



M^CLAREN TRAFFIC ENGINEERING

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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

24 November 2022

Reference: 220798.01FA

McCloy Group
Suite 2, Ground Floor,
317 Hunter Street, Newcastle
NSW 2300
Attention: Sam Rowe

SUPPLEMENTARY TRAFFIC IMPACT ASSESSMENT FOR RESIDENTIAL SUBDIVISION AT 107 HAUSSMAN DRIVE, THORNTON

Dear Sam,

Reference is made to your request to provide a supplementary traffic impact assessment of the proposed residential subdivision at 107 Haussman Drive, Thornton. This report should be read as a supplement to the traffic and parking impact assessment report by M^CLaren Traffic Engineering dated 8 October 2020 (MTE Report) (reference 200695.01FA).

Taking into consideration the comments provided by the Department of Planning and Environment (as reproduced in **Annexure A** for reference), additional traffic modelling has been undertaken, including the planned road network changes in the immediate vicinity of the site. The modelling has been undertaken using an Aimsun microsimulation model provided by TfNSW.

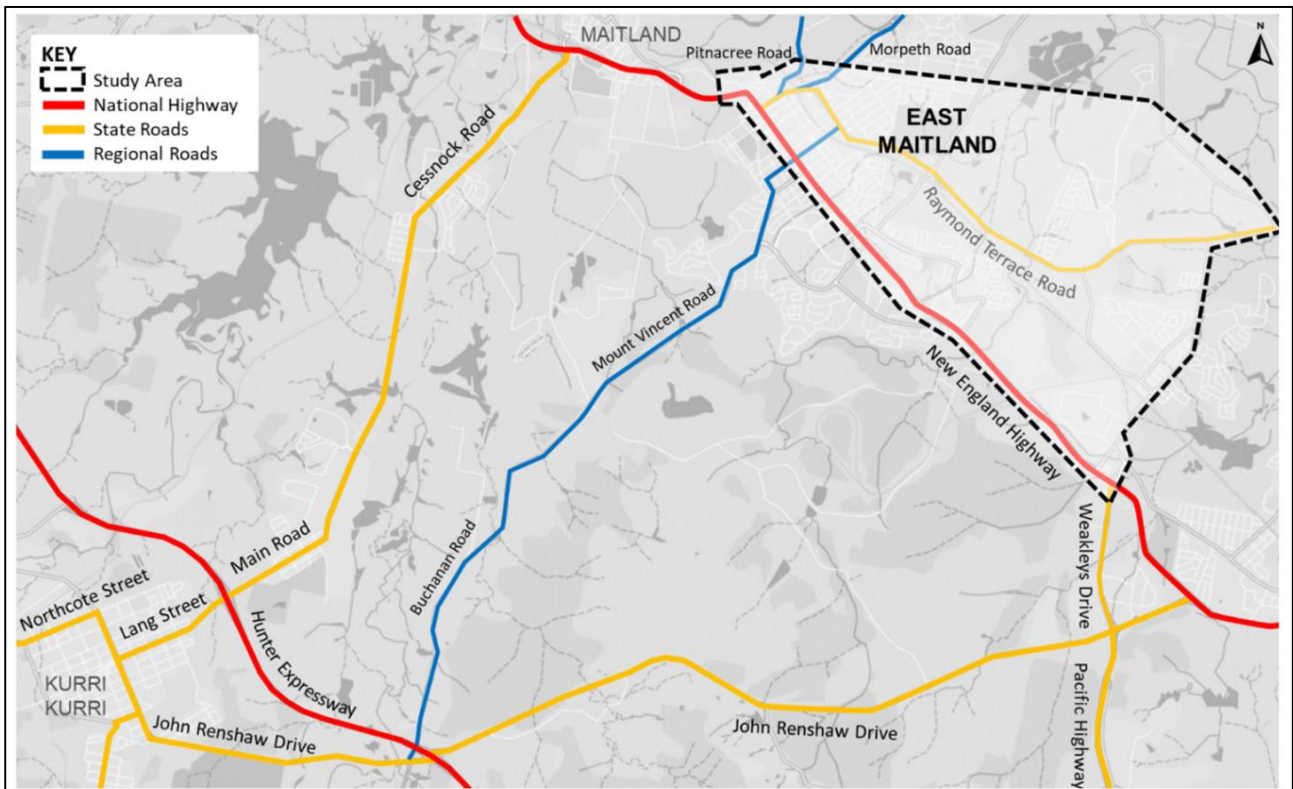
The assumptions with regards to traffic generation and traffic distribution provided in the MTE Report have been retained for the purpose of this supplementary modelling and reference should be made to that report if further details regarding the application are sought.

1 Modelling Methodology

To reflect the impacts of the development on the roads surrounding the site and to assess the impacts of two possible access arrangements, modelling has been undertaken using an Aimsun microsimulation model provided by TfNSW. The results reflected by this model is detailed in **Section 2**.

1.1 Aimsun Base Model

The base model provided by TfNSW is a base model to assist with the assessment of the road network performance in East Maitland. It was prepared by Arcadis and includes the area as indicated in **Figure 1**.



Arcadis 2022

FIGURE 1: SCOPE OF BASE MICROSIMULATION MODEL

The model includes volumes for the AM (7 AM – 9 AM) and PM (3 PM – 5 PM) peaks and has been calibrated and validated by Arcadis to meet the requirements of the TfNSW Traffic Modelling Guidelines. The base configuration of the roads surrounding the site in the model is depicted in **Figure 2**.

As shown, the layout of the model does not include any of the upgrades planned in the near future by Maitland Council as outlined in **Annexure B**.



FIGURE 2: BASE MODEL CONFIGURATION

1.2 Model Adaptation

1.2.1 Road Network Adjustments

To provide an assessment of the performance of the road network surrounding the site and noting that the upgrades planned by Maitland Council will be completed prior to the occupation of any development on the site, modifications were made to the base model including:

- Duplication of Haussman Drive between Taylor Avenue and Raymond Terrace Road;
- Upgrade of Taylor Avenue / Haussman Drive intersection to a dual-lane roundabout;
- Upgrade of Raymond Terrace / Haussman Drive intersection to signal control, including extra lanes;
- Duplication of Raymond Terrace Road between Haussman Drive and Harvest Boulevard.

The road layout implemented in the model including the upgrades is depicted in **Figure 4**.

1.2.2 Scope of Model Used for Assessment

To examine the area most relevant to the site and the access option testing, the scope of the model was reduced to encompass only the area outlined in **Figure 3**. The volumes in the reduced model were based on subpath volumes from the base model (including Council Road upgrades) such that there was no difference between the models when considering the reduced area only.

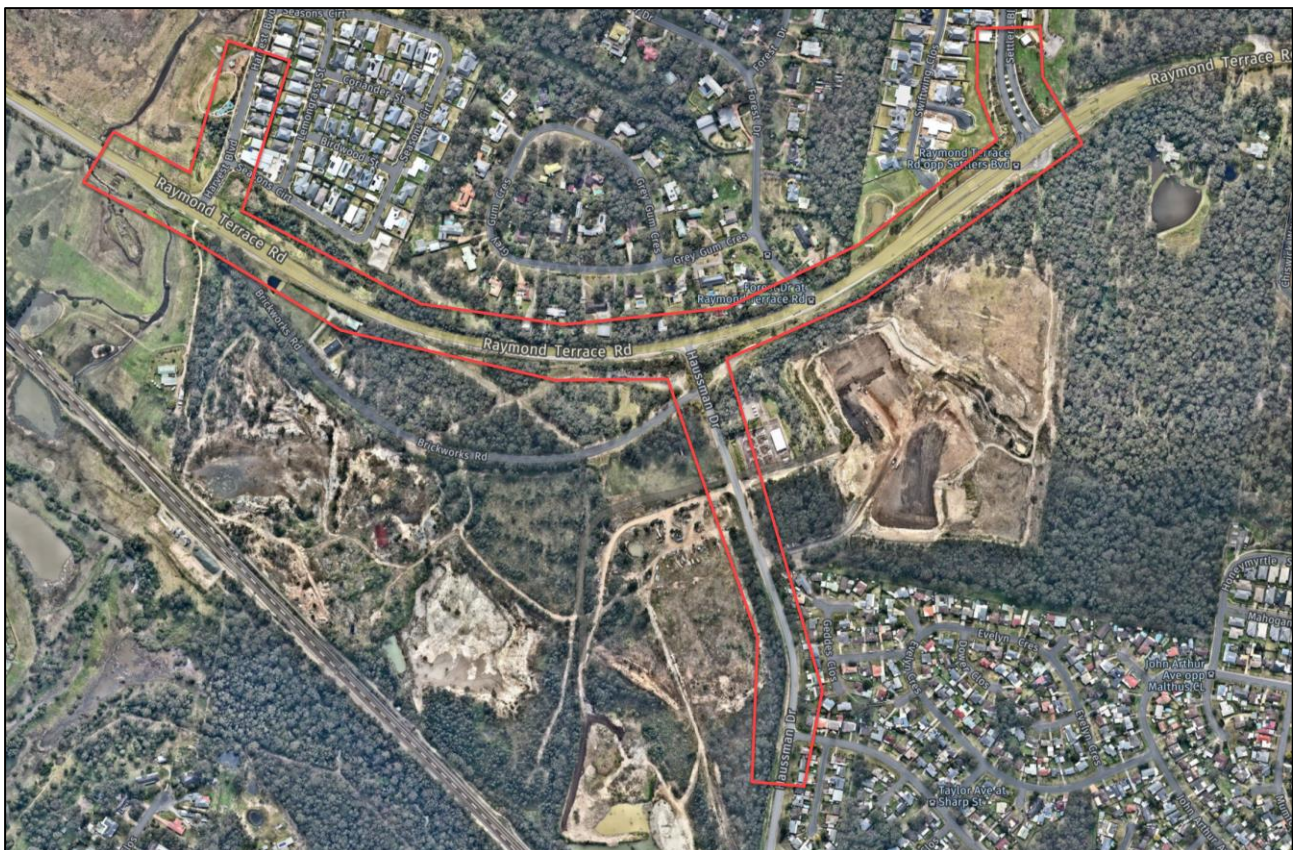


FIGURE 3: REDUCED SCOPE OF MODEL USED FOR ASSESSMENT



FIGURE 4: MODEL INCLUDING LOCALISED UPGRADES

2 Modelling of Existing, Future and Development Traffic Volumes

2.1 Existing Traffic Environment

The existing traffic environment has been modelled as a base point of comparison for the future traffic environment. The existing traffic environment has been assessed using the base traffic volumes as adapted from the base model provided by TfNSW. All modelling has been based on the upgraded road network as discussed in **Section 1.2**. The results of the base model assessment are summarised in **Table 1**.

**TABLE 1: EXISTING INTERSECTION PERFORMANCE
AIMSUN**

<i>BASE + LOCAL UPGRADES</i>					
Intersection	Control	Peak Period	Average Delay (worst)	Level of Service (worst)	Maximum Average Vehicle Queue (Approach)
Haussman Drive / Taylor Avenue	Roundabout	AM	7.1 (8.6) (East RT)	A (A)	0.2 (East LT)
		PM	3.8 (5) (South RT)	A (A)	0.1 (East LT)
Haussman Drive / Raymond Terrace Road	Signals	AM	14.5 (22.7) (South RT)	B (B)	1.4 (East T)
		PM	7.6 (13) (West RT)	A (A)	1.5 (East T)

2.2 Growth Traffic Environment

The performance of the future road network based on 2% growth volumes per annum and with the local road upgrades implemented in the model as outlined in **Section 1.2** is summarised in **Table 2**.

**TABLE 2: EXISTING PLUS GROWTH INTERSECTION PERFORMANCE
AIMSUN**

<i>BASE + LOCAL UPGRADES</i>					
Intersection	Control	Peak Period	Average Delay (worst)	Level of Service (worst)	Maximum Average Vehicle Queue (Approach)
Haussman Drive / Taylor Avenue	Roundabout	AM	7.1 (8.6) (East RT)	A (A)	0.2 (East LT)
		PM	3.6 (6) (South RT)	A (A)	0.1 (East LT)
Haussman Drive / Raymond Terrace Road	Signals	AM	14.6 (26.4) (South RT)	B (B)	1.3 (East T)
		PM	7.4 (12) (West RT)	A (A)	2.2 (West RT)

2.3 Traffic Impacts of Development

Using the traffic distribution as outlined in the MTE Report, the Aimsun model was adapted to include two configurations for testing as follows:

- A. Site access restricted to left-in, left-out from Haussman Drive (**Figure 5**);
- B. Site access restricted to left-in, right-in, left-out from Haussman Drive (**Figure 6**).

For this assessment, the traffic volumes associated with the development were added to the “base plus 10-year growth” volumes in the Aimsun model to reflect the performance of the road network at a 10-year design horizon.

The results of this assessment are reflected in **Table 9**.

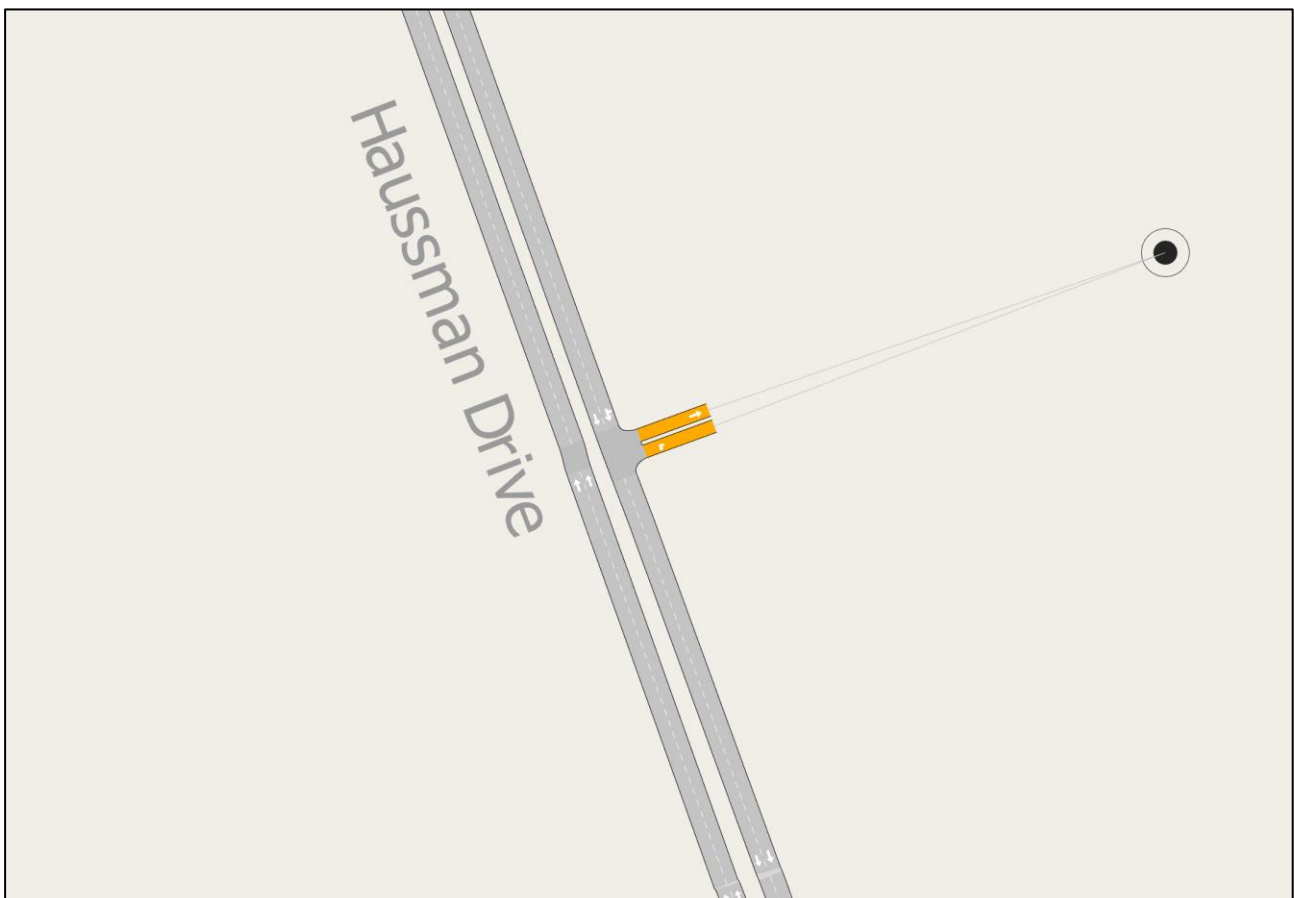


FIGURE 5: HAUSSMAN DRIVE LEFT-IN / LEFT-OUT DEVELOPMENT ACCESS OPTION – MODEL SNAPSHOT

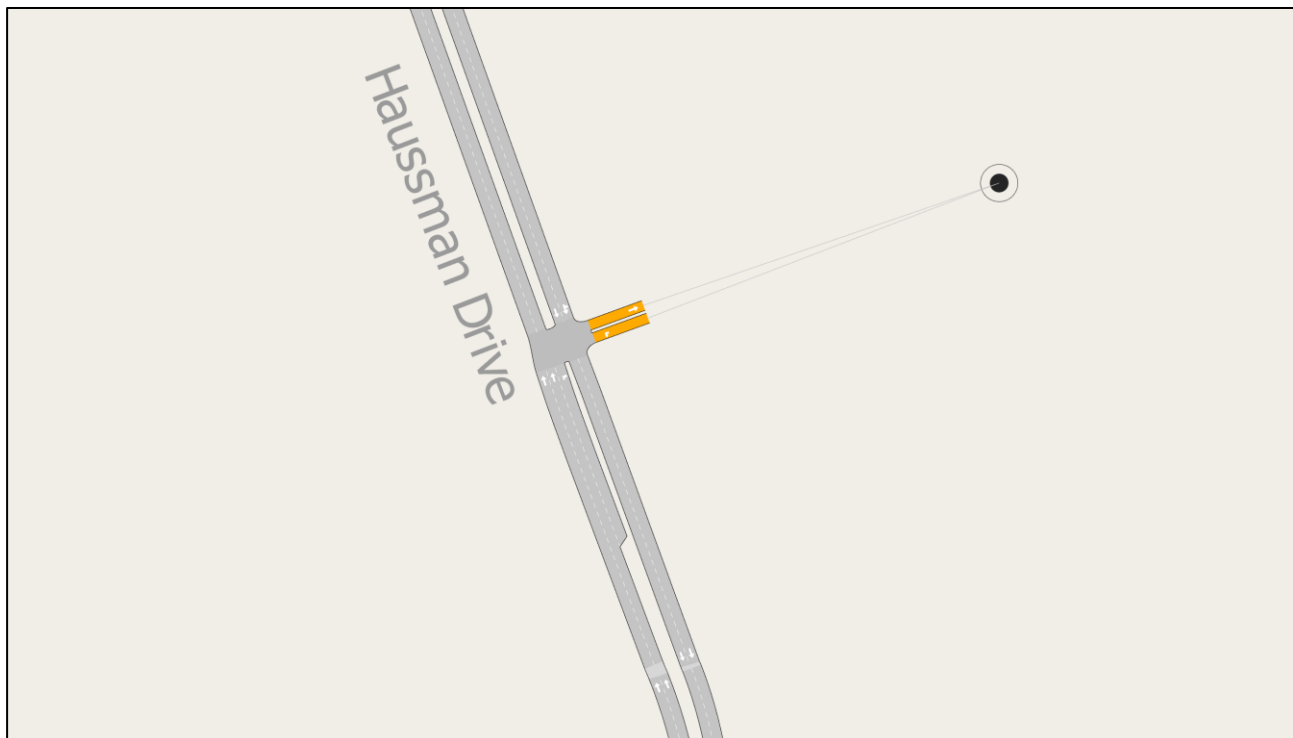


FIGURE 6: HAUSSMAN DRIVE LEFT-IN / RIGHT IN / LEFT-OUT DEVELOPMENT ROAD DEVELOPMENT ACCESS OPTION – MODEL SNAPSHOT

**TABLE 3: INTERSECTION PERFORMANCES (AIMSUN)
EXISTING PLUS GROWTH PLUS DEVELOPMENT**

Left-In Left-Out					
Intersection	Control	Peak Period	Average Delay (worst)	Level of Service (worst)	Maximum Average Vehicle Queue (Approach)
Hausman Drive / Taylor Avenue	Roundabout	AM	10.9 (48.2) (North T)	A (D)	0.2 (East LT)
		PM	10.2 (42) (North T)	A (C)	0.2 (East LT)
Hausman Drive / Raymond Terrace Road	Signals	AM	15.5 (43.3) (South RT)	B (D)	1 (East LT)
		PM	12.3 (26) (West RT)	A (B)	1.3 (West RT)
Site Entry	Give-Way	AM	1.9 (5.2) (North LT)	A (A)	0 (North LT)
		PM	0.9 (4) (North LT)	A (A)	0 (North LT)
Right-In Permitted					
Intersection	Control	Peak Period	Average Delay (worst)	Level of Service (worst)	Maximum Average Vehicle Queue (Approach)
Hausman Drive / Taylor Avenue	Roundabout	AM	10.8 (47.8) (North T)	A (D)	0.2 (East LT)
		PM	10.1 (42) (North T)	A (C)	0.2 (East LT)
Hausman Drive / Raymond Terrace Road	Signals	AM	13 (26.4) (West RT)	A (B)	1 (East LT)
		PM	12.5 (26) (West RT)	A (B)	1.4 (West RT)
Site Entry	Give-Way	AM	2 (4.9) (North LT)	A (A)	0.1 (North T)
		PM	0.9 (4) (North LT)	A (A)	0 (North LT)

As shown, under both development scenarios, the surrounding intersections will retain levels of service of “A” or “B”, indicating that the proposed development will have little to no noticeable effect on the performance of the road network in the surrounds of the site.

Whilst the traffic model provided by TfNSW includes a much larger scope than just these intersections, the impact on any intersections further afield will be less than that at those modelled and there is no need to provide results for other intersections.

3 Conclusions

The traffic impacts of the subject residential subdivision at 107 Haussman Drive, Thornton have been assessed, with the following conclusions drawn:

- The traffic generation associated with a 160-lot residential subdivision will have little to no noticeable effect on the performance of the road network.
- Both access options assessed (left-in / left-out and left-in / right-in / left-out) perform acceptably and there is no clear difference in the performance of the road network based on the options assessment.
- It is likely that a right-turn into the site would provide for a superior level of amenity for residents and, considering that the modelling demonstrates that it will have no adverse impact on the road network, it is the superior option for access to the site.

Please contact the undersigned on 9521 7199 should you require further information or assistance.

Yours faithfully,

McLaren Traffic Engineering



Tom Steal

Senior Traffic Engineer

BE Civil AMAITPM MIEAust

RMS Accredited Level 2 Road Safety Auditor



**ANNEXURE A: DPIE COMMENTS
(2 SHEETS)**

Mr David Evans
General Manager
Maitland City Council
PO Box 220
MAITLAND NSW 2320

Our ref: IRF22/2059

Attn: Leonie Bryson

Dear Mr Evans,

Planning proposal PP-2021-2820 to amend Maitland Local Environmental Plan 2011

I am writing in response to the planning proposal forwarded to the Minister under section 3.34(1) of the *Environmental Planning and Assessment Act 1979* (the Act) seeking to enable residential development at 107 Haussman Drive, Thornton.

The planning proposal has not sufficiently demonstrated how the boundary of the R1 General Residential zone avoids or minimises the impacts on vegetation or environmental values. The NSW Biodiversity Assessment Method (BAM) is the pathway to determine if areas of environmental value should be avoided or conserved. This assessment needs to be undertaken before the planning proposal can progress.

This may also have implications for the bushfire report and the advice of NSW Rural Fire Service regarding compliance with Planning for Bushfire Protection. Confirmation from the agency is required on the need for secondary access to the site, and for landowner support if this is required to be located on adjoining properties.

Confirmation from Subsidence Advisory NSW is also required to determine consistency with section 9.1 Ministerial direction 4.6 and whether additional studies or measures, including grouting, are required to support future residential uses.

The above matters were not appropriately addressed in the planning proposal submitted to the Department of Planning and Environment. As delegate of the Minister for Planning and Homes, I have determined the planning proposal should be resubmitted after matters outlined in the enclosed Gateway Determination have been addressed.

If the planning proposal is not resubmitted and considered adequate before the timeframe specified in the enclosed Gateway determination, a decision will be made to not proceed with the planning proposal under section 3.32(2(d) of the Act.

While not a final plan, the Department has done an assessment of the planning proposal against the draft Hunter Regional Plan 2041. In particular, assessing the merits against the objectives to create a 15-minute region and nimble neighbourhoods of diverse housing.

The site is well-positioned to a range of day-to-day needs and services, along with public transport. Furthermore, there is an active planning proposal (PP-2022-1187) opposite the site which seeks a range of employment uses. This will further reinforce accessibility for future residents to local employment opportunities without the need to commute by private vehicle.

The draft regional plan recognises that in order to achieve the many public interest intentions of the draft plan, new developments will have to be different. There needs to be greater diversity of housing to improve affordability. As the proposed minimum lot size of 450m² is the same as the adjoining R1 General Residential zoned areas, it is not consistent with this strategy or objective.

Given the proposed opportunities for a 15-minute neighbourhood outlined above, a density of only 8 dwellings/ha will be a significant missed opportunity and substantially below an optimum density for the site.

In our assessment of the planning proposal, the following matters were identified as likely to be required to be addressed prior to public exhibition (unless addressed beforehand):

- a revised transport assessment that considers Transport for NSW's road and intersection planning for the area; and
- advice from Hunter Water Corporation on the location and capacity of sewer and water in relation to the site.

These above matters could be further considered as part of the resubmitted planning proposal. However, they are not required or been conditioned in the Gateway determination.

The Department offers its assistance in resolving these matters and recommends Council seeks pre-lodgement advice to confirm the matters listed in the Gateway resubmit have been adequately addressed.

As you would be aware the Department of Planning and Environment is committed to reducing the time taken to complete planning proposals and is taking an active management approach to align planning proposals with the timeframes outlined in the *Local Environmental Plan Making Guideline* (December 2021).

Should you have any enquiries about this matter, I have arranged for Mr Thomas Holmes, Senior Planning Officer, Central Coast and Hunter to assist you. Mr Holmes can be contacted on 9860 1583.

Yours sincerely



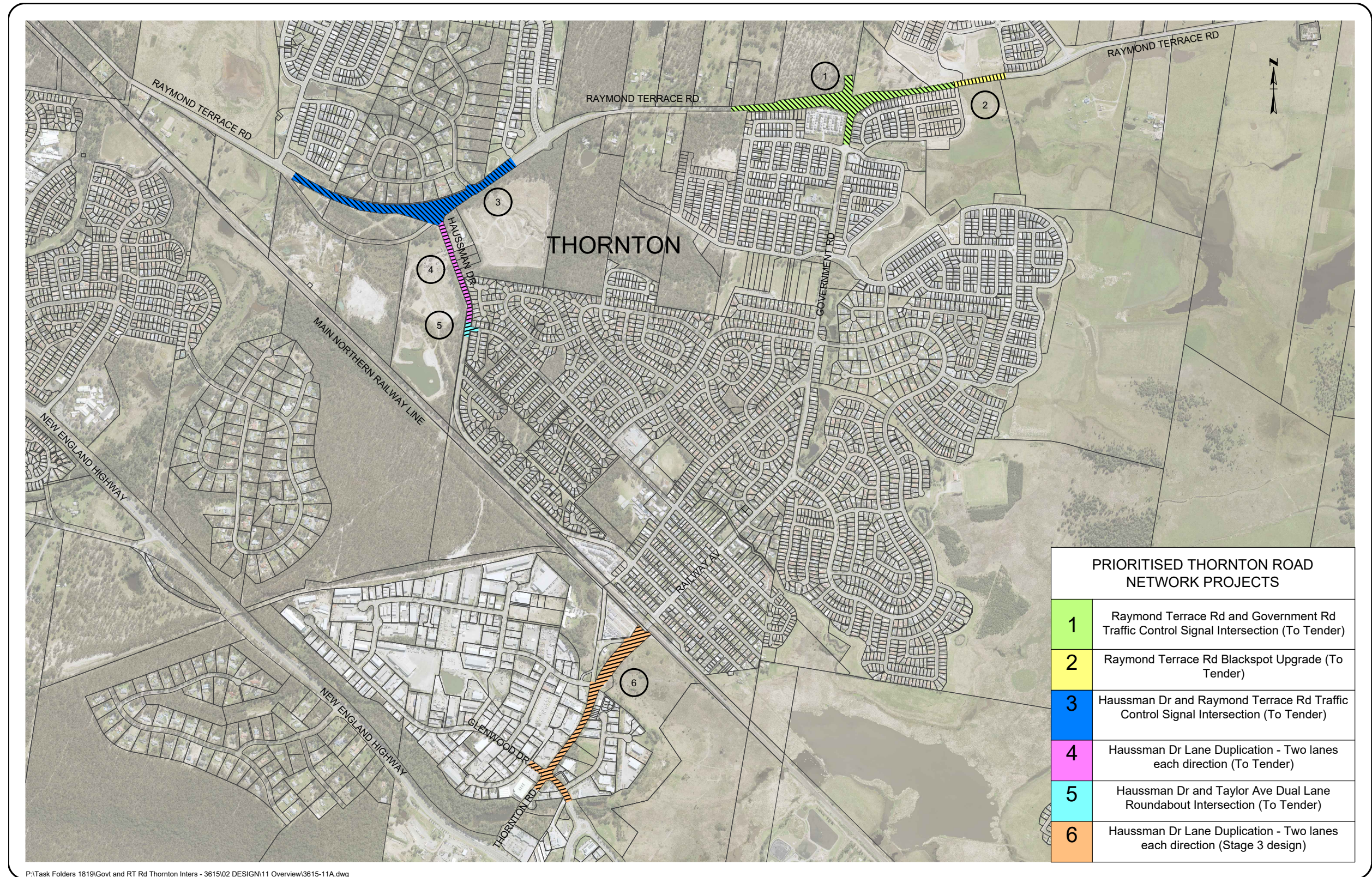
26/08/2022

Dan Simpkins
Director, Central Coast and Hunter Region
Planning and Land Use Strategy

Encl: Gateway determination



**ANNEXURE B: MAP OF UPGRADES FROM COUNCIL
MEETING MINUTES
(1 SHEET)**



				CONCEPT PLAN - NOT FOR CONSTRUCTION		RATIO @A3 Horizontal Ratio:1:15 000 Vertical Ratio:		MAITLAND CITY COUNCIL INFRASTRUCTURE & WORKS		THORNTON ROAD NETWORK Tender Projects Thornton PRIORITISED THORNTON ROAD NETWORK PROJECTS		PLAN No. 3615-11A			
A ORIGINAL ISSUE SHEET REVISION Plotted: 3/05/2022 12:47:33 PM By: Cl						C.P. 03/05/2022 BY DATE		SURVEYOR N/A DESIGNER C. Pinchen		DATUM A.H.D. DATE OF PLAN 03/05/2022		285-287 HIGH STREET P.O. BOX 220 MAITLAND 2320		PHONE: (02) 49349700 FAX (02) 49333209 DX 21613 MAITLAND	



**ANNEXURE C: ROAD UPGRADE PLANS PROVIDED BY
COUNCIL
(19 SHEETS)**

MAITLAND CITY COUNCIL

HAUSSMAN DRIVE - STAGE 2



RAYMOND TERRACE ROAD - DETAILED DESIGN

22-12542622



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LOCALITY PLAN
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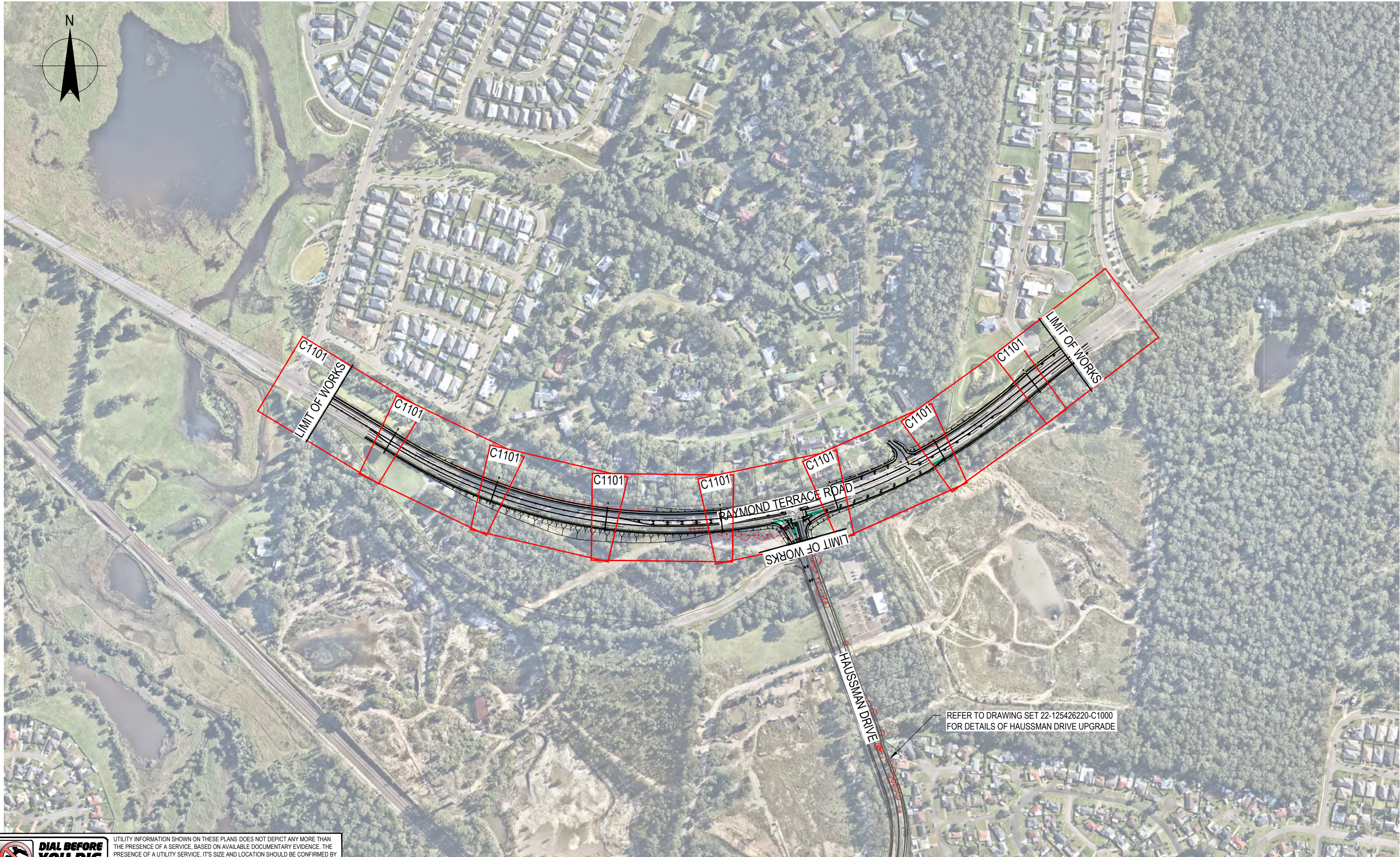
Plotted By: Blake Drew

Cad File No: C:\12d\SW\data\12-00-12D-00122-12542622 - MCC - Haussman Drive, Stage 2 - Detailed Design_1219\CADD\Drawings\22-12542622-C2000.dwg



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Project	HAUSSMAN DRIVE - STAGE 2
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Rev:	A

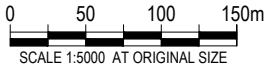


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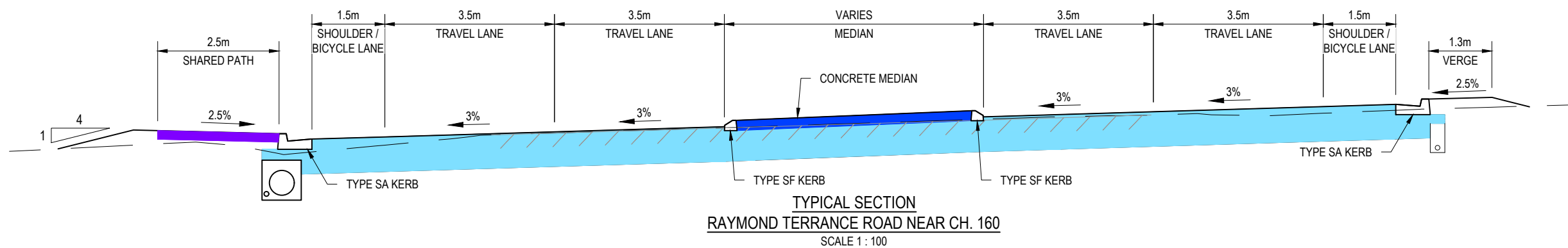
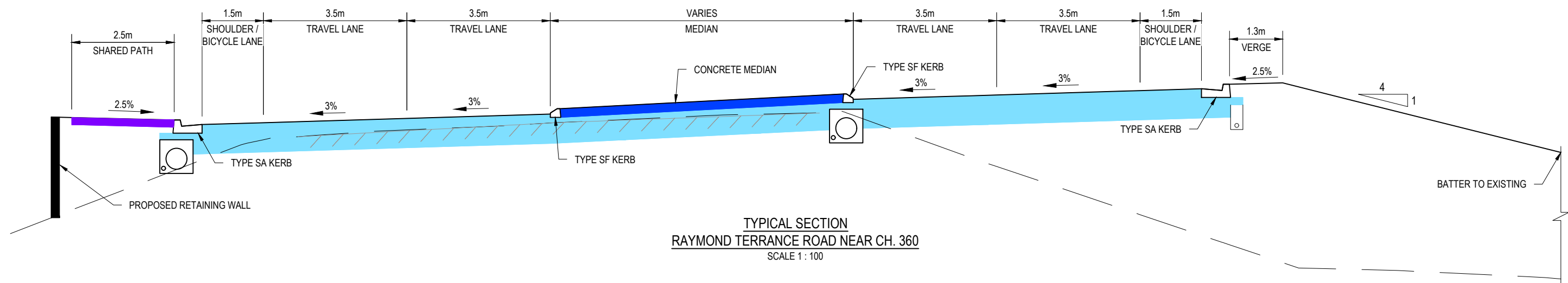
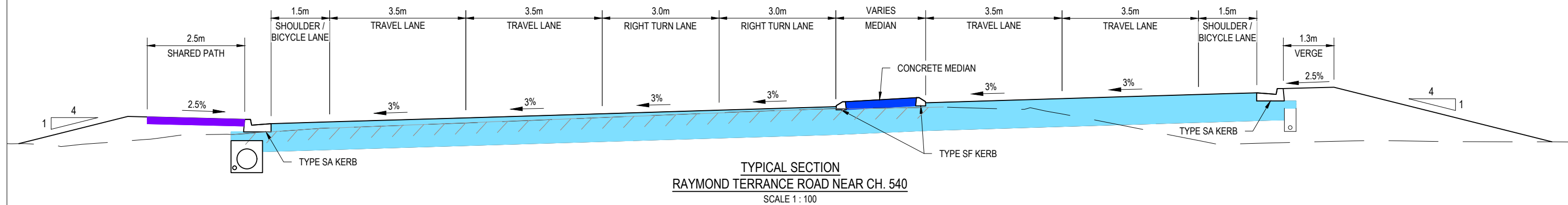
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MAITLAND CITY COUNCIL
HAUSSMAN DRIVE - STAGE 2
GENERAL ARRANGEMENT

A3

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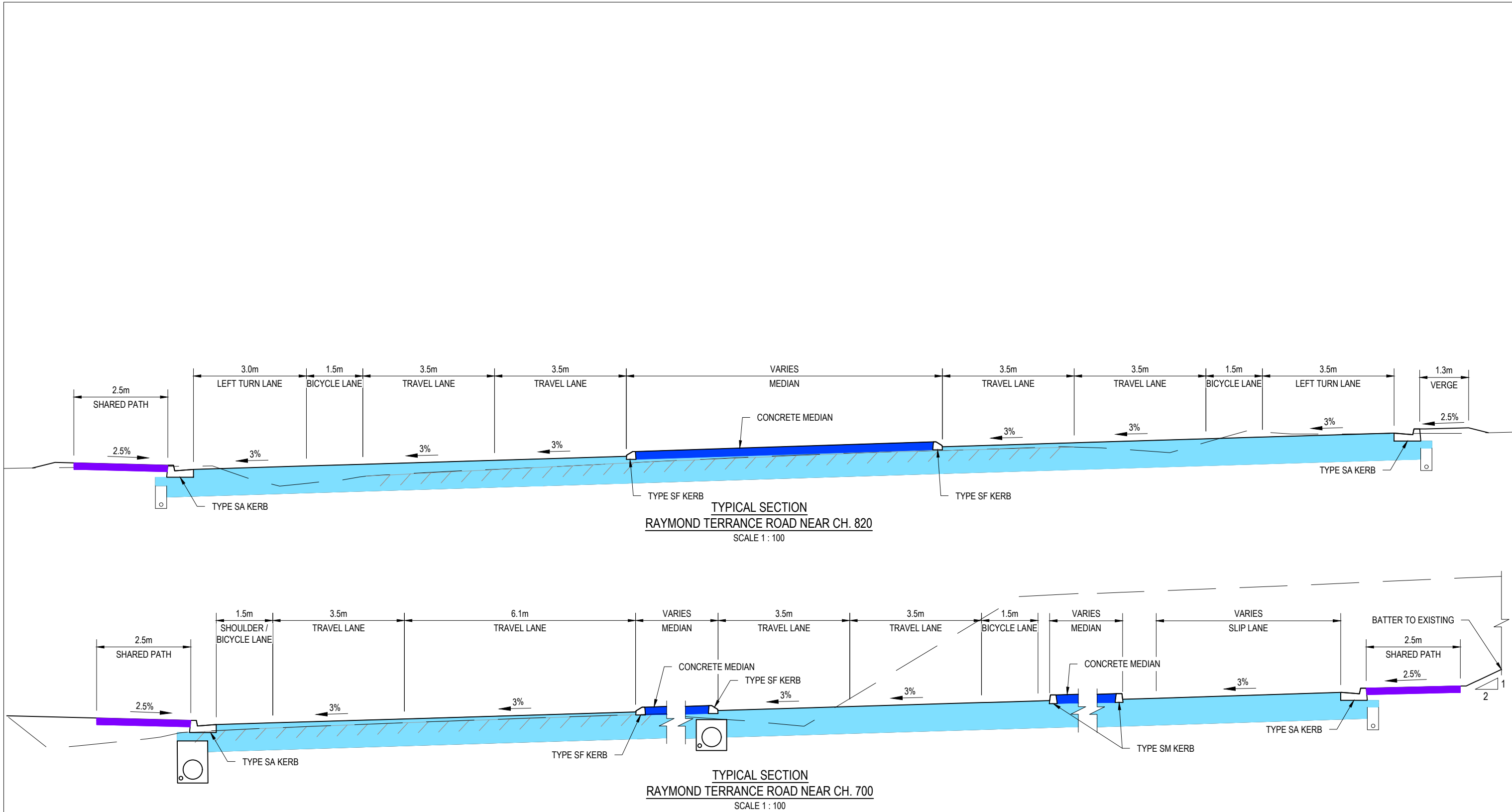
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**MAITLAND CITY COUNCIL
HAUSSMAN DRIVE - STAGE 2
TYPICAL SECTIONS
SHEET 1 OF 2**

Drawing No: **22-12542622-C2051**

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- NOTES
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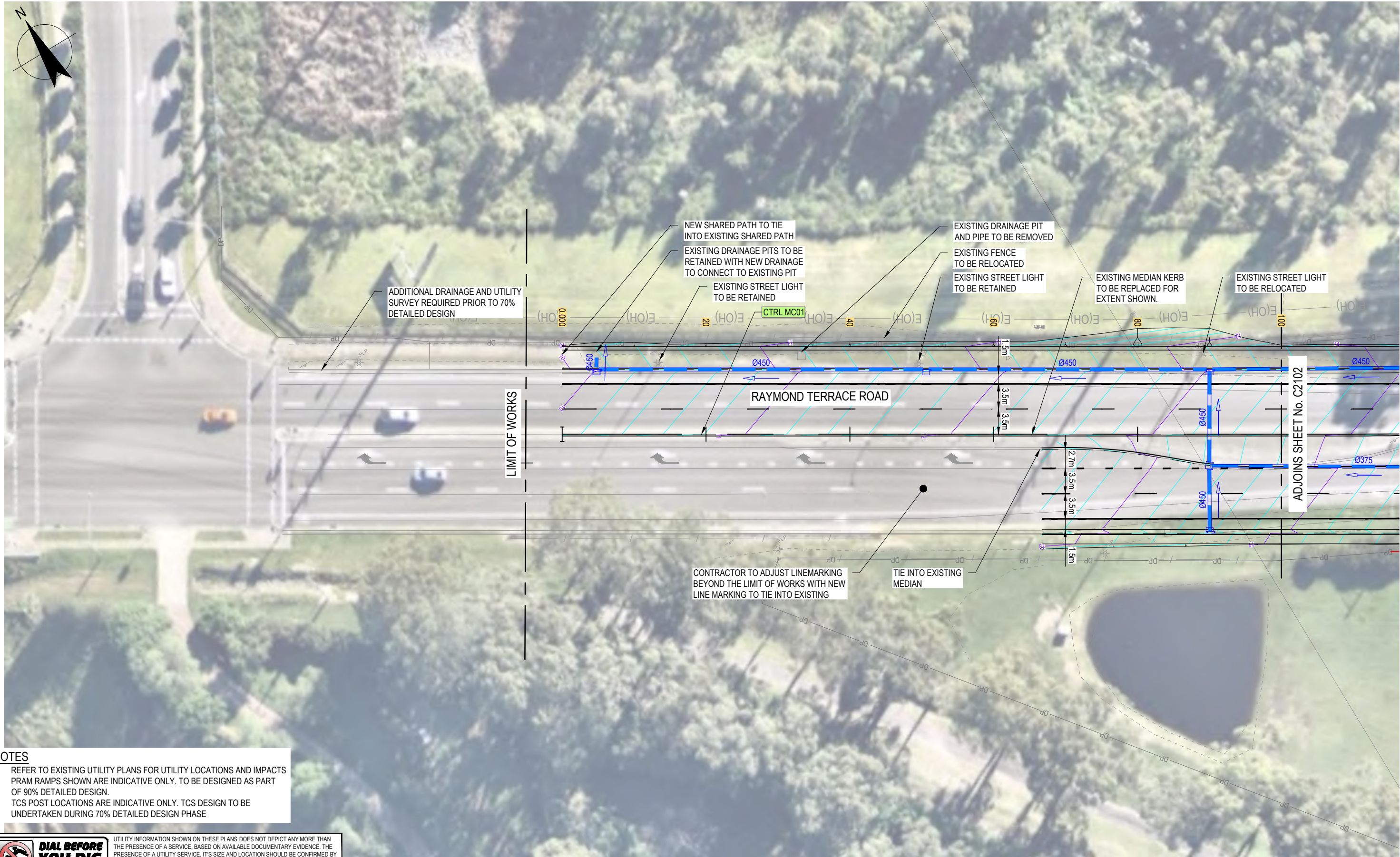
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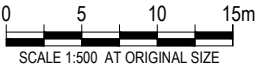


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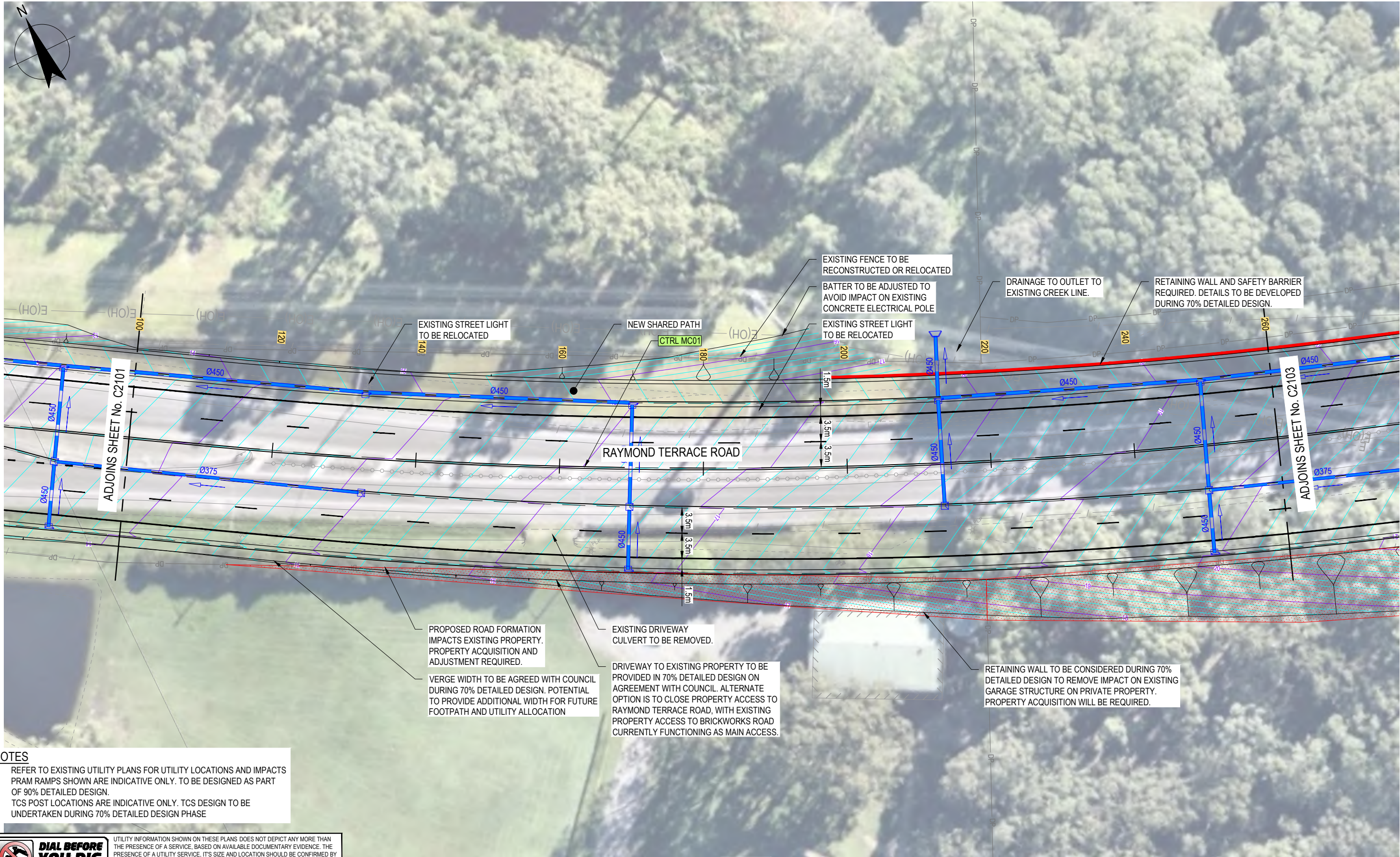
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Project **HAUSSMAN DRIVE - STAGE 2**
Title **DETAIL PLAN**
SHEET 1 OF 8

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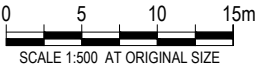


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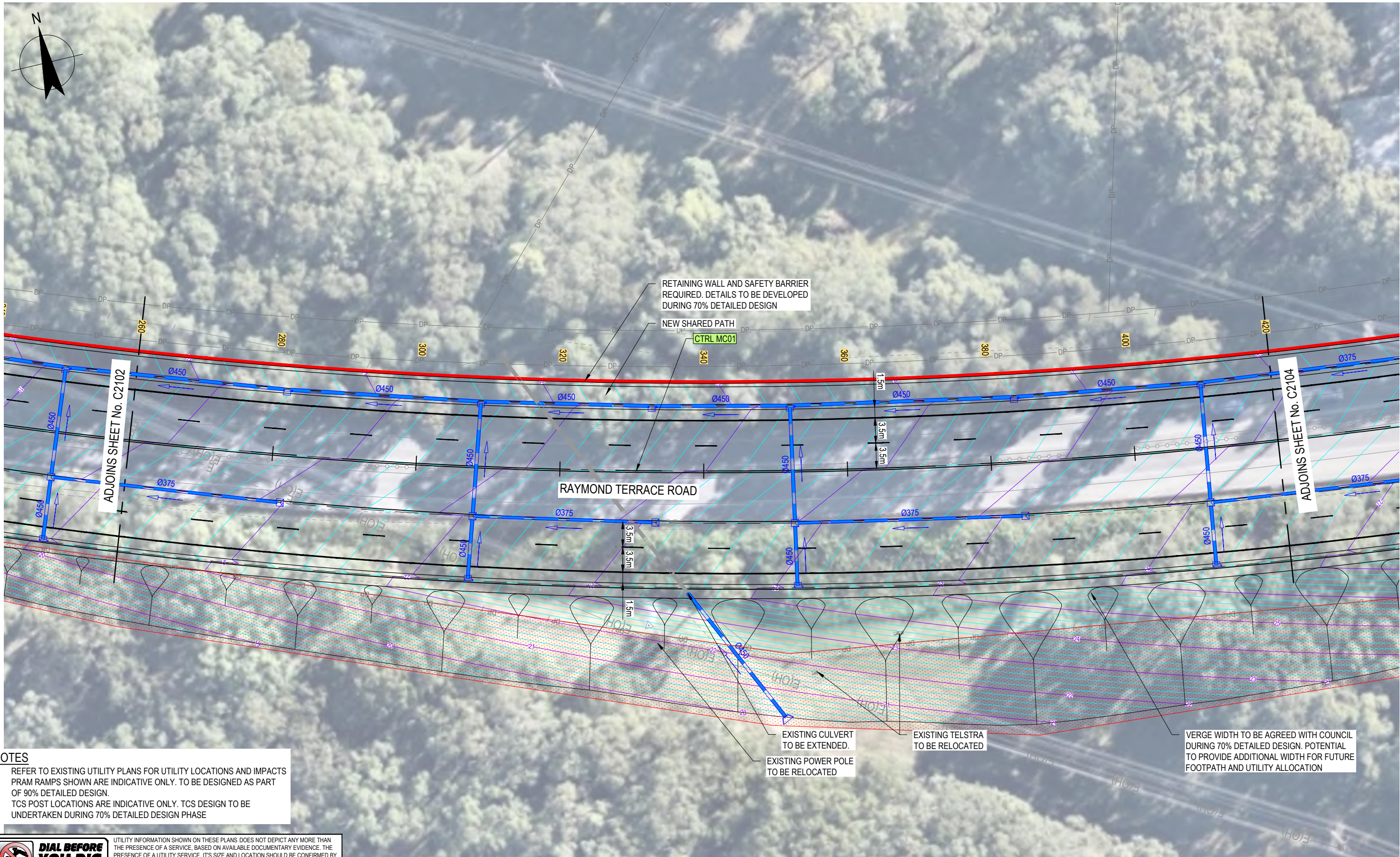
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MAITLAND CITY COUNCIL
HAUSSMAN DRIVE - STAGE 2
DETAIL PLAN
SHEET 2 OF 8

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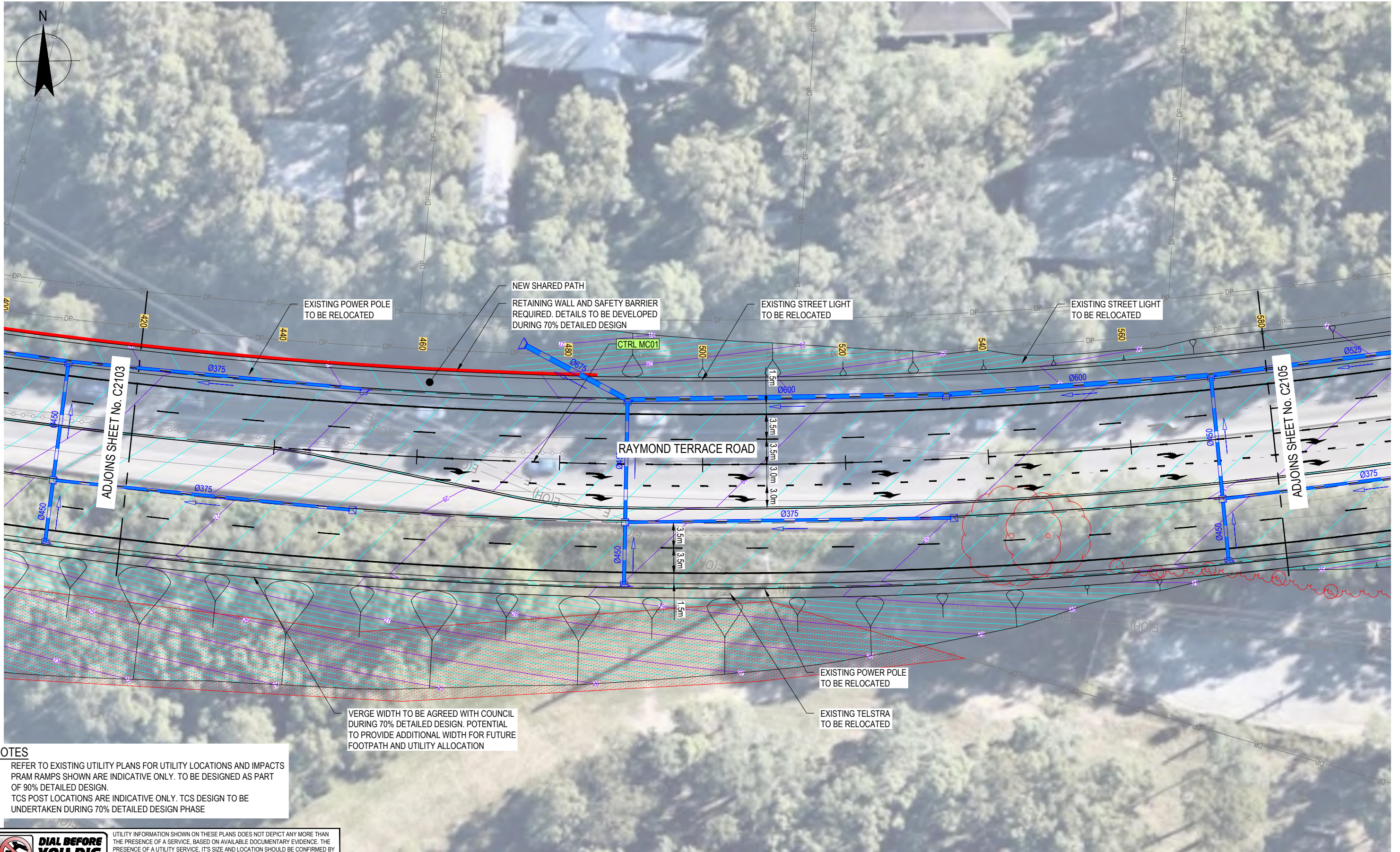
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No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director



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Original Size A3 Drawing No: 22-12542622-C2103				Rev: A



NOTES

1. REFER TO EXISTING UTILITY PLANS FOR UTILITY LOCATIONS AND IMPACTS
2. PRAM RAMP SHOWN ARE INDICATIVE ONLY. TO BE DESIGNED AS PART OF 90% DETAILED DESIGN.
3. TCS POST LOCATIONS ARE INDICATIVE ONLY. TCS DESIGN TO BE UNDERTAKEN DURING 70% DETAILED DESIGN PHASE

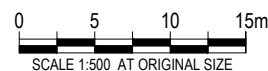


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PRELIMINARY

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A	30% DETAIL DESIGN		BD	GM	AS	30.07.21



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Designer N.HINCKS

Drafting Check

Design Check

Approved (Project Director)

Date

Scale AS SHOWN

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Client MAITLAND CITY COUNCIL
Project HAUSSMAN DRIVE - STAGE 2
Title DETAIL PLAN
SHEET 4 OF 8

Original Size A3 Drawing No: 22-12542622-C2104

Rev: A



- NOTES**
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 3. TCS POST LOCATIONS ARE INDICATIVE ONLY. TCS DESIGN TO BE UNDERTAKEN DURING 70% DETAILED DESIGN PHASE



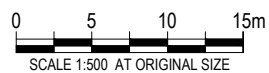
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Approved (Project Director)

Date

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Designer N.HINCKS

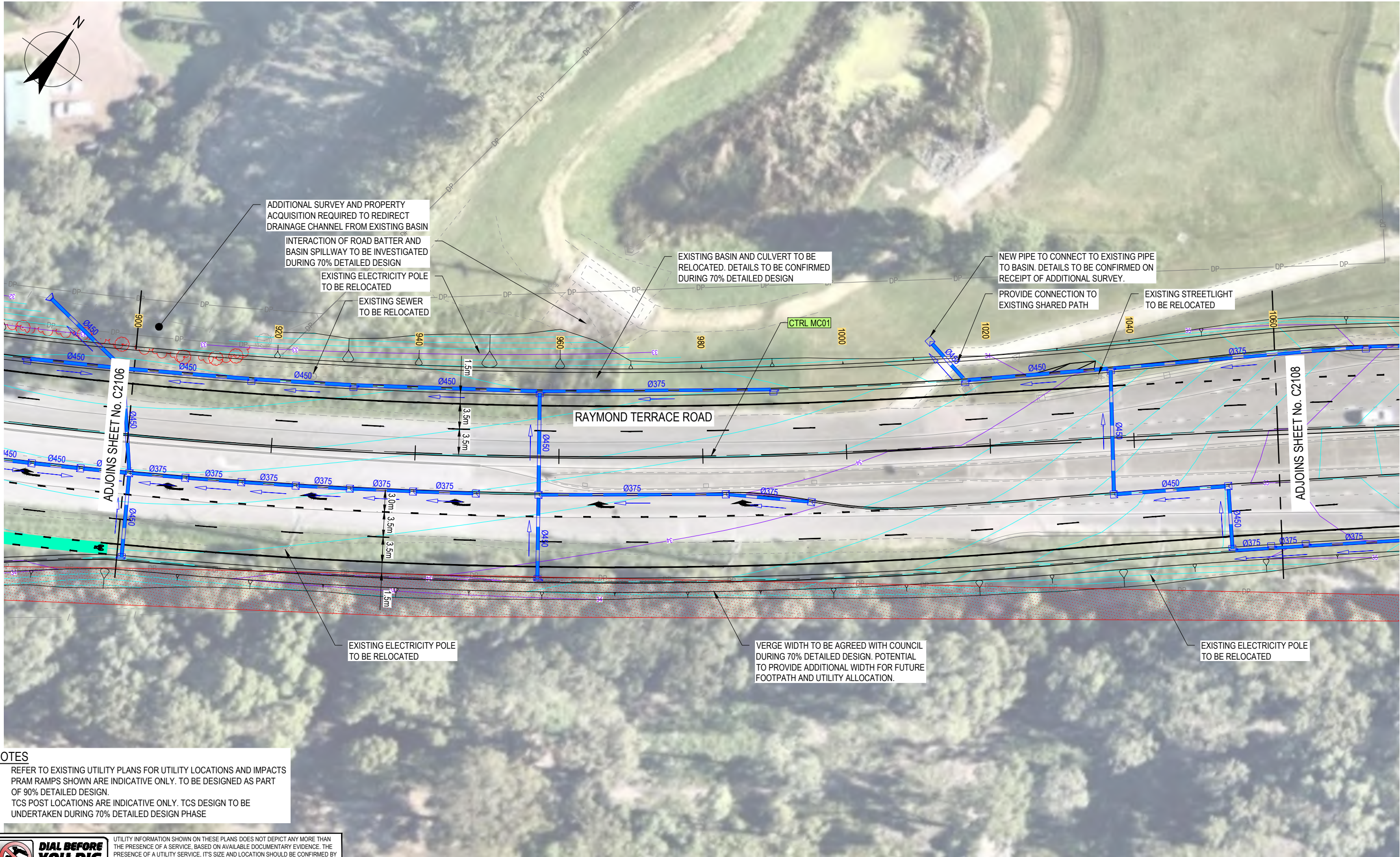
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Client **MAITLAND CITY COUNCIL**
Project **HAUSSMAN DRIVE - STAGE 2**
Title **DETAIL PLAN**
SHEET 5 OF 8

Original Size **A3** Drawing No: **22-12542622-C2105**

Rev: **A**



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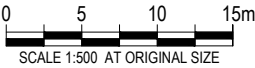
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SCALE 1:500

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		Drawn	Job Manager	Project Director	Date

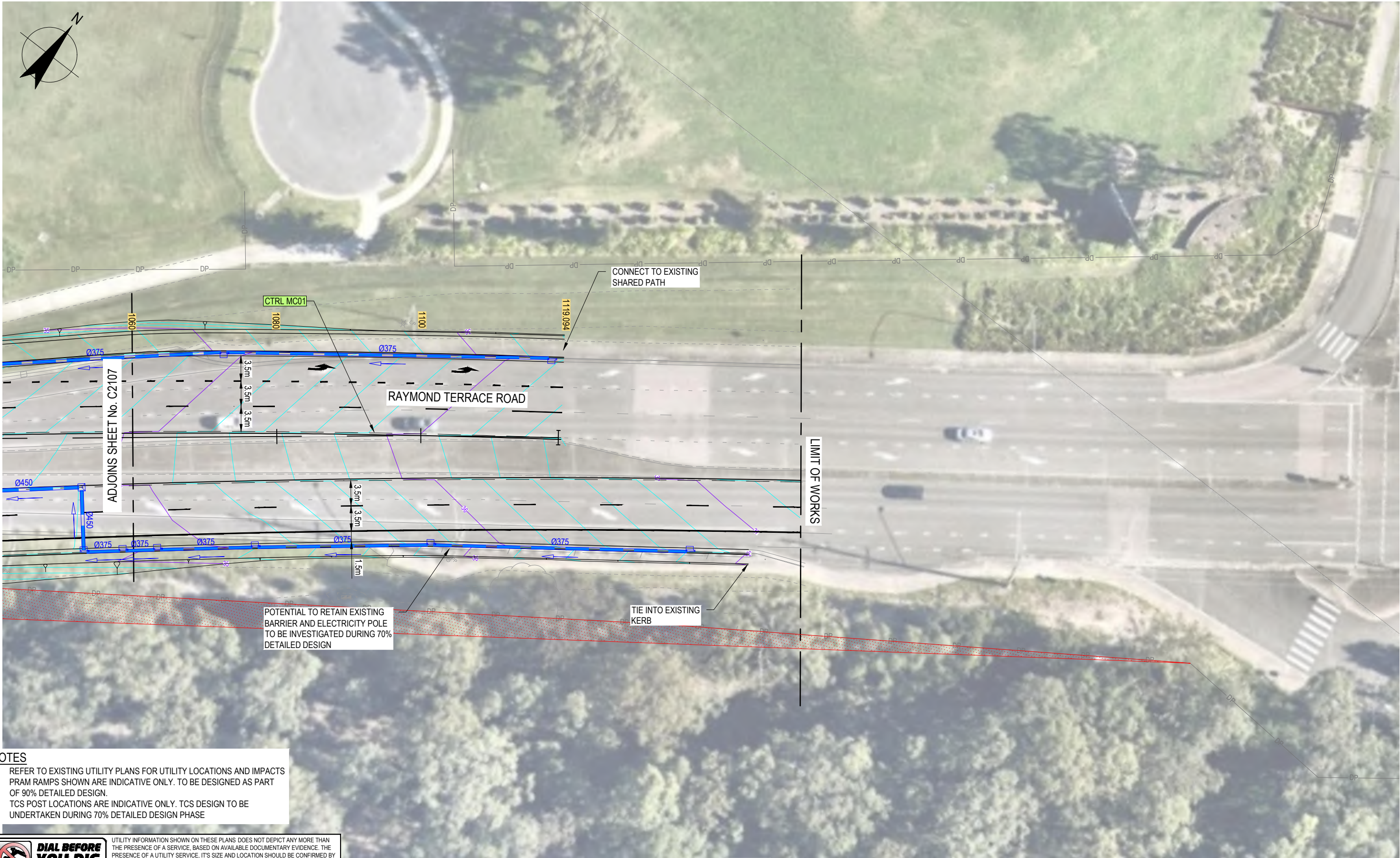





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Client	MAITLAND CITY COUNCIL		
Project	HAUSSMAN DRIVE - STAGE 2		
Title	DETAIL PLAN SHEET 7 OF 8		
Original Size	A3	Drawing No: 22-12542622-C2107	Rev: A



- NOTES**
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 3. TCS POST LOCATIONS ARE INDICATIVE ONLY. TCS DESIGN TO BE UNDERTAKEN DURING 70% DETAILED DESIGN PHASE



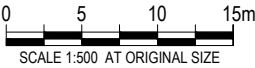
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SCALE 1:500

PRELIMINARY

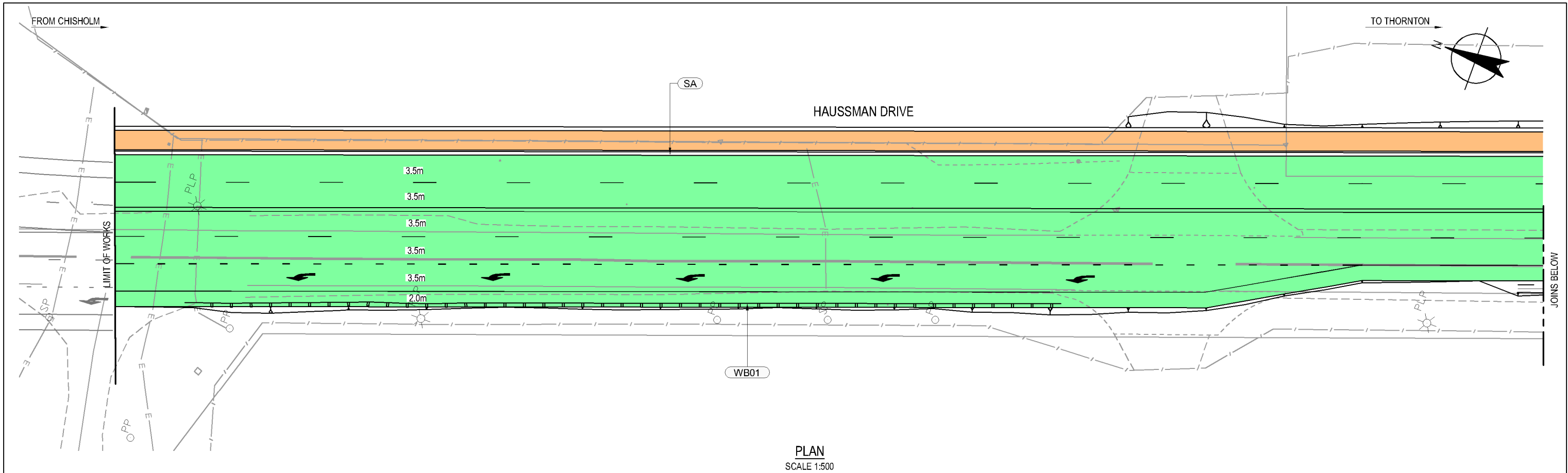
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No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director



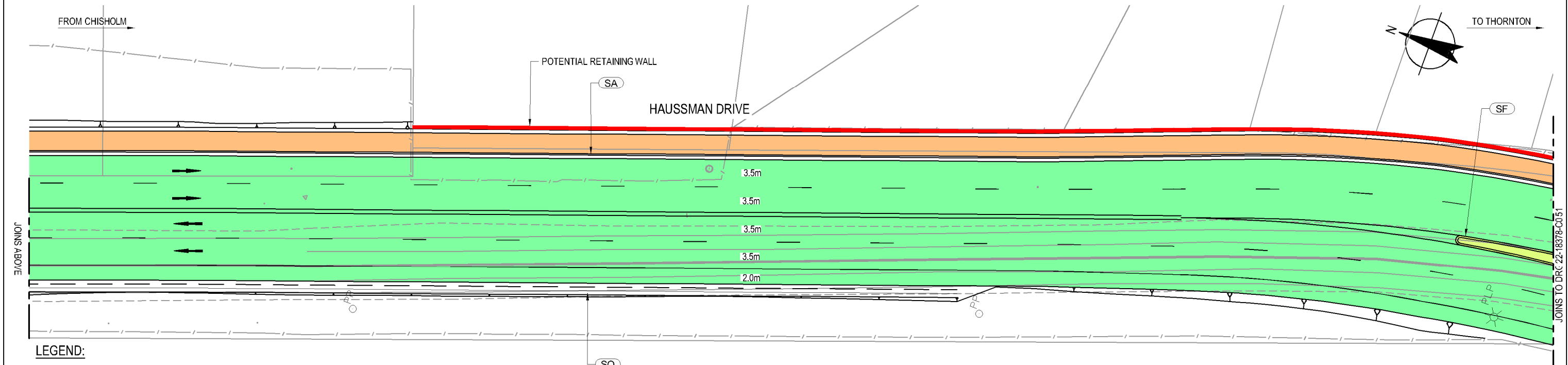


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



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	Approved (Project Director)		Title	DETAIL PLAN	
	Date			SHEET 8 OF 8	
	Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved		Original Size	A3
			Drawing No:	22-12542622-C2108	Rev: A



PLAN
SCALE 1:500



PLAN
SCALE 1:500

- LEGEND:
- | | | | |
|---|--|---|--------------------------|
|  | TYPE 1 - UNBOUND PAVEMENT WITH AC |  | TYPE 4 - CONCRETE MEDIAN |
|  | TYPE 2 - UNBOUND PAVEMENT WITH 2 COAT SEAL |  | TYPE 5 - SHARED PATHWAY |
|  | TYPE 3 - CONCRETE ROUNDABOUT PAVEMENT | | |

C	FINAL CONCEPT DESIGN	RJC	GM	AS	06.10.17	
B	FINAL CONCEPT DESIGN	C.B	G.M	A.S	15.09.17	
A	ISSUED FOR REVIEW	C.B	G.M	A.S	13.07.17	
No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date





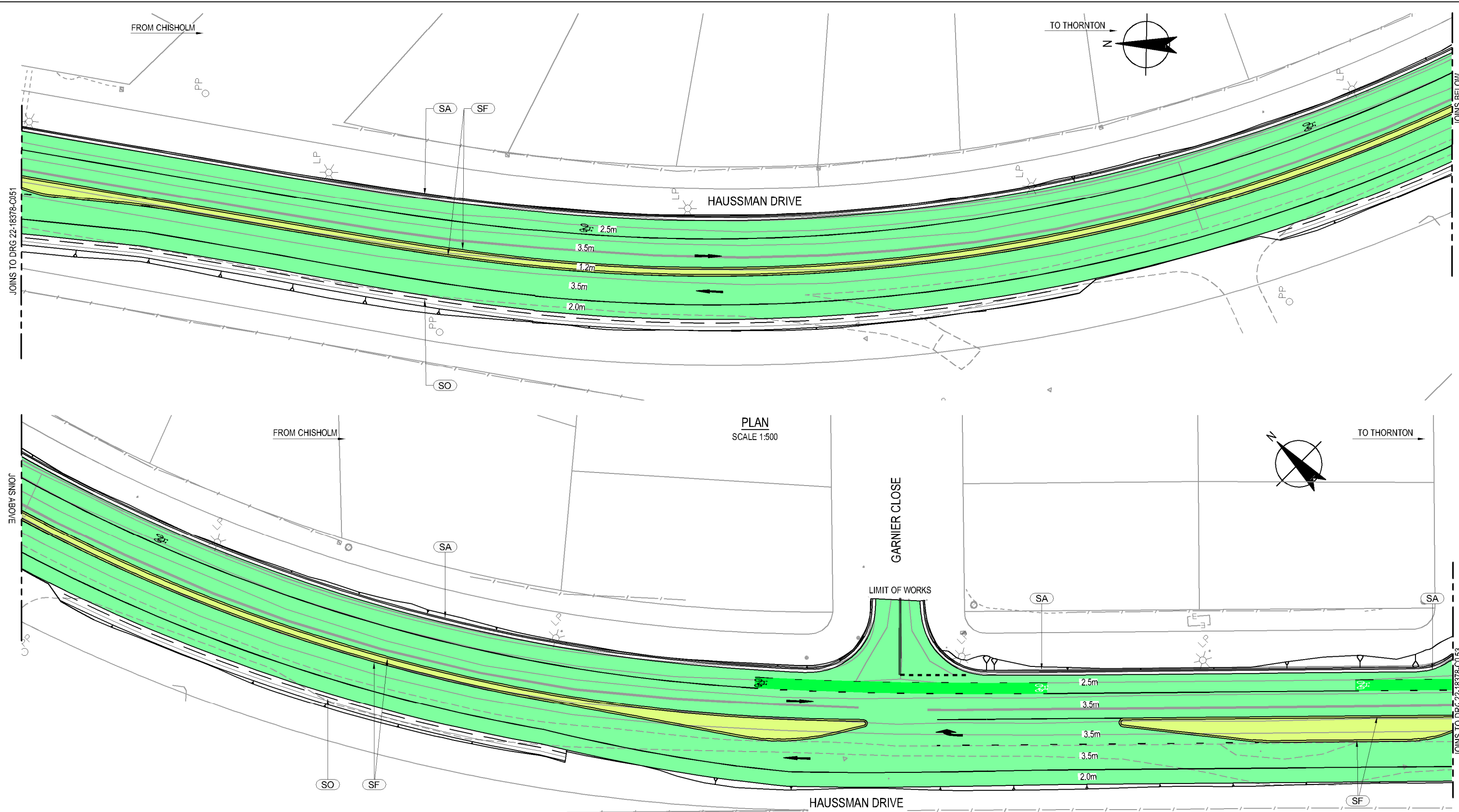
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Approved (Project Director)		Date	
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Client	MAITLAND CITY COUNCIL
Project	HAUSSMAN DRIVE ROAD UPGRADE
Title	PAVEMENT PLAN
Original Size	A3
Drawing No:	22-18378-C050
Rev:	C



LEGEND:

- TYPE 1 - UNBOUND PAVEMENT WITH AC
- TYPE 2 - UNBOUND PAVEMENT WITH 2 COAT SEAL
- TYPE 3 - CONCRETE ROUNDABOUT PAVEMENT
- TYPE 4 - CONCRETE MEDIAN
- TYPE 5 - SHARED PATHWAY

C	FINAL CONCEPT DESIGN	RJC	GM	AS	06.10.17	
B	FINAL CONCEPT DESIGN	C.B	G.M	A.S	15.09.17	
A	ISSUED FOR REVIEW	C.B	G.M	A.S	13.07.17	
No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date

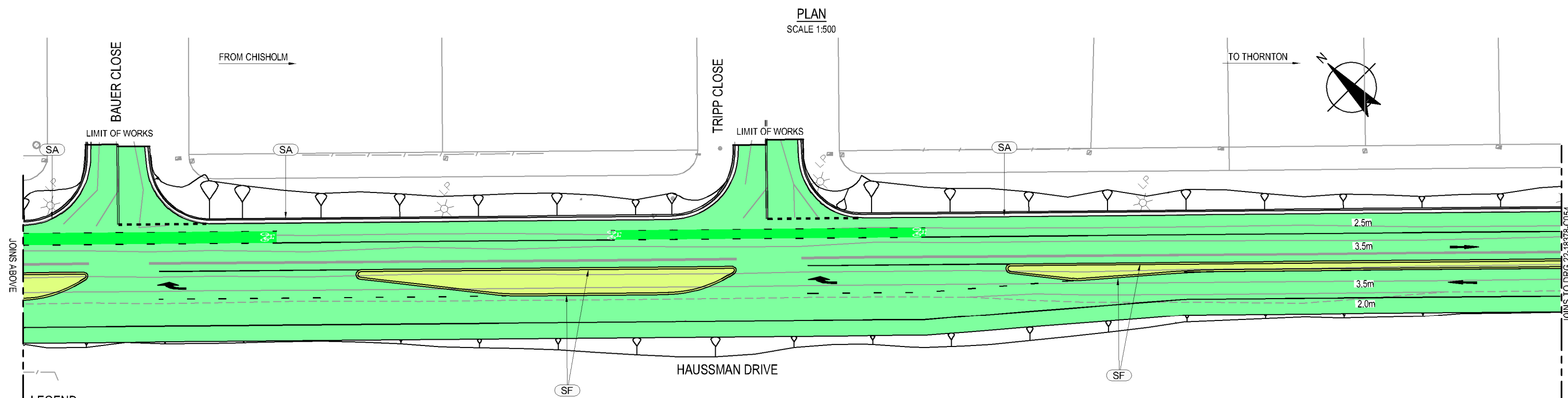
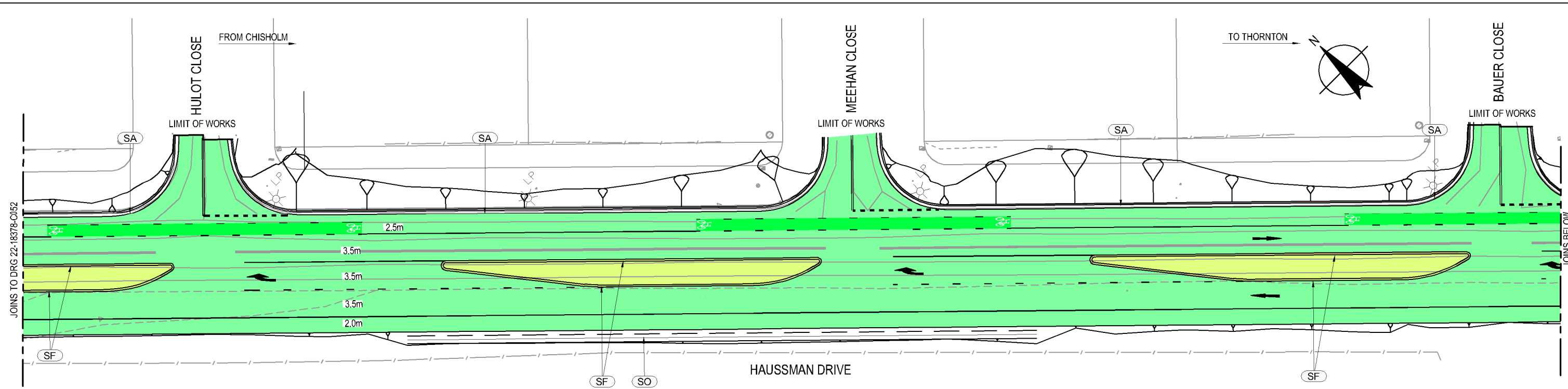


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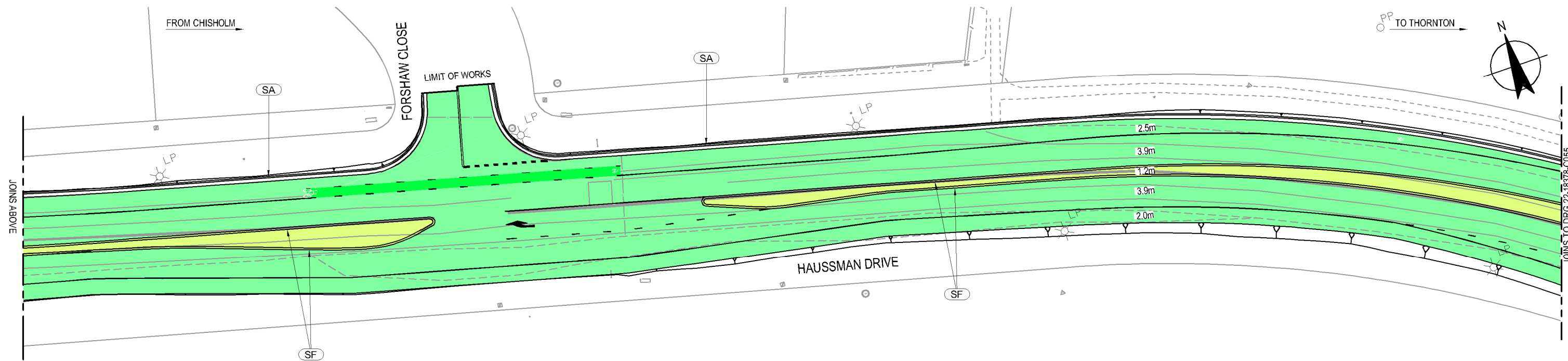
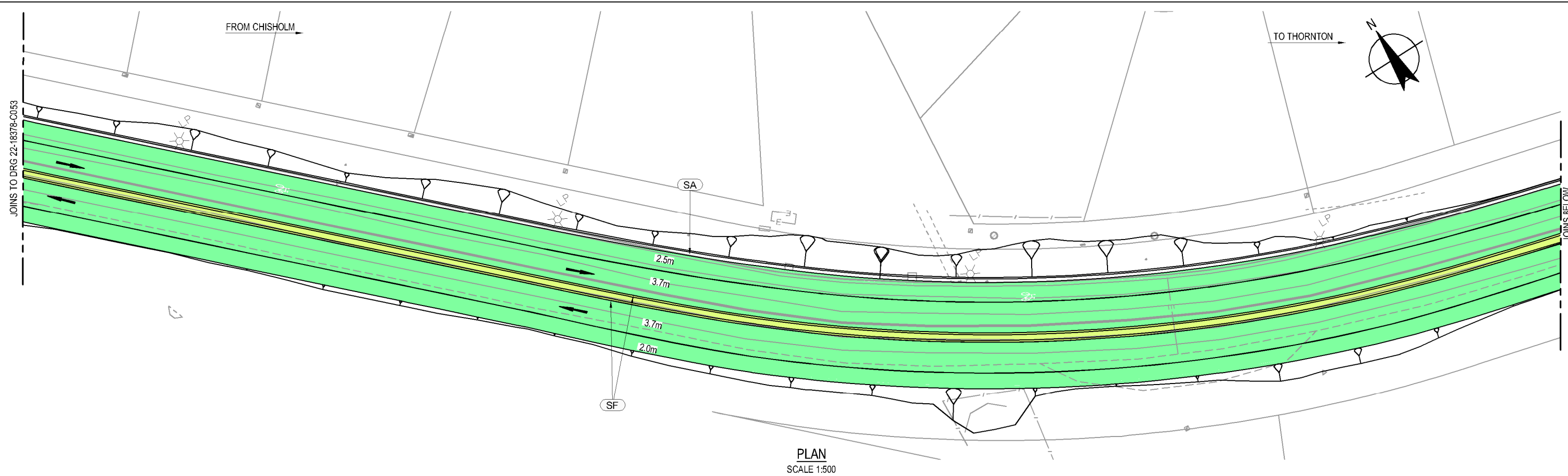
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Client	MAITLAND CITY COUNCIL
Project	HAUSSMAN DRIVE ROAD UPGRADE
Title	PAVEMENT PLAN
Original Size	A3
Drawing No:	22-18378-C052
Rev:	C








- LEGEND:**
- TYPE 1 - UNBOUND PAVEMENT WITH AC
 - TYPE 2 - UNBOUND PAVEMENT WITH 2 COAT SEAL
 - TYPE 3 - CONCRETE ROUNDABOUT PAVEMENT
 - TYPE 4 - CONCRETE MEDIAN
 - TYPE 5 - SHARED PATHWAY

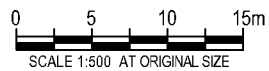
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A	ISSUED FOR REVIEW	C.B	G.M	A.S	13.07.17							
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Plot Date: 6 October 2017 - 5:06 PM Plotted By: Bec Cocks						Cad File No: G:\22\18378\CADD\Drawings\22-18378-C050.dwg						



LEGEND:

- | | | | |
|---|--|---|--------------------------|
|  | TYPE 1 - UNBOUND PAVEMENT WITH AC |  | TYPE 4 - CONCRETE MEDIAN |
|  | TYPE 2 - UNBOUND PAVEMENT WITH 2 COAT SEAL |  | TYPE 5 - SHARED PATHWAY |
|  | TYPE 3 - CONCRETE ROUNDABOUT PAVEMENT | | |

C	FINAL CONCEPT DESIGN	RJC	GM	AS	06.10.17
B	FINAL CONCEPT DESIGN	C.B	G.M	A.S	15.09.17
A	ISSUED FOR REVIEW	C.B	G.M	A.S	13.07.17
No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director
					Date



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Drawn R. COCKS

Designer N. HINCKS

Drafting Check

Design Check

Approved (Project Director)

Date

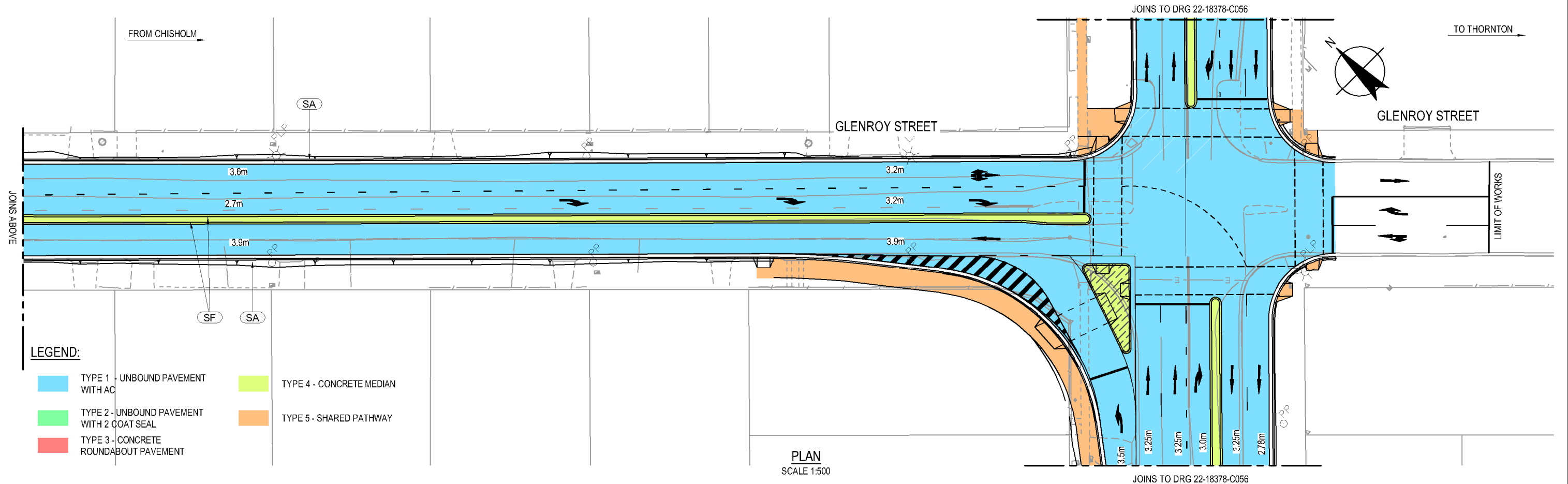
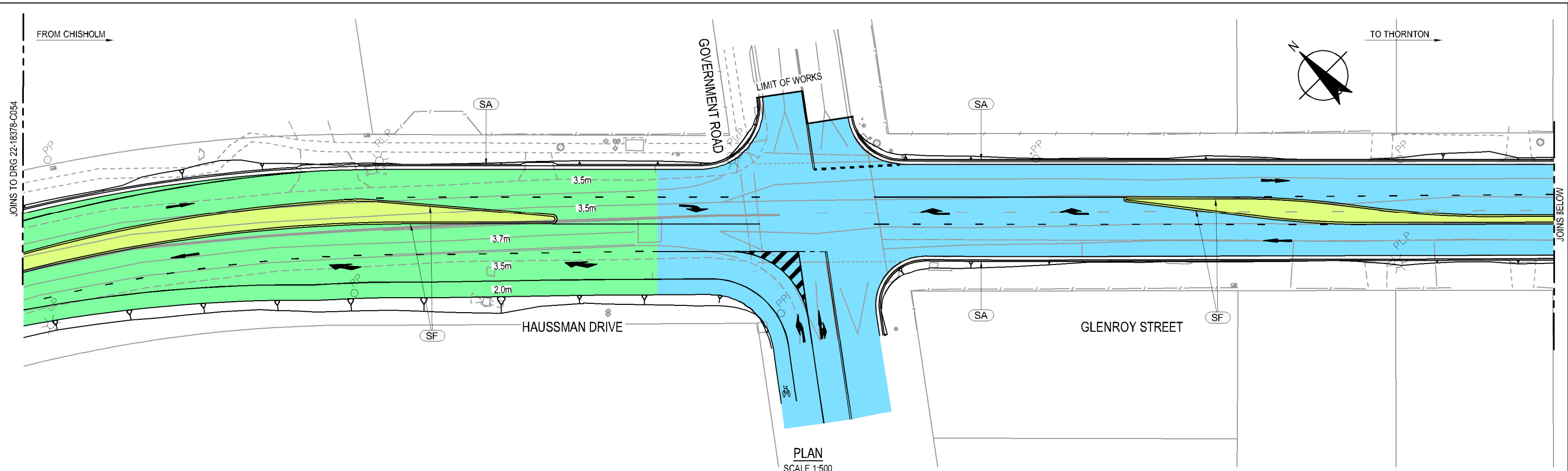
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Client **MAITLAND CITY COUNCIL**
Project **HAUSSMAN DRIVE ROAD UPGRADE**
Title **PAVEMENT PLAN**
SHEET 5 OF 7

Original Size **A3** Drawing No: **22-18378-C054**

Rev: C



PRELIMINARY

C	FINAL CONCEPT DESIGN	RJC	GM	AS	06.10.17	
B	FINAL CONCEPT DESIGN	C.B	G.M	A.S	15.09.17	
A	ISSUED FOR REVIEW	C.B	G.M	A.S	13.07.17	
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Plot Date: 6 October 2017 - 5:08 PM

Plotted By: Bec Cocks

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Drawn R. COCKS

Designer N. HINCKS

Drafting

Design Check

Approved (Project Director)

Date

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Client

MAITLAND CITY COUNCIL
HAUSSMAN DRIVE ROAD UPGRADE
PAVEMENT PLAN
SHEET 6 OF 7

Original Size

A3 Drawing No: 22-18378-C055

Rev: C

