK = 20A USE: CLIPSAL 56 SERIES
	FUEL SYSTEM EMERGENCY STOP RED BUTTON

COMMUNICATIONS AND CCTV

ELEMENT	DESCRIPTION
	DUAL RJ45 CAT 6A DATA/VOICE OUTLET C/W WHITE PLATE (UNO). MOUNT AT 500mm AFFL UNO. TYPE: CLIPSAL 'ICONIC' SERIES
	TRIPLE RJ45 CAT 6A DATA/VOICE OUTLET C/W WHITE PLATE (UNO). MOUNT AT 500mm AFFL UNO. TYPE: CLIPSAL 'ICONIC' SERIES
	24 RU WALL MOUNTED 800mm(W) x 800mm(D) COMMUNICATIONS RACK WITH LOCKABLE FRONT DOOR. REMOVABLE SIDES. VERTICAL POWER RAIL AND SHELVING UNITS, etc. PATCH PANELS, TIE-CABLES AND CABLE MANAGEMENT AS REQUIRED. TYPE: RACK TECHNOLOGIES IQ SERIES
	NBN PREMISES CONNECTION DEVICE. PROVIDED BY NBN
	NBN NETWORK TERMINATION DEVICE PROVIDED BY NBN
	MICROPHONE OUTLET FOR PUBLIC ADDRESS(PA) TYPE:
	ROUND RECESSED CEILING MOUNTED PUBLIC ADDRESS SPEAKER. WHITE TRIM TYPE:
	CCTV HEAD END CONTROL AND VIDEO STORAGE EQUIPMENT TYPE: HILVISION DS9600 SERIES NVR OR APPROVED EQUAL.
	2MP IP66, FIXED DOME CCTV IP CAMERA COMPLETE WITH IR EMITTER. TYPE: BOSCH FLEXIDOME IP 3000 IR OR APPROVED EQUAL. FIELD OF VIEW TO BE CONFIRMED ON SITE.
	DOOR BELL

SECURITY SYSTEMS

ELEMENT	DESCRIPTION
	INTRUDER DETECTION SYSTEM CONTROL PANEL TYPE: INNER RANGE INTEGRITI
	INTRUDER ALARM REMOTE ARMING STATION KEY PAD.
	360 DEGREES DUAL TECH CEILING MOUNTED PIR MOVEMENT DETECTOR.
	INTRUDER ALARM CONCEALED DOOR CONTACT. RD = SURFACE HEAVY DUTY FOR ROLLER DOOR
	DURESS PUSH BUTTON
	INTRUDER ALARM INTERNAL SCREAMER SOUNDER
	INTRUDER ALARM EXTERNAL VISUAL INDICATOR
	ACCESS CONTROLLED DOOR PUSH TO RELEASE BUTTON MOUNTED ABOVE BENCH. INTERFACE TO LOCAL DOOR CONTROLLER AND COORDINATE WITH DOOR INSTALLER. TYPE: CSD 'X2-EXIT-008'

LIGHTING

ELEMENT	DESCRIPTION
L1.	1x100W, 5000°K, 60° BEAM LED, RECESSED, IP67 RATED WEATHERPROOF CANOPY LUMINAIRE COMPLETE WITH ELECTRONIC DRIVER AND WHITE TRIM FINISH. USE: TIGERLITE CP15K100 'CP15K100PM-50K 100W LED 60° 5000K IP67'
L2.	1x18W, 2100lm, 4000°K, CR1 90, 100mmDIA RECESSED LED DOWNLIGHT COMPLETE WITH ELECTRONIC DRIVER, MATTE REFLECTOR AND WHITE TRIM USE: NEKO LIGHTING: TAKEO T100 'TS3-9405018F-WM'
L3.	1x7.5W, 650LUMEN, 4000°K, CR1 90, 75mmDIA RECESSED LED DOWNLIGHT COMPLETE WITH ELECTRONIC DRIVER, MATTE REFLECTOR AND WHITE TRIM. USE: NEKO LIGHTING: TAKEO T750 'TT1-9405008F-WM'
L4.	1x27W 2800lm 4000°K, TBAR RECESSED, 600x600mm LED PANEL LUMINAIRE COMPLETE WITH ELECTRONIC DRIVER, OPAL DIFFUSER. USE: PIERLITE 'ECO LED PANEL GEN 2' RANGE.
L5.	1x27W 2800lm, 4000°K, PLASTER RECESSED, 600x600mm LED PANEL LUMINAIRE COMPLETE WITH ELECTRONIC DRIVER, OPAL DIFFUSER AND PLASTER MOUNTING KIT. USE: PIERLITE 'CO LED PANEL GEN 2' WITH 'FRMPMP18WIDE' RANGE.
L6.	1x27W 4000°K, IP65 RATED WEATHERPROOF, 1200mm SURFACE MOUNTED LED LUMINAIRE COMPLETE WITH ELECTRONIC DRIVER AND OPAL POLYCARBONATE DIFFUSER. USE: PIERLITE 'BWP ECO LED' RANGE.
L7.	1x97W 5000K, POLE TOP AREA LIGHTER LED LUMINAIRE COMPLETE WITH ELECTRONIC DRIVER, 6m POLE AND FOUNDATION. POLE AND LUMINAIRE IN BLASK FINISH. LUMINAIRE DRIVER HATCH SHALL BE NO LOWER THAN 2000mm FROM FINISHED DRIVEWAY LEVEL. TO ENSURE ELECTRICAL CONNECTIONS ARE ABOVE THE ZONE 1 HAZARDOUS AREA. USE: TIGERLITE 'SL080L-T3M-50K TYPE III MEDIUM ASYM 50'
L8.	1x97W 5000K LED, POLE TOP AREA LIGHTER LUMINAIRE COMPLETE WITH ELECTRONIC DRIVER, 6m POLE AND FOUNDATION. POLE AND LUMINAIRE IN BLASK FINISH. USE: TIGERLITE 'SL080L-T4M-50K TYPE IV MEDIUM ASYM 50'
EL1.	SINGLE POINT CEILING RECESSED NON-MAINTAINED LED EMERGENCY LIGHT WITH REMOTE PREMIUM LITHIUM BATTERY PACK TO AS/NZS 2293. CLASSIFICATION C0.D63, C90.D63. USE: CLEVERTRONICS 'CLIFE-PRO'
EL2.	DUAL LED SURFACE MOUNTED NON-MAINTAINED LED EMERGENCY LIGHT IP66 SUITABLE FOR COLDROOMS AND FREEZERS WITH REMOTE PREMIUM LITHIUM BATTERY PACK TO AS/NZS 2293. MINIMUM 2 YEARS WARRANTY, WHITE FINISH. CLASSIFICATION C0.D63, C90.D63. USE: CLEVERTRONICS 'CLIFE-PRO-WP-IPREM'
EL3.	MAINTAINED LED EXIT LIGHT IP66 SUITABLE FOR COLDROOMS AND FREEZERS WITH REMOTE LITHIUM BATTERY PACK TO AS/NZS 2293. MINIMUM 2 YEARS WARRANTY. COMPLETE WITH PICTORIAL RUNNING MAN SYMBOL. MINIMUM 24m VIEWING DISTANCE CLASSIFICATION C0.E1.6, C90.E1.6. USE: CLEVERTRONICS 'LWLED-WM-IPREM'
EL4.	MAINTAINED LED EXIT LIGHT WITH INTEGRAL PREMIUM LITHIUM BATTERY PACK TO AS/NZS 2293. MINIMUM 2 YEARS WARRANTY, WHITE FINISH. WALL / CEILING MOUNT BETWEEN 2100mm AND 2700mm AFFL. COMPLETE WITH PICTORIAL RUNNING MAN SYMBOLS AND DIRECTION ARROWS AS NOTED ON THE PLANS. MINIMUM 24m VIEWING DISTANCE CLASSIFICATION C0.E2.5, C90.B12.5. USE: CLEVERTRONICS 'CLEVERFIT CCFPRO'

LIGHTING AND FAN CONTROL

ELEMENT	DESCRIPTION
	LIGHTING CONTROL PANEL. MOUNT AT 1000mm AFFL UNO. WHITE FINISH. TYPE: 24 SWITCH - CLIPSAL 'ICONIC' SERIES.
	ONE WAY, SINGLE POLE LIGHT SWITCH. MOUNT AT 1000mm AFFL UNO. WHITE FINISH. TYPE: CLIPSAL 'ICONIC' SERIES.
	360 DEGREE CEILING MOUNTED PIR OCCUPANCY CONTROLLER WITH INTEGRATED TIMER. TYPE: CLIPSAL INFRASCAN 3 WIRE 753R OR APPROVED EQUAL.
	IP68 DAY LIGHT SENSOR. TYPE: CLIPSAL SUNSET 3 WIRE 56SSR/3 OR APPROVED EQUAL.

ABBREVIATIONS

ab	MOUNTED 150mm ABOVE BENCH
AD	AUTODOOR OUTLET - LIAISE WITH DOOR INSTALLER FOR FINAL LOCATION
AFFL	ABOVE FINISHED FLOOR LEVEL
bb	MOUNTED 150mm BELOW BENCH
BWP	BORE WATER PUMP - LIAISE WIT HYDRAULIC TRADE
BWPC	BORE WATER PUMP CONTROL PANEL - LIAISE WITH HYDRAULIC TRADE
CM	COMMIS RACK
CR	COMMS RACK
CS	MOUNTED WITHIN CEILING SPACE
DA	DURESS ALARM
DR	DOOR RELEASE
EVC	ELECTRIC VEHICLE CHARGER
FRZ	FREEZER
HD	HAND DRYER OUTLET - UNIT PROVIDED BY BUILDING
HL	HIGH LEVEL
HWS	HOT WATER SYSTEM - LIAISE WIT HYDRAULIC TRADE
LMD	LIGHTING MOTION DETECTOR
MB	MENU BOARD/TELEVISION / LCD DISPLAY)
MON	CCTV MONITOR
PA	PUBLIC ADDRESS SYSTEM
POS	POINT OF SALE
REF	REFRIDGERATOR
SCRM	SECURITY SYSTEM SCREAMER
SEC	SECURITY
SIGN	OUTLET FOR ELECTRONIC SIGNAGE
SMD	SECURITY MOTION DETECTOR
SWP	SEWER PUMP
SWC	SEWER PUMP CONTROL PANEL
TEF	TOILET EXHAUST FAN - LIAISE WITH MECHANICAL TRADE
TV	TELEVISION / LCD DISPLAY MONITOR
TWP	SUBMERSIBLE TANK WATER PUMP
UNO	UNLESS NOTED OTHERWISE
WM2700	WALL MOUNTED E.G. @2700AFFL
WTCP	WATER TREATMENT UV AND CONTROL PANEL
WTP	WATER TREATMENT BOOSTER PUMP
WP	WEATHERPROOF IP65/4
IP	WEATHERPROOF IP66/66

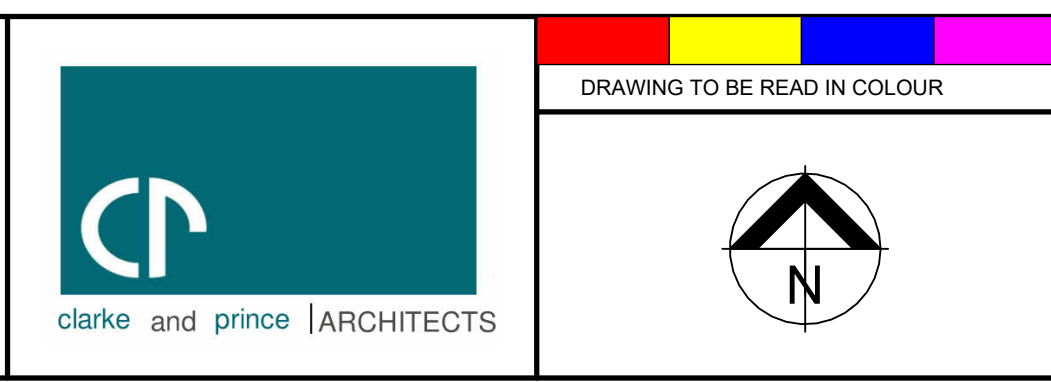
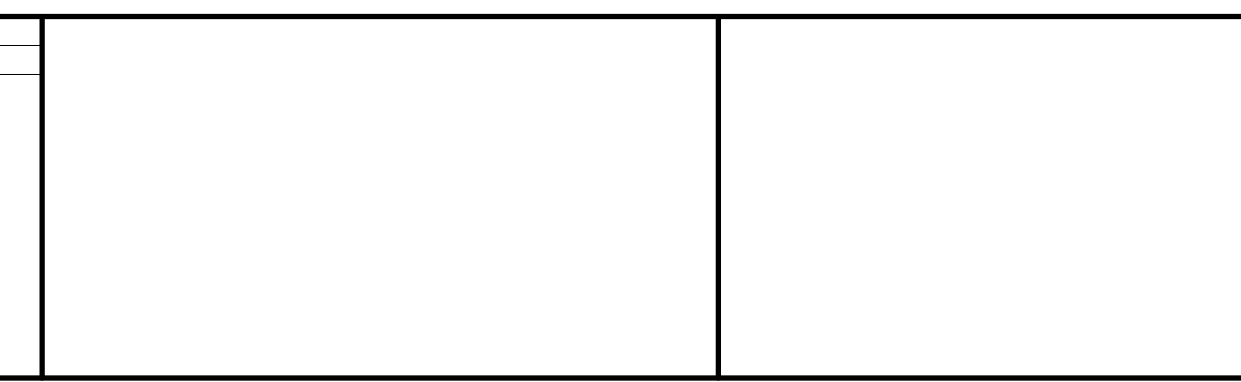
SCHEMATIC

ELEMENT	DESCRIPTION
	ON LOAD ISOLATOR n = AMPS m = PHASE
	MOULDED CASE CIRCUIT BREAKER (MCBB) n = AMPS m = FRAME SIZE
	MINIATURE CIRCUIT BREAKER (MCB) n = AMPS
	COMBINED MCB/RCD, RCD 30mA RATING n = AMPS
	ERGON ENERGY TARIFF METER
	SURGE PROTECTION DEVICE C/W LOCAL FUSE PROTECTION
	TRANSFORMER
	DAY LIGHT PHOTO CELL SENSOR
	MEN LINK AND EARTH
	FUSE LINK
	MOMENTARY PUSH SWITCH
	CONTACTOR / REALY COIL n = REFERENCE
	TIME CLOCK n = REFERENCE
	TIMER SWITCH n = REFERENCE
	CONTACTS n = REFERENCE

NOTES

- DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE SPECIFICATION.
- CABLE CONTAINMENT PATHWAYS AND SIZES ARE TO BE COORDINATED WITH ALL TRADES.
- SEAL AND FINISH ALL ELEMENTS TO SUIT LOCATION.
- CONFIRM MOUNTING HEIGHTS AND LOCATIONS PRIOR TO INSTALLATION.
- PROVIDE ALL LABELING IN ACCORDANCE WITH AUTHORITIES, STANDARDS AND SPECIFICATION.
- THE CONTRACTOR SHALL SATISFY THEMSELVES THAT THE INFORMATION CONTAINED HERE IN THIS DRAWING, ASSOCIATED SCHEDULES & DOCUMENTATION PROVIDED TO THEM AS PART OF THEIR TENDER DOCUMENTATION PACKAGE IS SUFFICIENT FOR THE PURPOSES OF THEM PROVIDING A COMPLETE & FULLY INCLUSIVE TENDER FOR THE WORKS DESCRIBED.
- NO CLAIMS WILL BE BROKERED FOR ADDITIONAL MONIES AS A RESULT OF THE CONTRACTOR FAILING TO INCLUDE FOR KNOWN TO BE REQUIRED EQUIPMENT & OR MATERIALS NECESSARY, THAT MAY NOT BE INDICATED SPECIFICALLY HERE OR ELSEWHERE.
- AT HAND-OVER, THE CONTRACTORS INSTALLATION SHALL BE FULLY COMPLIANT WITH THE APPLICABLE AUSTRALIAN STANDARDS & GUIDES, NOT LEAST OF WHICH BEING THE CURRENT EDITION OF AS3000, INCLUDING ALL AMENDMENTS, AT THE TIME OF INSTALLATION.
- THESE DRAWINGS ARE NOT ISSUED FOR CONSTRUCTION PURPOSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRODUCING THEIR OWN SHOP DRAWING(S), VERIFYING THAT ALL GIVEN DIMENSIONS & DETAILS ARE CORRECT & THAT THE LATEST ARCHITECTURAL BACKGROUNDS ARE APPLIED.
- POWER SUPPLIES TO MECHANICAL, FUEL SPECIALIST SYSTEMS, PROCESS AND HYDRAULIC EQUIPMENT ARE FOR TENDER PURPOSES ONLY. CONFIRM WITH MECHANICAL, PROCESS AND HYDRAULIC CONTRACTORS THE ACTUAL REQUIREMENTS BEFORE COMMENCEMENT OF THE INSTALLATION. ADVISE THE SUPERINTENDENT OF ANY CHANGES REQUIRED.
- CONTRACTOR TO ASCERTAIN THE LOCATION OF ALL FIRE WALLS FROM THE ARCHITECTS DRAWINGS AND PROVIDE FIRE RATED BACK BOXES AND SEALS AS REQUIRED.

REV.	DATE:	DESCRIPTION:	BY:
C1	20-06-24	CONSTRUCTION ISSUE	MM



McCLINTOCK ENGINEERING GROUP Pty Ltd
BUILDING SERVICES ENGINEERING CONSULTANCY
www.megroup.com.au
Cairns | Townsville | Brisbane

PROJECT DESCRIPTION
PROPOSED SERVICE STATION KENNEDY HIGHWAY, MARREBA

CLIENT:
SUTARIYA BROTHERS PTY LTD

ARCHITECT:
CLARKE AND PRINCE

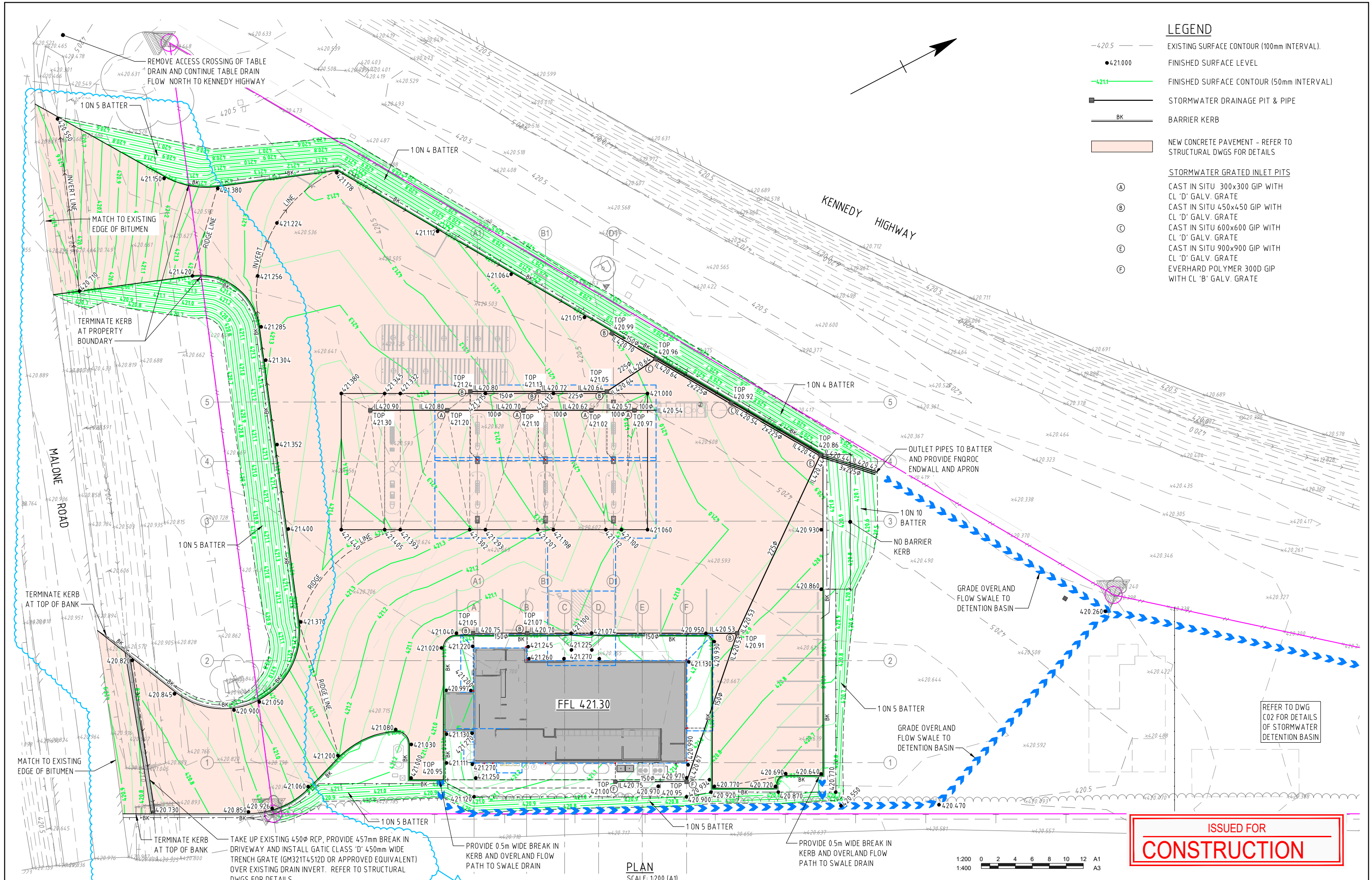
ELECTRICAL SERVICES

DRAWING TITLE
LOCATION PLAN, LEGEND AND DRAWING SCHEDULE

Design Engineer	MM
Drawn	NRF
Checked	
Date	JULY 2022
Sheet Size	A1
Scale	1:1

Drawing Number
8835- E001

Revision
C1



- LEGEND**
- 420.5 ——— EXISTING SURFACE CONTOUR (100mm INTERVAL).
 - 421.000 FINISHED SURFACE LEVEL
 - 421.1— FINISHED SURFACE CONTOUR (50mm INTERVAL)
 - STORMWATER DRAINAGE PIT & PIPE
 - BK BARRIER KERB
 - NEW CONCRETE PAVEMENT - REFER TO STRUCTURAL DWGS FOR DETAILS
- STORMWATER GRATED INLET PITS**
- (A) CAST IN SITU 300x300 GIP WITH CL 'D' GALV. GRATE
 - (B) CAST IN SITU 450x450 GIP WITH CL 'D' GALV. GRATE
 - (C) CAST IN SITU 600x600 GIP WITH CL 'D' GALV. GRATE
 - (E) CAST IN SITU 900x900 GIP WITH CL 'D' GALV. GRATE
 - (F) EVERHARD POLYMER 300D GIP WITH CL 'B' GALV. GRATE

ISSUED FOR
CONSTRUCTION

REV	DESCRIPTION	APP'D	DATE
C2	KERBS AND GRATED TRENCH GRATE ADDED		15/10/24
C1	CONSTRUCTION ISSUE		10/06/24

THE ENGINEERING NOTES ATTACHED TO THE CERTIFICATE FOR THIS JOB NUMBER ARE PART OF THE DRAWINGS, AND ARE TO BE ATTACHED TO EACH SET OF DRAWINGS TO BE WORKED FROM.

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CLIENT: SUTARIYA BROTHERS PTY LTD

PROJECT: PROPOSED SERVICE STATION
KENNEDY HIGHWAY
MAREEBA, QLD

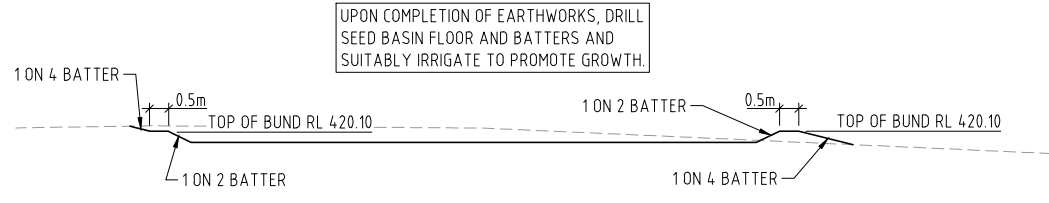
RODGERS CONSULTING ENGINEERS

124 SPENCE STREET
P.O. BOX 1769
CAIRNS 4870

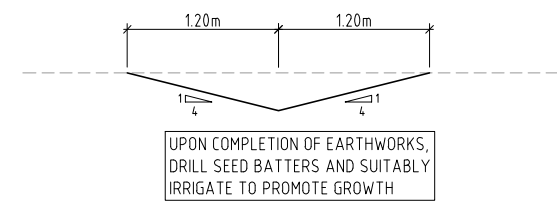
PHONE: 07 4051 9466
FAX: 07 4051 9477
Heath Rodgers RPEQ 7859

admin@rogersconsulting.com.au

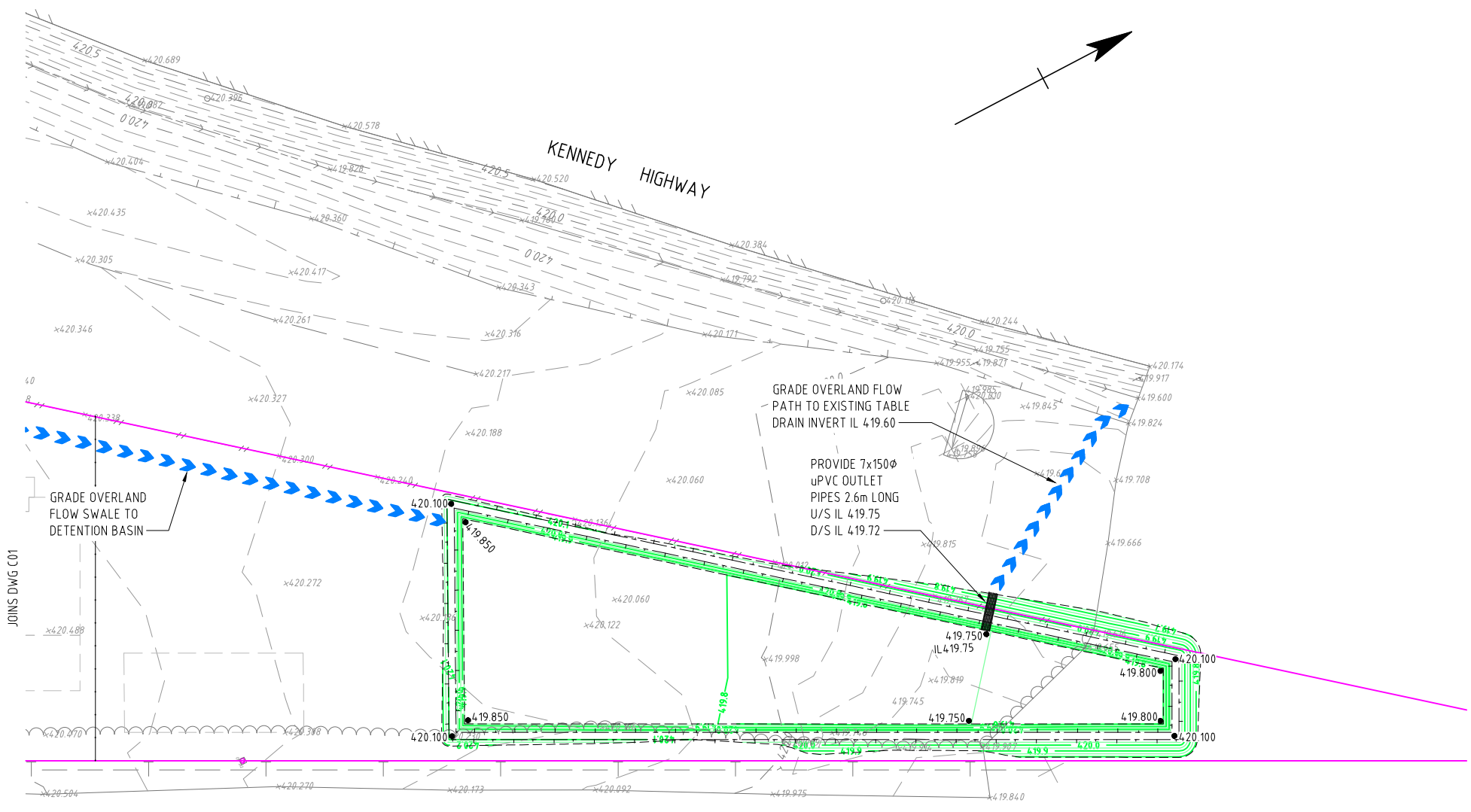
TITLE: CIVIL WORKS GENERAL ARRANGEMENT - SHEET 1			
DRAFTED: KCCD	REVIEWED:	APPROVED:	
DESIGNED: EWK	A1 PLAN		
SCALE: 1:200 (A1)	PROJECT NO: 210220	DWG NO: C01	REV: C2



TYPICAL SECTION DETENTION BASIN
SCALE: 1:100 (A1)



TYPICAL SECTION SWALE DRAIN
SCALE: 1:100 (A1)



PLAN
SCALE: 1:200 (A1)

NOTES

ALL WORKS
CONSTRUCTION AND INSTALLATION OF ALL WORKS AS DETAILED ON THESE DRAWINGS SHALL BE IN ACCORDANCE WITH THE PROCEDURES, SPECIFICATIONS AND DRAWINGS CONTAINED IN THE CURRENT ISSUE OF THE FNQROC DEVELOPMENT MANUAL.

EARTHWORKS NOTES

1. THE CONTRACTOR SHALL REMOVE ALL STRUCTURES, DEBRIS AND FENCES FROM THE SITE TO THE SATISFACTION OF THE SUPERINTENDENT.
2. ALL ENVIRONMENTAL WEEDS SHALL BE REMOVED FROM THE SITE.
3. THE EXISTING SURFACE IS TO BE CLEARED OF VEGETATION MATTER PRIOR TO THE START OF EARTHWORKS OPERATIONS.
4. ALL TREES THAT ARE REMOVED SHALL BE MULCHED. THE MULCH SHALL BE STOCKPILED ON SITE FOR USE IN EROSION AND SEDIMENT CONTROL OR LANDSCAPING.
5. TOPSOIL SHALL BE STRIPPED FROM ALL AREAS OF PROPOSED EARTHWORKS PRIOR TO THE START OF EARTHWORKS OPERATIONS AND STOCKPILED IN AN APPROVED LOCATION FOR RE-USE AT A LATER DATE. THE DEPTH OF TOPSOIL STRIPPING SHALL BE AS AGREED WITH THE SUPERINTENDENT.
6. SITE FILLING SHALL BE CARRIED OUT IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3798 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS. (LEVEL 1 SUPERVISION)".
7. IMPORTED FILL MATERIAL SHALL BE APPROVED BY THE SUPERINTENDENT PRIOR TO COMMENCING FILLING OPERATIONS.
8. SITE PREPARATION SHALL ENCOMPASS PROPOSED BUILDING FOOTPRINT PLUS 15m BEYOND THE BUILDING PERIMETER.
9. FINISHED SURFACE TO BE GRADED UNIFORMLY BETWEEN LEVELS SHOWN.
10. THE CONTRACTOR IS TO ENSURE THAT LANDSCAPING (eg. GARDEN BEDS, MULCH ETC) DOES NOT INTERFERE WITH SURFACE GRADES AND OVERLAND FLOW PATHS SHOWN ON THIS DRAWING.
11. ALL COMPLETED EARTHWORKS SURFACES FLATTER AND INCLUDING 1 ON 4 SLOPE TO BE DRILL SEEDED WITH AN APPROVED GRASS SPECIES AND SUITABLY IRRIGATED TO PROMOTE GROWTH.
12. EARTHWORKS SHALL NOT PROCEED PAST THE FOLLOWING HOLD POINTS UNTIL APPROVAL TO PROCEED BY THE SUPERINTENDENT IS ISSUED IN WRITING.
 - AFTER STRIPPING TOPSOIL, PRIOR TO UNDERTAKING ANY FILLING OPERATIONS.
 - AFTER LAYING SUBSOIL DRAINAGE PIPES, PRIOR TO BACKFILLING.
 - AFTER SUBGRADE PREPARATION, PRIOR TO PLACING PAVEMENT MATERIALS. (NOTE THAT A SUBGRADE PROOF ROLL, INSPECTED BY THE SUPERINTENDENT, WILL BE DONE AFTER THE INSTALLATION OF SUBSOIL DRAINS, UNLESS THE SUBSOIL DRAINS EXTEND THROUGH THE SUBBASE, IN WHICH CASE SUBGRADE AND SUBBASE PROOF ROLLS WILL BE REQUIRED.

SERVICES

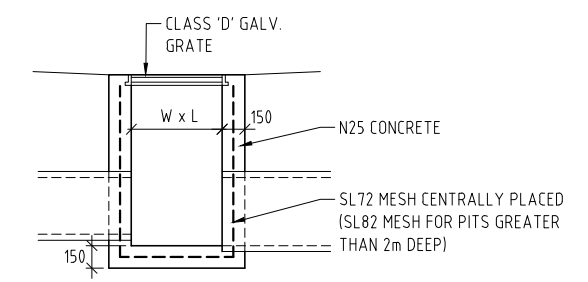
THE CONTRACTOR SHALL COORDINATE ALL BUILDING SERVICES (eg. LANDSCAPING, IRRIGATION, WATER, POWER, SEWER, GAS, TELECOMMUNICATIONS) FOR CONSTRUCTION, AND SHALL CHECK FOR ANY SERVICE ALIGNMENT CLASHES PRIOR TO COMMENCING WORKS ON SITE. NOTIFY THE RELEVANT CONSULTANT SHOULD THERE BE ANY PROBLEMS OR CLASHES FOR DESIGN ADJUSTMENTS.

STORMWATER DRAINAGE

1. UNDERGROUND STORMWATER DRAINAGE PIPES SHOWN ON THIS DRAWING ARE TO BE STORMWATER CLASS uPVC OR PP PIPE BEDDED IN ACCORDANCE WITH FNQROC STD DWG S1046. BACKFILLING TO BE CARRIED OUT IN LAYERS OF 200mm AND COMPACTED TO 98% RDD. CONTRACTOR MAY ELECT TO BACKFILL WITH SAND PROVIDED SAND IS FLOODED WITH WATER AND COMPACTED IN LAYERS NOT EXCEEDING 250mm.
2. GRATED INLET PITS ON THESE DRAWINGS ARE TO BE CAST-IN-SITU CONCRETE PITS WITH CLASS 'D' GALVANISED STEEL GRATES IN TRAFFICABLE AREAS UNLESS NOTED OTHERWISE.

SURVEY AND EXISTING SERVICES

1. SURVEY BY RPS AUSTRALIA EAST PTY LTD (REF: PR149751-1)
2. SURVEY DATUM: A.H.D. - OPM 192482 RL 420.243 MERIDIAN: RP846956
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE ALL EXISTING SERVICES PRIOR TO ANY EXCAVATION, PARTICULARLY ON FOOTPATHS.
4. ALL DAMAGE TO EXISTING SERVICES SHALL BE MADE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT AUTHORITY, ALL AT THE CONTRACTORS EXPENSE. THE CONTRACTOR SHALL NOTIFY THE RELEVANT AUTHORITY IMMEDIATELY WHEN ANY DAMAGE OCCURS.
5. THE LINE AND LEVEL OF EXISTING UNDERGROUND SERVICES SHALL BE DETERMINED BY THE CONTRACTOR AND THE ENGINEER SHALL BE NOTIFIED OF ANY POTENTIAL CLASHES WITH DESIGN STRUCTURES AND SERVICES PRIOR TO COMMENCING CONSTRUCTION.
6. EXISTING OUTLET LEVELS OR CONNECTION LEVELS FOR ALL DESIGN STORMWATER AND SEWER SHALL BE CONFIRMED BY THE CONTRACTOR AND THE ENGINEER SHALL BE NOTIFIED OF ANY VARIATIONS PRIOR TO COMMENCING CONSTRUCTION.
7. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR IS TO ESTABLISH ON SITE THE EXACT POSITION OF ALL UNDERGROUND SERVICES IN THE PROPOSED WORKS AREA. METHODS FOR ACHIEVING THIS WILL INCLUDE BUT NOT BE LIMITED TO:
 - CAREFUL EXAMINATION OF THE CONTRACT DRAWINGS.
 - CONSULTATION WITH THE RELEVANT SERVICE AUTHORITIES.
 - COMPREHENSIVELY SCANNING THE AFFECTED AREAS WITH A CABLE DETECTOR AND MARKING ON THE GROUND THE POSITION OF ALL SERVICES.
 - HAND EXCAVATING TO EXPOSE ALL SUCH SERVICES WHICH MAY BE AFFECTED BY THE PROPOSED WORKS UNDER THE DIRECTION OF THE RELEVANT SERVICE AUTHORITY.



CAST IN SITU GRATED INLET PIT
N.T.S.



ISSUED FOR CONSTRUCTION

REV	DESCRIPTION	APP'D	DATE
C1	CONSTRUCTION ISSUE		10/06/24

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CLIENT: SUTARIYA BROTHERS PTY LTD

PROJECT: PROPOSED SERVICE STATION KENNEDY HIGHWAY MAREEBA, QLD

RODGERS CONSULTING ENGINEERS

124 SPENCE STREET
P.O. BOX 1769
CAIRNS 4870
admin@rogersconsulting.com.au

PHONE: 07 4051 9466
FAX: 07 4051 9477
Heath Rodgers RPEQ 7859

TITLE: CIVIL WORKS GENERAL ARRANGEMENT - SHEET 2			
DRAFTED: KCDD	REVIEWED:	APPROVED:	
DESIGNED: EWK	AT PLAN		
SCALE: 1:200 (A1)	PROJECT NO: 210220	DWG NO: C02	REV: C1

To Whom It May Concern

Re: **New Service Station**

At: **Kennedy Highway between Mareeba and Emerald Creek**

1 Overview

Rodgers Consultants has been engaged to prepare a Stormwater Drainage Management Plan to support a Development Application for a Service Station development on Lot 15 on RP 846956 at the corner of Malone Road and Kennedy Highway, Mareeba. The site is and is located within the Mareeba Shire Council local government area.



Figure 1.1 Site Locality

2 Existing Site Details

The site is currently vacant with good grass cover, bounded by heavy vegetation on the south-eastern boundary and falls gently towards the Kennedy Highway. The Malone Road pavement and northern table drain has a high point roughly in the middle of our site frontage & falls gently towards Kennedy Highway where it grades around the corner to the north-east and continues to flow north-east on the eastern side of the Kennedy Highway, likewise from this point the table drain falls gently southeast down Malone Road. The existing site levels and contours are shown on

RPS drawing PR149751-1. Kennedy Highway is on a crest approximately 100m east of Malone Road.

3 Proposed development

The proposed development is shown on Clarke & Prince drawing 1532-CD-A-02(P8). The development includes:

- Refuelling areas for general and heavy vehicles
- Concrete hardstand and unsealed truck turning area
- Shop/retail building and on-site carparking
- Playground and caretakers residence

4 Flood Risk Review

Department of Natural Resources, Mines and Energy regional flood mapping indicates that the site is not affected by Q100 (1% AEP) flooding as shown in Figure 4.1 below.

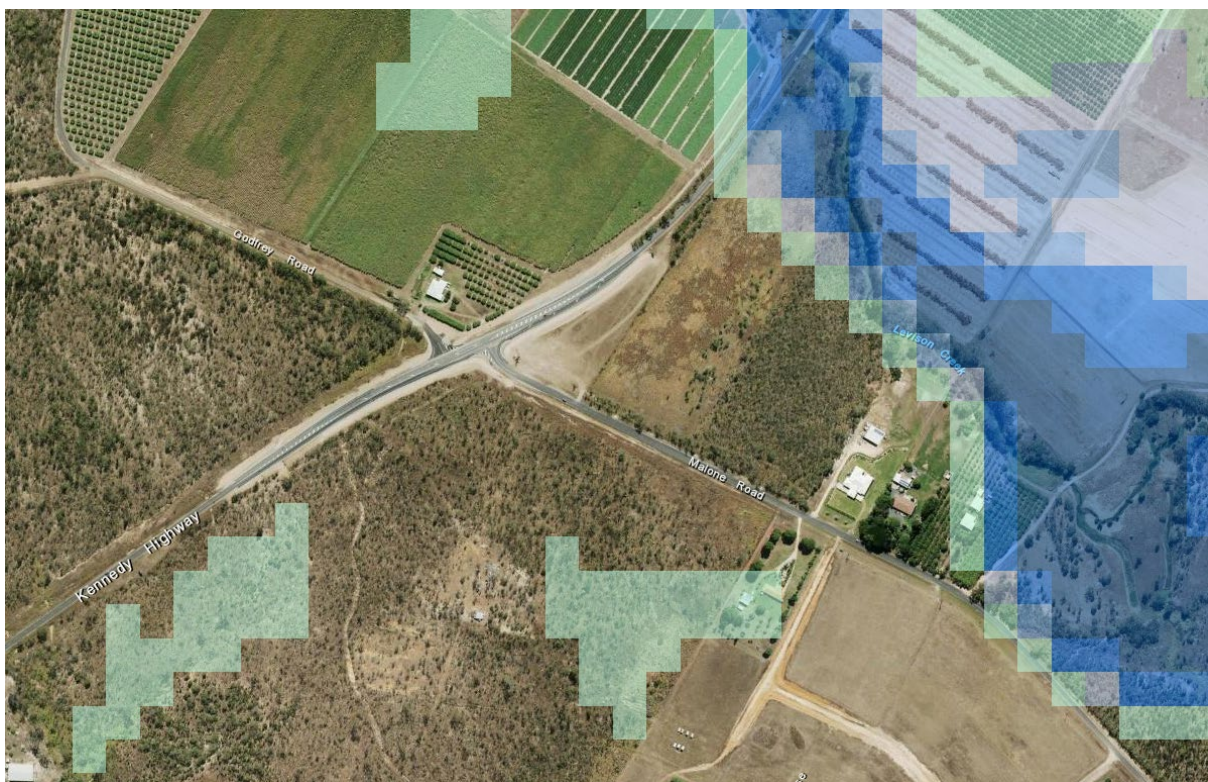


Figure 4.1 Flood Map

5 Stormwater Quantity Assessment

The proposed site is zoned Rural Residential and is currently vacant. To ensure a non-worsening impact on adjacent stormwater drainage systems (ie. Kennedy Highway table drain) this development will discharge postdevelopment stormwater flows into a detention basin located at the north-eastern corner of the site. The stormwater detention basin will be sized to detain flows for all events up to Q100 (1% AEP) and discharge flows to the Kennedy Highway at predevelopment flow rates.

The entire site currently falls and drains to the Kennedy Highway table drain and the postdevelopment site will continue to do so. Rodgers Consulting drawing F01 shows the concept stormwater drainage scheme proposed for this development.

Pre & post development stormwater flows calculated in accordance with QUDM are summarised as follows:

CATCHMENT	AREA	TIME OF CONCEN	FRACT IMPER	COEFF.	Vol.	Vol.	Vol.	Vol.	Vol.
	A	Tc	fi	C10	Q2	Q5	Q10	Q20	Q100
	m2	mins			m3/s	m3/s	m3/s	m3/s	m3/s
Predev	8412.5	40	0.10	0.70	0.082	0.113	0.131	0.156	0.227
Postdev	8412.5	6	0.50	0.80	0.200	0.286	0.339	0.410	0.613

Increases in stormwater flow will be detained in a basin located at the northern corner of the site as shown on Rodgers Consulting drawing F01. For the Q100 (1% AEP) event, the maximum storage requirement is 180m³ with a basin of 250m² and 750mm deep. The location of the basin allows for the site to discharge to the Kennedy Highway table drain at the lowest level possible to avoid excessive site filling. All postdevelopment stormwater runoff from the site will be collected and discharged to the basin with a system of underground pipes and overland flow paths.

6 Summary

A stormwater drainage detention basin constructed at the northern corner of this site will ensure that postdevelopment stormwater discharge to the Kennedy Highway will remain at the predevelopment flow rate and this development will have a non-worsening impact on the Kennedy Highway drainage system.

Please do not hesitate to make contact should you require any clarification or further information.

Yours faithfully

RODGERS CONSULTING ENGINEERS

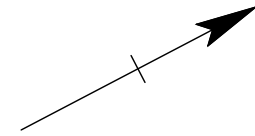


Heath P Rodgers

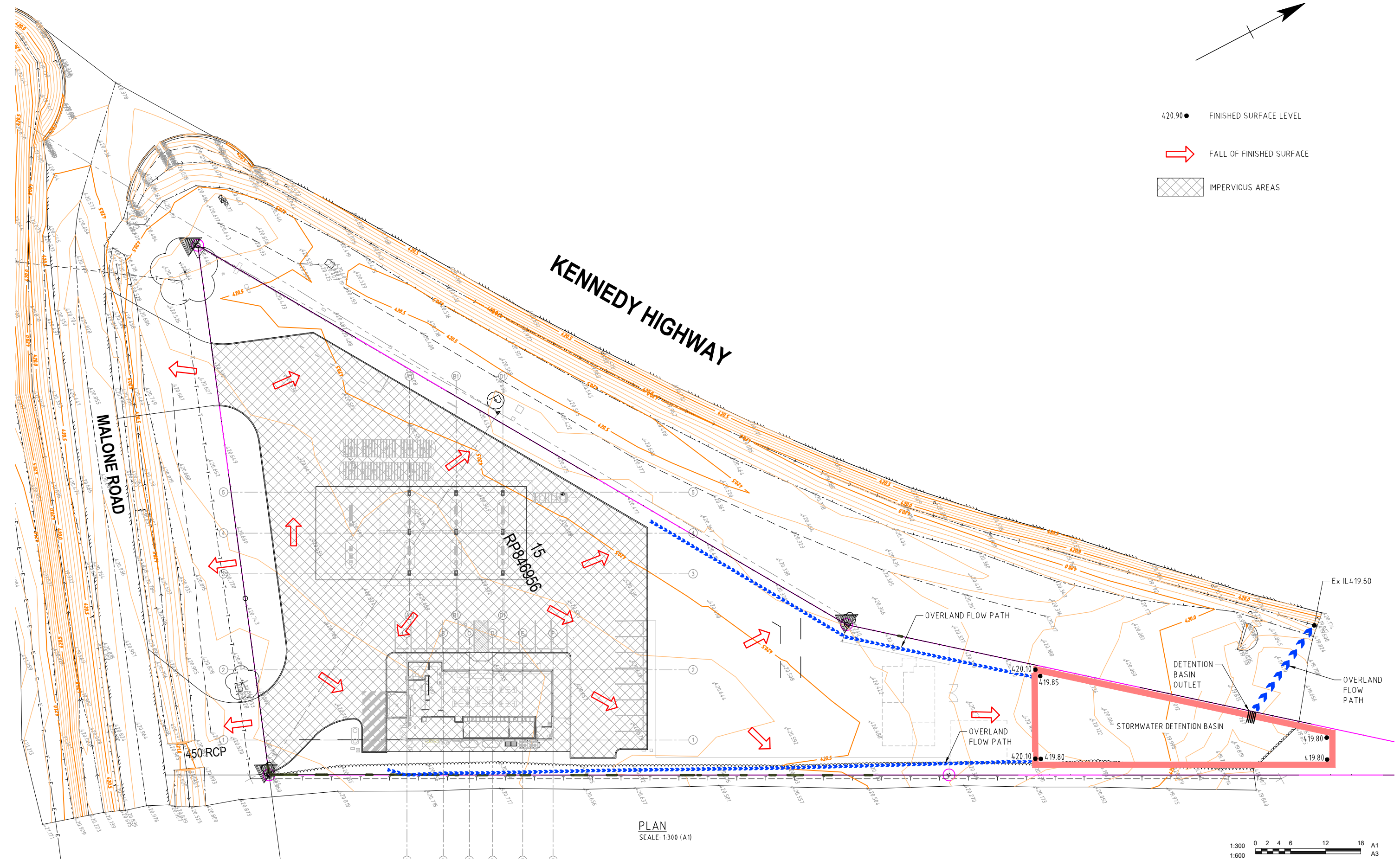
B.E. Hons, MIE Aust, RPEQ 7859

Attachments:

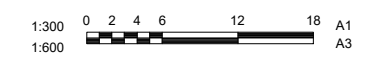
(1) RPS Dwg PR149751-1 (2) Clarke & Prince Dwg 1532-PD-A-01 (3) Rodgers Consulting Dwg 210220 F01(P2)



- 420.90 ● FINISHED SURFACE LEVEL
- ➔ FALL OF FINISHED SURFACE
- ▨ IMPERVIOUS AREAS



PLAN
SCALE: 1:300 (A1)



REV	DESCRIPTION	APP'D	DATE	REV	DESCRIPTION	APP'D	DATE
P3	SITE LAYOUT UPDATED		25/10/22				
P2	SITE LAYOUT UPDATED		23/02/22				
P1	PRELIMINARY ISSUE		03/06/21				

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CLIENT: SUTARIYA BROTHERS PTY LTD

PROJECT: PROPOSED SERVICE STATION
KENNEDY HIGHWAY
MAREEBA, QLD

RODGERS CONSULTING ENGINEERS

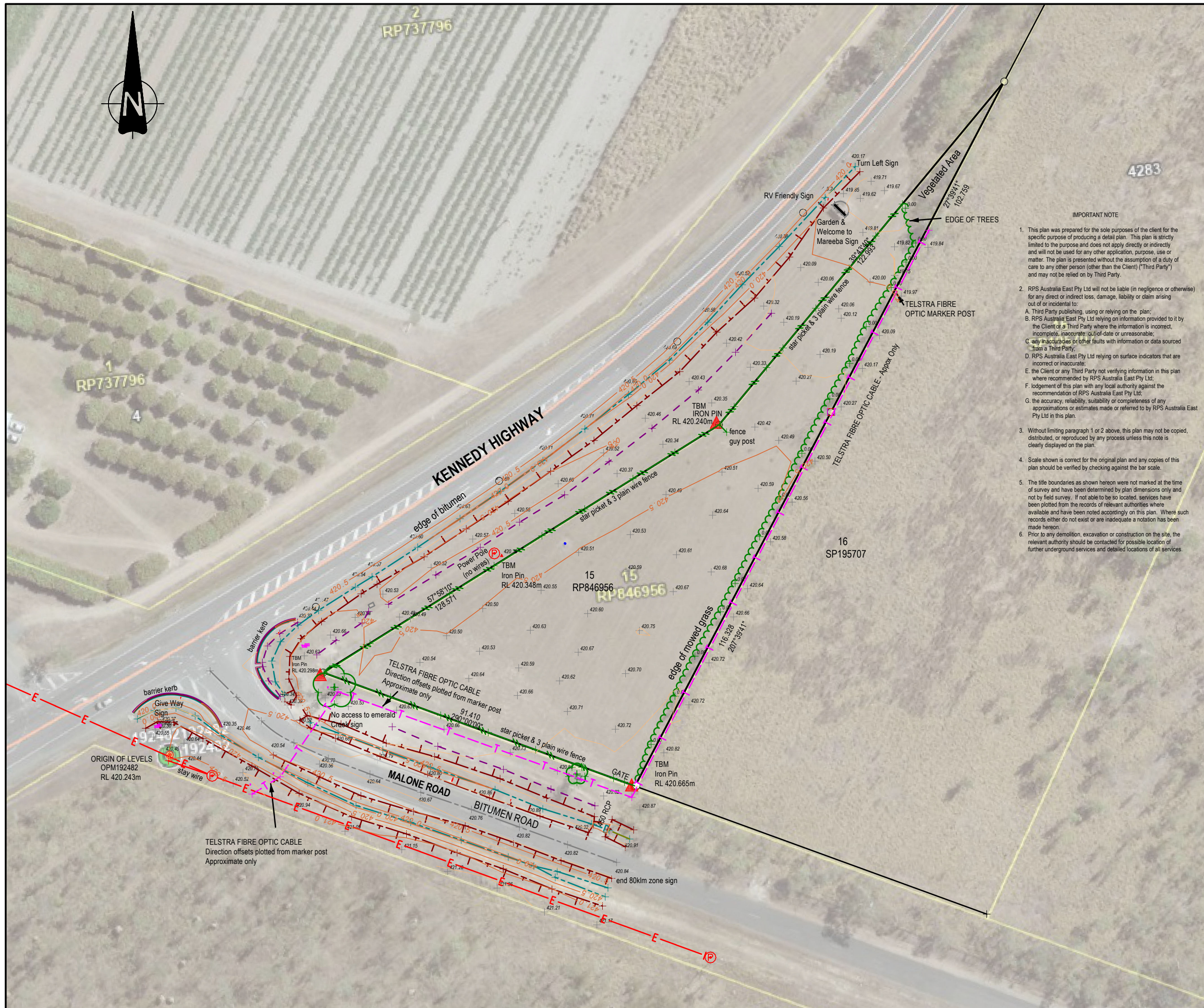
124 SPENCE STREET
P.O. BOX 1769
CAIRNS 4870

PHONE: 07 4051 9466
FAX: 07 4051 9477
Heath Rodgers RPEQ 7859

admin@rogersconsulting.com.au

TITLE: CONCEPT STORMWATER DRAINAGE

DRAFTED: KCDD	REVIEWED:	APPROVED:
DESIGNED: EWK	A1 PLAN	
SCALE: 1:300 (A1)	PROJECT NO: 210220	DWG NO: F01
		REV: P3



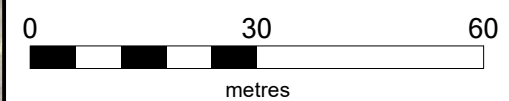
NOTES

Level Datum: AHD
 Origin of Levels: OPM192482
 RL: 420.243
 Contour Interval: 0.25
 Index: 0.5

Origin of Coordinates: Arbitrary

Meridian: RP846956

- IMPORTANT NOTE**
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 - B. RPS Australia East Pty Ltd relying on information provided to it by the Client or a Third Party where the information is incorrect, incomplete, inaccurate, out-of-date or unreasonable;
 - C. any inaccuracies or other faults with information or data sourced from a Third Party;
 - D. RPS Australia East Pty Ltd relying on surface indicators that are incorrect or inaccurate;
 - E. the Client or any Third Party not verifying information in this plan where recommended by RPS Australia East Pty Ltd;
 - F. lodgement of this plan with any local authority against the recommendation of RPS Australia East Pty Ltd;
 - G. the accuracy, reliability, suitability or completeness of any approximations or estimates made or referred to by RPS Australia East Pty Ltd in this plan.
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 - Scale shown is correct for the original plan and any copies of this plan should be verified by checking against the bar scale.
 - The title boundaries as shown hereon were not marked at the time of survey and have been determined by plan dimensions only and not by field survey. If not able to be so located, services have been plotted from the records of relevant authorities where available and have been noted accordingly on this plan. Where such records either do not exist or are inadequate a notation has been made hereon.
 - Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services.



SCALE 1:1000 IS APPLICABLE ONLY TO THE ORIGINAL SHEET SIZE (A3).

AMENDMENTS

A: INIT: AMEND DESCRIPTION	
PROJECT MANAGER AES	CHECKED
SURVEYED DKO 19/5/2021	DRAFTING CHECKED
DRAWN AES	CAD REF PR149751-1.DWG
SHEET SIZE A3	SHEET OF SHEETS 1 1

RPS Australia East Pty Ltd
 ACN 140 292 762
 135 Abbott St
 PO Box 1949
 CAIRNS QLD 4870

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 F +61 7 4031 2942
 W rpsgroup.com.au

CLARKE & PRINCE

Contour & Detail Survey
Lot 15 on RP846956
Cnr Malone Rod & Kennedy Hwy
MAREEBA

SCALE	DATE	DRAWING NO.	ISSUE
1:1000	24/05/21	PR149751-1	



FILE NOTE

Emerald Creek Service Station

Malone Road Pavement Design

Traffic Loading

Background Traffic

- Traffic Count conducted on 2 October 2024
- AADT: 1027
- 10% HV
- ESAs/veh: 0.3654 (Based on Malone Road Traffic survey 2019)
- ESAs/day/lane: 187.63

Development Traffic

- 294 trips/100m² GFA
- AADT: 955.5
- 10% HV
- ESAs/veh: 0.3654 (Based on Malone Road Traffic survey 2019)
- ESAs/day/lane: 174.57

Combined Traffic

- 362.2 ESAs/day/lane
- 2% linear traffic Growth
- Pavement Design Life: 20 Years
- Growth Factor: 24.78
- Total Traffic Loading: 3276412 ESAs

Subgrade Assessment

Subgrade Strength: 19% CBR (Testing 9/6/2022)

Pavement Design

Base: Type 2.2 (>60%CBR) – 275mm Depth

Subgrade: 10% CBR

Allowable ESAs: 3710000 (88.3%)

Project Details

This sheet contains the top level information for the current project.

Project Name:	Malone Road
Location Name:	
Report Generated:	2024-10-25 04:24:41 PM
Completed On:	2024-10-25 04:24:15 PM
Design Date:	09/10/2024
AustPads version:	v3.1
APADS version:	1.0a
Chainage:	
Comments:	
Designer:	Andrew Armstrong
WMAPT (°C):	0
Design Speed (km/h):	0
Cemented Material Fatigue Reliability Factor:	4.70
Asphalt Fatigue Reliability Factor:	2.40
Pavement Layers:	6
Load Type:	Standard Axle Design

Load Summary

Standard Axle Design

Radius [mm]:	92.1
Contact Stress [kPa]:	750
Design Traffic (HVAGs):	3276412
ESA/HVAG:	1
Design Traffic (ESAs):	3276412

Pavement Details

LayerType	LayerChar	Thickness [mm]	Modulus [MPa]	CriticalStrain	Poisson's Ratio
Granular	granular	55	459.00	N/A	0.35
Granular	granular	55	339.00	N/A	0.35
Granular	granular	55	250.00	N/A	0.35
Granular	granular	55	184.00	N/A	0.35
Granular	granular	55	136.00	N/A	0.35
Subgrade	User Defined	0	100.00	1054	0.45

Pavement Performance

LayerType	LayerChar	Thickness [mm]	Modulus [MPa]	CriticalStrain
Granular	granular	55	459.00	N/A
Granular	granular	55	339.00	N/A
Granular	granular	55	250.00	N/A
Granular	granular	55	184.00	N/A
Granular	granular	55	136.00	N/A
Subgrade	User Defined	0	100.00	1054

Layer Material Information**Granular:**

Name:	granular
Thickness[mm]:	55
Vertical Modulus[MPa]:	459
Ev/Eh:	2.00
Poisson's Ratio:	0.35
Volume of Binder[%]:	0.00
K:	
Bulk Density[t/m3]:	2.00
Shift Factor:	
Nonlinear Flag:	Linear
K1[MPa]:	
K2[-]:	
K3[-]:	
Emin[MPa]:	
Emax[MPa]:	
Residual Compaction Stress[kPa]:	

Granular:

Name:	granular
Thickness[mm]:	55
Vertical Modulus[MPa]:	339
Ev/Eh:	2.00
Poisson's Ratio:	0.35
Volume of Binder[%]:	0.00
K:	
Bulk Density[t/m3]:	2.00
Shift Factor:	
Nonlinear Flag:	Linear
K1[MPa]:	
K2[-]:	
K3[-]:	
Emin[MPa]:	
Emax[MPa]:	
Residual Compaction Stress[kPa]:	

Granular:

Name:	granular
Thickness[mm]:	55
Vertical Modulus[MPa]:	250
Ev/Eh:	2.00
Poisson's Ratio:	0.35
Volume of Binder[%]:	0.00
K:	
Bulk Density[t/m3]:	2.00
Shift Factor:	
Nonlinear Flag:	Linear
K1[MPa]:	
K2[-]:	
K3[-]:	
Emin[MPa]:	
Emax[MPa]:	
Residual Compaction Stress[kPa]:	

Granular:

Name:	granular
-------	----------

Thickness[mm]:	55
Vertical Modulus[MPa]:	184
Ev/Eh:	2.00
Poisson's Ratio:	0.35
Volume of Binder[%]:	0.00
K:	
Bulk Density[t/m3]:	2.00
Shift Factor:	
Nonlinear Flag:	Linear
K1[MPa]:	
K2[-]:	
K3[-]:	
Emin[MPa]:	
Emax[MPa]:	
Residual Compaction Stress[kPa]:	

Granular:

Name:	granular
Thickness[mm]:	55
Vertical Modulus[MPa]:	136
Ev/Eh:	2.00
Poisson's Ratio:	0.35
Volume of Binder[%]:	0.00
K:	
Bulk Density[t/m3]:	2.00
Shift Factor:	
Nonlinear Flag:	Linear
K1[MPa]:	
K2[-]:	
K3[-]:	
Emin[MPa]:	
Emax[MPa]:	
Residual Compaction Stress[kPa]:	

Subgrade:

Name:	User Defined
Thickness[mm]:	0
Vertical Modulus[MPa]:	100
Ev/Eh:	2.00
Poisson's Ratio:	0.45
Volume of Binder[%]:	
K:	
Bulk Density[t/m3]:	2.00
Shift Factor:	
Nonlinear Flag:	Linear
K1[MPa]:	
K2[-]:	
K3[-]:	
Emin[MPa]:	
Emax[MPa]:	
Residual Compaction Stress[kPa]:	

California Bearing Ratio Report (1 Point)

Client: The Dirt Professionals	Report Number: 01578 - 746
Client address: PO Box 1036, Mareeba Qld 4880	Report Date: 20/06/2022
Job Number: 01578	Order Number:
Project: Quality Control	Page 1 of 1
Location: , Mareeba	Sample Location
Lab No: 22/155	Proposed Service Station Malone Road
Date Sampled: 9/06/2022	Corner of Kennedy Highway & Malone Road
Date Tested: 13/06/2022	Subgrade
Sampled By: Client	Test Method : AS1289.6.1.1
Sample Method: Unknown	Lot Number: -
Material Source: Insitu	Item Number : -
For Use As: Subgrade	
Remarks: Sample & Density Tested as Received, This Report does not endorse sampling & Density Test	



Maximum Dry Density - MDD (t/m ³) :	1.926	Dry Density after Soak (t/m ³) :	
Optimum Moisture Content - OMC (%) :	9.9	Moisture Content after Soak (%) :	
Compactive Effort :	Standard	Density Ratio after Soak (%) :	
Nominated % Maximum Dry Density Compaction :	97	Field Moisture Content (%) :	6.4
Nominated % Optimum Moisture Content Compaction :	100	Moisture Content (Top) after Penetration (%) :	13.4
Achieved Dry Density before Soak (t/m ³) :	1.868	Moisture Content (Total) after Penetration (%) :	12.5
Achieved Percentage of Maximum Dry Density (%) :	97	CBR 2.5mm (%) :	17
Achieved Moisture Content (%) :	9.9	CBR 5.0mm (%) :	19
Achieved Percentage of Optimum Moisture Content (%) :	100	Minimum Specified CBR Value (%) :	
Test Condition (Soaked/Unsoaked) / Soaking Period (Days) :	Soaked / 4 days	CBR Value (%) :	19.0
Swell (%) / Surcharge (kg):	0.0 / 4.5 kg		

Soil Description :



Accredited for compliance with ISO/IEC 17025-Testing

Approved Signatory

P. Patane

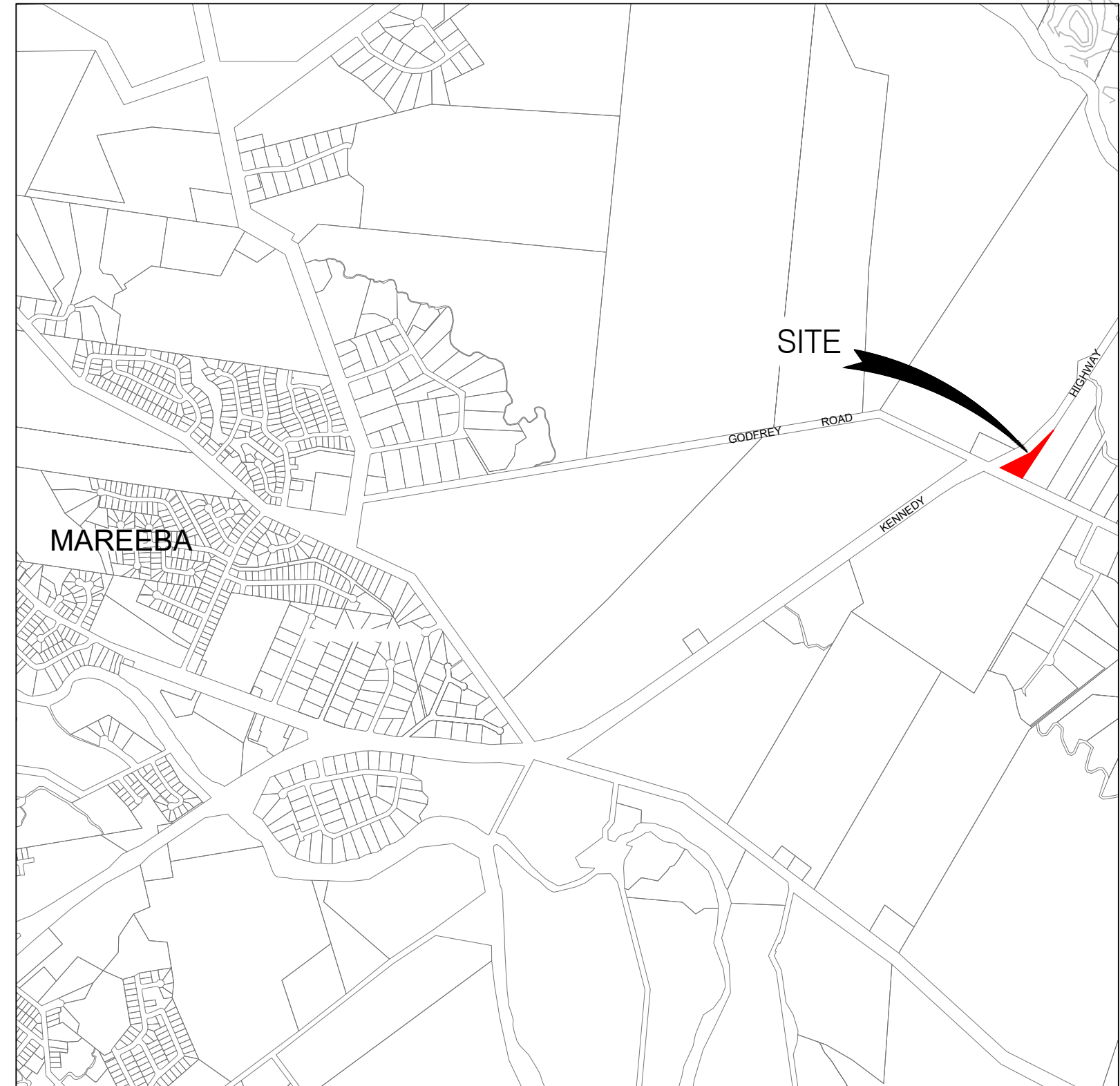
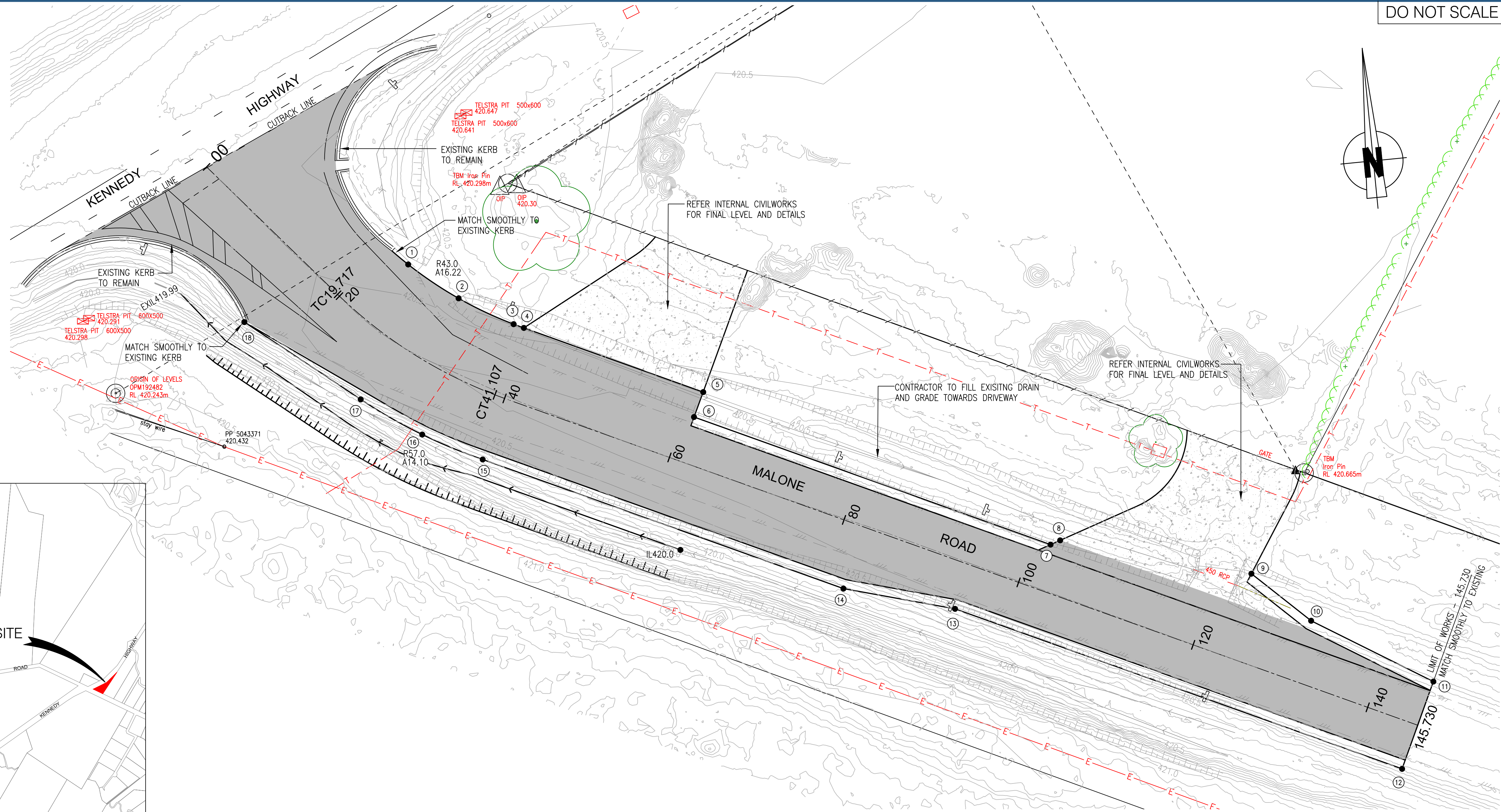
Paul Patane
NATA Accred No:9523

Form Number

REP ACBR_1_3-8

EDGE OF ROAD SETOUT TABLE

POINT No.	EASTING	NORTHING	LEVEL
1	336725.991	8120338.774	420.701
2	336731.045	8120334.598	420.788
3	336736.674	8120331.238	420.721
4	336737.736	8120330.728	420.746
5	336755.052	8120319.352	421.116
6	336756.308	8120321.929	420.830
7	336791.970	8120301.861	421.094
8	336793.045	8120302.218	-
9	336813.220	8120296.608	-
10	336819.130	8120290.916	421.094
11	336831.605	8120283.090	EXIST.
12	336827.321	8120274.047	EXIST.
13	336781.029	8120295.979	420.905
14	336769.268	8120299.338	420.528
15	336752.179	8120305.222	420.195
16	336731.917	8120317.035	420.424
17	336725.692	8120320.355	420.380
18	336719.464	8120324.784	420.520
19	336707.793	8120334.323	420.822



GENERAL ARRANGEMENT

SCALE 1:250

LEGEND

- 4.6 ——— NATURAL SURFACE CONTOUR (0.1m INTERVAL)
- 4.6 ——— DESIGN SURFACE CONTOUR (0.1m INTERVAL)
- R10.00 RADIUS
- A15.75 ARC LENGTH
- 3.00 ——— OFFSET FROM ROAD CENTRELINE
- 140 ROAD CHAINAGE
- (25) KERB SETOUT POINT

NOTES

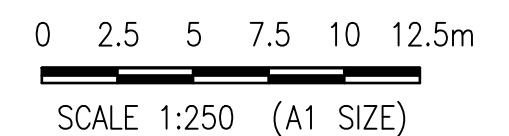
1. ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
2. DIMENSIONS, RADII AND LEVELS SHOWN ARE TO THE EDGE OF SHOULDER.
3. LEVELS ARE SHOWN EQUALLY DIVIDED BETWEEN TANGENT POINTS.
4. REFER ALSO TO ROAD SETOUT DETAILS FOR COORDINATES OF ROAD CHAINAGES AND TANGENT POINTS.
5. REFER TO THE FOLLOWING FNQROC STANDARD DRAWINGS: S1015 - ACCESS CROSSOVERS

SURVEY ORIGIN

SURVEY COMPLETED BY D K OERTEL JOB No. 19/5/21
 CO ORDINATE SYSTEM MGA2020, ZONE 55
 MERIDIAN : RP846956
 PSM 192482 TYPE "C"
 EASTING : 4957.697 E
 NORTHING : 9977.332 N
 LEVEL : RL 420.243m

SCHEDULE OF PROJECT DRAWINGS

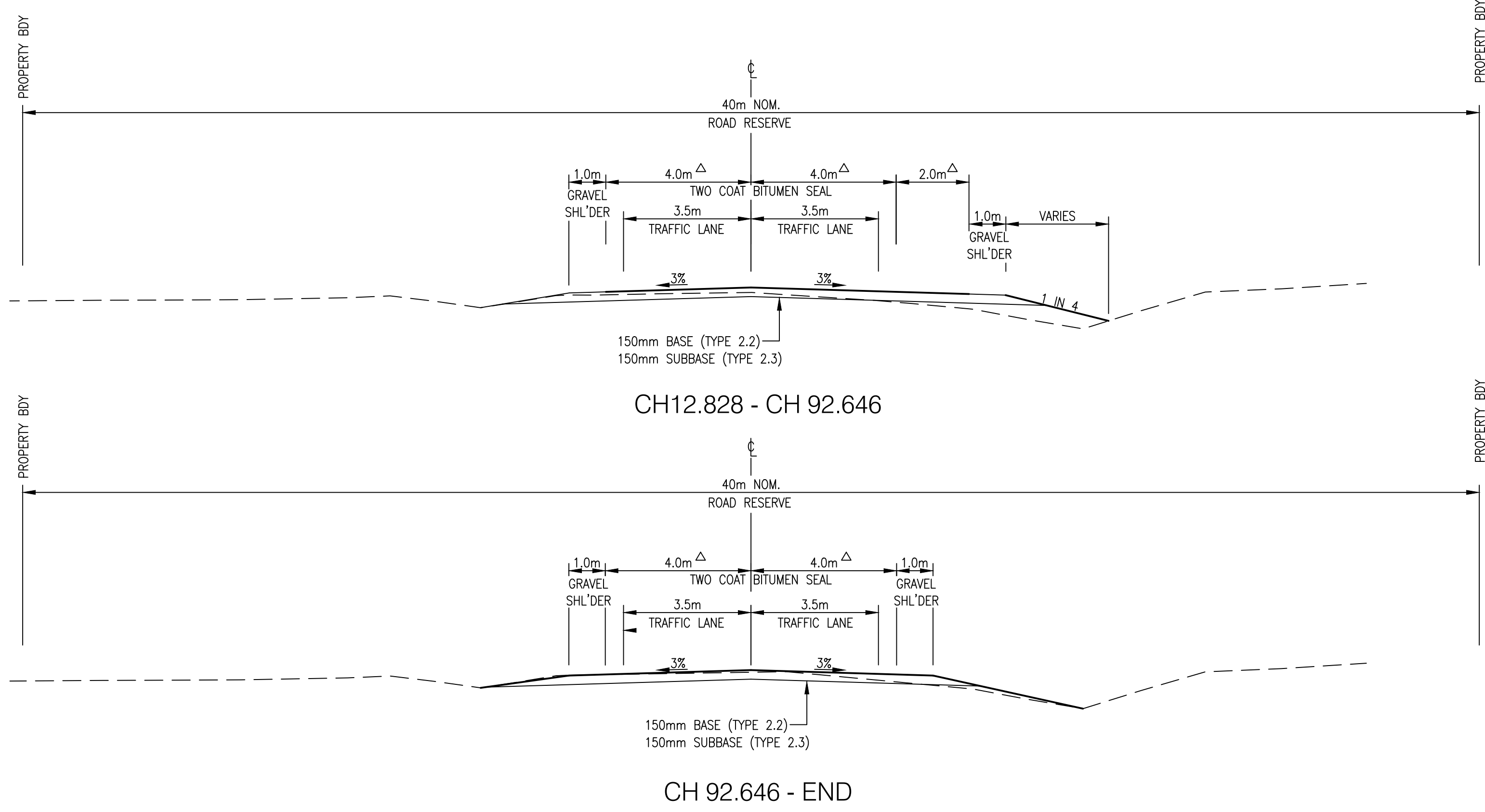
AR00218-C01	LOCALITY PLAN, DRAWING SCHEDULE AND GENERAL ARRANGEMENT
AR00218-C02	MALONE ROAD TYPICAL CROSS SECTIONS AND DETAILS
AR00218-C03	LINEMARKING SETOUT AND DETAILS



CONSTRUCTION ISSUE

No.	Description	Reviewed	Approved	Date	Client Logo	SUTARIYA BROTHERS PTY LTD				Scale (A1 size)				
						EMERALD CREEK SERVICE STATION				MS	MS	A. ARMSTRONG		AS SHOWN
B	ACCESS AMENDED AND FULL WIDTH ROADWORKS	AA	AA	01/11/2024		MALONE ROAD WIDENING				Drawing Check	Design Check	RPEQ	Date	Drawing is not to be used for construction unless approved.
A	CONSTRUCTION ISSUE	AA	AA	15/11/2022		LOCALITY PLAN, DRAWING SCHEDULE AND GENERAL ARRANGEMENT				AA	AA	21116	15/11/22	
1	PRELIMINARY ISSUE	-	-	29/07/2022		Drawing No. ARO0218-C01								

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 Cairns Qld 4870
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 E admin@arindustries.com.au
 W www.arindustries.com.au
 ABN: 49 641 461 298



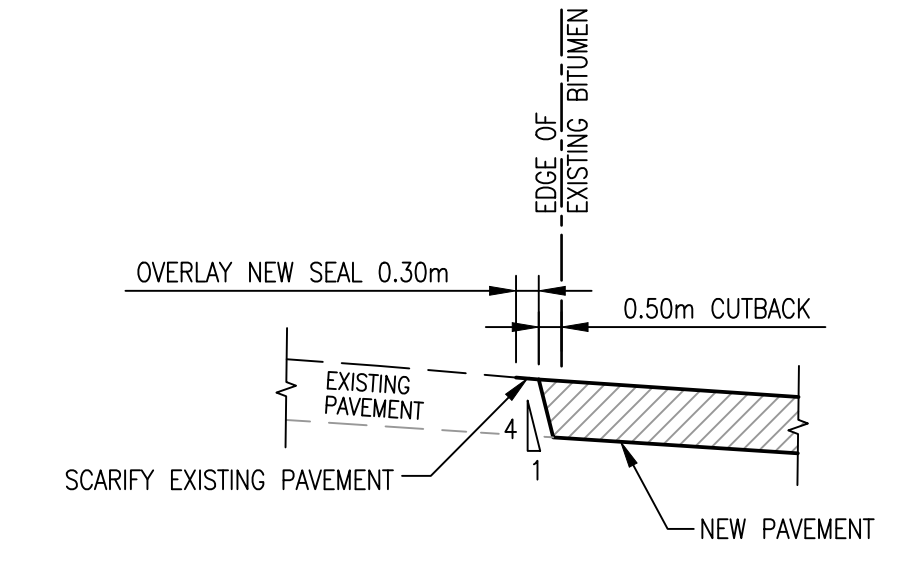
- 2 COAT BITUMEN SEAL DETAILS**
- 1st COAT
 - S10E PMB @ 1.4/m²
 - 14mm AGGREGATE AT 115m²/m³
 - 2nd COAT
 - S10E PMB @ 0.9/m²
 - 7mm AGGREGATE AT 250m²/m³

ALL ALTERNATE OR NON-CONFORMING SEAL DESIGN TO BE APPROVED BY SUPERINTENDENT.

NOTES

- ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
- PAVEMENT DESIGN IS BASED ON AN ASSUMED SUBGRADE CBR OF 8. THE CONTRACTOR IS TO CONFIRM SUBGRADE CBR DURING CONSTRUCTION AND PAVEMENT DESIGN IS TO BE CONFIRMED WITH SUPERINTENDENT AND TABLELANDS REGIONAL COUNCIL.
- REFER TO GENERAL ARRANGEMENT PLAN ON DRG ARO0218-C01 FOR SETOUT DETAILS.

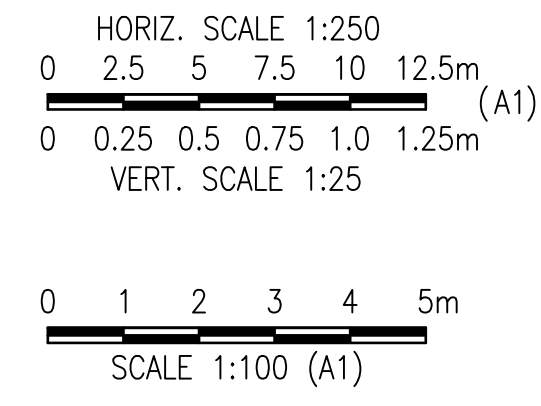
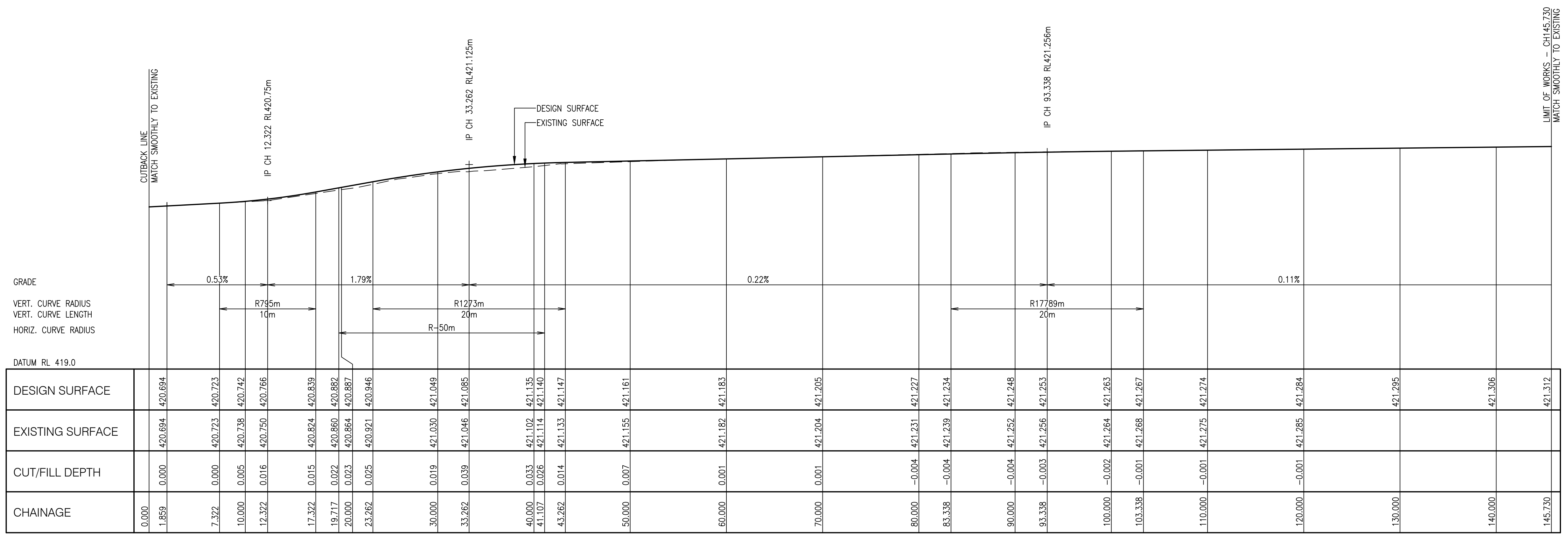
DESIGN SUBGRADE CBR 8
(REFER NOTE 2)



MALONE ROAD CONTROL LINE SETOUT

CHAINAGE	EASTING	NORTHING	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
0.000	336705.387	8120351.388	139°51'44.98"	R = -50,000	21.390	24°30'41.17"
TC 19.717	336718.097	8120336.314	139°51'44.98"			
CT 41.107	336734.914	8120323.360	115°21'03.81"			
145.730	336829.462	8120278.565	115°21'03.81"			

MALONE ROAD TYPE SECTIONS
SCALE 1:100



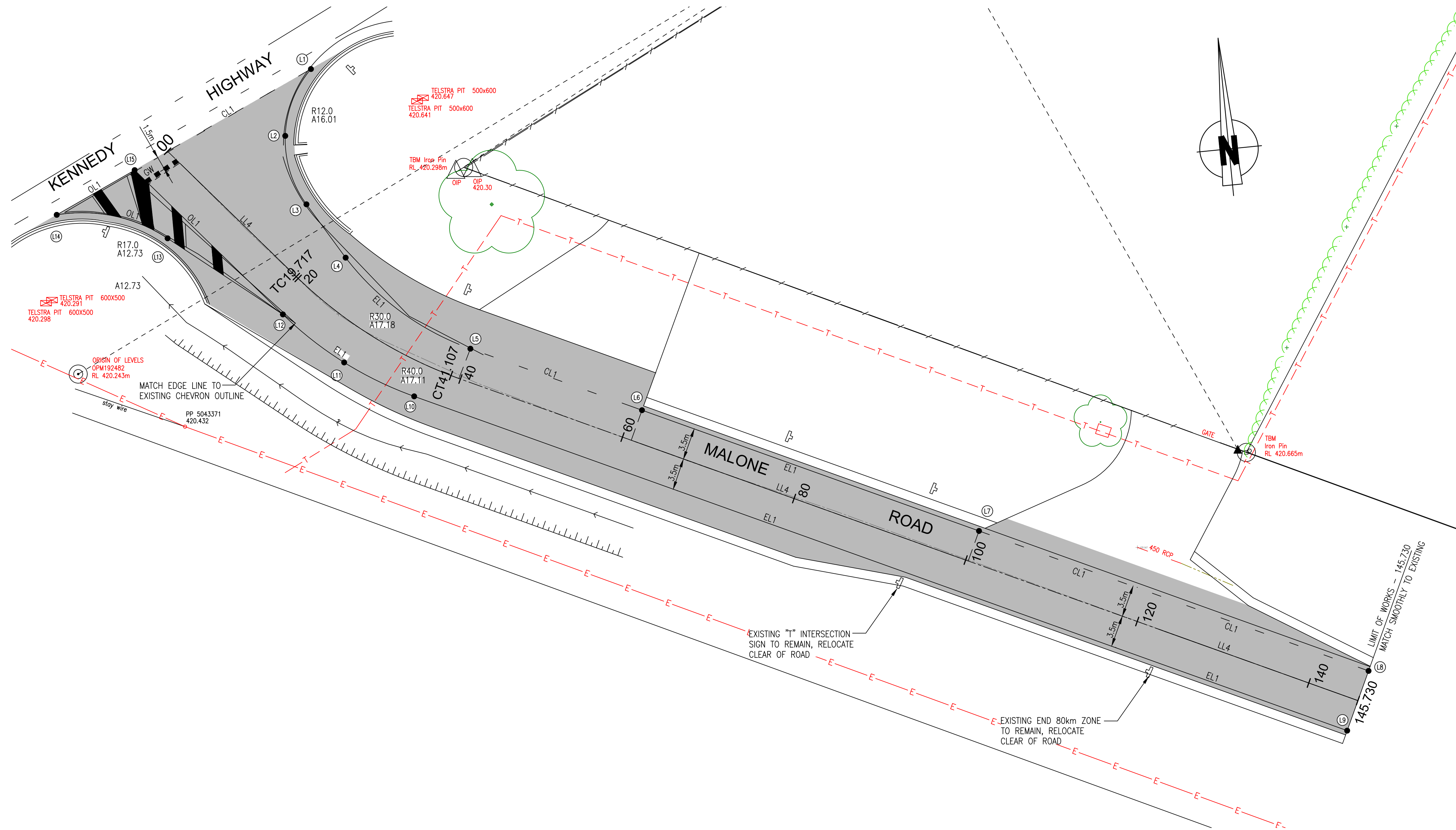
MALONE ROAD LONGITUDINAL SECTION
SCALE 1:250 HOR, 1:25 VERT

CONSTRUCTION ISSUE

No.	Description	Reviewed	Approved	Date
B	CROSS SECTIONS AMENDED TO FULL WIDTH RECONSTRUCTION	AA	AA	01/11/2024
A	CONSTRUCTION ISSUE	-	-	15/11/2022
1	PRELIMINARY ISSUE	-	-	29/07/2022

Client		SUTARIYA BROTHERS PTY LTD	
Project		EMERALD CREEK SERVICE STATION	
Title		MALONE ROAD WIDENING TYPE CROSS SECTIONS AND MISCELLANEOUS DETAILS	

Drawn	MS	Designed	MS	Approved	A. ARMSTRONG
Drawing Check	AA	Design Check	AA	RPEQ	21116
Date		15/11/22		Scale (A1 size)	
				AS SHOWN	



LINEMARKING SETOUT

POINT No.	EASTING	NORTHING
1	336721.937	8120358.816
2	336718.410	8120351.794
3	336719.984	8120344.096
4	336723.688	8120337.848
5	336736.329	8120326.563
6	336754.407	8120317.998
7	336789.909	8120301.177
8	336830.943	8120281.691
9	336827.963	8120275.402
10	336729.676	8120321.969
11	336722.393	8120326.428
12	336716.223	8120332.332
13	336704.451	8120341.885
14	336692.595	8120345.646
15	336701.592	8120349.684

LEGEND

- NEW ASPHALT ROAD
- PROPOSED SIGN
- EXISTING SIGN
- RADIUS
- SETOUT POINT

NOTES

- ALL WORKS AND MATERIALS TO BE IN ACCORDANCE WITH FNQROC DEVELOPMENT MANUAL GUIDELINES AND SPECIFICATIONS.
- LOCATION OF ALL EXISTING SERVICES TO BE CONFIRMED PRIOR TO CONSTRUCTION BY CONTRACTOR THROUGH LIAISON WITH RELEVANT AUTHORITIES.
- NEW ROADWORKS TO JOIN SMOOTHLY TO EXISTING WORKS. PROVIDE CUT BACK TO EXISTING SEALED ROADS WHERE NECESSARY. REFER DETAIL ON DRG ARO0218-C02.
- REFER ALSO TO ROAD SETOUT DETAILS FOR COORDINATES OF ROAD CHAINAGES AND TANGENT POINTS.
- LINEMARKING (WHITE PAINT) AND SIGNAGE TO BE IN ACCORDANCE WITH AS1742.2 - 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES'.

LINEMARKING SETOUT AND DETAILS

SCALE 1:250

LINEMARKING DIMENSIONS TABLE

TYPE (FROM AS1742.2)	DESCRIPTION	LENGTH (mm)	GAP (mm)	WIDTH (mm)
--- GW ---	GIVE WAY LINE	600	600	450
— EL1 —	EDGE LINE	-	-	150
— LL4 —	SINGLE CONTINUOUS LANE LINE	-	-	100
— OL1 —	OUTLINE MARKING	-	-	150

0 2.5 5 7.5 10 12.5m
SCALE 1:250 (A1 SIZE)

CONSTRUCTION ISSUE

No.	Description	Reviewed	Approved	Date
B	ACCESS AMENDED AND FULL WIDTH RECONSTRUCTION	AA	AA	01/11/2024
A	CONSTRUCTION ISSUE	-	-	15/11/2022
1	PRELIMINARY ISSUE	-	-	29/07/2022

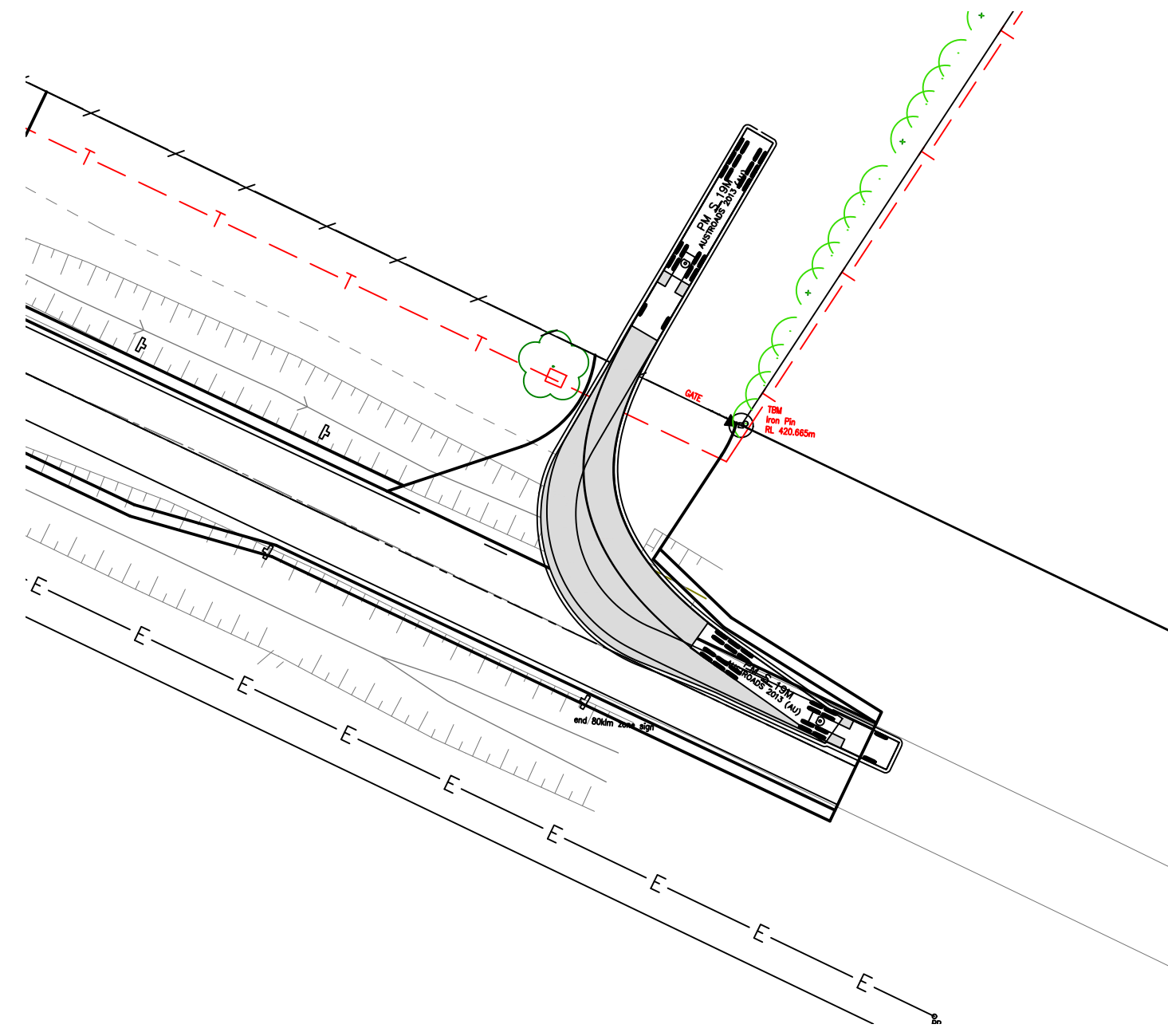
Client Logo

Client	SUTARIYA BROTHERS PTY LTD		
Project	EMERALD CREEK SERVICE STATION		
Title	MALONE ROAD WIDENING LINEMARKING SETOUT AND DETAILS		

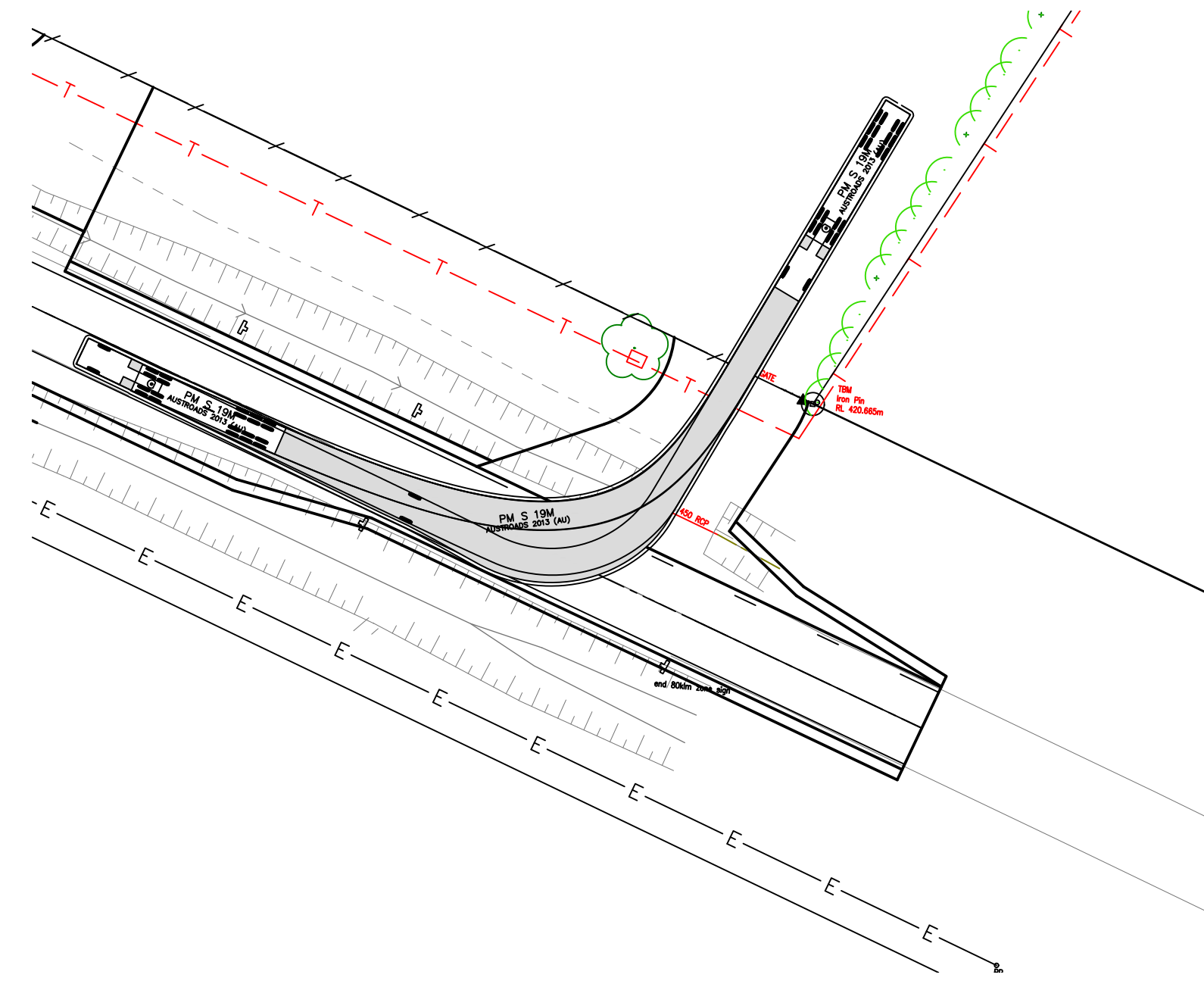
Drawn	MS	Designed	MS	Approved	A. ARMSTRONG	
Drawing Check	AA	Design Check	AA	RPEQ	Date	21116 15/11/22

Scale (A1 size)	1:250
Drawing is not to be used for construction unless approved.	

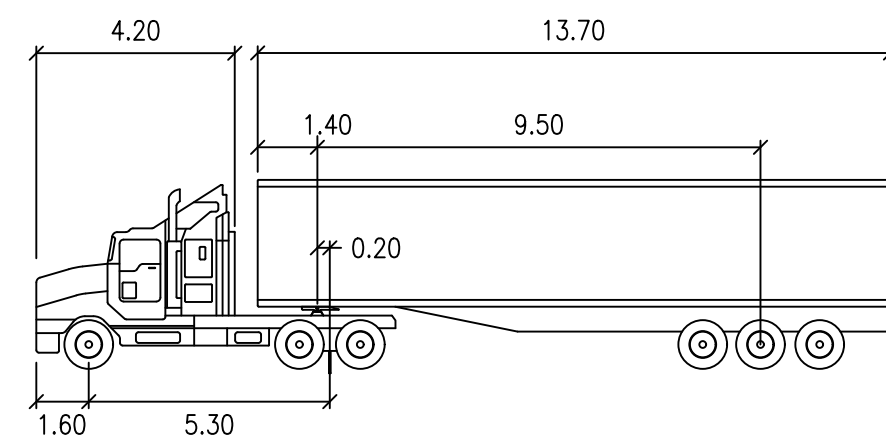
51 Sheridan Street
Cairns Qld 4870
T (07) 4281 6897
E admin@arindustries.com.au
W www.arindustries.com.au
ABN: 49 641 461 298



LEFT-TURN OUT
 SCALE 1:500

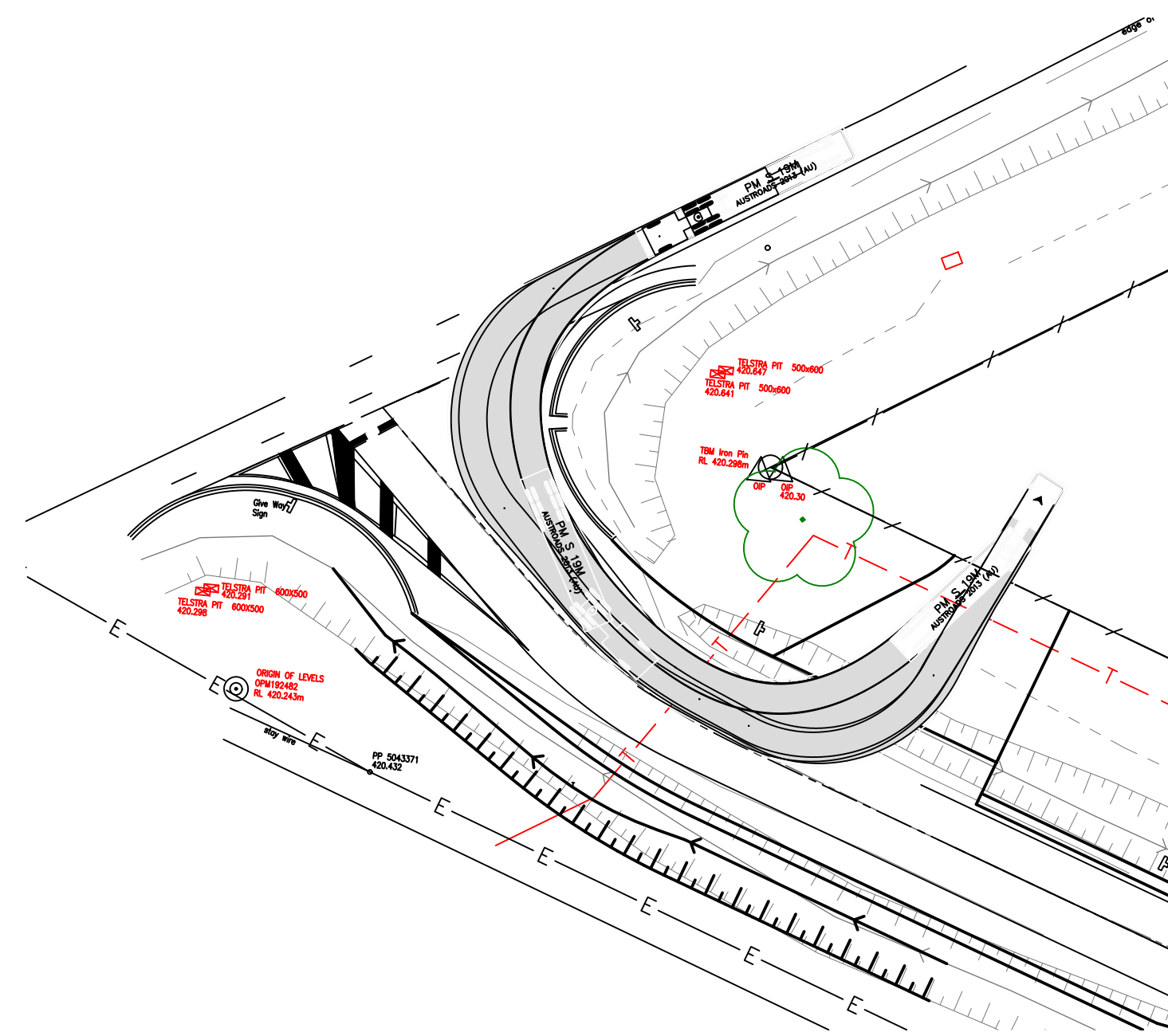


RIGHT-TURN OUT
 SCALE 1:500

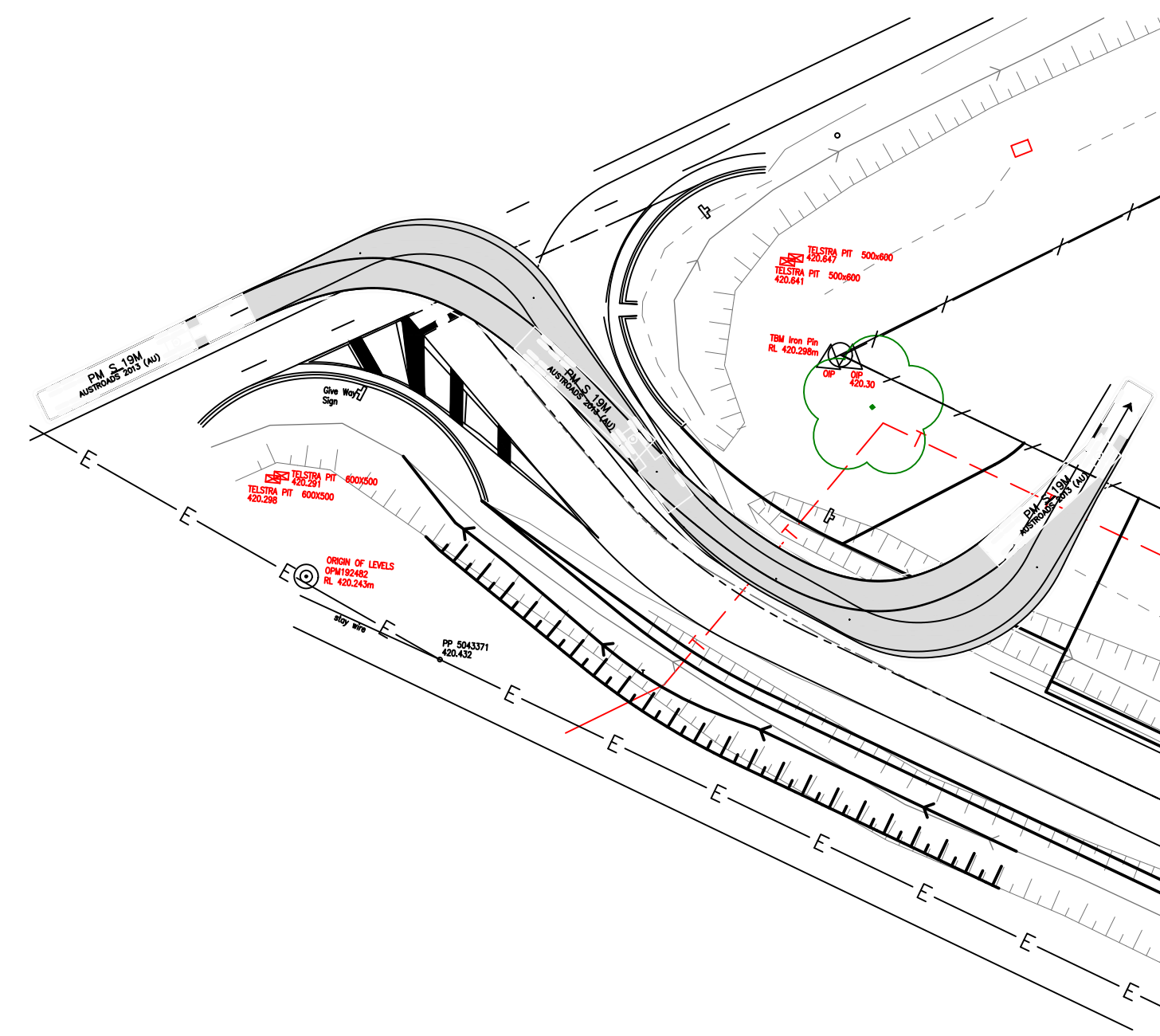


PM S 19M

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 27.8
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		



LEFT-TURN INTO MALONE ROAD
 SCALE 1:500



RIGHT-TURN INTO MALONE ROAD
 SCALE 1:500



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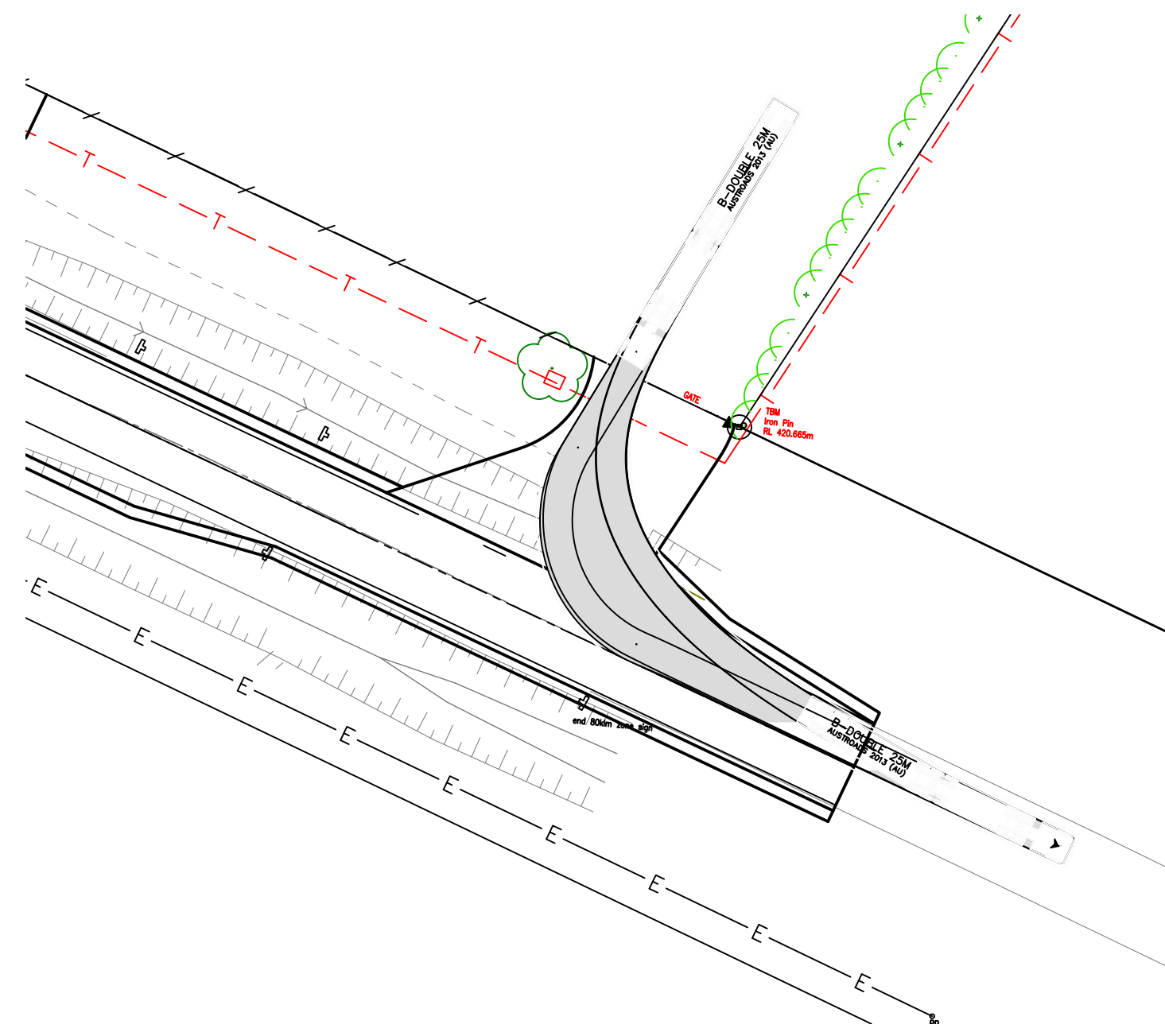
E admin@aroindustries.com.au
 W www.aroindustries.com.au
 ABN: 49 641 461 298

**EMERALD CREEK
 SERVICE STATION**

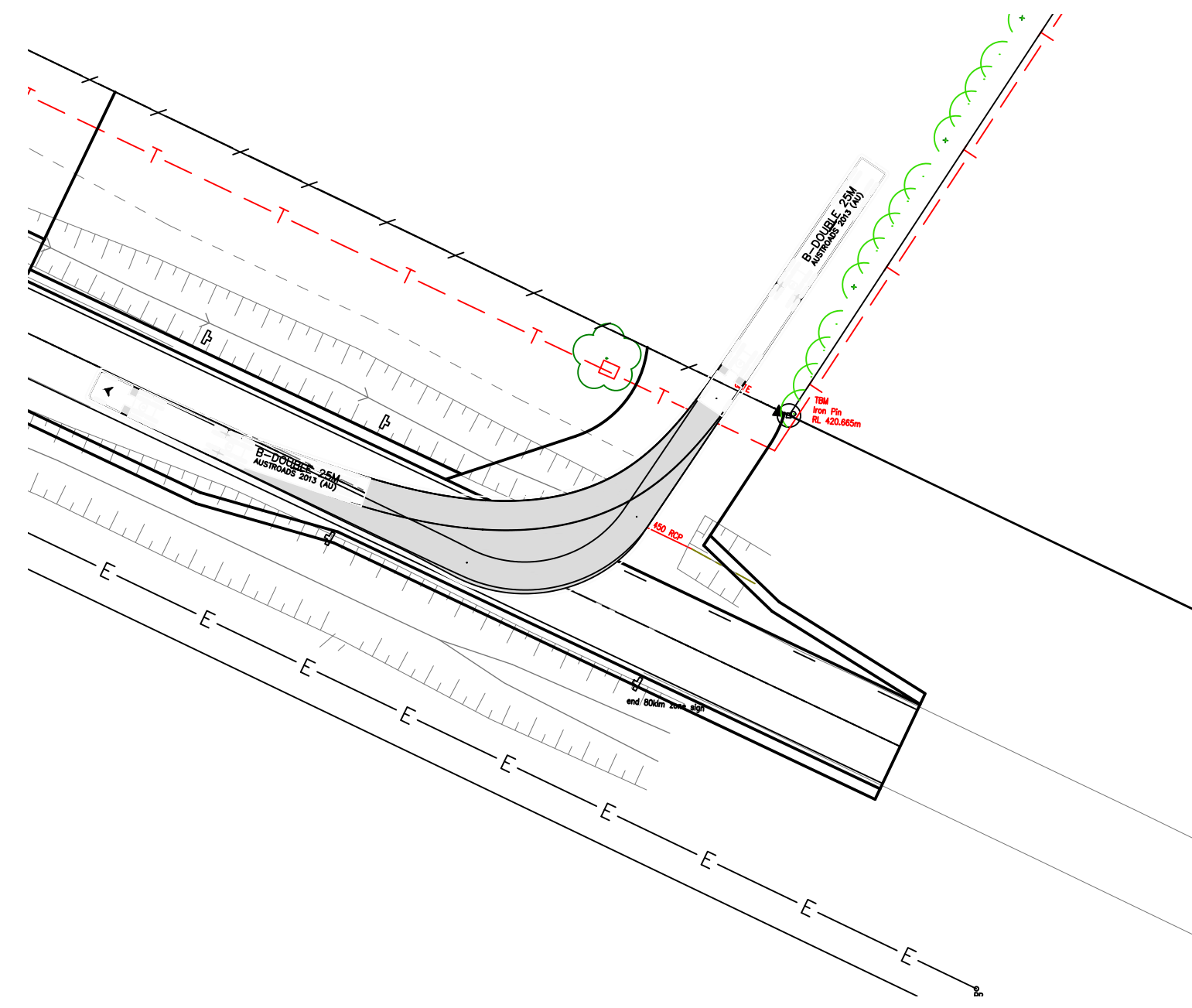
SEMI TRAILER TURNPATH

ARO0218-SK02 1:500
 A1 Full Size

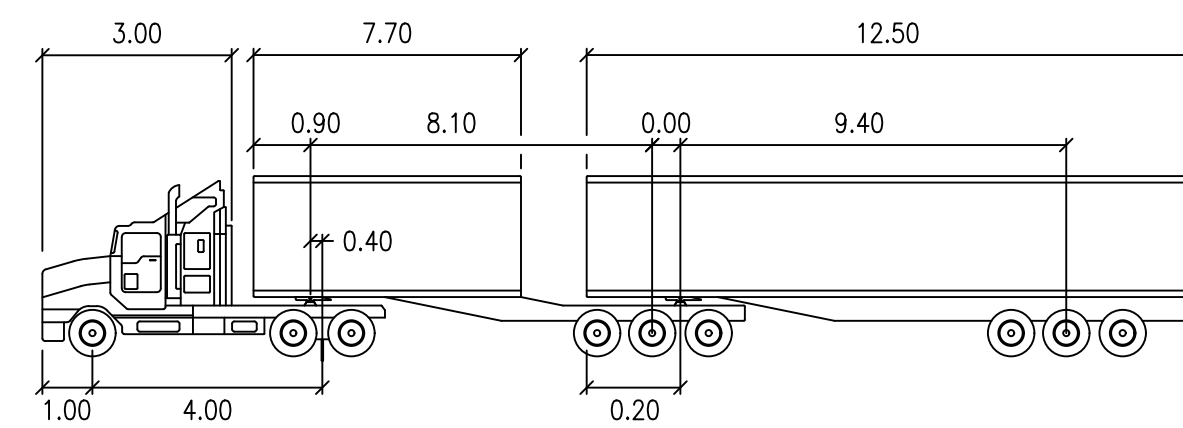
Acad No. ARO0218-SK02(2) 5th Nov 2024



LEFT-TURN OUT
 SCALE 1:500

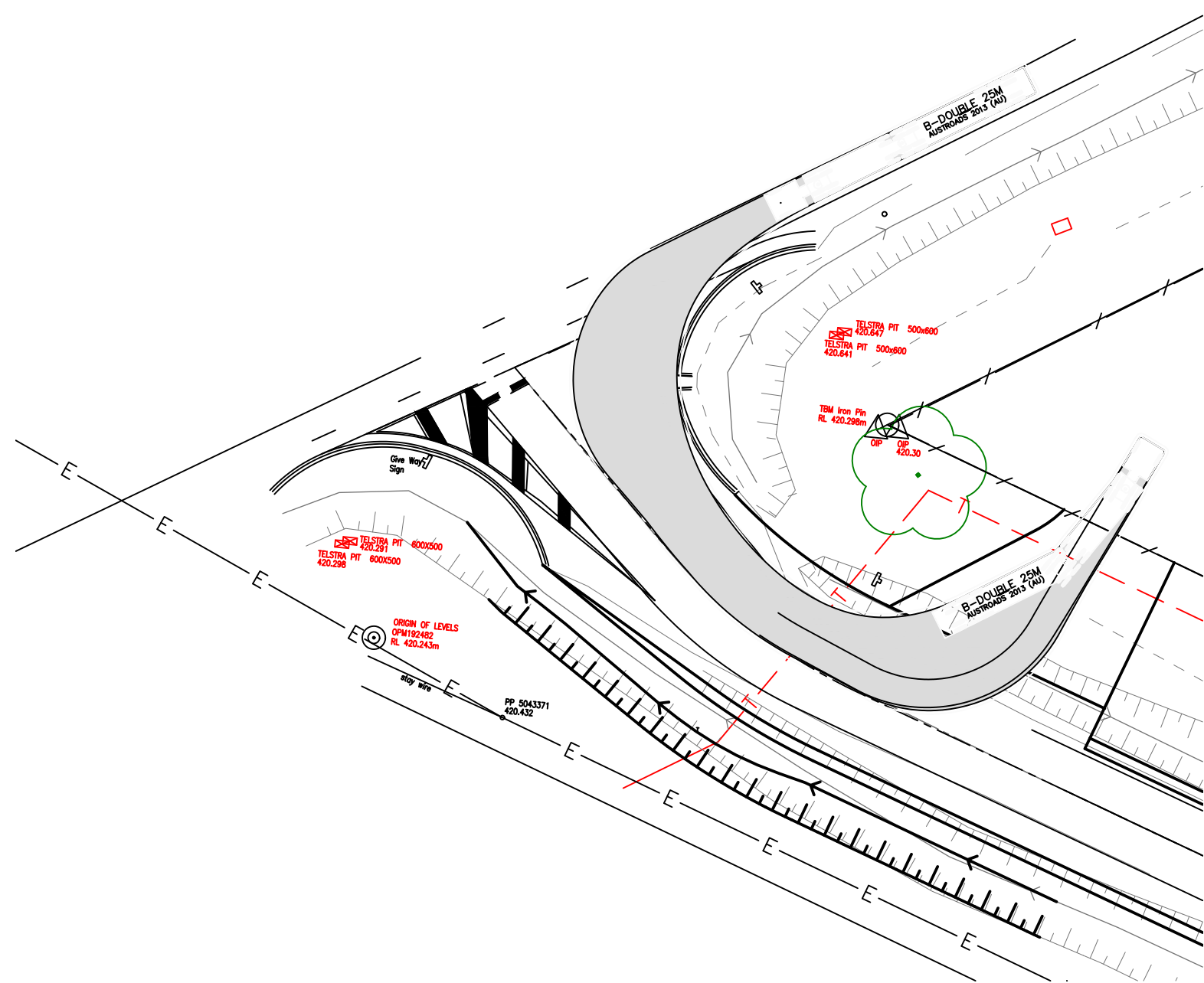


RIGHT-TURN OUT
 SCALE 1:500

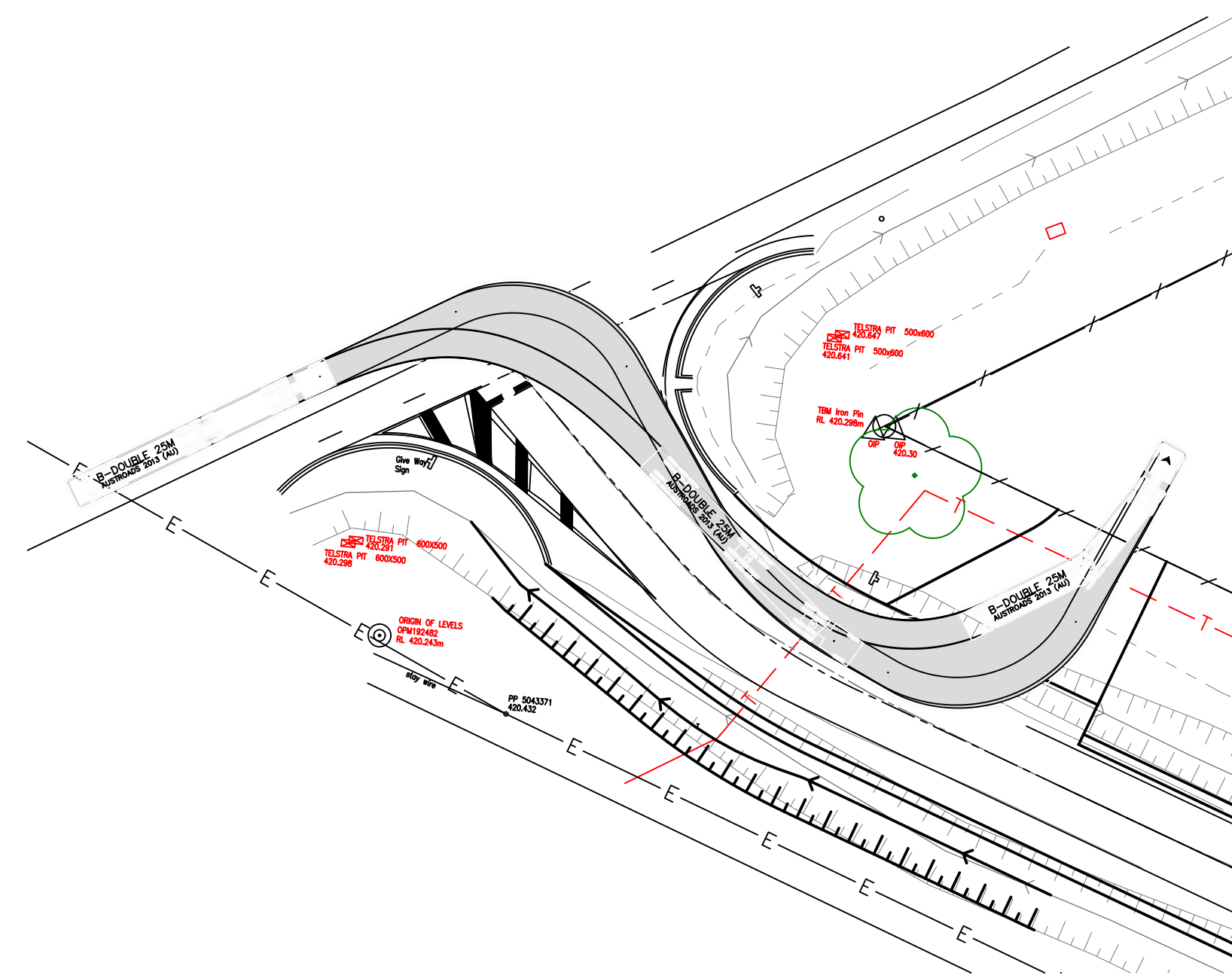


B-DOUBLE 25m

meters	
Tractor Width	: 2.50
Trailer Width	: 2.50
Tractor Track	: 2.50
Trailer Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 20.7
Articulating Angle	: 70.0



LEFT-TURN INTO MALONE ROAD
 SCALE 1:500



RIGHT-TURN INTO MALONE ROAD
 SCALE 1:500



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 ABN: 49 641 461 298

EMERALD CREEK
 SERVICE STATION

B-DOUBLE TURNPATH

ARO0218-SK03

1:500
 A1 Full Size

Acad No. ARO0218-SK03(1)

5th Nov 2024

DOCUMENT TRANSMITTAL

PROJECT: **SUTARIYA BROTHERS PTY LTD**
SERVICE STATION, KENNEDY HIGHWAY, MAREEBA

TO:
 ADDRESS:
 ATTENTION:

PROJECT No:	1532	DATE OF ISSUE			TOWN PLANNING APPROVAL	PRE TENDER ISSUE	PRE TENDER ISSUE	INFORMATION	TENDER ISSUE	ADDENDUM 1	STORAGE SHELVING	INFORMATION	TENDER ISSUE - LIGHTIN	FOR CONSTRUCTION	OPERATIONAL WORKS	FLOOR PLAN	ELEC DRAWING UPDATE	PYLON SIGN LOCATION	OPERATIONAL WORKS
		Day	20	24															
SHEET No:		Month	05	05	05	09	09	11	02	02	02	06	06	06	07	08	08	09	11
		Year	21	21	21	22	22	22	23	23	23	24	24	24	24	24	24	24	
DOCUMENT TITLE	DOCUMENT NO.	REVISION No																	
1. ARCHITECTURAL - CP Architects																			
COVER SHEET	1532-CD- A-00				P2	P2	P3	P3							A				
LOCALITY PLAN	1532-CD- A-01							P1							A				
SITE PLAN	1532-CD- A-02				P2	P2	P3	P9	P9	A			B	A					B
SLAB SET OUT PLAN	1532-CD- A-03							P4							A				
FLOOR PLAN	1532-CD- A-04							P7	P7						A	A			
WALL TYPE & DIMENSIONS PLAN	1532-CD- A-05							P2							A				
CEILING PLAN	1532-CD- A-06							P6							A				
ROOF PLAN	1532-CD- A-07							P6							A				
ELEVATIONS	1532-CD- A-08							P6							A				
SECTIONS	1532-CD- A-09							P3							A				
DETAILS	1532-CD- A-10							P2							A				
DETAILS	1532-CD- A-11							P2							A				
INTERNAL ELEVATIONS	1532-CD- A-12							P5		A					A				
DOOR & WINDOW ELEVATIONS	1532-CD- A-13							P2							A				
2. CIVIL - Rodgers Consulting Engineers																			
GENERAL ARRANGEMENT - SHEET 1	210220 C01							D	D	T1	T2			C1	C1				C2
GENERAL ARRANGEMENT - SHEET 2	210220 C02							A	A	T1	T2			C1	C1				C1
STORMWATER MANAGEMENT REPORT	210220							2											3
3. STRUCTURAL - Rodgers Consulting Engineers																			
STRUCTURAL NOTES	210220 S00							P2	P3	T1				A					
SLAB & FOOTING PLAN - OVERALL SITE DRIVEWAY	210220 S01							P2	P3	T1				A					
SLAB & FOOTING PLAN - FUEL CANOPY AND SHOP	210220 S02							P2	P3	T1				A					
SLAB & FOOTING DETAILS - FUELS CANOPY, RETAILSHOP, DRIVEWAY	210220 S03							P2	P3	T1				A					
WALL REINFORCEMENT PLAN - FUEL CANOPY & SHOP	210220 S04							P2	P3	T1				A					
ROOF FRAMING PLAN - FUELING ZONE CANOPY	210220 S05							P2	P3	T1				A					
ROOF FRAMING PLAN - RETAIL SHOP	210220 S06							P2	P3	T1				A					
ROOF FRAMING DETAILS - FUEL CANOPY	210220 S07							P2	P3	T1				A					
ROOF FRAMING DETAILS - RETAIL SHOP	210220 S08							P2	P3	T1				A					
ROOF FRAMING DETAILS - RETAIL SHOP	210220 S09							P2	P3	T1				A					
4. ELECTRICAL - McClintock Engineering Group																			
SITE WIDE AND EARLY WORKS	8835 E051							P3		T1				C1		C2			C2
LOCATION PLAN, LEGEND AND DRAWINGS SCHEDULE	8835 E001							P3		T1				C1					
POWER AND COMMS LAYOUT - SHOP	8835 E101							P3		T1				C1		C2			
LIGHTING AND SECURITY LAYOUT - SHOP	8835 E201							P3		T1				C1					
LIGHTING AND SECURITY LAYOUT - FUEL BOWSERS	8835 E202							P3		T1				C1					
SINGLE LINE DIAGRAMS, SCHEDULES AND SCHEMEATICS	8835 E301							P3		T1				C1					
5. MECHANICAL - McClintock Engineering Group																			
LEGEND, NOTES, DETAILS & SCHEDULES	8835 M01							P1		T1				C1					
GROUND FLOOR LAYOUT	8835 M02							P1		T1				C1					
FLOOR LAYOUT AND ROOF ASSOC. BUILDG WORK	8835 M03							P1		T1				C1					
GROUND FLOOR LAYOUT MECHANICAL ASSOC. BUILDING WORK	8835 M04							P1		T1				C1					
6. HYDRAULIC - Gilboy Hydraulic Solutions																			
COVER SHEET, NOTES & LEGEND	204267 HS001							P4		B				C					
SITE SERVICES PLAN	204267 HS002							P4		B	C			D					
SANITARY, PLUMBING & DRAINAGE	204267 HS003							P4		B				C					
WATER SERVICES RETICULATION	204267 HS004							P4		B				C					
ROOF PLAN	204267 HS005							P4		B				C					
7. TRAFFIC - ARO																			
LOCALITY PLAN, DRAWINGS SCHEDULE AND GENERAL ARRANGEMENT	ARO0218 C01							1		A			A	A	A				B
MALONE ROAD TYPICAL CROSS SECTION AND DETAILS	ARO0218 C02							1		A			A	A	A				B
LINEMARKING SETOUT AND DETAILS	ARO0218 C03							1		A			A	A	A				B
SEMI TRAILER TURNPATH	ARO0218 SK02																		2
B-DOUBLE TURNPATH	ARO0218 SK01																		1
TRAFFIC IMPACT ASSESSMENT REPORT																3			4
PAVEMENT FILE NOTE																			-
8. FUEL SYSTEMS - 5d Designs																			
FUEL SYSTEMS GENERAL NOTES & SPECIFICATIONS	20212211 A1-FSNS-MRB							0		0					1				

