

**ratio:**

**Prepared for:**  
King & Wood Mallesons on behalf of  
Stockland Development Pty Ltd

**Prepared by:**  
Stephen Hunt

**Traffic and Transport Expert Evidence  
Casey Planning Scheme - Amendment C269  
Minta Farm Final Infrastructure  
Contributions Plan**

2 April 2020

**r:**

**traffic: evidence**

**ratio:**consultants

8 Gwynne Street  
Cremorne VIC 3121  
ABN 93 983 380 225

**Prepared for:**

King & Wood Mallesons on behalf of  
Stockland Development Pty Ltd  
Our reference  
16484PANELF01MintaFarmC269

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# Table of contents:

Chapter / Section	Page No.
<b>1</b> .....	<b>Statement of Evidence 5</b>
<b>2</b> .....	<b>Introduction 7</b>
2.1 .....	Overview 7
2.2 .....	Instructions 7
2.3 .....	Facts, Matters and Assumptions 8
<b>3</b> .....	<b>Minta Farm Precinct Structure Plan (PSP) 9</b>
3.1 .....	Amendment C228 9
3.2 .....	Minta Farm PSP 12
<b>4</b> .....	<b>Traffic Modelling and Function of Bells Road 17</b>
4.1 .....	Cardno Modelling 2015 17
4.2 .....	Jacobs Minta Farm PSP 2018 18
4.3 .....	Ratio Modelling 19
4.4 .....	Future Function of Bells Road 20
<b>5</b> .....	<b>Minta Farm Infrastructure Contributions Plan (ICP) 21</b>
5.1 .....	Minta Farm PSP 21
5.2 .....	Interim ICP (Amendment C266) 21
5.3 .....	Final ICP (Amendment C269) 21
5.4 .....	Review of Traffix / Cardno Plans 25
5.5 .....	Use of Supplementary Levy 26
<b>6</b> .....	<b>Bells Road Construction 29</b>
6.1 .....	Function of Bells Road and Initial Construction Standard 29
6.2 .....	Staged Construction and Funding Responsibility 29
<b>7</b> .....	<b>Ratio Interim Functional Plans 30</b>
7.1 .....	Instructions 30
7.2 .....	Basis of Design 30
7.3 .....	Review of Plans 30
<b>8</b> .....	<b>Cardno Revised Concept Layout Plans 32</b>
8.1 .....	Instructions 32
8.2 .....	DoT Advice 32
8.3 .....	Cardno Revised Concept Plans 32
8.4 .....	Review of Plans 33
<b>9</b> .....	<b>Opinion on Issues 36</b>
9.1 .....	Function of Bells Road and ICP Contribution 36
9.2 .....	Inclusion of IN-01 in the ICP 36
9.3 .....	Bells Road Early Works Package 37
9.4 .....	Bells Road PAO 37
Appendices:	
Appendix A.....	: Traffix Group Plans
Appendix B.....	: Cardno Plans
Appendix C.....	: Ratio Plans
Appendix D.....	: Amended Cardno Plans
Appendix E.....	: Ratio PAO Plans

List of Figures:

Figure 3.1 Minta Farm PSP Area and Section 96A Application Land.....	9
Figure 3.2 Minta Farm PSP – Existing Road Network .....	10
Figure 3.3 Minta Farm PSP – Future Urban Structure.....	12
Figure 3.4 – Minta Farm PSP – Street Network Plan.....	13
Figure 3.5 - Minta Farm PSP – Precinct Infrastructure Plan (PIP) .....	15
Figure 5.1 - Standard and Supplementary levy transport construction projects .....	22

List of tables:

Table 4.1- Minta Farm PSP Area - Ultimate Daily Volumes (Cardno 2015).....	18
Table 4.2 – Minta Farm PSP Area – Ultimate Traffic Generation (Jacobs 2018) .....	19
Table 4.3 Bells Road Daily Volumes – Minta Farm Generated Traffic (2046).....	20
Table 5.1 Minta Farm ICP – Transport Infrastructure Projects .....	23
Table 5.2 – Cardno Adopted Stage Roll out of Bells Road.....	24
Table 5.3 – Bells Road Staged Roll Out Costs (Cardno February 2019) .....	24
Table 5.4 Transport Construction Supplementary Levy Allowable items.....	27
Table 8.1 – Revised Plans v ICP Plans.....	34

# 1 Statement of Evidence

## Reference

1.1.1 Casey Planning Scheme – Amendment C269

## Name and Address

1.1.2 Stephen John Hunt - Principal

1.1.3 Ratio Consultants Pty Ltd

1.1.4 8 Gwynne Street, Cremorne, VIC 3121

## Professional Qualifications

1.1.5 Bachelor of Engineering (Civil), 1975, Swinburne University of Technology.

1.1.6 Graduate Diploma of Highway and Traffic Engineering, 1981, Chisholm Institute of Technology.

## Professional Experience

- 2017 – Present: Principal – Traffic, Ratio Consultants.
- 2010 – 2016: Group Manager – Cardno Victoria
- 2007 – 2010: Consultant, Cardno Grogan Richards.
- 1988 – 2006: Director, Grogan Richards.
- 1975 – 1988: Traffic Engineer with Cities of Doncaster and Templestowe, Caulfield and Prahran.

## Professional Expertise

- 1.1.7 I have worked in the area of Traffic and Transportation Engineering throughout my career. My area of expertise includes traffic advice and assessment of a wide range of land use and development proposals for planning authorities, government agencies, corporations and developers.
- 1.1.8 My training, qualifications and experience including involvement with a wide variety of developments over a number of years, qualifies me to comment on the traffic and transport implications of this proposal.

## Instructions which define the scope of this report

- 1.1.9 I have been instructed by King & Wood Mallesons on behalf of Stockland Development Pty Ltd, to undertake a review of the Amendment C269 to the Casey Planning Scheme and prepare an expert evidence statement for submission and presentation at the upcoming panel hearing.
- 1.1.10 My instructions from King & Wood Mallesons are included in Section 2.2.

## Facts, Matters and Assumptions Relied Upon

- 1.1.11 During preparation of this report the facts, matters and assumptions I have relied upon are outlined in Section 2.3

## Identity of Persons Undertaking the Work

- 1.1.12 Stephen Hunt of Ratio Consultants assisted by Peter Malley, also of Ratio Consultants.

## Declaration

- 1.1.13 I have read the Planning Panels Victoria Expert Witness guidelines (April 2019) and understand my obligations to the Panel.
- 1.1.14 I have no relationship with the client other than a business engagement to comment on this matter.

- 1.1.15 My involvement in this project commenced in August 2019 and I was not involved in the preparation of the Amendment or any associated planning.
- 1.1.16 I also have had no involvement in the preparation of Interim Functional Layout Plans for the North South Arterial Road prepared by Ratio Consultants on behalf of Stockland (Plans 15527T-FLP007-C1-9) dated 11<sup>th</sup> February 2020, which I have been asked to consider in association with preparation of this evidence statement.
- 1.1.17 I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge, been withheld from the Panel.

A handwritten signature in black ink, appearing to be 'S. Hunt', written on a light grey background.

**Stephen Hunt**  
**Principal: Traffic**  
**Ratio Consultants**

# 2 Introduction

## 2.1 Overview

- 2.1.1 I have been instructed by King & Wood Mallesons on behalf of Stockland Development Pty Ltd to provide my expert opinion with respect to proposed Amendment C269 to the Casey Planning Scheme.
- 2.1.2 Amendment C269 seeks to make changes to the Casey Planning Scheme to replace the Minta Farm Interim Infrastructure Contributions Plan (ICP) with the Ultimate ICP, which was exhibited in August 2019.
- 2.1.3 This report has been prepared in accordance with the recently updated Planning Panels Victoria Expert Witness guidelines.
- 2.1.4 In the course of preparing this assessment, I have reviewed the Interim ICP gazetted in January 2019, the proposed Final ICP, dated July 2019 as exhibited, and examined plans prepared by Ratio dated 11<sup>th</sup> February 2020 showing the proposed interim configuration of the North South Arterial (Bells Road).
- 2.1.5 My opinions with respect to the exhibited amendment and in particular, the proposed delivery of Bells Road and the funding contribution sought through the Final Minta Farm ICP are set out as follows.

## 2.2 Instructions

- 2.2.1 My preliminary instructions in this matter were provided by King & Wood Mallesons on the 15<sup>th</sup> August 2019, seeking my engagement to review Amendment C269 to the Casey Planning Scheme, assess submissions and to provide my expert opinion on the appropriate delivery of Bells Road to the Panel convened to consider the Amendment and the final Minta Farm ICP.
- 2.2.2 In a letter dated 12<sup>th</sup> September 2019, I was instructed as follows.

*"We are instructed to engage you as an expert witness to prepare an expert witness report within the scope of your expertise and present evidence at the Panel hearing to express your opinions as to whether the Amendment is appropriate having regard to:*

*(a) any regulatory framework applicable to the proposal which is within your expertise to examine and comment on,*

*(b) your own judgement and experience; and*

*(c) any other matter which you regard as relevant to the formulation of your opinion, stating clearly the basis for your views.*

*You are also requested to review and comment on traffic issues within your expertise raised in written submissions to the Amendment.*

- 2.2.3 In an email dated the 26<sup>th</sup> September 2019, I was further provided a list of matters to be considered in my evidence as follows:
  - The appropriateness of the requirement in the ICP to deliver all or any of the parts of Bells Road as suggested in the newly exhibited PSP/ICP which is inconsistent with the prior gazettal and panel report.
  - If it is appropriate to include Bells Road in the ICP, whether Bells Road construction should be fully included in the standard levy in accordance with the Ministerial Direction.
  - If it was appropriate to include Bells Road in the Final ICP, whether the road has been designed appropriately and most efficiently, both in consideration to the early works package and the interim design with consideration to the ultimate design and use.
  - the appropriateness of inclusion of IN01 in the ICP, fully or partly;
  - the accuracy of the PAO in relation to the Bells Road alignment.

2.2.4 Finally, in an email dated 20<sup>th</sup> February 2020, I was provided with Stockland submission dated the 12<sup>th</sup> February 2020 containing functional layout plans prepared by Ratio dated 11<sup>th</sup> February 2020, to assist in the preparation of my expert report.

## **2.3 Facts, Matters and Assumptions**

2.3.1 During the course of my assessment I have relied on the following facts, matters and assumptions:

- Minta Farm Precinct Structure plan (PSP) as gazetted,
- Minta Farm Precinct Structure Plan Panel Report (Amendment C228)
- Stockland submission to Amendment C228,
- Minta Farm Interim Infrastructure Contributions Plan as gazetted,
- Minta Farm Final Infrastructure Contributions Plan, as exhibited,
- Amendment C269 documents as exhibited,
- *Ministerial Direction on the Preparation of Infrastructure Contribution Plans and Ministerial Reporting Requirements for Infrastructure Contribution Plans (July 2018)*
- *Growth Area Network Planning Guidance & Policy Principles – Operations Policy – VicRoads July 2015*
- Final Intersection Layouts for the Minta Farm PSP area, prepared by Traffix Group dated 21<sup>st</sup> September 2018,
- “Benchmark Infrastructure Costing – Selected Minta Farm ICP Items” prepared by Cardno dated 14<sup>th</sup> March 2019.
- Thompsons Road, Clyde Creek and Casey Fields South (Residential PSPs 53,54 and 57.1-Transport Modeling prepared by Aecom (July 2014).
- Interim Functional Layout Plans for the North South Arterial Road prepared by Ratio Consultants on behalf of Stockland (Plans 15527T-FLP007-C1-9) dated 11<sup>th</sup> February 2020
- Revised Concept Layout Plans for North South Arterial prepared by Cardno dated 13<sup>th</sup> March 2020.

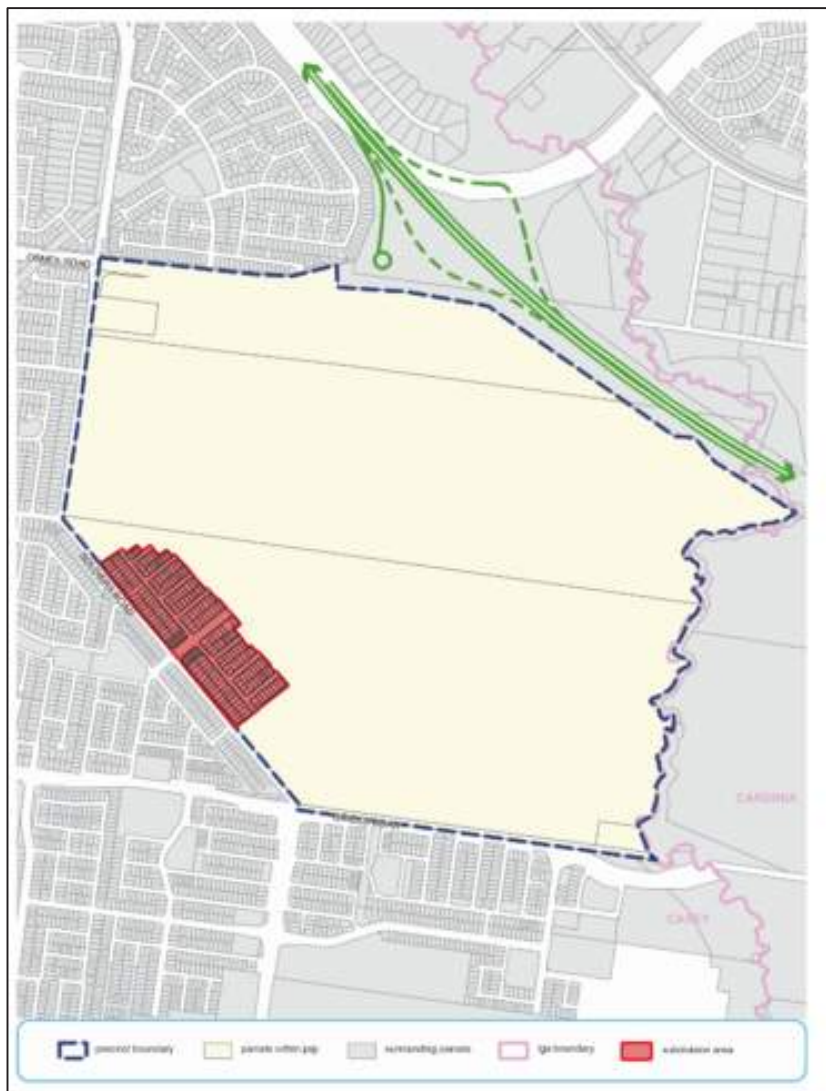


# 3 Minta Farm Precinct Structure Plan (PSP)

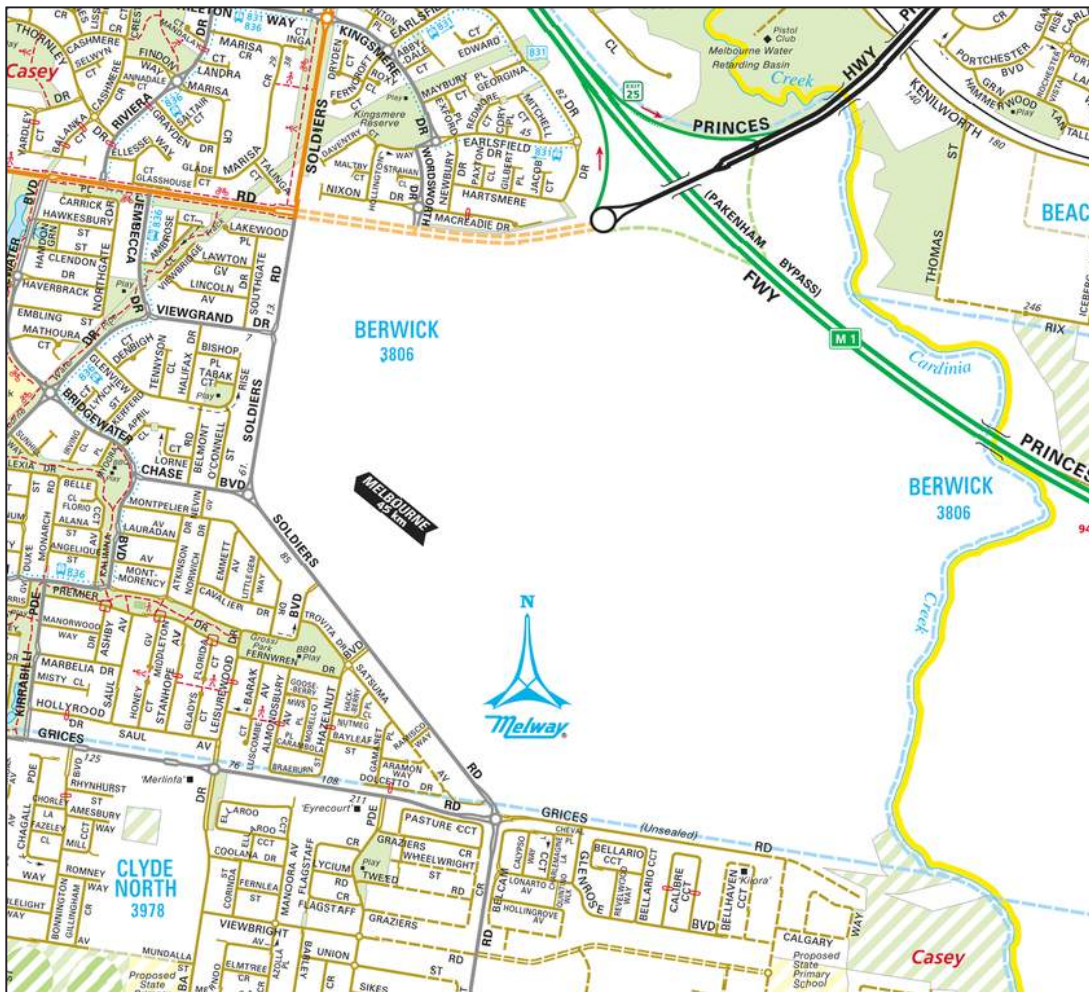
## 3.1 Amendment C228

- 3.1.1 The Minta Farm Precinct Structure Plan (PSP) was approved in December 2018.
- 3.1.2 The PSP was introduced as an incorporated document in the Casey Planning Scheme through Amendment C228, which was prepared by the Victorian Planning Authority. The Amendment was a combined planning permit application and Planning Scheme Amendment under Section 96A of the Planning and Environment Act.
- 3.1.3 The planning permit application applied to Part 2 of 2-106 Soldiers Road, Berwick and proposed staged subdivision of the land for residential development containing 231 residential lots.
- 3.1.4 The location of the PSP area and the Section 96A land is shown in Figure 3.1, with the existing road network in the vicinity of the PSP area shown in Figure 3.2.

**Figure 3.1 Minta Farm PSP Area and Section 96A Application Land**



**Figure 3.2 Minta Farm PSP – Existing Road Network**



- 3.1.5 The combined amendment was exhibited, with submissions considered by an Independent Panel in April 2018.
- 3.1.6 I was instructed by King & Wood Mallesons on behalf of Stockland and Norton Rose Fulbright on behalf of the Minta Group to review the Amendment C228 and to provide my opinions with respect to the Amendment and on traffic issues raised in written submissions to the exhibited amendment.
- 3.1.7 I subsequently presented expert evidence to the Panel convened to consider the Amendment providing my opinion on the following issues in a report dated 5<sup>th</sup> April 2018:
  - Adequacy of traffic modelling undertaken by Cardno which informed the Amendment and preparation of the exhibited PSP.
  - Adequacy of the proposed street network including the North South Arterial and intersections with East West Boulevard Connector streets.
  - Traffic Implications of the Stockland 96A application and the need or otherwise for a lot cap on development prior to the delivery of the North South Arterial Road.
- 3.1.8 The Panel Report, issued on 11<sup>th</sup> July 2018, stated as follows with respect to traffic volumes and congestion on the existing regional road network, improvements likely as a consequence of the extension of O’Shea Road to the Beaconsfield Interchange and the development of the North South Arterial.

*“The Panel accepts that the traffic volumes on parts of the existing road network are higher than desirable and that there is a relatively high level of congestion, particularly at some key intersections. As noted by the VPA, however, growth areas, including the southeast corridor, are*

*undergoing a ‘transformational change’ and it was inevitable that infrastructure, including the capacity of the road network, would come under some stress. With existing levels of development, the level of congestion on the road network in the City of Casey will continue to worsen with or without the development of Minta Farm.*

*The threshold issue is whether the traffic impact of Minta Farms development would be sufficiently averse to justify delaying any development until major improvements to the surrounding road network are completed.*

*The Panel does not consider this to be the case. The State Government has committed to the extension and duplication of O’Shea Road to the Beaconsfield freeway interchange with works to be completed by 2022 i.e. concurrent with the progressive development of Minta Farm.*

*This major upgrade, in combination with the delivery of the north-south arterial in a similar timeframe, will largely address traffic congestion on the surrounding road network. All of the parties agreed that the early delivery of the critical north-south arterial would provide a vital new arterial link in the regional road network. Somewhat paradoxically, its delivery is largely contingent on Minta Farm being developed.”*

## 3.2 Minta Farm PSP

### Future Urban Structure

3.2.1 The future urban structure for the Minta Farm PSP area, as gazetted is shown in Figure 3.3.

**Figure 3.3 Minta Farm PSP – Future Urban Structure**



3.2.2 It is estimated that the precinct, will ultimately accommodate a population of approximately 8,000 people accommodated in 2,850 dwellings and provide 11,000 jobs within a regionally significant employment precinct proposed in the northern part of the PSP area.

3.2.3 It is also proposed that a local town centre, supported by a second convenience centre will provide for retail, entertainment, education and community facilities serving the local community.

## Transport and Movement

3.2.4 The proposed street network to serve the precinct is shown in Figure 3.4.

**Figure 3.4 – Minta Farm PSP – Street Network Plan**



3.2.5 The street network is designed to not only service the local traffic requirements of the precinct, but to also accommodate key strategic transport links which will supplement the arterial network servicing the broader growth corridor.

3.2.6 Development of the precinct is proposed to provide for, and partially facilitate, the construction of a new six lane arterial North South Arterial (**Bells Road**) through the precinct which will run north from Grices Road as an extension of Soldiers Road, to intersect with the proposed extension of O'Shea Road.

- 3.2.7 O'Shea Road is to be extended east from Soldiers Road along the northern boundary of the PSP area, with the State Government, through VicRoads, responsible for the construction of the road. The easterly extension of O'Shea Road will form a new connection to the Princes Freeway via a western leg of the Beaconsfield Interchange, with Bells Road also linking to the interchange via the O'Shea Road connection.
- 3.2.8 The construction of Bells Road, linking developing growth areas to the south in the Clyde North area to the Princes Freeway interchange, is designed to reduce pressure on Berwick Cranbourne (Clyde) Road and the existing Berwick interchange by providing an alternate connection to the freeway from the growth area.
- 3.2.9 Following the completion of Bells Road, it is proposed to truncate the existing section of Soldiers Road north of the Grices Road intersection. Soldiers Road will continue to connect to the north to O'Shea Road, forming part of the grid connector network servicing the wider local area.
- 3.2.10 Within the PSP area, a network of new connector streets and local roads is proposed, supporting the future arterial network upgrades facilitated by the Minta Farm PSP. Three connector streets are proposed running east from Soldiers Road forming intersections with Soldiers Road.
- 3.2.11 These connections will facilitate east west access, providing links from existing residential areas to the west of Soldiers Road to Bells Road, as well as connections from Minta Farm to Soldiers Road and existing local facilities in the Eden Rise Precinct.
- 3.2.12 The Public Transport and Path Network Plan shown as Plan 9 of the PSP, proposes that connector roads within the precinct will be "bus capable", with future bus connections shown at Chase Boulevard and Hazelnut Boulevard, potentially through extension of Route 836 which services that area.

#### **Infrastructure Contributions Plan**

- 3.2.13 Section 1.3 of the PSP refers to the Minta Farm Infrastructure Contributions Plan, which will set out the requirements for infrastructure funding across the precinct.
- 3.2.14 The PSP notes that the ICP will be a separate document which will be introduced into the Planning Scheme under a separate amendment and in accordance with the Ministerial Direction on the Preparation and Content of Infrastructure Contributions plans (July 2018).

#### **Infrastructure Delivery**

- 3.2.15 The PSP states that infrastructure will be provided within the precinct incorporating a number of mechanisms including:
  - Subdivision construction work by developers.
  - Section 173 agreements.
  - Minta Farm Infrastructure Contributions Plan.
  - Relevant development contributions from adjoining areas; and
  - Capital works projects by Council and State Government agencies.
- 3.2.16 Plan 13 and Table 8 of the PSP illustrates the provision of infrastructure considered to be required in conjunction with the development of the PSP area.
- 3.2.17 The Precinct Infrastructure Plan (**PIP**) is shown in Figure 3.5.

**Figure 3.5 - Minta Farm PSP – Precinct Infrastructure Plan (PIP)**



3.2.18 The PIP shows three major transport infrastructure projects within the precinct:

1. The North South Arterial, comprising delivery of land to accommodate the (ultimate) six lane arterial and the construction of a 2-lane (interim) carriageway between Grices Road and the future O'Shea Road intersection. (*Projects RD-01, RD-02, RD-03 and RD-04*).
2. Construction of the (interim) O'Shea Road / North South Arterial Road intersection (*Project IN-01*).
3. Delivery of land for (ultimate) North South Arterial / Grices Road intersection and construction of (interim) modifications to the existing intersection, including truncation of Soldiers Road north and construction of a new northern leg to form the connection to the North South Arterial (*IN-05*).

- 3.2.19 The delivery of the North South Arterial as a 2 lane single carriageway and associated interim O'Shea Road and Grices Road intersections are proposed to have no external funding, with Projects IN-01, RD-01, RD-02, RD-03 and RD-04 and IN-05 proposed to be 100% funded by the ICP.
- 3.2.20 The PIP also includes the provision of land for the (ultimate) construction of arterial / connector intersections at three locations along the North South Arterial and construction of (interim) intersection treatments (IN-02, IN-03 and IN-04) and an arterial /connector intersection to Grices Road (IN-06).
- 3.2.21 The construction and delivery of O'Shea Road between Soldiers Road and the Beaconsfield Interchange as a 4-lane arterial road and the intersection of O'Shea Road / Soldiers Road is included in the PIP, with Metropolitan Roads Authority being nominated as the lead agency, with these works funded as part of the Monash Stage 2 upgrade works.
- 3.2.22 The provision of land for, and the delivery of, O'Shea Road is listed in Table 8 as not being included in the ICP.

**Infrastructure Staging**

- 3.2.23 Section 3.7.1 of the PSP lists the following requirements and guidelines for development staging and infrastructure delivery.

**3.7.1 Development staging**

REQUIREMENTS	
<b>R94</b>	The north–south arterial road as funded by the Minta Farm ICP must be delivered prior to the subdivision of the 1,001st aggregate residential lot unless otherwise agreed in writing by the relevant road management authority.
<b>R95</b>	For development abutting the north–south arterial road, staging must prioritise the delivery of the road, to the satisfaction of the responsible authority. Delivery of the north–south arterial road must prioritise construction to property boundaries where an inter-parcel connection is intended or indicated by Plan 10, in accordance with the staging requirements of the permit.
<b>R96</b>	<p>Development staging must provide for the timely provision and delivery of:</p> <ul style="list-style-type: none"> <li>• the arterial road network and seek to co-ordinate the delivery of these roads in conjunction with the timing of the arterial road connections located external to the precinct</li> <li>• connector streets and connector street bridges</li> <li>• street connections between properties, constructed to the property boundary</li> <li>• on- and off-road pedestrian and bicycle path connections.</li> </ul>
GUIDELINES	
<b>G84</b>	<p>Development staging will be determined largely by the development proposals on land within the precinct and the availability of infrastructure services. Development applications should demonstrate the following:</p> <ul style="list-style-type: none"> <li>• How the development will be integrated with adjoining developments, through the timely provision of connecting roads and pedestrian and bicycle paths, where practicable.</li> <li>• Where development does not directly adjoin the urban edge, how local open space will be provided in the early stages of the development to provide new residents with amenity.</li> <li>• How sealed road access will be provided to each new lot.</li> <li>• How trunk service extensions will be delivered, including confirmation of the agreed approach and timing by the relevant infrastructure or service provider.</li> <li>• How development will avoid and minimise impacts to conservation areas including with regard to the location of essential and other services.</li> </ul>
<b>G85</b>	Development staging should provide for the early delivery of sports reserves, community facilities, parks and playgrounds.

- 3.2.24 Section 4.8 pf the PSP provides a series of concept plans depicting major transport infrastructure projects which were prepared by Traffix Group in August 2018.
- 3.2.25 The plans, attached in **Appendix A** to this report, are labelled “Minta Farm infrastructure contributions plan intersection concept plans” and provide concepts for the intersections *IN-01*, *IN-02*, *IN-03*, *IN-04* and *IN-05*.





# 4 Traffic Modelling and Function of Bells Road

## 4.1 Cardno Modelling 2015

- 4.1.1 In 2015, the Metropolitan Planning Authority, now the VPA, commissioned Cardno to undertake strategic modelling within the South East Growth Corridor in order to inform preparation of draft Urban Structure Plans for the McPherson, Croskell and **Minta Farm** PSP areas.
- 4.1.2 I was employed by Cardno at that time but was not directly involved in the modelling undertaken or the preparation of the subsequent report.
- 4.1.3 Cardno undertook the modelling using the South East Growth Corridor version of the Victorian Integrated Transport Model (VITM), with a final report entitled “*Strategic Transport Modelling Assessment (Ultimate Scenario) – McPherson, Croskell and Minta Farm Precincts*” submitted in August 2015.
- 4.1.4 The Cardno report was exhibited as background documentation in association with the approval of the Minta Farm PSP through Amendment C228.
- 4.1.5 2046 VITM modelling undertaken by Cardno was based on the following land use inputs for the Minta Farm PSP:
- |                       |                 |
|-----------------------|-----------------|
| — Population:         | 8,067 people    |
| — Households:         | 2,970 dwellings |
| — School Enrollments: | 451 pupils      |
| — Total Jobs:         | 10,229 jobs     |
- 4.1.6 Cardno estimated that at full development (2046) the precinct will generate 54,746 vehicle trips per day, 4,232 trips in the AM peak and 5,456 in the PM peak hour.
- 4.1.7 A summary of 2046 daily volumes on key arterial links as modelled by Cardno, compared with existing (2016) volumes is shown in Table 4.1 on the following page.
- 4.1.8 It is clear from the modelling undertaken by Cardo that, despite the additional transport infrastructure contemplated by the North South Arterial and the easterly extension of O’Shea Road, traffic volumes using existing arterial roads will continue to increase as development proceeds in the area.
- 4.1.9 Ultimately, it is expected that Bells Road through Minta Farm will carry in the order of 45,000 to 50,000 vehicles per day, with similar volumes utilising Clyde Road and O’Shea Road between Clyde Road and the Beaconsfield Interchange.

**Table 4.1- Minta Farm PSP Area - Ultimate Daily Volumes (Cardno 2015)**

Road	Section	Existing <sup>1</sup> (vpd)	2046 <sup>2</sup> (vpd)
Bells Road	South of O'Shea	-	42,500
Soldiers Road / Bells Road	South of Grices	8,800	45,200
Clyde Road	North of O'Shea	38,700	46,500
	South of Grices	27,800	54,000
Soldiers Road	North of O'Shea	11,800	17,100
O'Shea Road	East of Clyde	14,100	46,300
	West of Monash	-	46,900
Grices Road	East of Clyde	12,250	12,700
	East of Bells	1700	15,000

1. Jacobs Surveys Feb 2018

2. Cardno Report Figure 5.3 and Appendix E

## 4.2 Jacobs Minta Farm PSP 2018

- 4.2.1 Jacobs Group was engaged by the City of Casey in 2018 to review traffic modelling undertaken in association with the preparation of the Minta Farm PSP and, amongst other things, assess critical transport infrastructure required development and staging of the PSP.
- 4.2.2 Jacobs also reviewed previous traffic modelling undertaken, including the Cardno analysis, noting with respect to the ultimate (2046) modelling undertaken as follows:

*"The ultimate modelling which is what is primarily reported upon in the document includes an extensive package of road duplication across the entire City of Casey. This model year represents 2046. Cardno made no changes to the standard VITM reference case though so this is deemed appropriate and consistent with (earlier) Aecom modelling."*<sup>1</sup>

*The model zone system was disaggregated to better replicate the PSP. There was originally five zones for Minta Farm, whereas Cardno disaggregated this to nineteen. This adds robustness to the modelling".*

- 4.2.3 For the purposes of their assessment. Jacobs accepted the ultimate daily volumes modelled by Cardo as being representative of ultimate (2046) volumes.
- 4.2.4 Jacobs undertook additional modelling to determine the likely traffic generation from the Minta Farm PSP area, assuming 2,853 residential dwellings, 11,258 jobs within the employment precinct.
- 4.2.5 The broadscale modelling undertaken by Jacobs on behalf of the City of Casey estimated that the PSP area would generate daily volumes of 72,500 vehicle movements per day and peak hourly volumes of 6,978 vph and 7,877 vph in the AM and PM respectively, as summarised in Table 4.2.

1. Aecom – "Thompsons Road, Clyde Creek and Casey Fields South (Residential) PSPs – Transport Modelling" - July 2014 for MPA.

**Table 4.2 – Minta Farm PSP Area – Ultimate Traffic Generation (Jacobs 2018)**

Land Use	Daily Trips (vpd)	AM Peak Hour (vph)	PM Peak Hour (vph)
Residential	19,258	1819	1819
Retail	19,405	581	1,778
Office / Industry	33,840	4,578	4,280
<b>Total</b>	<b>72,503</b>	<b>6,978</b>	<b>7,877</b>

- 4.2.6 Assuming that 67% of generated traffic from Minta Farm will utilise Bells Road to access O’Shea Road to the north and 14% to the south, Jacobs modelled Bells Road carrying **48,577** vpd south of O’Shea Road and **10,150** vpd north of Grices Road.
- 4.2.7 It is noted that the Jacobs estimates are considerably higher than the Cardno modelled volumes, with PSP only generated volumes at the northern end of Bells Road exceeding total volumes as modelled by Cardno.

### **4.3 Ratio Modelling**

#### **C228 Panel**

- 4.3.1 I presented evidence on behalf of Stockland to the Panel which considered Amendment C228 and the Minta Farm PSP in April 2018.
- 4.3.2 In my evidence, I undertook a review of Cardno traffic modelling which had informed the preparation of the PSP and local area modelling undertaken by Traffix Group on behalf of Council.
- 4.3.3 I accepted the Cardo modelling as reflecting ultimate volumes on the arterial network, including the future Bells Road, noting that is expected that the North South Arterial through Minta Farm will carry in the order of 45,000 to 50,000 vehicles per day, with similar volumes utilising Clyde Road and O’Shea Road between Clyde Road and the Beaconsfield Interchange.
- 4.3.4 In assessing the modelling undertaken by the Traffix Group, I undertook local area modelling of interim scenarios to test the capacity of the local road network to absorb initial development prior to the construction of Bells Road and the connection to the Beaconsfield Interchange to the Monash Freeway.
- 4.3.5 The modelling undertaken did not however extend to projected volumes following construction of Bells Road or the components of traffic using Bells Road generated by the Minta Farm precinct.

#### **Minta Farm PSP Area**

- 4.3.6 In order to understand the level of traffic likely to be generated by the Minta Farm Precinct onto Bells Road, I have extended the modelling undertaken in 2018, to include full development of the PSP and construction of Bells Road as an ultimate 6 lane arterial road.
- 4.3.7 Estimated daily volumes along Bells Road generated by development within the Minta Farm PSP area is shown in Table 4.3.

**Table 4.3 Bells Road Daily Volumes – Minta Farm Generated Traffic (2046)**

Section	Component Daily Volume				Total
	Residential North	Residential South	Town Centre	Employment	
South of O'Shea	2780	6150	5980	6150	21,060 vpd
North of IN-03	560	7890	2230	2290	12,970 vpd
South of IN-03	870	6030	2230	2290	11,420 vpd
North of Grice	1160	2040	2230	2290	7,720 vpd

- 4.3.8 The modelling shows that Bells Road, immediately south of O'Shea Road can be expected to attract approximately 21,000 vehicle movements per day from development within the Minta Farm PSP area, of which approximately 30% (or 6,150 vpd) will be generated by the residential precincts south of IN-03.
- 4.3.9 Generated volumes in the order of 12,000 vehicles per day are expected to the south of the Town Centre, reducing to approximately 7,700 vehicles per day north of Grices Road.
- 4.3.10 Based on this modelling and adopting the ultimate volumes as modelled by Cardno, it is estimated that, at the northern end of Bells Road, Minta Farm generated traffic will comprise approximately 50% of total volumes using the road, and 18% at the southern end.

#### **4.4 Future Function of Bells Road**

- 4.4.1 Bells Road, when constructed will form a key component of the arterial road network serving the Growth Corridor, providing a new connection to the Princes Freeway at the existing Beaconsfield Interchange, in conjunction with the committed easterly extension of O'Shea Road.
- 4.4.2 The road has been modelled to ultimately carry at least 42,500 vehicles per day, through Minta Farm, justifying its classification as a primary arterial road and the ultimate 6 lane cross-section shown in the PSP. Given the immediate connectivity provided, and existing congestion levels on Clyde Road, I expect that when initially constructed, it will attract volumes of between 10,000 and 15,000 vpd.
- 4.4.3 As well as acting as a key component of the regional arterial network, Bells Road will also form part of the connector road network within the Minta Farm PSP area, with a proportion of locally generated trips being distributed to the surrounding road network via Bells Road, particularly for connection to the north to the Princes Freeway via O'Shea Road the Beaconsfield interchange. To a lesser extent, it will also facilitate trips to the south west via Soldiers Road and / or Grices Road.
- 4.4.4 As discussed above, approximately 50% of total ultimate volumes using Bells Road at its northern end are expected to be generated by Minta Farm, reducing to less than 20% north of Grices Road.
- 4.4.5 If the proportion of traffic is used as the basis for determining the extent of external funding contribution, a model of 50% funding of the total cost of construction of the road from the ICP and 50% from external funding sources is considered appropriate,
- 4.4.6 As such, the funding of one carriageway through the Final ICP as proposed is appropriate and equitable.

# 5 Minta Farm Infrastructure Contributions Plan (ICP)

## 5.1 Minta Farm PSP

- 5.1.1 Section 1.3 of the Minta Farm PSP refers to the Minta Farm Infrastructure Plan (ICP, which “*will set out the requirements for infrastructure funding across the precinct*”.
- 5.1.2 The PSP notes that the ICP will be a separate document which will be “*introduced into the Casey Planning Scheme under a separate amendment and in accordance with the Ministerial Direction on the Preparation of Infrastructure Contribution Plans and Ministerial Reporting Requirements for Infrastructure Contribution Plans (July 2018)*”.
- 5.1.3 The PSP also notes that the projects to be included in the ICP are listed in Table 8 and Plan 13 of the PSP.

## 5.2 Interim ICP (Amendment C266)

- 5.2.1 On 30th June 2019, the Minister for Planning, at the request of the VPA, approved an interim Minta Farm ICP through Amendment C266 to the Casey Planning Scheme.
- 5.2.2 The Interim ICP, dated May 2019 was implemented at the direction of the Minister to enable the development of the Minta Farm precinct to commence, with a permanent ICP to be implemented through a separate amendment, subject to a standard amendment process including exhibition and consideration of submissions by a panel if required.

## 5.3 Final ICP (Amendment C269)

- 5.3.1 Amendment C269 to the Casey Planning Scheme, which seeks to introduce the Minta Farm Final Infrastructure Contributions Plan (July 2019) into the Casey Planning Scheme, was exhibited by the VPA between the 8th August and the 9th September 2019.
- 5.3.2 The infrastructure contribution projects included in the Minta Farm Final ICP are shown in Plan 2 of the ICP, reproduced in Figure 5.1.

Figure 5.1 - Standard and Supplementary levy transport construction projects



5.3.3 It is proposed that the ICP contribute a total of \$46.65 million for the construction of Bells Road, \$26.09 million within the Standard Levy and \$20.56 million within a supplementary levy.

5.3.4 The allocated contribution for each component of the work is summarised in Table 5.1.

**Table 5.1 Minta Farm ICP – Transport Infrastructure Projects**

Project	Description	Standard Levy		Supplementary Levy	
		Internal	Cost	Internal	Cost
RD 01-04	<b>North South Arterial</b> – Construction of 1 through lane in each direction (interim)	100%	\$5.63m	-	-
RD-01	<b>North South Arterial</b> – Construction of 1 additional southbound lane to support IN-01 and IN-02 (interim)	100%	\$0.92m	-	-
RD-02	<b>North South Arterial</b> – Construction of 1 additional southbound lane to support IN-02 and IN-03 (interim)	100%	\$0.93m	-	-
RD-04	<b>North South Arterial</b> – Construction of 1 additional southbound lane to support IN-04 and IN-05 (interim)	100%	\$1.49m	-	-
IN-01	O’Shea Road / North South Arterial Road (Interim)	100%	\$6.80m	-	-
IN-02	North South Arterial / Connector Road (interim)	-	-	100%	\$6.58m
IN-03	North South Arterial / Connector Road (interim)	65.58%	\$3.39m	34.42%	\$1.78m
IN-04	North South Arterial / Connector Road (interim)	-	-	100%	\$4.19m
IN-05	North South Arterial / Grices Road (ultimate)	100%	\$6.79m	-	-
PS-01	Pedestrian Signals	50%	\$0.14m	-	-
EDW-01	Early Delivery of Works – First two lanes of North South Arterial	-	-	100%	\$8.02m
<b>TOTAL</b>		-	<b>\$26.09m</b>	-	<b>\$20.56m</b>

## Basis of Costings

- 5.3.5 The costings contained in the ICP as exhibited were prepared by Cardno in a report to the VPA dated 14<sup>th</sup> March 2019.
- 5.3.6 The costings were based on plans prepared by Cardno dated February 2019, which updated the plans prepared by Traffix Group prepared in September 2018 attached to the PSP. A copy of the Cardno Plans is provided in **Appendix B**.
- 5.3.7 Cardno cost estimates assumed a four stage roll out of Bells Road as summarised in Table 5.2.

**Table 5.2 – Cardno Adopted Stage Roll out of Bells Road**

Stage	Works
Stage 1	Early works package providing for the initial construction of Bells Road as a continuous two lane road between O’Shea Road in the north and Grices Road in the south and intersections IN-01 (O’Shea Road / Bells Road) and IN-05 (Bells Road / Grices Road)
Stage 2	Delivery of IN-04 and accommodating works
Stage 3	Delivery of IN-03 and accommodating works
Stage 4	Delivery of IN-04 and accommodating works

- 5.3.8 The cost estimates for each of the four stages as prepared by Cardno are summarised in Table 5.3

**Table 5.3 – Bells Road Staged Roll Out Costs (Cardno February 2019)**

Stage	Components	Cost Estimate
Stage 1 – Early Works	IN01	\$6.80m
	IN05	\$6.79m
	RD01-04	\$5.63m
	<b>Stage 1 Total</b>	<b>\$19.22m</b>
Stage 2 – IN04	IN04	\$4.19m
	RD04	\$1.49m
	<b>Stage 2 Total</b>	<b>\$5.58m</b>
Stage 3 – IN03	IN03	\$5.17m
	<b>Stage 3 Total</b>	<b>\$5.17m</b>
Stage 4 – IN02	IN02	\$6.57
	RD01	\$0.92m
	RD02	\$0.93m
	<b>Stage 4 Total</b>	<b>\$8.42m</b>
<b>Total</b>		<b>\$38.49m</b>

- 5.3.9 It is noted that the staged delivery of transport items as costed by Cardno totals \$38.49m, which is less than the \$46.65m included in the combined Standard and Supplementary Levies.



- 5.3.10 The difference appears to relate to the non-inclusion of two projects in the staged delivery schedule:
- PS-01 Pedestrian signals across O'Shea Road - \$0.14m
  - EDW-01 (Early Works Package for Bells Road - \$8.02m
- 5.3.11 The pedestrian signals are a minor item which presumably will be constructed either in association with the O'Shea Road project or retrofitted when demand emerges.
- 5.3.12 The package of works proposed in the Supplementary Levy for the early delivery of Bells Road has not been included in the Cardno stage plan, seemingly as the cost estimates for RD-01-04, IN01 and IN05, (defined as the early works in their cost report), *are already included in the cost estimates and in the Standard Levy*, such that the additional amount of \$8.02m in the Supplementary Levy is potentially double counting.

## 5.4 Review of Traffix / Cardno Plans

- 5.4.1 Ratio has reviewed the concept plans for Bells Road prepared by Cardno which form the basis of the costings included in the exhibited ICP.
- 5.4.2 The concept plans are noted as being based on traffic alignment plans in the PSP prepared by Traffix Group. The Traffix design provides for the construction of Bells Road as a two-lane road, incorporating flaring of the road to provide interim intersection treatments at IN-01, IN-02, IN-03, IN-04 and IN-05.
- 5.4.3 The PSP functional plans for each intersection (prepared by Traffix) are provided **Appendix A**.
- 5.4.4 The Traffix functional layouts show the following design features:
1. The intersections are designed to match the ultimate intersection alignment upfront, incorporating an “*outside in*” philosophy designed to minimise future costs when the intersections are upgraded to the ultimate configuration.
  2. The Bells Road approaches to IN-02, IN-03, IN-04 and IN-05 each provide for two through lanes and separate left and right turn lanes on each approach.
  3. IN-01 is designed to provide for 2 right turn lanes from Bells Road into O'Shea Road east, with a left turn slip lane to the west. Double signal controlled left turn lanes are shown from O'Shea east into Bells Road.
  4. The length of left and right turn lanes along Bells Road appear to be designed to accommodate 80kph approach deceleration requirements.
  5. Each intersection tapers back to a midblock two-lane roadway, aligned to match the future western (northbound) carriageway. Transition radii incorporated into the tapers appear to adopt a design speed of 60kph.
  6. The designs of the east west connector road legs at IN-02, IN-03 and IN-04 correspond to standard connector configurations in accordance with *VicRoads Guidance for Planning Road Networks in Growth Areas* for a connector road.
- 5.4.5 The Cardno intersection plans adopt a similar design philosophy to the Traffix PSP plans, incorporating an “*outside in*” design philosophy for each intersection. Cardno have however adopted a design speed of **80 kph** for the Bells Road, not only for the turn lane lengths, but also for the transition radii and taper lengths.
- 5.4.6 The adoption of an 80 kph design speed for the taper radii, together with the relatively close spacings of the intersections and the curved alignment of the road, results in tapers between intersections effectively overlapping.
- 5.4.7 As such the design has not incorporated tapers back to a two lane road as envisaged in the PSP and the Traffix design, but provided for a second carriageway between intersections as follows:
- Stage 2 (IN-04) – construction of a two lane second carriageway between IN-04 and IN-05 (Grices Road)
  - Stage 3 (IN-03) – construction of a two lane second carriageway between IN-03 and IN-04)

- Stage 4 (INO2) – construction of a two lane second carriageway between IN-02 and IN-03 and between IN-02 and IN-01 (O’Shea Road).
- As a consequence, the ICP includes additional projects RD-01, RD-02 and RD-03 to “join” the intersections, noting that the second carriageway between IN-03 and IN-04 is not nominated as an additional road project, but included in the costs for IN-03 in the Stage 3 works.

5.4.8 In effect, the adoption of an 80kph design speed through each intersection has resulted in the ICP not only seeking to fund the construction of a single carriageway and interim intersections as specified in the PSP, but to duplicate Bells Road.

5.4.9 Effectively the ICP, as exhibited, is seeking to fund a four lane regional arterial road between O’Shea Road and Grices Road through the Minta Farm PSP. This is contrary to the gazetted PSP.

5.4.10 The Cardno intersection plans and costings in the exhibited ICP appear to be generally in accordance with the functional layout of the east west intersecting roads as depicted in the PSP.

5.4.11 At IN-02, IN-03 and IN-04, intersecting roads are broadly configured to provide a shared through and left lane and a separate right turn lane on each approach, which is consistent with VicRoads *Guidance for Planning Road Networks in Growth Areas* for a connector road.

## 5.5 Use of Supplementary Levy

5.5.1 As shown in Table 5.1, the duplication of Bells Road as proposed requires additional ICP funding beyond the Standard Levy, with an additional \$20.56 million dollars proposed within a Supplementary Levy.

5.5.2 The Infrastructure Contribution Plan Guidelines (November 2019) published by DELWP, and the Ministerial Direction on the *Preparation and Content of Infrastructure Contribution Plans (July 2018)*, provide criteria for the use of a Supplementary Levy to fund Transport Construction projects.

5.5.3 The Ministerial Direction lists the allowable items for transport construction within a **standard levy** at Table 3. Allowable items for transport construction that may be funded by a **supplementary levy** are listed in Table 4, including relevant criteria having to be met for to allow a Supplementary levy to be applied.

5.5.4 Allowable transport construction items which can be included in a standard and a supplementary levy as listed in Table 3 and 4 of the Direction are reproduced in Table 5.3 and Table 5.4.

**Table 5.3 Transport Construction Standard Levy Allowable items**

(Ministerial Direction 1st July 2018)

**Table 3: Transport construction standard levy allowable items**

Standard levy allowable item	Standard of provision
<b>Arterial roads</b> This includes: <ul style="list-style-type: none"> <li>• upgrades to existing local roads to arterial road standards; and</li> <li>• new arterial roads.</li> </ul>	<b>Arterial road spacing</b> Based on a typical 1.6 km arterial road grid network with alternating: <ul style="list-style-type: none"> <li>• primary (six lane) arterial roads comprising a 41 metre wide reservation; and</li> <li>• secondary (four lane) arterial roads comprising a 34 metre wide reservation.</li> </ul>
	<b>Arterial road design</b> Designed to generally accommodate the forecast ultimate traffic volumes generated by the new development.
	<b>Arterial road lanes</b> Construction of one through lane in each direction.
	<b>Walking and cycling infrastructure</b> On both sides of the arterial road as specified in the Precinct Structure Plan or equivalent structure plan.
	<b>Signalised pedestrian crossings</b> As specified in the Precinct Structure Plan or equivalent structure plan.
<b>Intersections (traffic signals or roundabouts) with council or declared State arterial roads</b> This includes: <ul style="list-style-type: none"> <li>• arterial and arterial road intersections; and</li> <li>• arterial and connector road intersections.</li> </ul>	<b>Intersection spacing</b> Based on a typical 800 metre spacing within the standard 1.6 km arterial road grid network.
	<b>Through lanes at intersection approach</b> One through lane plus one short through lane in each direction.
	<b>Left turn lane/slip lane</b> One left turn lane/slip lane where required in ultimate design.
	<b>Right turn lane</b> As specified in the Precinct Structure Plan or equivalent structure plan.
	<b>Traffic signals</b> Signals to be located at the ultimate intersection position.
	<b>Walking and cycling infrastructure</b> As specified in the Precinct Structure Plan or equivalent structure plan.

**Table 5.4 Transport Construction Supplementary Levy Allowable items**

(Ministerial Direction 1st July 2018)

**Table 4: Transport construction supplementary levy allowable items**

Supplementary levy allowable item	Criteria for applying a supplementary levy
<b>Arterial roads</b> This includes: <ul style="list-style-type: none"> <li>• upgrades to existing local roads to arterial road standards; and</li> <li>• new arterial roads.</li> </ul>	At least one of the following apply: <ul style="list-style-type: none"> <li>• The Precinct Structure Plan or equivalent strategic plan requires:                             <ul style="list-style-type: none"> <li>• arterial road spacing above the standard set out in Table 3; or</li> <li>• the interim construction of two through lanes in each direction.</li> </ul> </li> <li>• Construction costs of the council arterial road cannot be wholly or partially funded from the standard levy because:                             <ul style="list-style-type: none"> <li>• of the topographical, geographical, environmental or other physical conditions of the land; or</li> <li>• the road is designed to primarily service industrial development; or</li> <li>• the area of the precinct in net developable hectares is limited.</li> </ul> </li> </ul>
<b>Intersections with council and declared State arterial roads</b> This includes: <ul style="list-style-type: none"> <li>• arterial and arterial road intersections; and</li> <li>• arterial and connector road intersections.</li> </ul>	At least one of the following apply: <ul style="list-style-type: none"> <li>• The Precinct Structure Plan or equivalent strategic plan requires:                             <ul style="list-style-type: none"> <li>• additional number of intersections above the standard set out in Table 3; or</li> <li>• intersection design requirements above the standard set out in Table 3.</li> </ul> </li> <li>• Construction costs of the intersections cannot be wholly or partially funded from the standard levy because:                             <ul style="list-style-type: none"> <li>• of the topographical, geographical, environmental or other physical conditions of the land; or</li> <li>• the road is designed to primarily service industrial development; or</li> <li>• the area of the precinct in net developable hectares is limited.</li> </ul> </li> </ul>

- 5.5.5 Table 3 of the Ministerial Direction sets out allowable items for inclusion in a Standard Levy, which include:
- New arterial roads based on a typical spacing of 1.6km between primary and secondary arterial roads (and 3.2 km between primary arterial roads), and
  - Intersections of arterial roads with arterial roads and connector street with typical 800m spacing (within the standard 1.6km arterial grid).
  - One through lane and one shorth through lane in either direction on intersection approaches.
- 5.5.6 Table 4 sets out that Supplementary Levy is allowable where one of a number of items, including the following, apply:
- Arterial road spacings are greater than set out in Table 3 (ie. greater than 1.6km),
  - An additional number of intersections is specified in Table 3 (ie. at a lesser spacing than 800m), and
  - Intersection design requirements exceed the standards in Table 3 (ie more than one through lane and one short lane on each arterial road approach).
- 5.5.7 In my opinion, the introduction of a Supplementary Levy to fund additional upgrade works as proposed in the ICP is allowable for the following reasons:
- Bells Road will be located approximately 2.5 km east of Berwick Cranbourne (Clyde) Road, greater than 1.6 km,
  - Intersections along Bells Road are proposed in the PSP at spacings of between 370m and 500m which is less than the 800m spacings specified, and
  - The configuration of two through lanes in each direction as proposed exceeds the standard requirement of one through and one short lane.

# 6 Bells Road Construction

## 6.1 Function of Bells Road and Initial Construction Standard

- 6.1.1 Bells Road when constructed will operate as a regional arterial road. In my opinion there is an existing need to deliver an additional north south arterial to the east of Clyde Road to address existing regional capacity issues.
- 6.1.2 The construction of Bells Road linking to O'Shea Road and the Beaconsfield interchange, will significantly improve access to existing and developing residential precincts to the south in the Clyde North area. It will also alleviate existing capacity issues at intersections along Clyde Road and at the Berwick interchange to the Princes Freeway.
- 6.1.3 As such, the requirement for the road exists regardless of the future development of the Minta Farm PSP area.
- 6.1.4 In my opinion, if Bells Road was to be constructed as a two lane road between Grices Road and O'Shea Road without any development occurring in the Minta Farm PSP area, the link would attract between 10,000 and 15,000 vehicles per day of existing regional traffic. Volumes would progressively increase through growth in the region as a whole as well as from Minta Farm.
- 6.1.5 Having regard to the function of Bells Road as a regional arterial and projected initial traffic volumes, the construction of the road as a four-lane divided road as contemplated in the ICP is justified and desirable.
- 6.1.6 In my opinion however, given the regional function of the route, it is inequitable for construction of the road as a four-lane divided arterial to be funded entirely through the ICP.

## 6.2 Staged Construction and Funding Responsibility

- 6.2.1 The proposed staged delivery of Bells Road as shown in the Cardno plans, includes an "early works package" which contemplates the construction of Bells Road as a two lane road, together with construction of the intersection of Bells Road / O'Shea Road and Bells Road / Grices Road (EDW-01, IN-01 and IN-05).
- 6.2.2 The early works package as proposed the Cardno plans and costings is included in Cardno plans attached in **Appendix B**.
- 6.2.3 The works provide the "missing link" between Grices Road and O'Shea Road (and the Beaconsfield interchange) and in my opinion, the early works package is designed to cater for existing regional demands and should arguably be funded outside of the ICP.
- 6.2.4 From the perspective of the Minta Farm ICP, Bells Road would then be considered as an "existing" arterial road running through the Minta Farm area, with the ICP responsible for funding the construction of new connector road intersections to Bells Road, (IN-02, IN-03 and IN-04), and potentially any further upgrading works to Bells Road required to support the development of the area as proposed in the PSP beyond the existing regional function.
- 6.2.5 Should alternate funding not be available to provide the initial connection of the Bells Road connection, in my opinion the Minta Farm ICP should only be required to fund the construction of the Bells Road as a connector road linking to the surrounding arterial network to a standard which is appropriate for the delivery of access to the precinct as it develops.

# 7 Ratio Interim Functional Plans

## 7.1 Instructions

- 7.1.1 On the 20th February 2020, I was provided with alternate plans for interim functional design of the North – South Arterial which were prepared by Ratio on behalf of Stockland, which were been submitted to the Victoria Planning Authority on the 12<sup>th</sup> February 2020 in order to “facilitate productive discussions” in relation to the Minta Farm PSP.
- 7.1.2 The plans were prepared by my office however I had no involvement in the preparation of the plans or the design philosophy.
- 7.1.3 I have been asked by King and Wood Mallesons to consider the plans in the preparation of this evidence statement.
- 7.1.4 The Ratio plans are attached in **Appendix C**.

## 7.2 Basis of Design

- 7.2.1 The Ratio plans for the construction of Bells Road provide for a two lane connector road with “compact design” signalised intersection treatments at IN-01, IN-02, IN-03 In-04 and IN-05.
- 7.2.2 The design of Bells Road as a connector road is consistent with the design of the route as discussed in 6.2.5 above, as an alternate funding model for the Minta Farm ICP.
- 7.2.3 The design is based around the delivery of a single carriageway providing one lane in each direction, aligned with the ultimate western carriageway. Intersections are provided at the locations shown in the PSP, designed as connector road intersections. The design is based on the recommended 60kph design speed for a connector road
- 7.2.4 IN-02, IN-03 and IN-04 adopt “template” designs for the connector / connector intersections incorporating a single through lane on each leg and separate left and right turn lanes on the Bells Road approaches. East west legs of each intersection are also designed as “template” connector roads.
- 7.2.5 IN-01 has been designed as a signalised intersection in accordance with Major Projects upgrade plans for O’Shea Road, incorporating single turning lanes in each direction into and out of O’Shea Road.
- 7.2.6 IN-05 retains the existing roundabout at Grices Road, with Bells Road forming a new northern leg.

## 7.3 Review of Plans

- 7.3.1 The plans are intended to provide a functional layout for Bells Road and connections to O’Shea Road and Grices Road for the purpose of identifying the appropriate financial contributions towards the ultimate delivery of Bells Road attributable to the ICP.
- 7.3.2 It is not expected that the road would be constructed as depicted, due to the additional traffic capacity which will be required to accommodate the pre-existing regional arterial traffic which will be attracted to the route.
- 7.3.3 In my opinion, it does however provide an alternate basis for determining a more equitable funding allocation attributable to the ICP for the regional arterial connection.
- 7.3.4 I generally agree with the philosophy adopted, whereby the ICP funding is responsible for delivery of Bells Road as a connector road, including construction of a single two lane carriageway and intersections as “template” connector road intersections in accordance with *VicRoads Guidance for Planning Road Networks in Growth Areas*.

- 7.3.5 I also consider, having regard to the estimated locally generated traffic volumes on Bells Road north of Grices Road as shown in Table 4.3, that the connection of Bells Road to form a new northern leg to the existing Grices Road / Soldiers Road roundabout as shown in the Ratio plans is appropriate, with the existing roundabout delivering sufficient capacity to cater for modelled volumes generated by development within the Minta Farm PSP area.
- 7.3.6 Having regard to estimated locally generated traffic volumes on Bells Road, also as shown in Table 4.3, it is arguable that north of IN-03, even without regional traffic, Bells Road can be expected to function as a local arterial road.
- 7.3.7 Accordingly, if the Ratio plans are to be adopted as the basis for determining ICP funding for Bells Road, in my opinion the template design for a secondary arterial road in the VicRoads guidelines should be utilised for Bells Road at IN-01 and IN-02, providing for two through lanes (effectively one through lane and one short through lane) and separate left and right turn lanes in each direction.
- 7.3.8 In accordance with the *Infrastructure Contribution Plan Guidelines 2019*, the funding of the second short through lane for the Bells Road legs on IN-01 and In-02 would be funded through the Standard Levy.
- 7.3.9 The adoption of the connector template for the east west leg of IN-02 and all legs of IN-03 and I-04 is considered appropriate and supported as the basis for ICP costing.

# 8 Cardno Revised Concept Layout Plans

## 8.1 Instructions

- 8.1.1 An alternate interim design for the North South Arterial (Bells Road) has been prepared by Cardno at the instructions of the VPA, incorporating a 60kph design speed for Bells Road which was agreed following further consultation between the VPA, DoT and Council.
- 8.1.2 I understand that the preparation of the revised concept layout was foreshadowed by the VPA at the second Panel directions hearing on 4th March 2020. In accordance with the subsequent Panel direction, the revised concepts were circulated to all parties on the 13<sup>th</sup> March 2020.
- 8.1.3 The Panel also directed that Transport for Victoria must circulate further details in relation to how the O’Shea Road upgrade might impact on costing projects in the ICP, in particularly IN-01.
- 8.1.4 In accordance with the direction, I was provided with the DoT response to the Panel and amended plans prepared by Cardno on 13<sup>th</sup> March 2020.
- 8.1.5 As instructed by King & Wood Mallesons, I have reviewed the DoT advice and the revised Cardno plans with my opinions set out as follows.

## 8.2 DoT Advice

- 8.2.1 DoT, in a letter to the Panel dated 13<sup>th</sup> March 2020 regarding the O’Shea Road upgrade in the context of the Minta Farm ICP, stated (in summary) as follows:
- DoT consider the delivery of the interim IN-01 in conjunction with the ICP must reflect the arterial road configuration for O’Shea Road to be delivered by Major Road Projects Victoria.
  - DoT understands that MRPV have had discussions with Council concerning “bringing forward” the timing of construction of interim IN-01 to coincide with the MRPV works on O’Shea Road.
  - Regardless of the potential construction of the interim O’Shea Road / Bells Road intersection in association with the O’Shea Road project, DoT considers that the ICP should be prepared and finalised to ensure that the ICP is able to independently deliver the intersection.

## 8.3 Cardno Revised Concept Plans

- 8.3.1 The revised concept plans as prepared by Cardno with the accompanying explanatory letter are attached in **Appendix D**.
- 8.3.2 As described by Cardno in the letter, the revised plans as prepared incorporate the following.
- The delivery on IN-01 and IN-05 with a single two lane carriageway along the west side of the North South Arterial reserve as part of the early delivery work.
  - Subsequent delivery of IN-02, IN-03 and IN-04 independently as *outside in* intersections.
  - Adoption of a 60kph design speed for the North South Arterial.
  - Lane configuration along the North South Arterial in accordance with *VicRoads Guidance for Planning Road Networks in Growth Areas*.
  - Single left and right turn lanes from North South Arterial into O’Shea Road and left turn lane out of North South Arterial but with dual right run lanes at IN-01.
  - Inclusion of a left turn slip lane from north to east at IN-02.
  - Adoption of ultimate lane configuration for the connector legs at IN-02, IN-03 and IN-04.
  - Matching to existing conditions along Grices Road and to Soldiers Road south at IN-04.



## 8.4 Review of Plans

- 8.4.1 I have undertaken an initial review of the revised plans and assessed the designs in the context of:
- My review of the initial and ultimate function of Bells Road;
  - The ICP intersection concept plans prepared by Traffix included in the PSP;
  - The exhibited Cardo designs and staging proposal; and
  - The alternate interim proposals prepared by Ratio.

### Reduced Design Speed and Duplication of Bells Road

- 8.4.2 The revised plans are predicated on a reduction in the design speed of Bells Road from 80kph to 60 kph. The lower design speed reduces the required taper lengths on the approaches and departures to each intersection such that, with the exception of between IN-01 and IN-02, overlapping of the tapers is avoided.
- 8.4.3 As such, projects RD-02 and RD-04, which is essentially the “de facto” duplication of Bells Road south of IN-02, are avoided.
- 8.4.4 It is noted however that the reduced taper lengths are insufficient to prevent overlap between IN-01 and In-02, such that duplication of this section through RD-01 is still required.
- 8.4.5 The reduced design speed for Bells Road, as well as reducing taper lengths, also has enabled reduction of right turn lane lengths from Bells Road into the east west streets. It is noted however that, while the length of right turn lanes has been reduced to corresponding to a 60 kph design speed, left turn lanes have not been modified, with lengths corresponding to an 80kph design speed.

### Intersection Designs

- 8.4.6 Each intersection along Bells Road has been designed such that the Bells Road approaches are configured to provide for one through lane and one short through lane and separate right and left turn lanes, which is consistent with *VicRoads Guidance for Planning Road Networks in Growth Areas* for a secondary arterial road.
- 8.4.7 The configuration of each of the intersecting connector roads at IN-02, IN-03 and IN-04 has however been modified / upgraded to reflect ultimate lane configuration. The ultimate configuration is understood to be based on analysis and concept layouts prepared by Traffix Group dated 21<sup>st</sup> September 2018.
- 8.4.8 Traffix undertook SIDRA analysis to determine the required ultimate configuration of the intersections, using modelled ultimate volumes.
- 8.4.9 It is noted that, while the Traffix analysis was available at the time of the preparation of the Infrastructure Costings by Cardno in February 2019, “template” connector road layouts were adopted in the design and for costing purposes.
- 8.4.10 As a consequence, the revised Cardno plans result in extended upgrade works on the east west legs of at intersections IN-02 and IN-03 and to turning lanes from Bells Road.
- 8.4.11 A comparison of the revised Cardno plans with the designs shown in the PSP and the exhibited ICP are summarised in Table 8.1, with proposed changes shown in **bold**.

**Table 8.1 – Revised Plans v ICP Plans**

Intersection	Approach	ICP Exhibited	Traffic / Cardno Revised
IN-02	East	1 x right turn lane 1 x shared left/ through lane	<b>2 x right turn lanes</b> <b>1 x through lane</b> 1 x shared left/ through lane
	West	1 x right turn lane 1 x through lane 1 x left turn slip lane	<b>2 x right turn lanes</b> 1 x through lane <b>1 x left lane turn slip lane</b>
	North	1 x right turn lane 2 x through lanes 1 x left turn lane	1 x right turn lane 2 x through lanes 1 x left turn lane
	South	1 x right turn lane 2 x through lanes 1 x left turn lane	1 x right turn lane 2 x through lanes 1 x left turn lane
IN-03	East	1 x right turn lane 1 x shared left/ through lane	<b>2 x right turn lanes</b> 1 x shared left/ through lane
	West	1 x right turn lane 1 x shared left/ through lane	1 x right turn lane 1 x shared left/ through lane
	North	1 x right turn lane 2 x through lanes 1 x left turn lane	1 x right turn lane 2 x through lanes 1 x left turn lane
	South	1 x right turn lane 2 x through lanes 1 x left turn lane	1 x right turn lane 2 x through lanes 1 x left turn lane
IN-04	East	1 x right turn lane 1 x shared left/ through lane	1 x right turn lane 1 x shared left/ through lane
	West	1 x right turn lane 1 x shared left/ through lane	1 x right turn lane 1 x shared left/ through lane
	North	1 x right turn lane 2 x through lanes 1 x left turn lane	1 x right turn lane 2 x through lanes 1 x left turn lane
	South	1 x right turn lane 2 x through lanes 1 x left turn lane	1 x right turn lane 2 x through lanes 1 x left turn lane

- 8.4.12 In addition to the inclusion of additional turning lanes at IN-02 and IN-03, turning lanes on the connector road approaches have also been extended, seemingly to reflect queue lengths modelled by Traffix in the September 2019 analysis.
- 8.4.13 It is noted that the lane configuration of IN-04 is unaltered in the revised Cardno plans.

#### **Opinion on Revised Plans**

- 8.4.14 In my opinion, the adoption of a design speed of 60 kph for the interim Bells Road intersections in the revised plans is appropriate. The consequential reduced taper lengths, even with “outside in” intersections, can be expected to result in removal of duplicating components of projects RD-01, RD-02 and RD-04 from the ICP which is supported.
- 8.4.15 The additional works on the east west legs of IN-02 and IN-03 are understood to be based on modelling of traffic generation for complete development of the PSP area and, in particular appear to reflect high levels of traffic generation from the employment precincts in the north east.
- 8.4.16 It is noted that the resultant design flows into and out of the employment precinct and to a lesser extent the Town Centre has resulted in design standards on the eastern legs of IN-02 and IN-03 exceeding the design standards adopted for the Bells Road arterial legs.
- 8.4.17 Ultimately traffic flows generated by the employment precinct and town centre may reach levels which require the extent of intersection works shown on the connector road approaches to Bells Road as proposed in the revised plans. As such the PAO should be adjusted to ensure that road reservations and flaring at intersections can be accommodated if ultimate configuration as proposed in the revised Cardno plans is ultimately found to be necessary.
- 8.4.18 In my opinion, however the ICP should only be required to fund the construction of the intersection, including the east west connector road legs to the “template” standard as shown in the PSP and exhibited ICP. Additional works which may be required to support subsequent levels of development should be identified and funded as conditions on permits as development proceeds and cumulative traffic impacts confirmed.

# 9 Opinion on Issues

## 9.1 Function of Bells Road and ICP Contribution

- 9.1.1 Bells Road, when constructed will form a key component of the arterial road network serving the Growth Corridor, providing a new connection to the Princes Freeway at the existing Beaconsfield Interchange, in conjunction with the committed easterly extension of O'Shea Road.
- 9.1.2 The road has been modelled to ultimately carry at least 42,500 vehicles per day, through Minta Farm, justifying its classification as a primary arterial road and the ultimate 6 lane cross-section shown in the PSP. Given the immediate connectivity provided and existing congestion levels on Clyde Road, I expect that when initially constructed, it will attract volumes of between 10,000 and 15,000 vpd, regardless of development within the Minta Farm Precinct.
- 9.1.3 As well as acting as a key component of the regional arterial network, Bells Road will also act as a "connector" route within the Minta Farm PSP area, providing north south local connectivity. A proportion of locally generated trips will also be distributed to the surrounding road network via Bells Road, particularly for connection to the north to the Princes Freeway via O'Shea Road and, to a lesser extent, trips to the south west via Soldiers Road and / or Grices Road.
- 9.1.4 Ultimately approximately 50% of total volumes using the Bells Road at its northern end are expected to be generated by Minta Farm, reducing to less than 20% north of Grices Road.
- 9.1.5 As such, the inclusion of a contribution towards the ultimate construction of Bells Road in the ICP is justifiable, equivalent to its role as a connector road / local arterial serving the PSP area.
- 9.1.6 In my opinion, the funding for the construction of one two lane carriageway as proposed as a Standard Levy item in the ICP is appropriate.
- 9.1.7 Additional contribution for the duplication of the road under a Supplementary Levy is however neither appropriate nor in my opinion required.

## 9.2 Inclusion of IN-01 in the ICP

- 9.2.1 The intersection of O'Shea Road / Bells Road (IN-01) will be a key intersection, delivering regional traffic to the Beaconsfield interchange to the Princes Freeway from the west via O'Shea Road and the south via Bells Road.
- 9.2.2 The intersection will also provide access to the Minta Farm PSP area, with modelling suggesting that, at full development, up to 20,000 vpd generated by Minta Farm will utilise the intersection.
- 9.2.3 On this basis, it is considered that ICP contribution towards the provision of the intersection is appropriate, generally in accordance with the revised Cardno design, providing for single right and left turn slip lane into Bells Road from O'Shea Road, and a left turn slip lane and two right turn lanes from Bells Road into O'Shea Road.
- 9.2.4 In my opinion, construction of turning lanes from O'Shea Road and preliminary traffic signal works such as laying of conduits should be undertaken in conjunction with the construction of the O'Shea Road project.
- 9.2.5 The balance of works, including the construction of the southern leg and completion of the intersection signalisation should be funded through the ICP.

### **9.3 Bells Road Early Works Package**

- 9.3.1 As discussed in Section 6.2 above, the proposed staged delivery of Bells Road as shown in both the Cardno ICP and Revised Plans includes an “early works package” which contemplates the construction of Bells Road as a two lane road, together with construction of the intersection of Bells Road / O’Shea Road and Bells Road / Grices Road (EDW-01, IN-01 and IN-05)
- 9.3.2 These works provide the “missing link” between Grices Road and the O’Shea Road and the Beaconsfield interchange and in my opinion, represent the pre-existing regional function of the road and should be funded outside of the ICP.
- 9.3.3 The construction of the early works package has clear regional benefit and as such, the cost of the works should not be the full responsibility of the ICP as proposed.
- 9.3.4 Given estimates of initial regional traffic using the road, and the expected proportions of PSP traffic expected to ultimately utilise the route, a **50%** external contribution for the Early Works Component is appropriate and equitable.
- 9.3.5 In the event that a 50% external contribution is applied to the early works package, the establishment of IN-02, IN-03 and IN-04 as 100% ICP projects is considered appropriate.

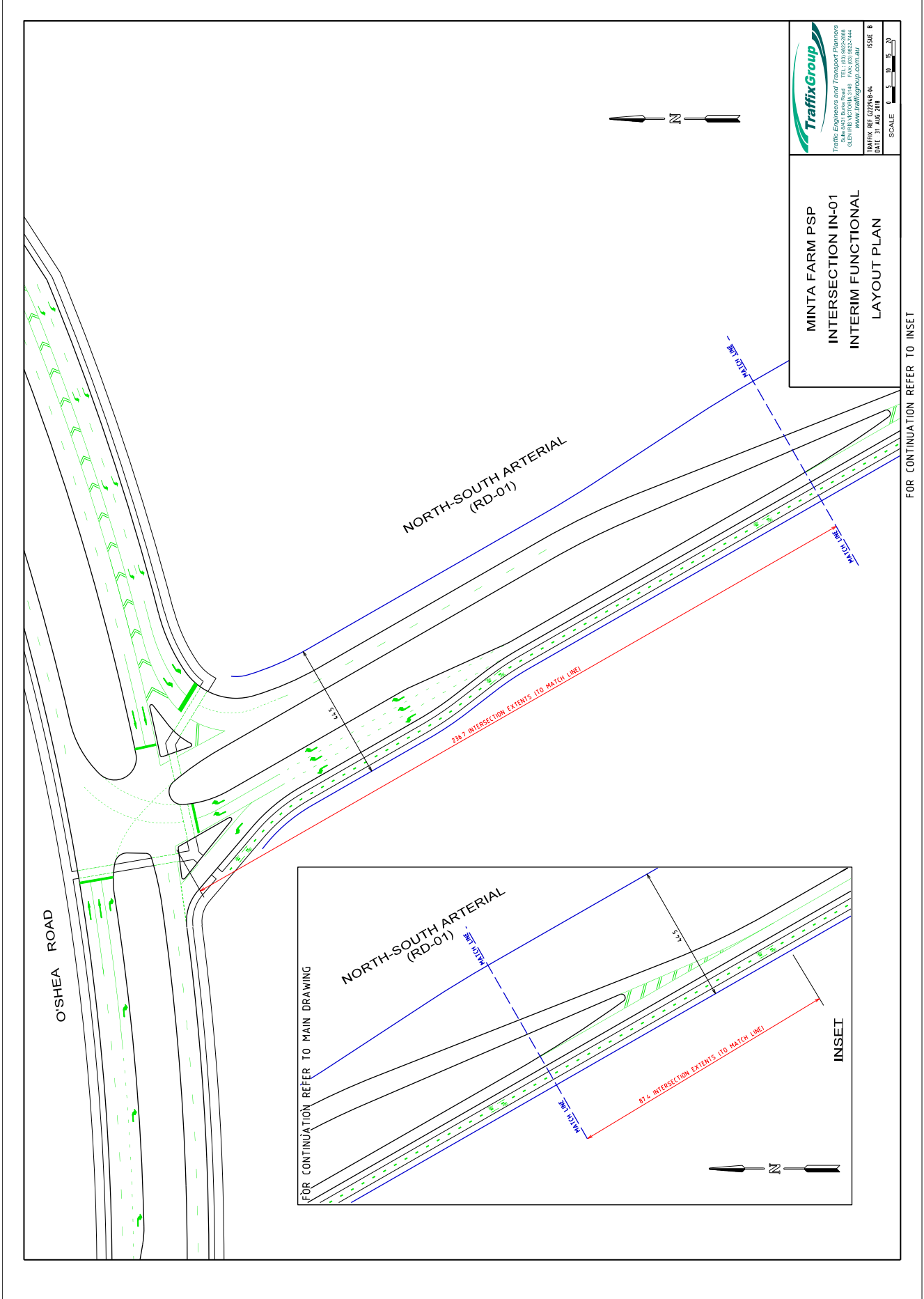
### **9.4 Bells Road PAO**

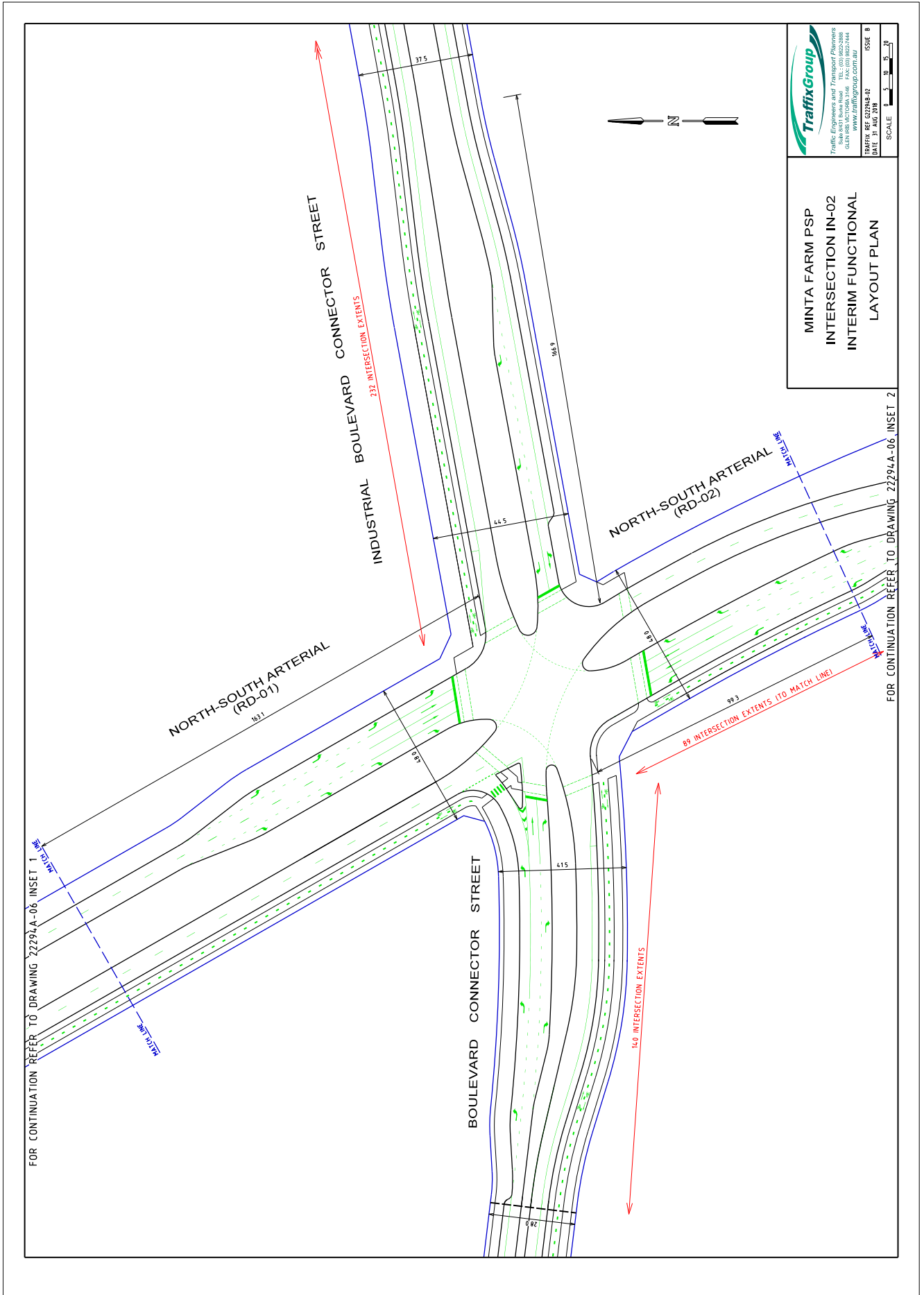
- 9.4.1 Ratio, in conjunction with design work undertaken on behalf of Stockland in association with the Eden Rise Estate within Minta Farm has identified that there are variations in the proposed PAO for Bells Road and the approved subdivision plans for Eden Rise as shown in the plans attached in **Appendix E**.
- 9.4.2 While the variations are comparatively minor, the ICP plans and the proposed PAO should be adjusted at this stage to ensure that alignments and subsequent costings reflect approved subdivision plans.



## Appendix A : Traffic Group Plans

4.8 Minta Farm infrastructure contributions plan intersection concept plans





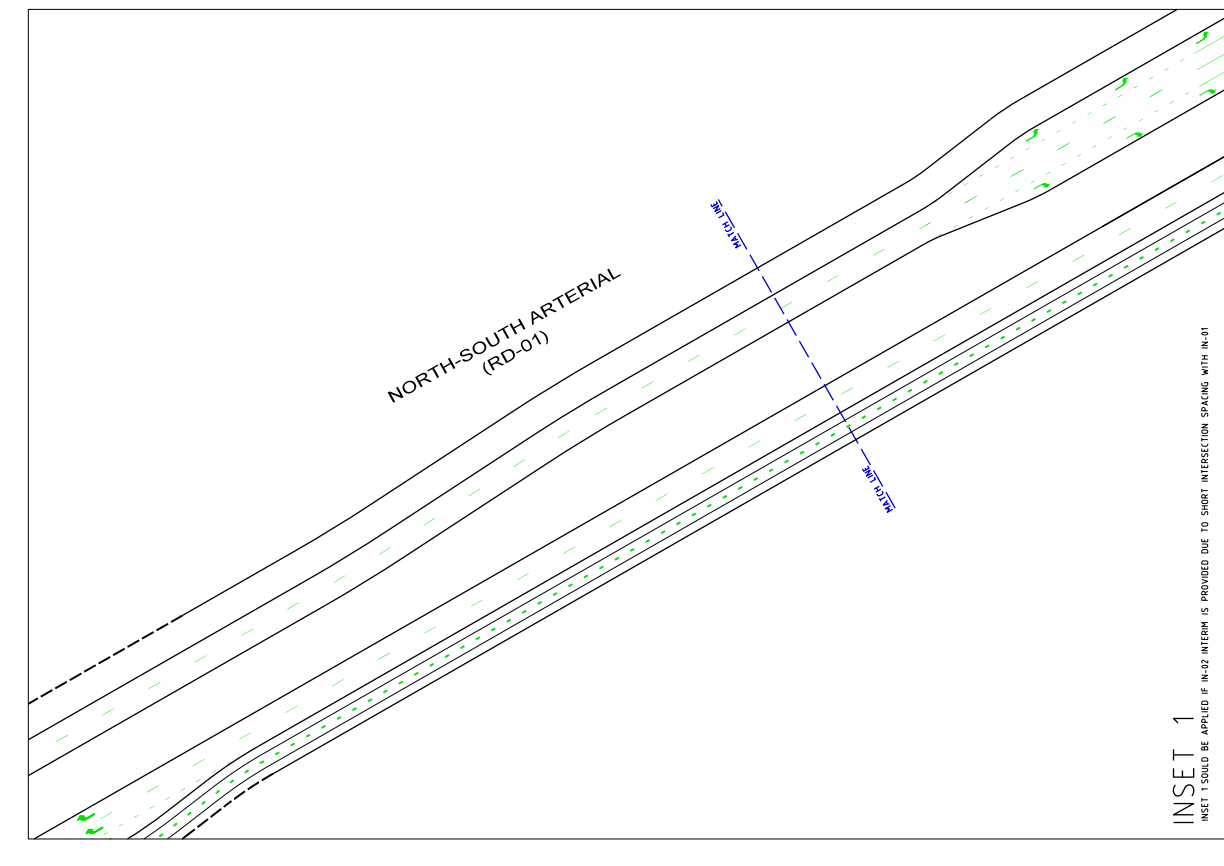
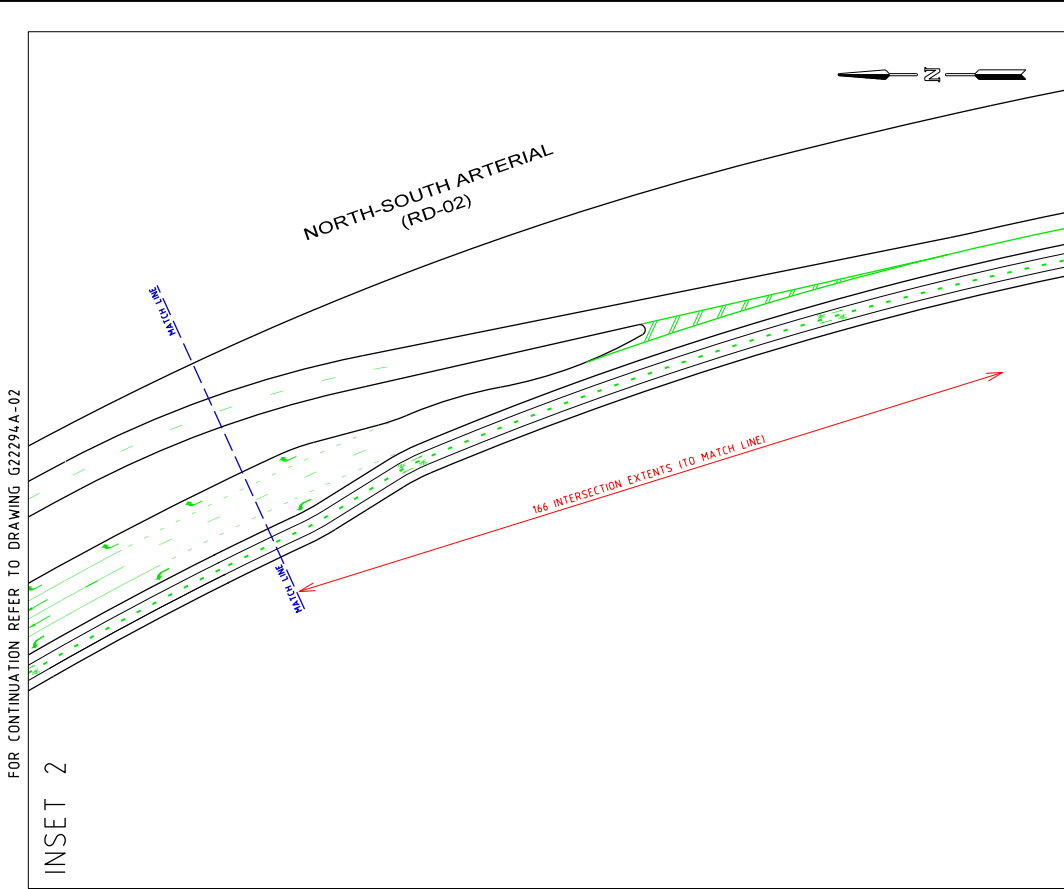


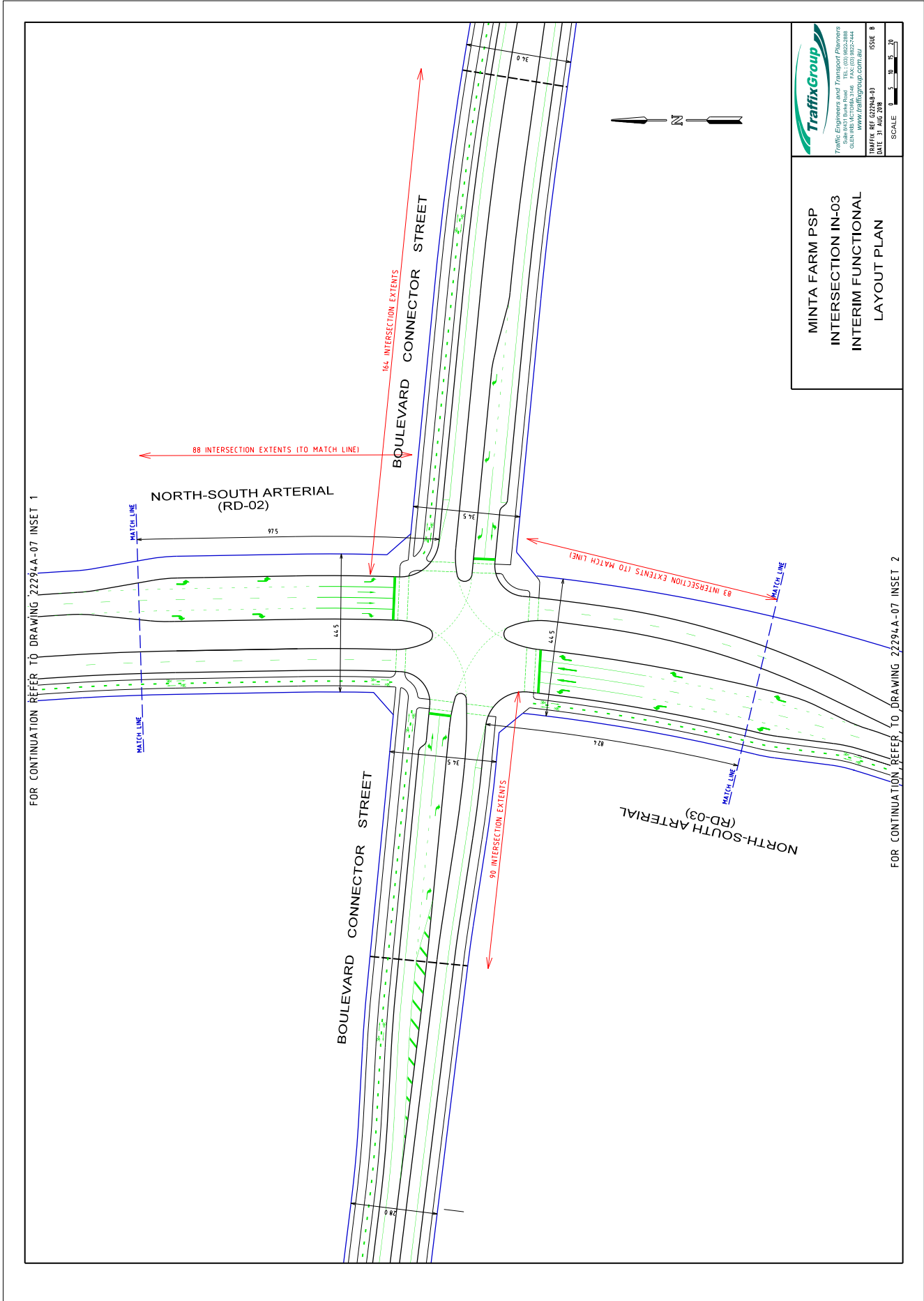
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 Traffic Engineers and Transport Planners  
 Suite 102/111, Lake Road  
 Clayton, VIC 3168  
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 Fax: (03) 88223888  
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 INTERIM FUNCTIONAL  
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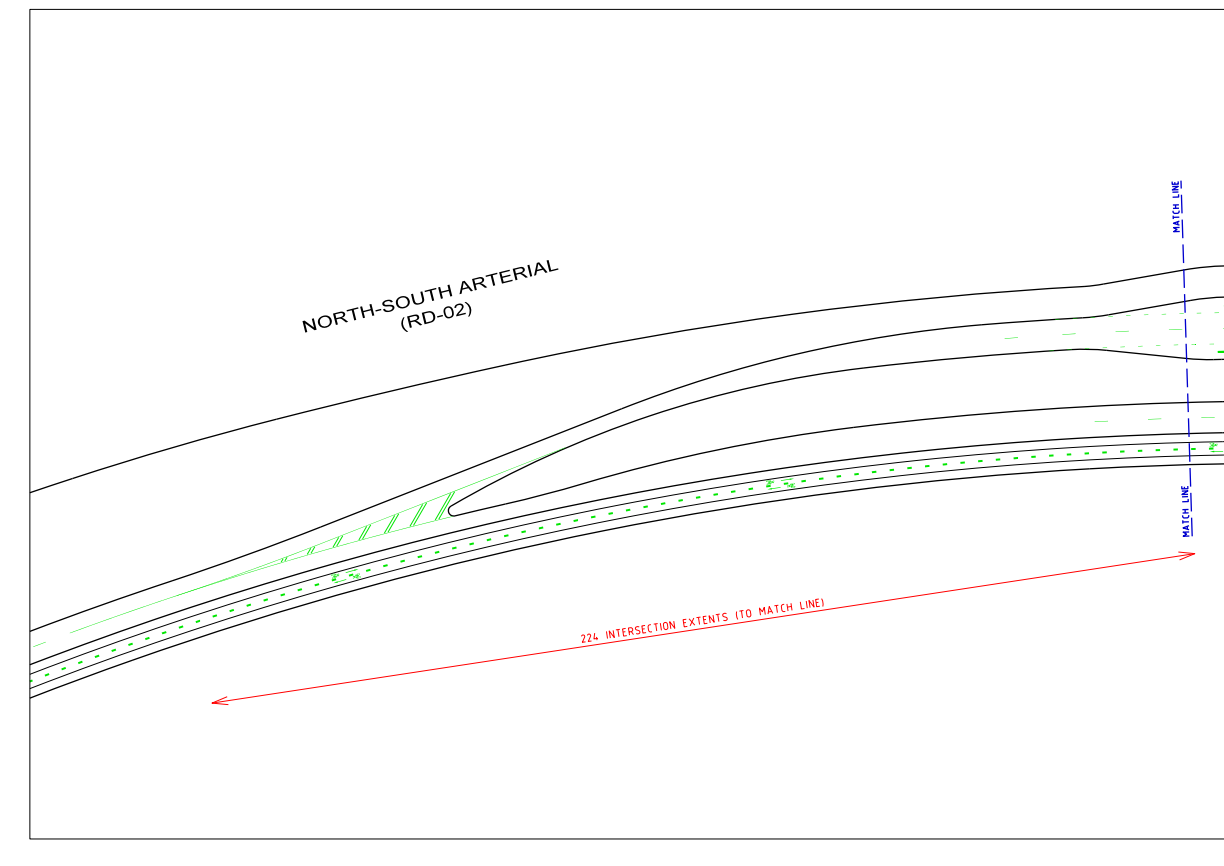
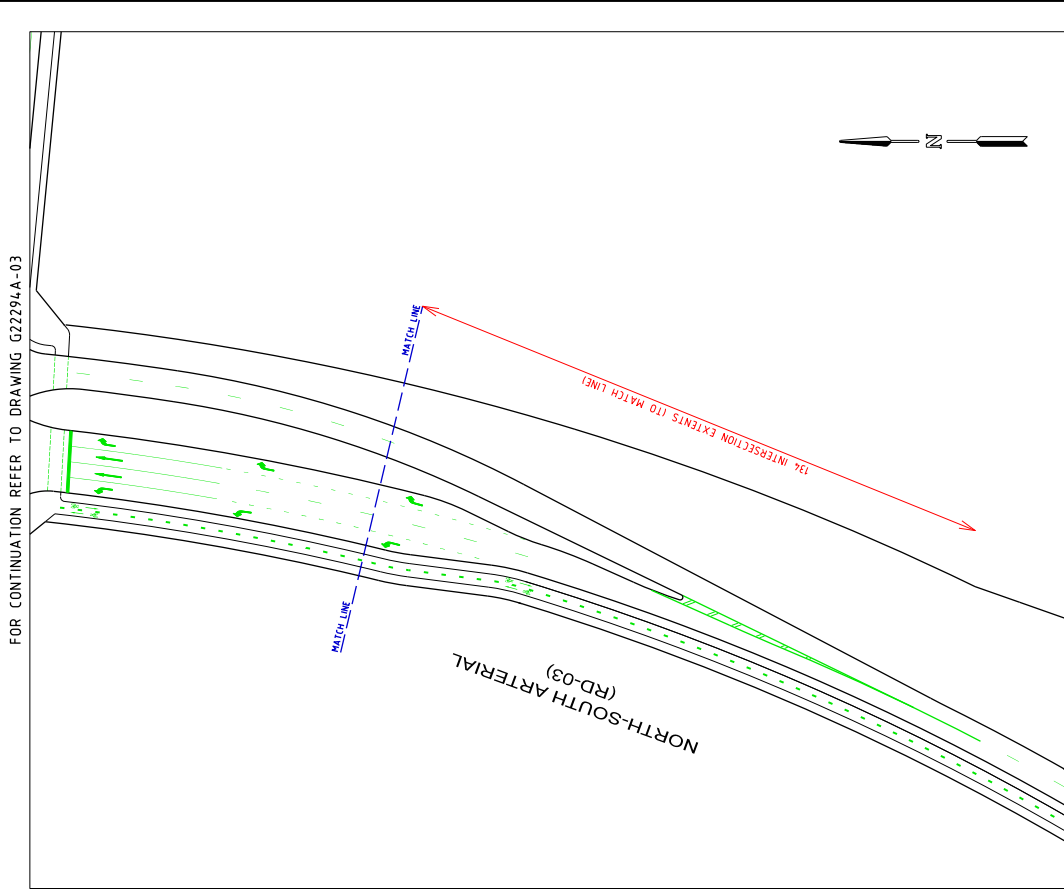
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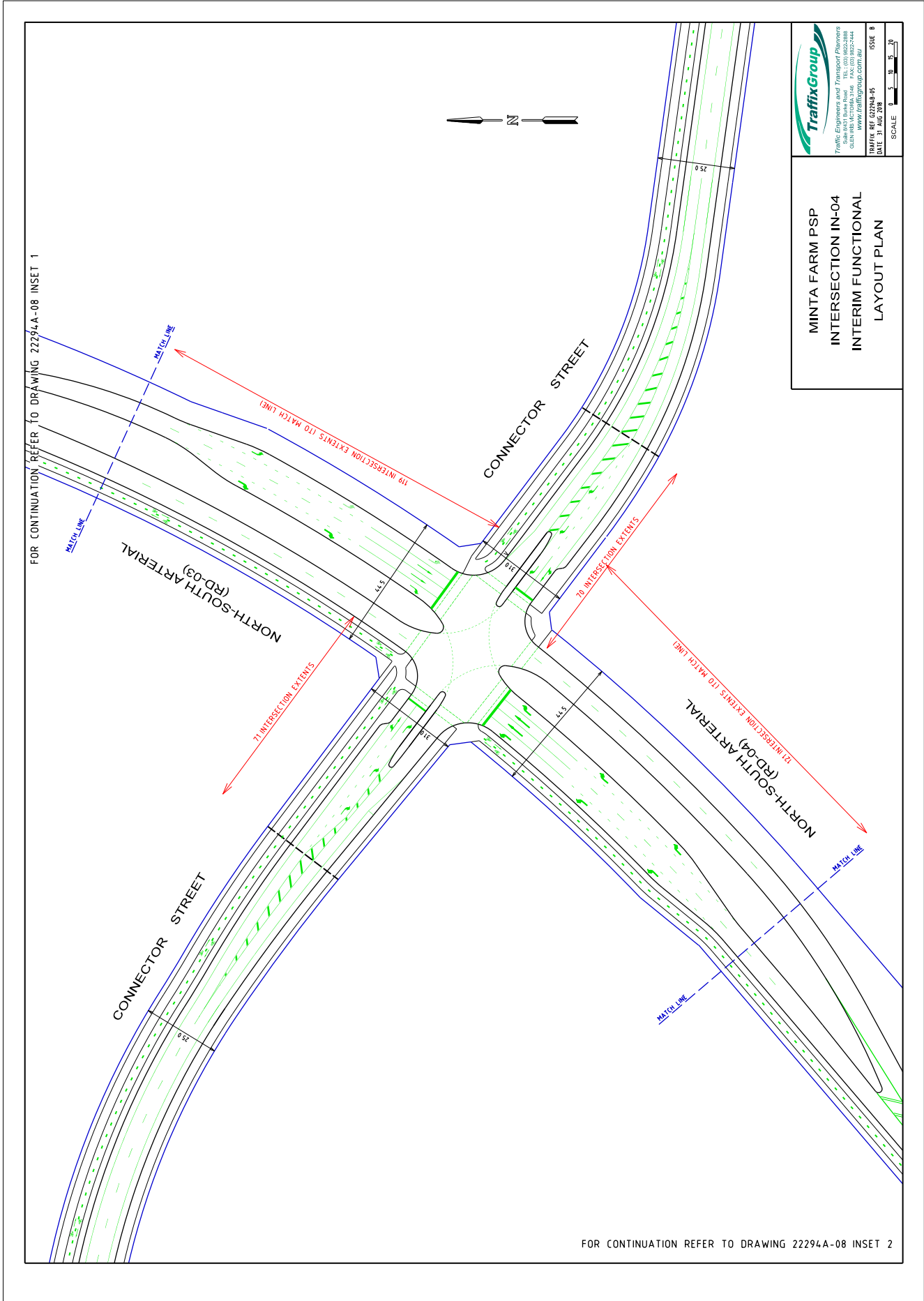
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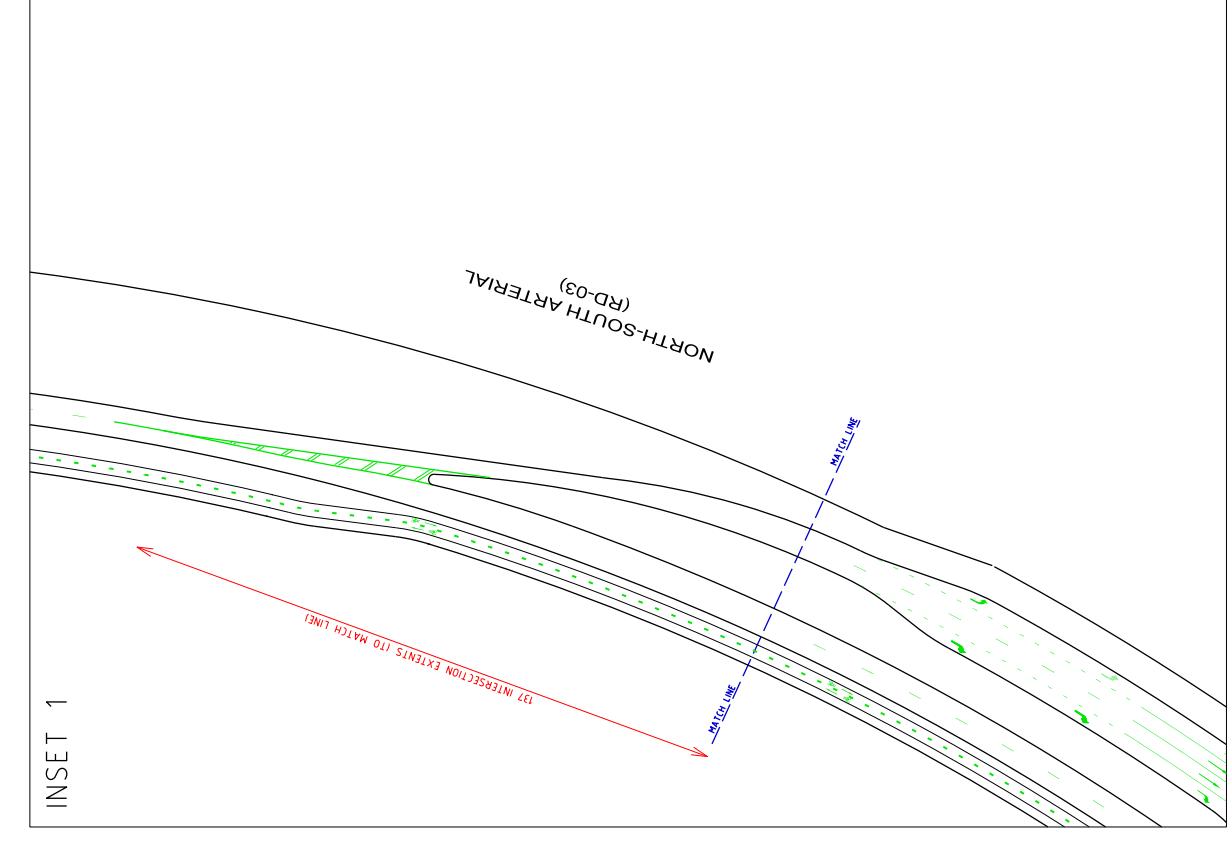
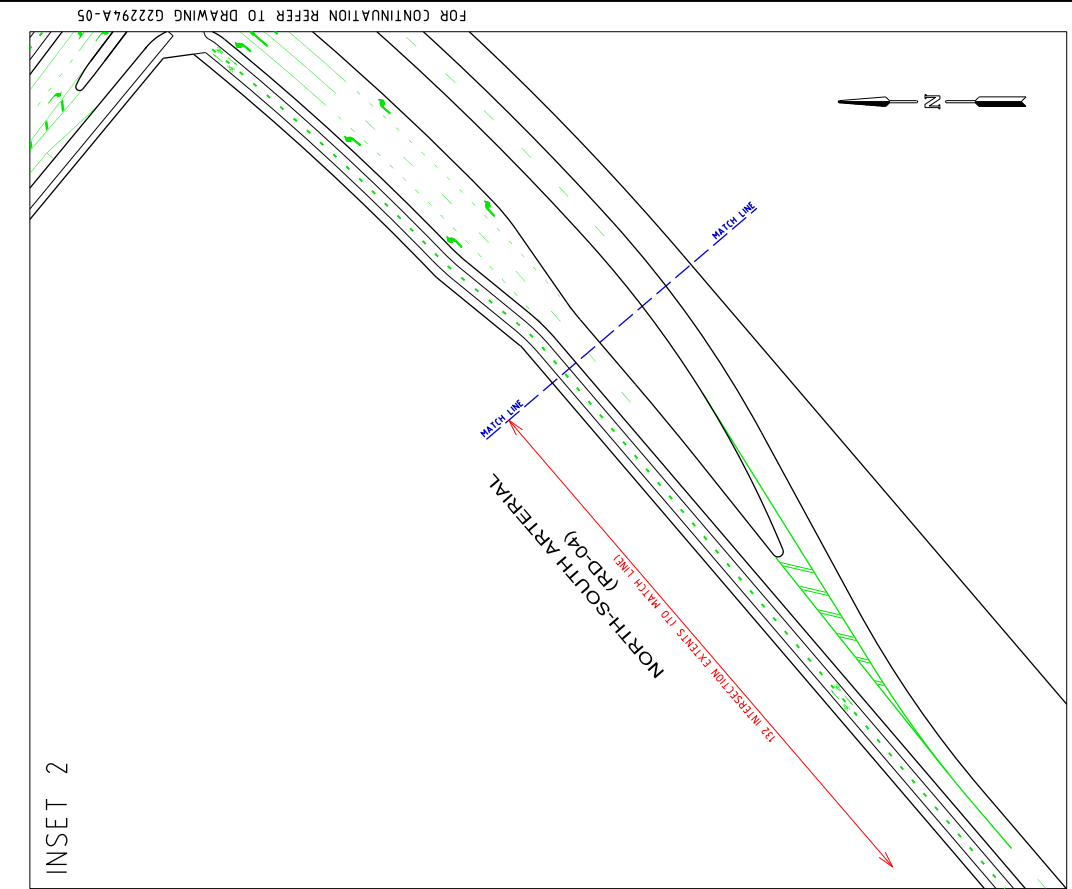
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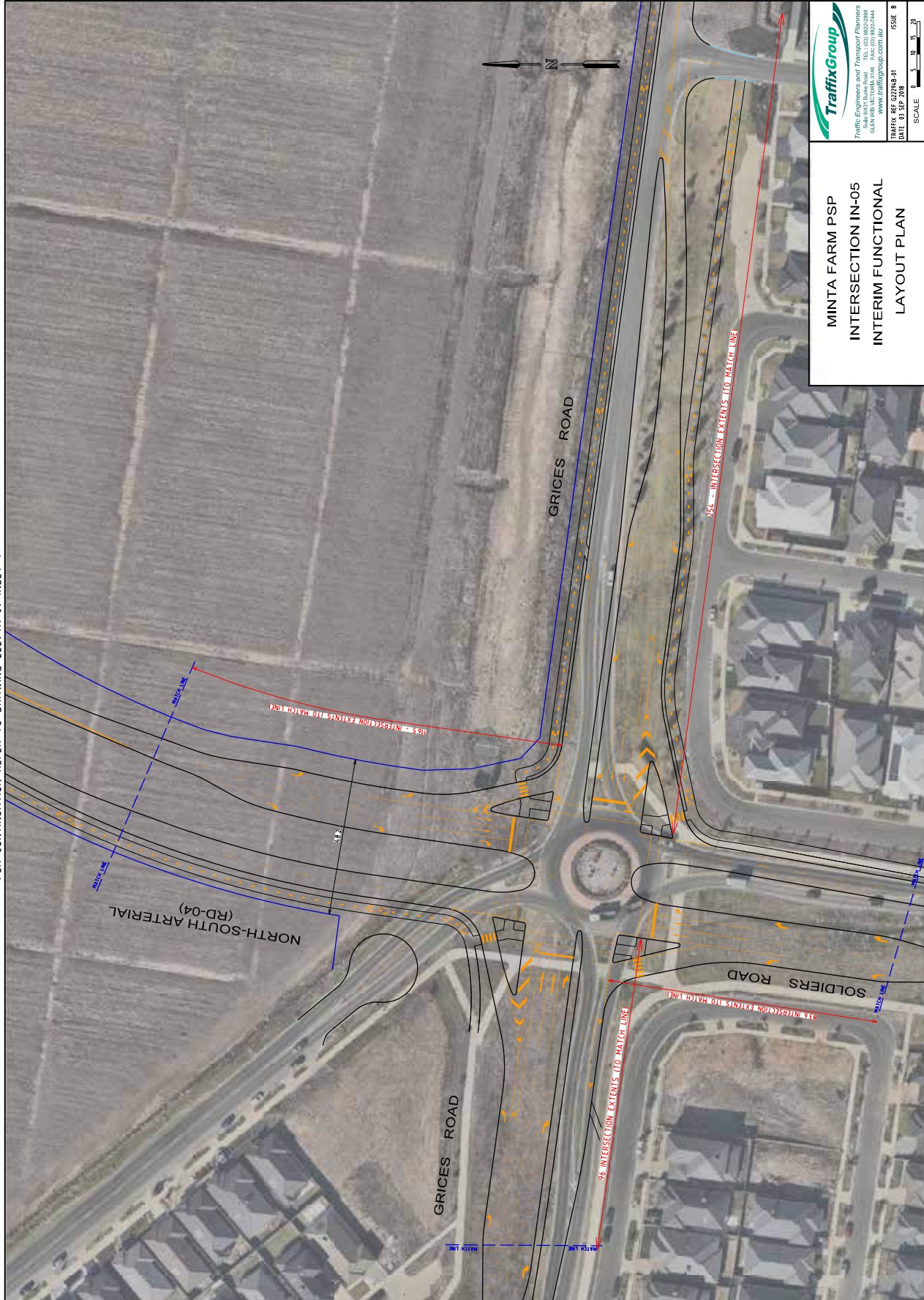


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 INTERIM FUNCTIONAL  
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SCALE: 0 5 10 20



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FOR CONTINUATION REFER TO DRAWING 22294A-09 INSET 2

FOR CONTINUATION REFER TO DRAWING 22294A-09 INSET 3

FOR CONTINUATION REFER TO DRAWING G22294A-01



INSET 3

FOR CONTINUATION REFER TO DRAWING G22294A-01



INSET 2

FOR CONTINUATION REFER TO DRAWING G22294A-01



INSET 1

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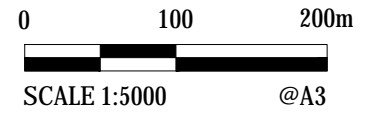
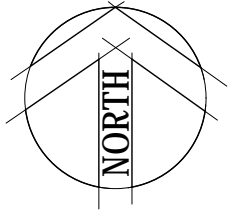
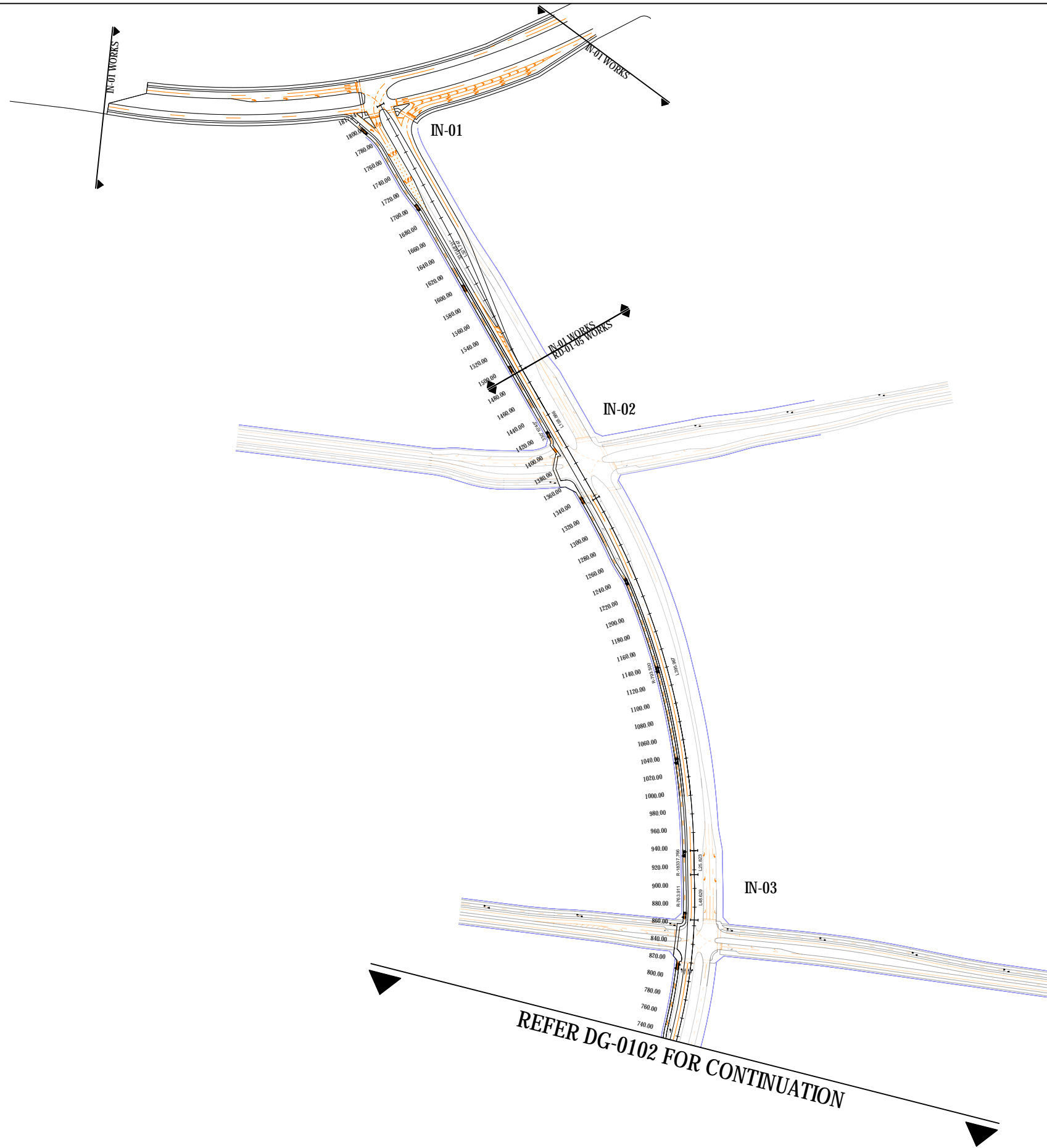
## Appendix B: Cardno Plans



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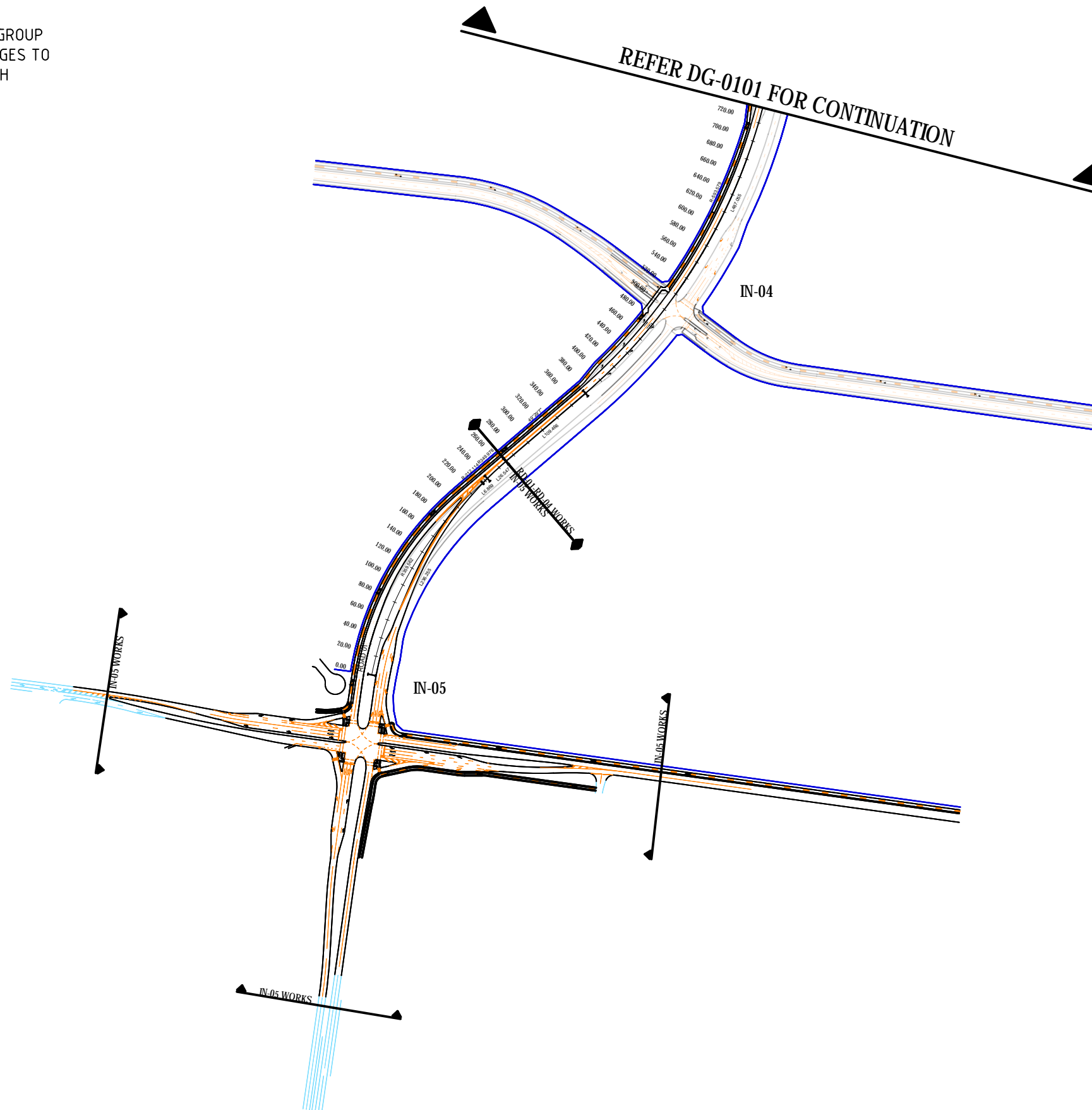
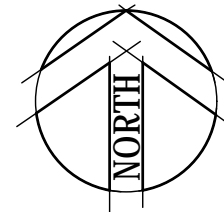
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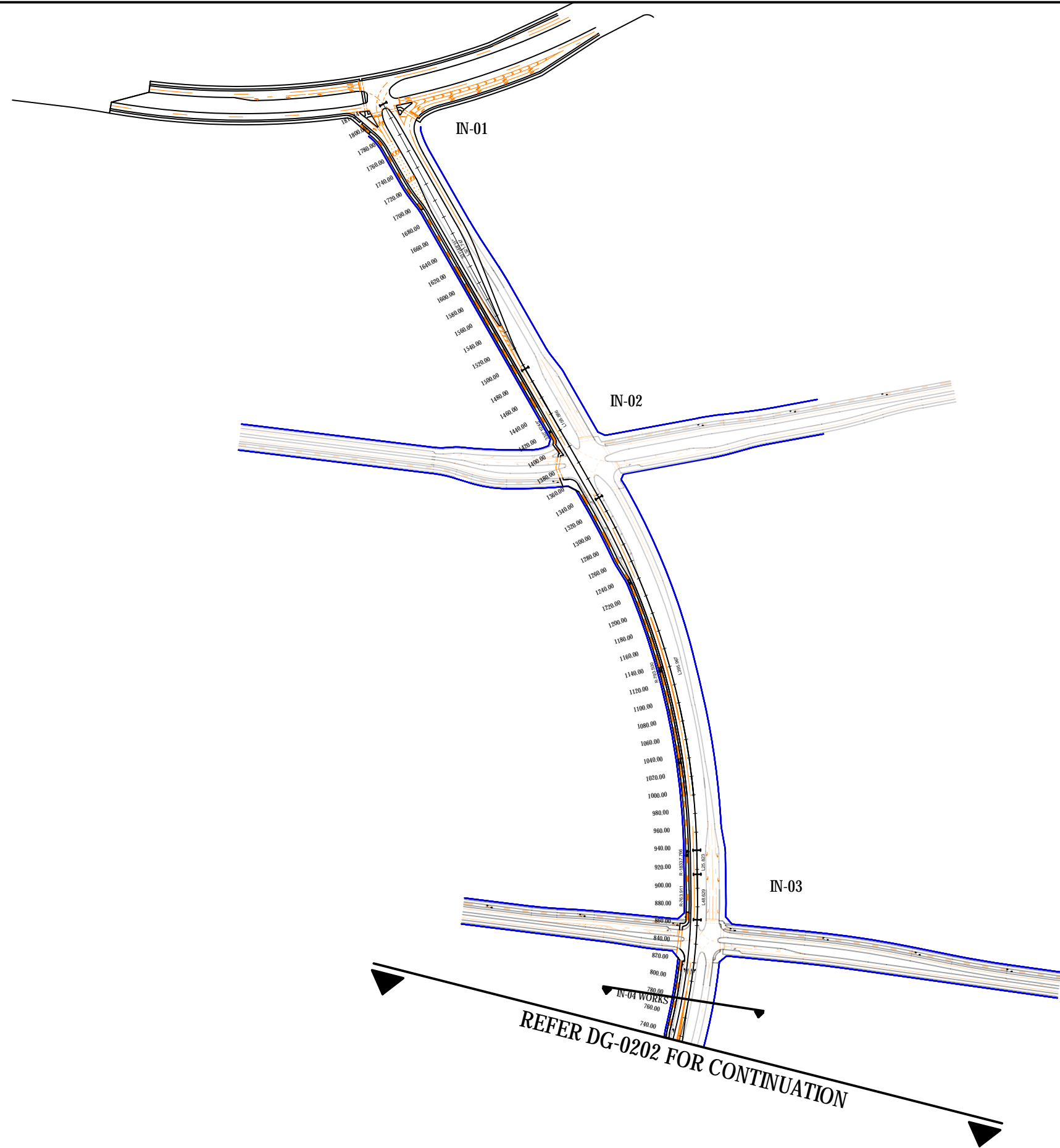
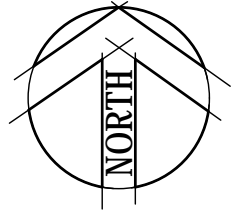
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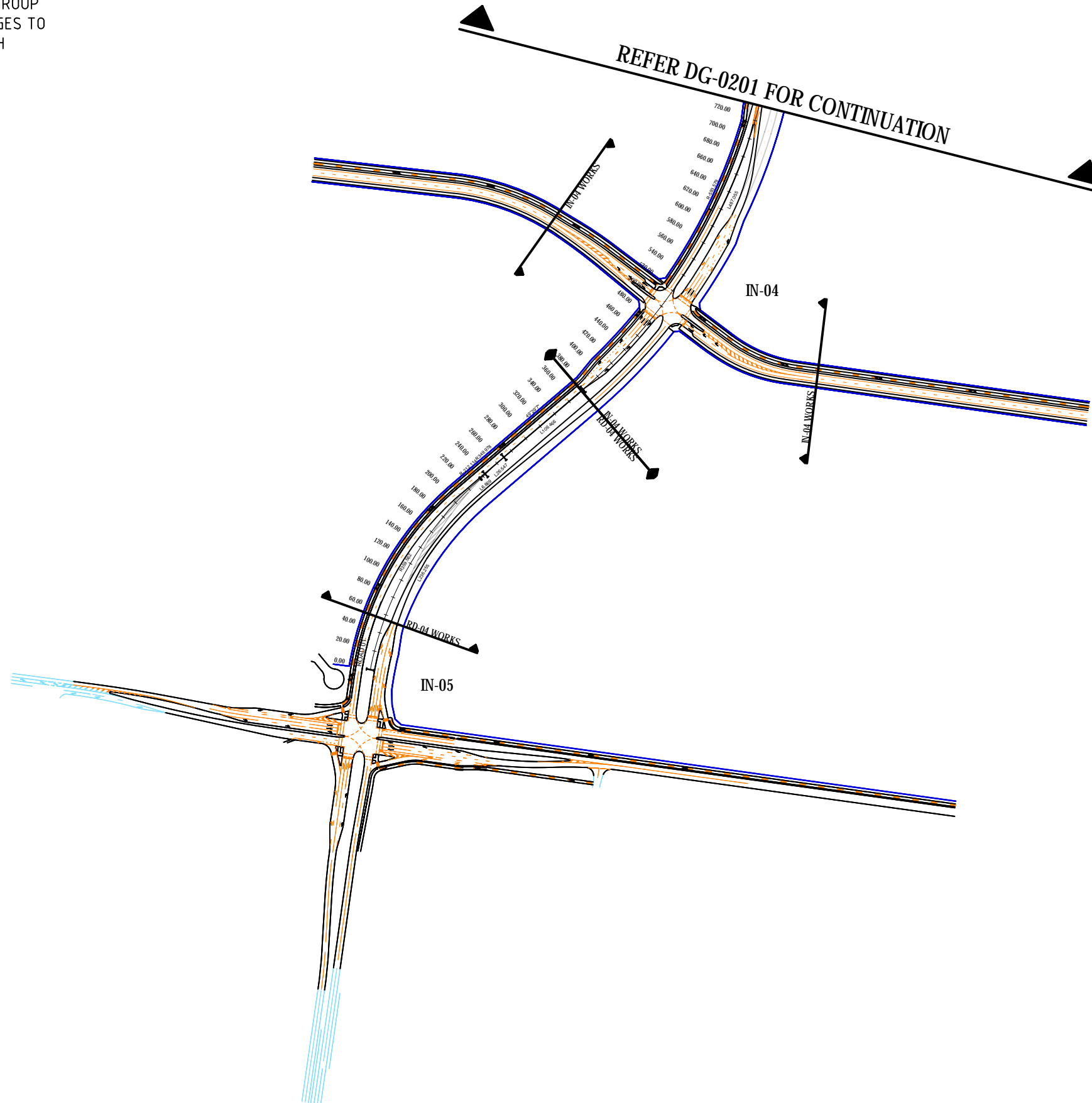
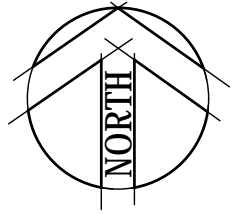
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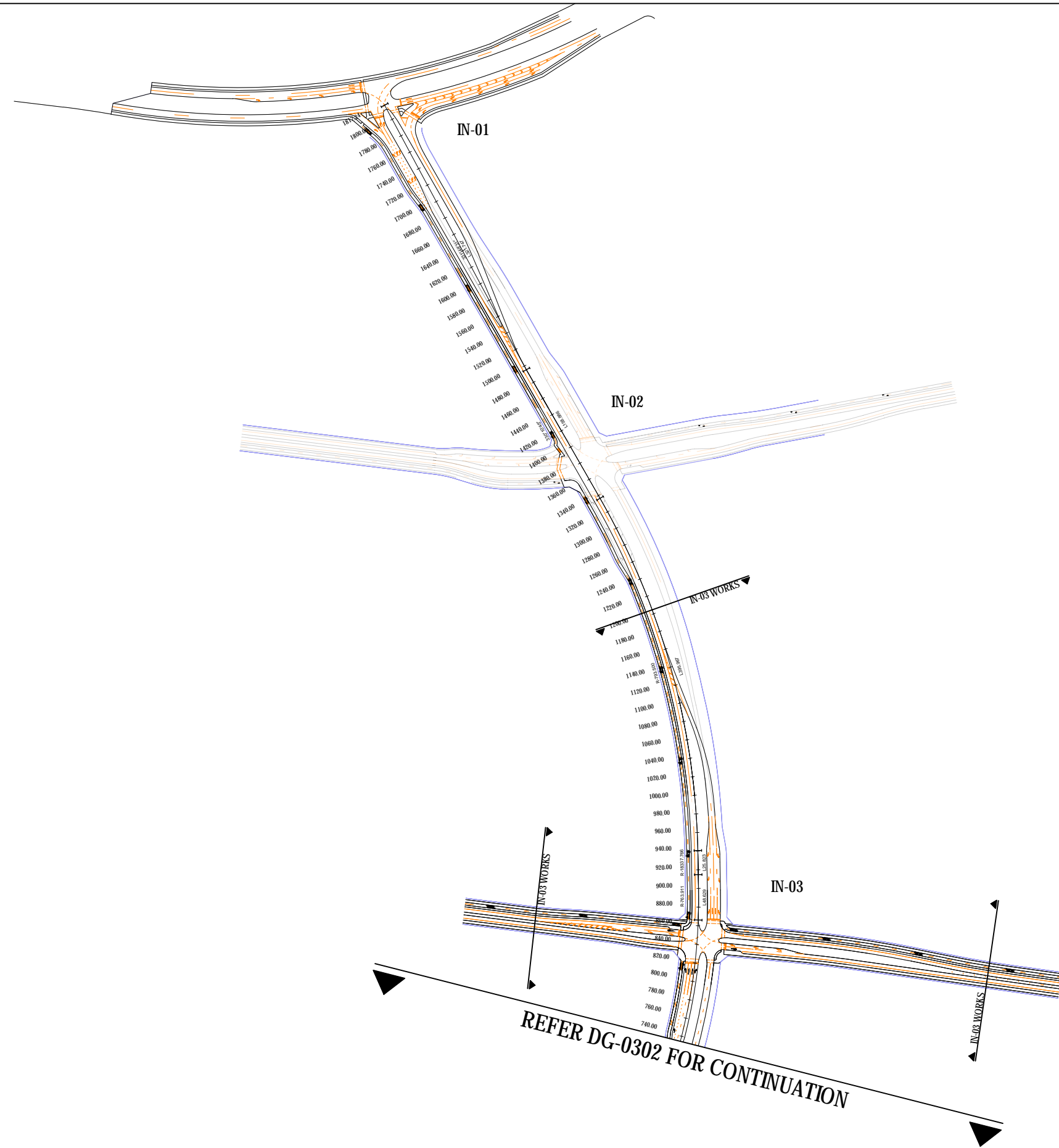
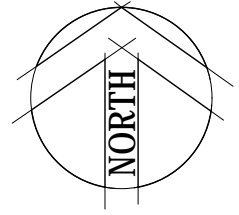
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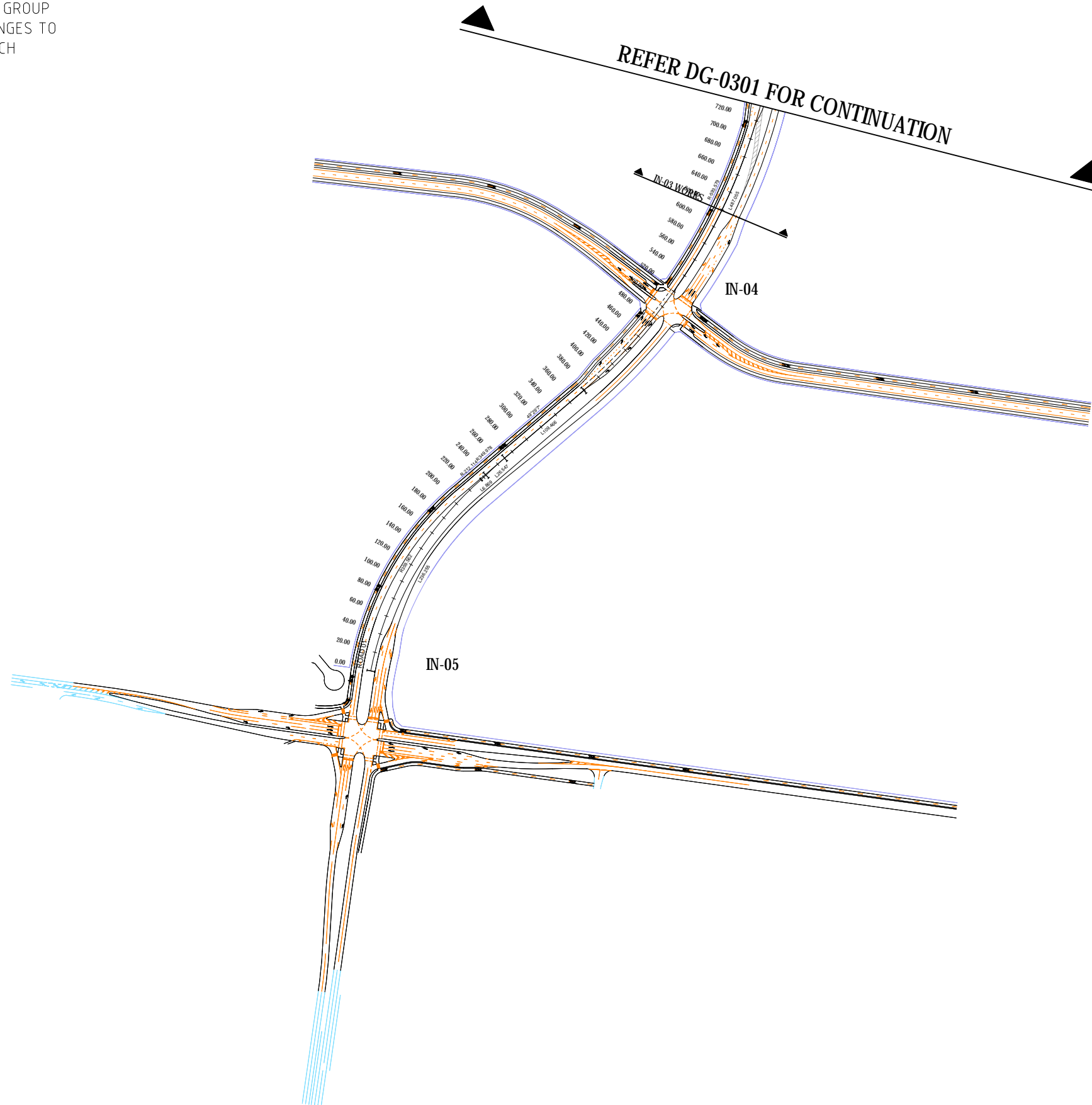
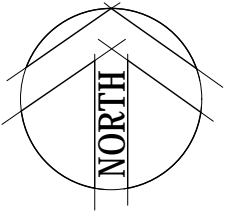
Client	VICTORIAN PLANNING AUTHORITY
Project	BENCHMARK COSTING IMPLEMENTATION MINTA FARM CIVIL DESIGN
Title	ALIGNMENT PLAN - STAGE 3 SHEET 1 OF 2

Status		
<b>PRELIMINARY</b>		
NOT TO BE USED FOR CONSTRUCTION PURPOSES		
DATUM	Scale	Size
MGA/AHD	AS SHOWN	A3
Drawing Number		Revision
V181544-CL-DG-0301		1

NOTES:

1. ORIGINAL DESIGNS BY TRAFFIX GROUP
2. CARDNO HAS MADE MINOR CHANGES TO REFLECT THE STAGED APPROACH

 REMOVE REDUNDANT PAVEMENT AND KERB



Rev	Date	Description	Des.	Verif.	Appd.
1	19.02.19	PRELIMINARY ISSUE	SB	VA	

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Melbourne VIC 3000  
Tel: 03 8415 7777 Fax: 03 8415 7788  
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Drawn	SB	Date	4/02/2019
Checked	VA	Date	15/02/2019
Designed	SB	Date	4/02/2019
Verified		Date	
Approved		Date	

Client	VICTORIAN PLANNING AUTHORITY
Project	BENCHMARK COSTING IMPLEMENTATION
	MINTA FARM
	CIVIL DESIGN
Title	ALIGNMENT PLAN - STAGE 3
	SHEET 2 OF 2

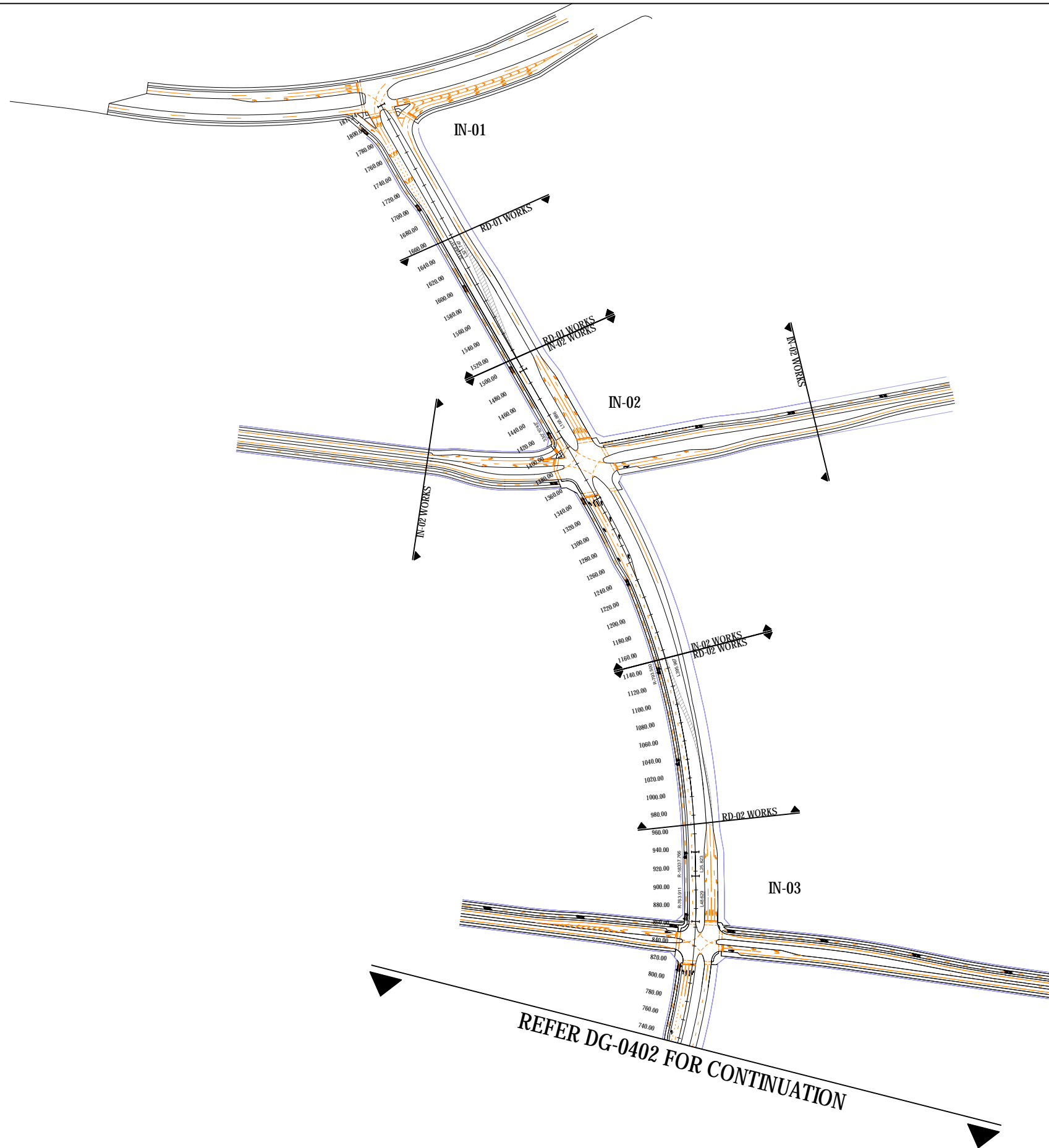
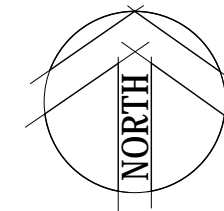
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NOT TO BE USED FOR CONSTRUCTION PURPOSES			
DATUM	MGA/AHD	Scale	AS SHOWN
		Size	A3
Drawing Number	V181544-CL-DG-0302		Revision
			1

DATE PLOTTED: 19 February 2019 11:22 AM BY: SAMUEL BECKHAM

REFS: V181544\_CTRL\_DESIGN  
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- NOTES:
1. ORIGINAL DESIGNS BY TRAFFIX GROUP
  2. CARDNO HAS MADE MINOR CHANGES TO REFLECT THE STAGED APPROACH

 REMOVE REDUNDANT PAVEMENT AND KERB



Rev	Date	Description	Des.	Verif.	Appd.
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Drawn SB	Date 4/02/2019
Checked VA	Date 15/02/2019
Designed SB	Date 4/02/2019
Verified	Date
Approved	Date

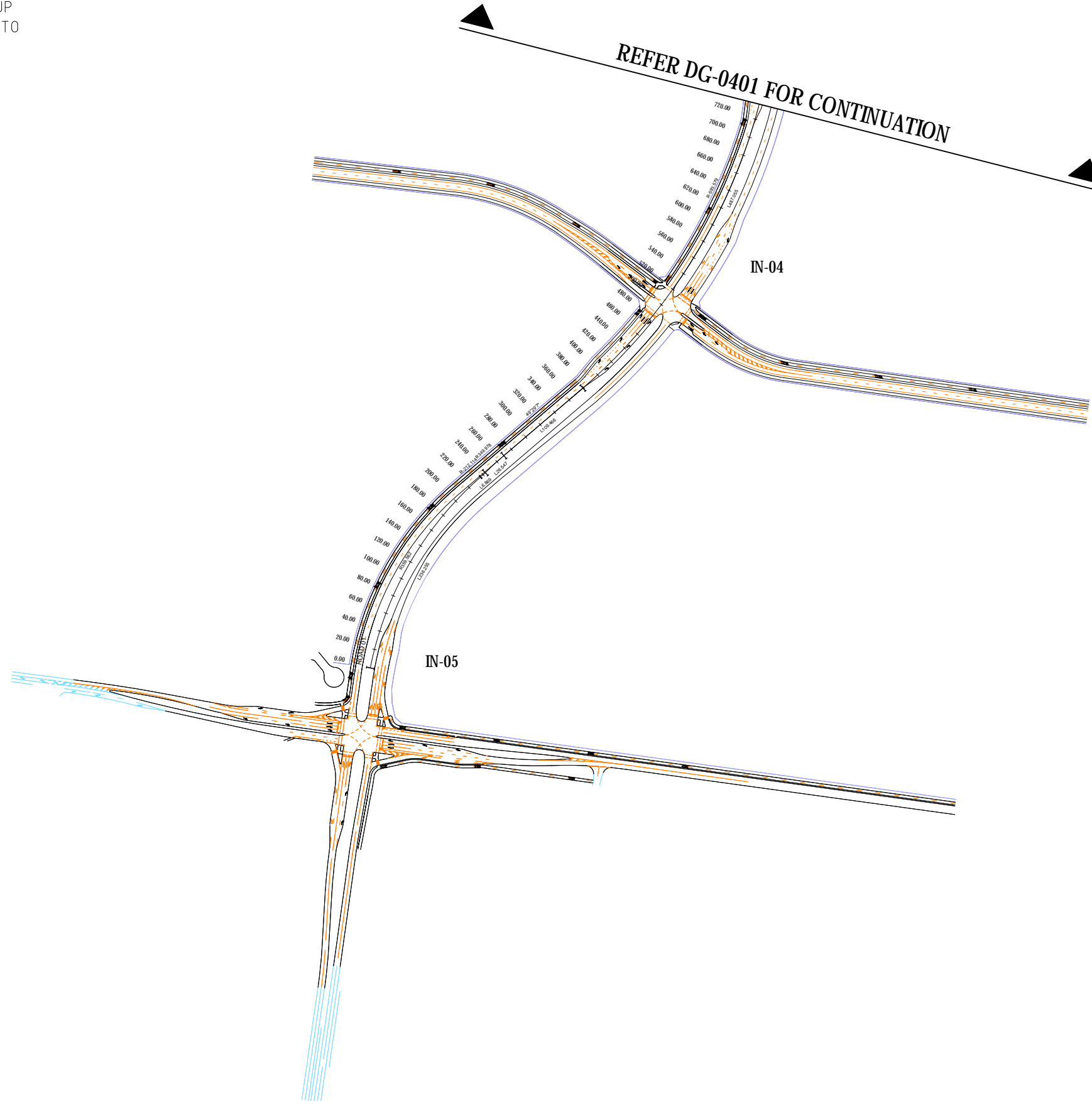
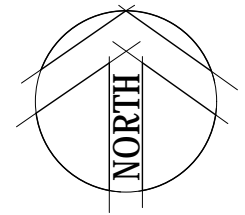
Client VICTORIAN PLANNING AUTHORITY
Project BENCHMARK COSTING IMPLEMENTATION MINTA FARM CIVIL DESIGN
Title ALIGNMENT PLAN - STAGE 4 SHEET 1 OF 2

Status <b>PRELIMINARY</b> NOT TO BE USED FOR CONSTRUCTION PURPOSES		
DATUM MGA/AHD	Scale AS SHOWN	Size A3
Drawing Number V181544-CI-DG-0401	Revision 1	

DATE PLOTTED: 19 February 2019 11:22 AM BY: SAMUEL BECKHAM

NOTES:

1. ORIGINAL DESIGNS BY TRAFFIX GROUP
2. CARDNO HAS MADE MINOR CHANGES TO REFLECT THE STAGED APPROACH



Rev	Date	Description	Des.	Verif.	Appd.
1	19.02.19	PRELIMINARY ISSUE	SB	VA	

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Web: www.cardno.com.au

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Checked	VA	Date	15/02/2019
Designed	SB	Date	4/02/2019
Verified		Date	
Approved		Date	

Client	VICTORIAN PLANNING AUTHORITY
Project	BENCHMARK COSTING IMPLEMENTATION MINTA FARM CIVIL DESIGN
Title	ALIGNMENT PLAN - STAGE 4 SHEET 2 OF 2

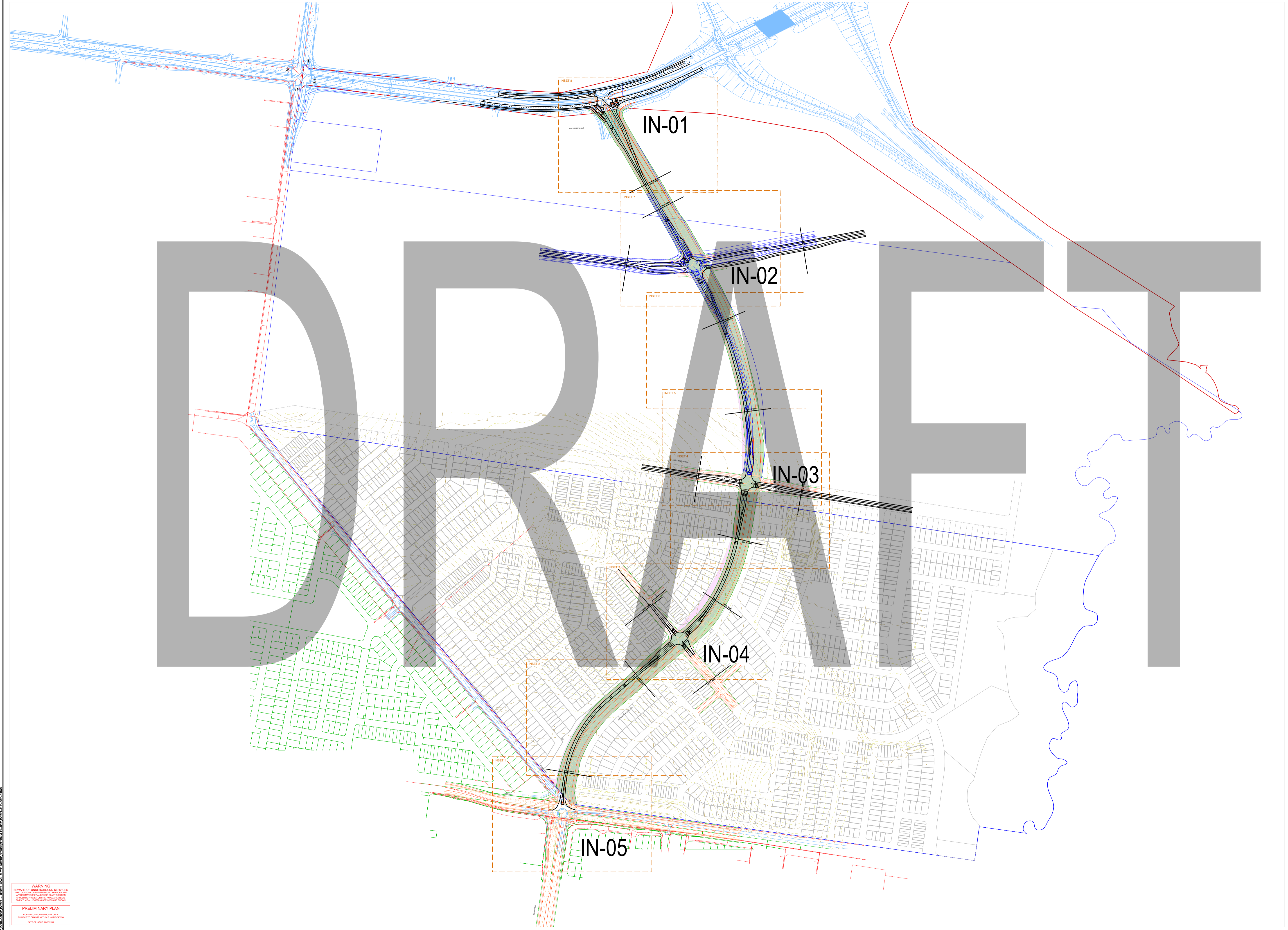
Status	<b>PRELIMINARY</b> NOT TO BE USED FOR CONSTRUCTION PURPOSES			
DATUM	MGA/AHD	Scale	AS SHOWN	
Drawing Number	V181544-CI-DG-0402		Size	A3
Revision	1			

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# Appendix C : Ratio Plans

This plan (or the data transmitted herewith) has been prepared to facilitate the construction and should not be used for any other purpose. Ratio accepts no responsibility whatsoever for the use of unapproved plans in any construction or for any consequential purposes. Set-Out dimensions of all manholes, gull flow control boxes, manhole rooms and manhole manholes should be verified and confirmed against the latest information at construction. Ratio is to be notified immediately of any error or discrepancy and the matter resolved prior to the commencement or continuation of any work. This note is an integral part of this plan/sets. Reproduction of this plan or any part of it without this note being included is not permitted. Information shown on each reproduction level and not suitable for use.

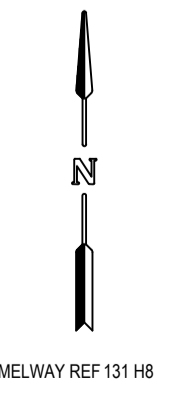


**LEGEND**

- EXISTING
- MAJOR CONTOUR
- MINOR CONTOUR
- EXISTING DEVELOPMENT
- TITLE BOUNDARY
- ROAD RESERVE
- ELECTRICITY
- TELECOM
- WATER
- DRAIN
- SEWER
- GAS
- FUTURE SITE DEVELOPMENT
- EXTERNAL DEVELOPMENT
- PROPOSED LINE MARKING
- PROPOSED KERB
- ULTIMATE DESIGN
- VPA PAD
- REVISED PAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
UNDETERMINED SERVICES MAY BE PRESENT AND SHOULD BE LOCATED PRIOR TO CONSTRUCTION.  
UNDETERMINED SERVICES MAY BE PRESENT AND SHOULD BE LOCATED PRIOR TO CONSTRUCTION.

**PRELIMINARY PLAN**  
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DATE OF ISSUE: 11/02/2020



MELWAY REF 151 HB

ISSUE	APPD	DATE	COMMENTS
C	D.Y.	11.02.2020	Updated As Per Client
B	D.Y.	05.02.2020	Updated As Per Client
A	D.Y.	15.01.2020	Issued for Information

- GENERAL NOTES**
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
  2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
  3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2019
  4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-0739-452-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
  5. VPA PAD BASED ON PLAN "1149-PAD" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019

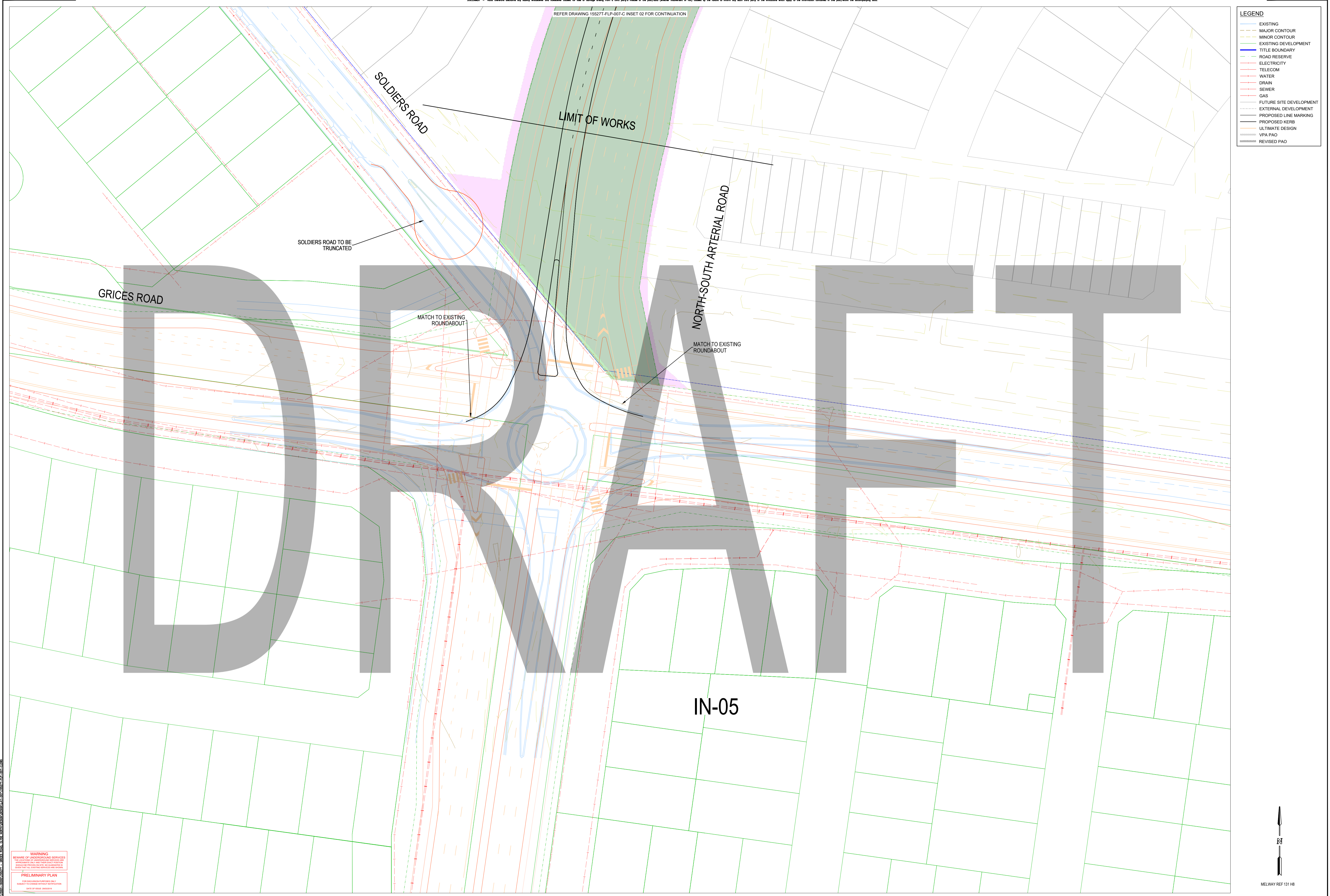
6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 904  
8 SOYONG STREET  
CARLINGFORD VIC 3011  
TEL: 03 9499 9111  
FAX: 03 9499 9111

Minta Farm - North/South Arterial Road Clyde City Council Interim Configuration - Functional Layout Plan Overall Inset Plan	
DATE	11.02.2020
SHEET NO.	1 of 9
DRAWING NO.	155277-FLP-007-C
ISSUE	C

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**LEGEND**

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING DEVELOPMENT
- TITLE BOUNDARY
- ROAD RESERVE
- ELECTRICITY
- TELECOM
- WATER
- DRAIN
- SEWER
- GAS
- FUTURE SITE DEVELOPMENT
- EXTERNAL DEVELOPMENT
- PROPOSED LINE MARKING
- ULTIMATE DESIGN
- VPA PAD
- REVISED PAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDED BY OTHER CONSULTANTS  
AND NOT SHOWN ON THIS PLAN  
AND NOT TO BE TAKEN INTO ACCOUNT  
UNLESS SPECIFICALLY NOTED ON THIS PLAN

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SUBJECT TO ENGINEERING MODIFICATION  
DATE OF ISSUE: 15/01/2020

**GENERAL NOTES**

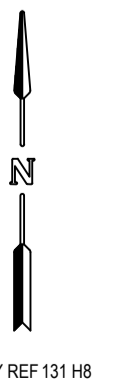
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2019
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149 PAD" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019

6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 104  
8 SOYONGE STREET  
GREENWICH VICTORIA 3101  
TELEPHONE 039489 3111  
FACSIMILE 039489 3011

Minta Farm - North/South Arterial Road Clyde City Council Interim Configuration - Functional Layout Plan Inset Plan 1		DATE	11.02.2020	SHEET NO.	2 of 9	DRAWING NO.	15527T-FLP-007-C	ISSUE	C
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MELWAY REF 131 HB

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REFER DRAWING 155277-FLP-007-C INSET 03 FOR CONTINUATION

LEGEND	
	EXISTING CONTOUR
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD

# DRAFT

NORTH-SOUTH ARTERIAL ROAD

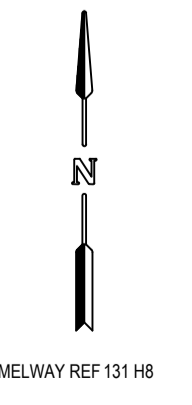
LIMIT OF WORKS

LIMIT OF WORKS

SOLDIERS ROAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDED BY OTHER AGENCIES  
AND NOT SHOWN ON THIS PLAN  
AND NOT TO BE TAKEN INTO ACCOUNT  
UNLESS SPECIFICALLY NOTED ON THIS PLAN.

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DATE OF ISSUE: 11/02/2020



ISSUE	APPD	DATE	COMMENTS
C	D.Y.	11.02.2020	Updated As Per Client
B	D.Y.	05.02.2020	Updated As Per Client
A	D.Y.	15.01.2020	Issued for Information

GENERAL NOTES	
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18	6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KMH
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16160-CPT" BY TRAFFICWORKS DATED 04/10/2017	7. GRICES ROAD - DESIGN SPEED LIMIT 60 KMH
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2019	8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019	9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019	10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020
SCALE	0 5 10 Custom @ A1	



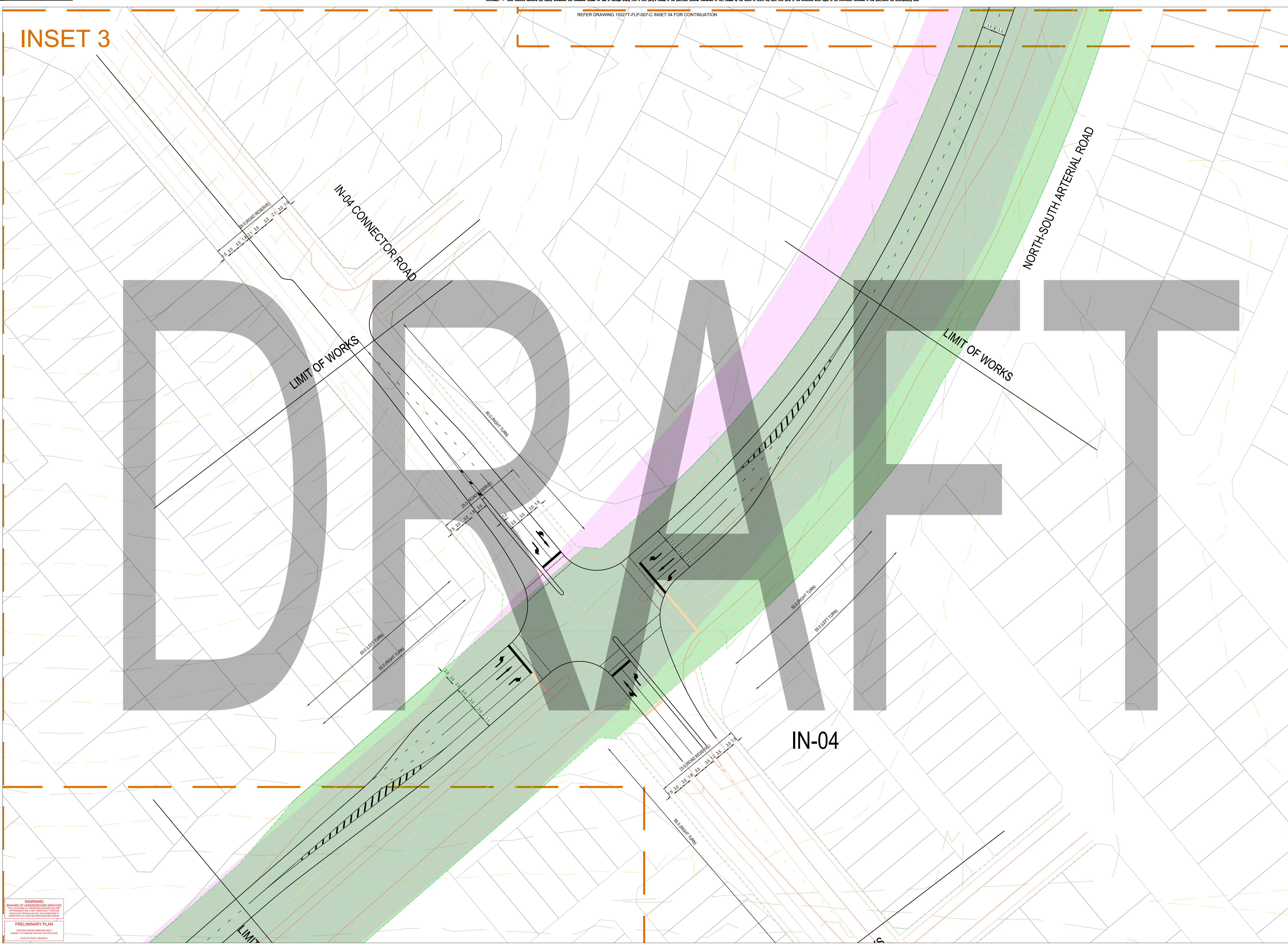
Minta Farm - North/South Arterial Road Clyde City Council Interim Configuration - Functional Layout Plan Inset Plan 2	
DATE	11.02.2020
SHEET NO.	3 of 9
DRAWING NO.	155277-FLP-007-C
ISSUE	C

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REFER DRAWING 155277-FLP-007-C INSET 04 FOR CONTINUATION

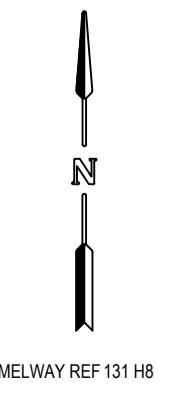
# INSET 3

LEGEND	
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	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE PRESENCE OF ANY UNDERGROUND SERVICES  
SHOULD BE CHECKED PRIOR TO COMMENCEMENT OF  
WORK ON THIS PROJECT. ANY DISCREPANCY IN  
THE LOCATION OF UNDERGROUND SERVICES SHOULD  
BE REPORTED IMMEDIATELY TO THE DESIGNER.

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SHOULD BE ASSUMED.



MELWAY REF 151 HB

ISSUE	APPD	DATE	COMMENTS
C	D.Y.	11.02.2020	Updated As Per Client
B	D.Y.	05.02.2020	Updated As Per Client
A	D.Y.	15.01.2020	Issued for Information

**GENERAL NOTES**

1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16160-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-001" v1" BY CARDNO DATED 19/02/2019
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019

6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

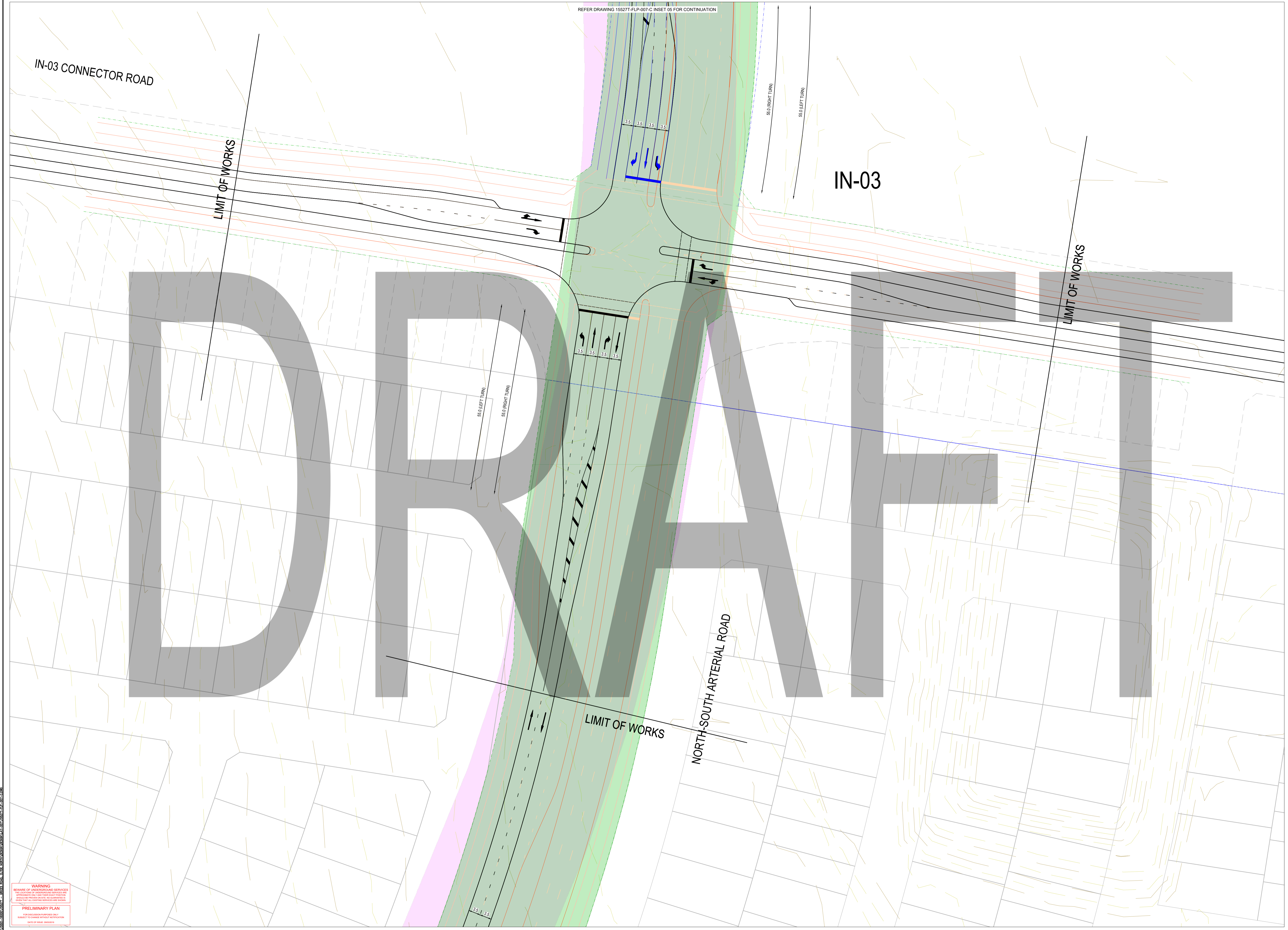
DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020
SCALE	0 5 10	
1:500 @ A1		

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 104  
8 GORMING STREET  
GREENWICH VICTORIA 3103  
TELEPHONE 039493 9111  
FACSIMILE 039493 9111

Minta Farm - North/South Arterial Road Clyde City Council Interim Configuration - Functional Layout Plan Inset Plan 3		DATE	11.02.2020	SHEET NO.	4 of 9	DRAWING NO.	155277-FLP-007-C	ISSUE	C
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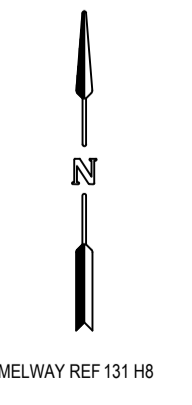
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	EXISTING
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



REFER DRAWING 155277-FLP-007-C INSET 05 FOR CONTINUATION

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
UNDERGROUND SERVICES ARE SHOWN ON THIS PLAN FOR INFORMATION ONLY. THE EXACT LOCATION AND DEPTH OF THESE SERVICES IS NOT GUARANTEED. ANY WORK SHOULD BE DONE AT THE RISK OF THE OPERATOR.

**PRELIMINARY PLAN**  
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SUBJECT TO CHANGE WITHOUT NOTICE  
DATE OF ISSUE: 11/02/2020



MELWAY REF 131 HB

ISSUE	APPD	DATE	COMMENTS
C	D.Y.	11.02.2020	Updated As Per Client
B	D.Y.	05.02.2020	Updated As Per Client
A	D.Y.	15.01.2020	Issued for Information

**GENERAL NOTES**

1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16186-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-001 rev 1" BY CARDNO DATED 19/02/2019
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-0739-452-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149-PAD" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019

6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KMH
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KMH
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020

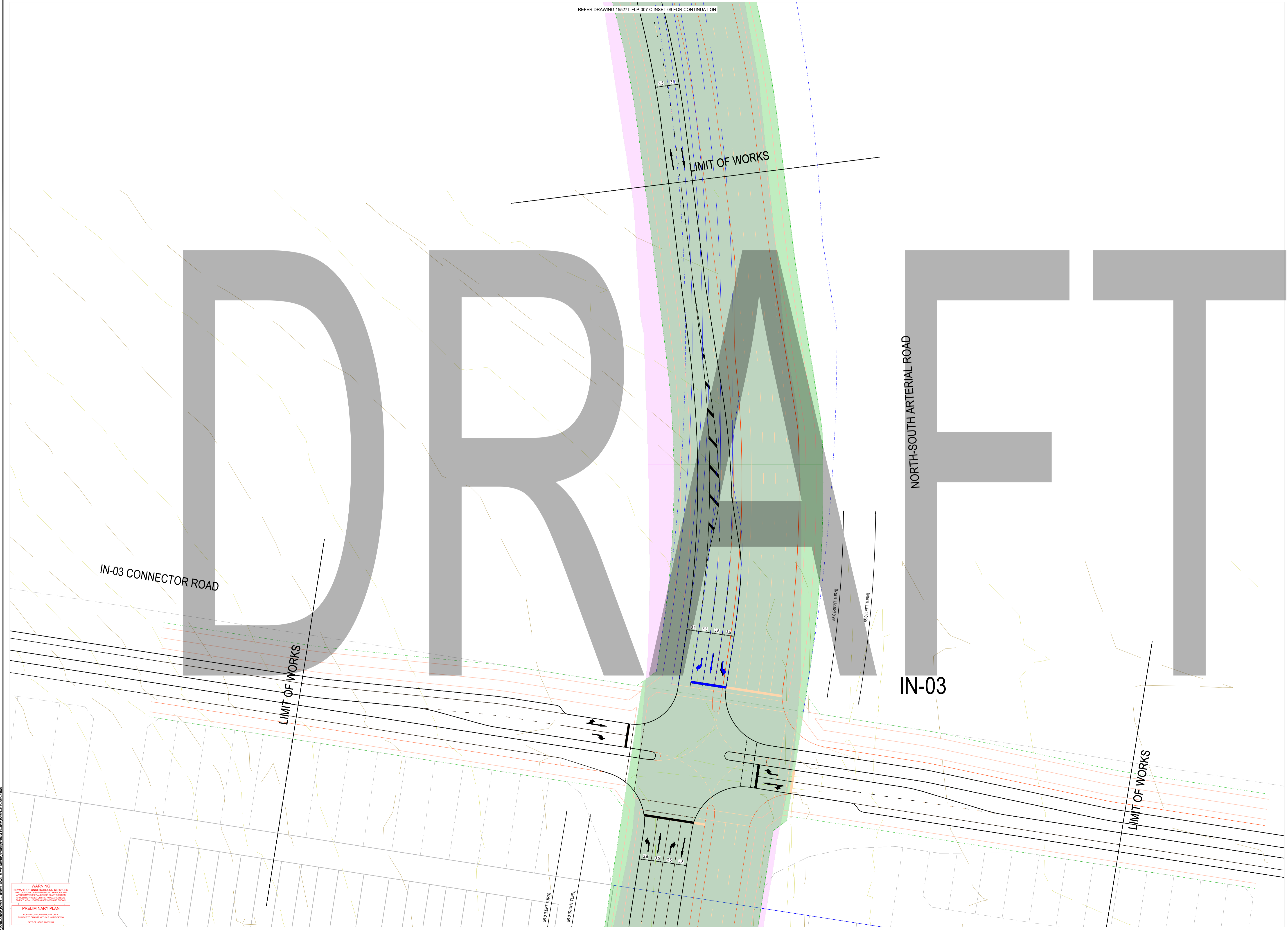
**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACORN 024 422 104  
8 GUYMERE STREET  
GUYMERE, VICTORIA 3101  
TELEPHONE 034949 3111  
FACSIMILE 034949 3011

DATE	11.02.2020	SHEET NO.	5 of 9	DRAWING NO.	155277-FLP-007-C	ISSUE	C
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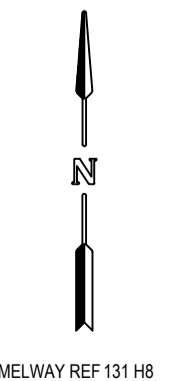
REFER DRAWING 15527T-FLP-007-C-INSET 06 FOR CONTINUATION

LEGEND	
	EXISTING CONTOUR
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
UNLAWFUL TO OPEN, MOVE OR REMOVE  
OR TO DAMAGE ANY SERVICES OR  
CONDUITS OR TO DAMAGE THE  
SURFACE OF ANY ROAD OR DRIVEWAY  
OR TO DAMAGE ANY SERVICES OR  
CONDUITS OR TO DAMAGE THE  
SURFACE OF ANY ROAD OR DRIVEWAY

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DATE OF ISSUE: 15/01/2020



MELWAY REF 151 HB

ISSUE	APPD	DATE	COMMENTS
C	D.Y.	11.02.2020	Updated As Per Client
B	D.Y.	11.02.2020	Updated As Per Client
A	D.Y.	15.01.2020	Issued for Information

GENERAL NOTES	
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18	6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KMH
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017	7. GRICES ROAD - DESIGN SPEED LIMIT 60 KMH
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2019	8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
4. CSHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019	9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019	10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

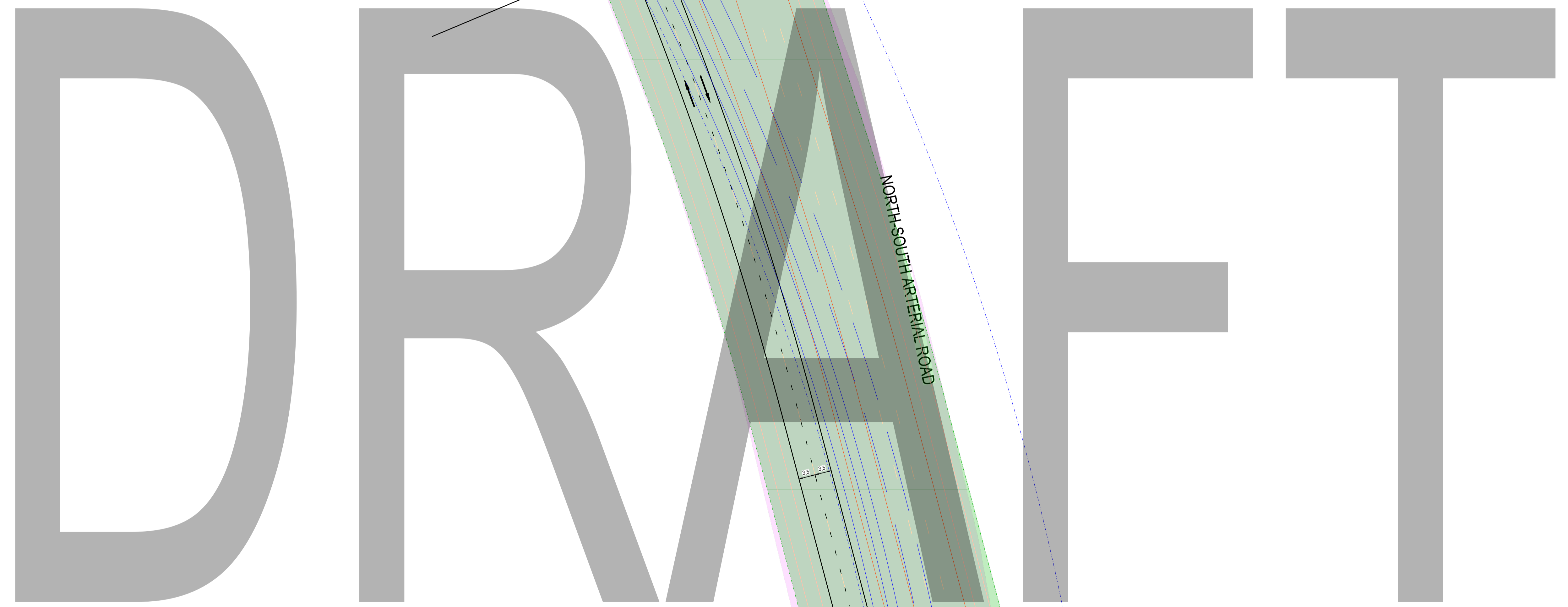
DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020
SCALE	1:500 @ A1	

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 104  
8 SOYONGE STREET  
CHRISTIEHURST VICTORIA 3101  
TELEPHONE 039493 9111  
FACSIMILE 039493 9111

Minta Farm - North/South Arterial Road Clyde City Council Interim Configuration - Functional Layout Plan Inset Plan 5	
DATE	11.02.2020
SHEET NO.	6 of 9
DRAWING NO.	15527T-FLP-007-C
ISSUE	C

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LEGEND	
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	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



REFER DRAWING 15527T-FLP-007-C INSET 07 FOR CONTINUATION

REFER DRAWING 15527T-FLP-007-C INSET 05 FOR CONTINUATION

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDERS OF ANY SERVICES SHOULD BE ADVISED BY THIS PLAN. THE USER SHOULD BE AWARE OF ANY SERVICES IN THE AREA AND TAKE APPROPRIATE PRECAUTIONS TO AVOID DAMAGE TO ANY SERVICES.

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- GENERAL NOTES**
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
  2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16160-CPT" BY TRAFFICWORKS DATED 04/10/2017
  3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "191544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2019
  4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
  5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
  6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
  7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
  8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
  9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
  10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020
SCALE	0 5 10 1:500 @ A1	

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 904  
8 SYDNEY STREET  
CHRISTCHURCH, VIC 3024  
TELEPHONE 039493 9111  
FACSIMILE 039493 9011

Minta Farm - North/South Arterial Road Clyde City Council Interim Configuration - Functional Layout Plan Inset Plan 6		DATE	11.02.2020	SHEET NO.	7 of 9	DRAWING NO.	15527T-FLP-007-C	ISSUE	C
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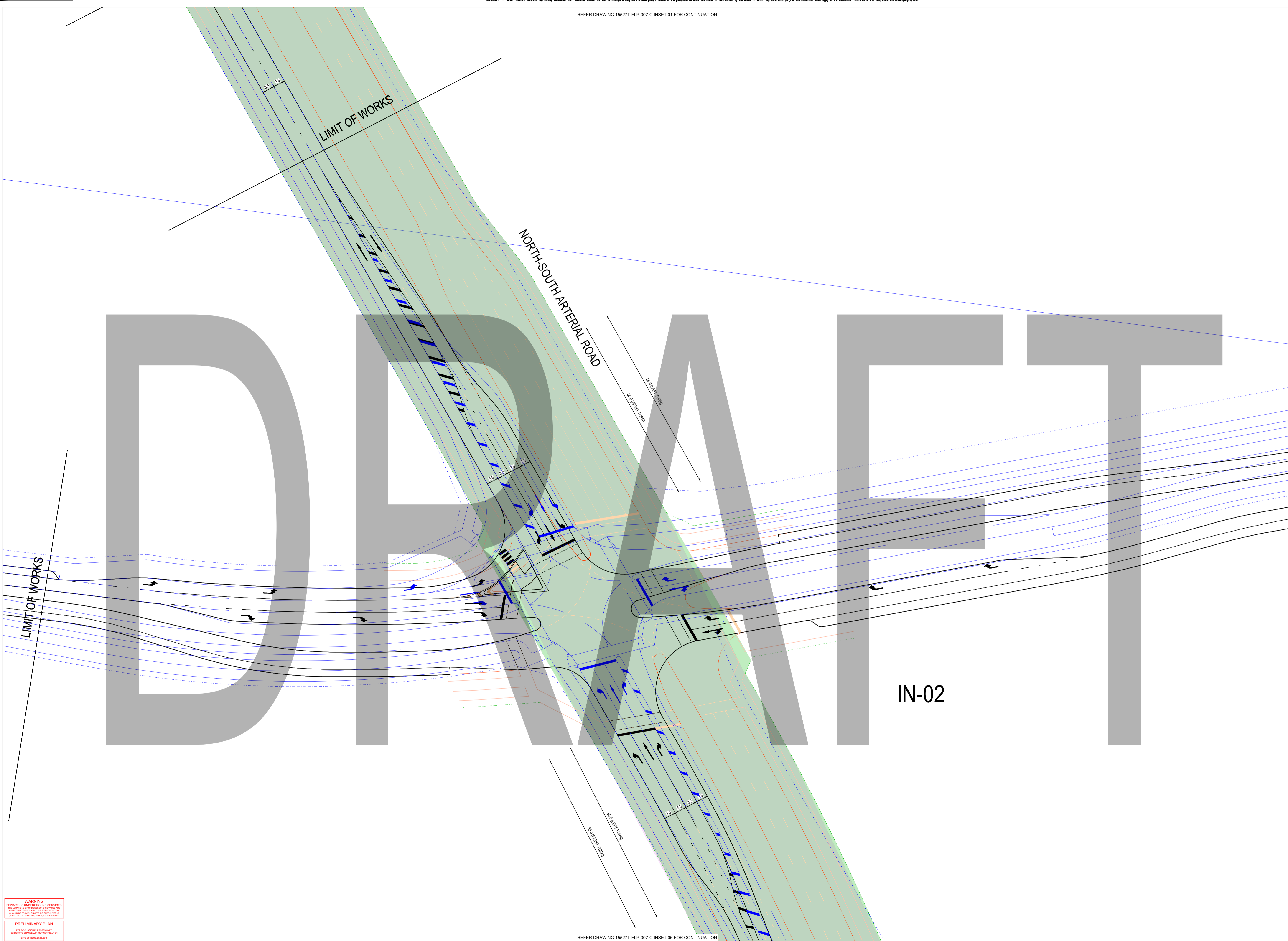
15527T-FLP-007-C - GRICES ROAD, CLYDE, VIC 3024 - 15527T-FLP-007-C - 15527T-FLP-007-C - 15527T-FLP-007-C



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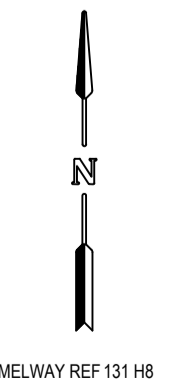
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	TITLE BOUNDARY
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	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



REFER DRAWING 15527T-FLP-007-C INSET 06 FOR CONTINUATION

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDED BY OTHER AGENCIES  
AND NOT SHOWN ON THIS PLAN  
OR DRAWING. THE USER OF THIS PLAN  
OR DRAWING IS TO BE NOTIFIED  
IMMEDIATELY OF ANY ERROR OR  
DISCREPANCY AND THE MATTER  
RESOLVED PRIOR TO THE COMMENCEMENT  
OR CONTINUATION OF ANY WORK.

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AND/OR SCALE REVISIONS



MELWAY REF 151 HB

ISSUE	APPD	DATE	COMMENTS
C	D.Y.	11.02.2020	Updated As Per Client
B	D.Y.	05.02.2020	Updated As Per Client
A	D.Y.	15.01.2020	Issued for Information

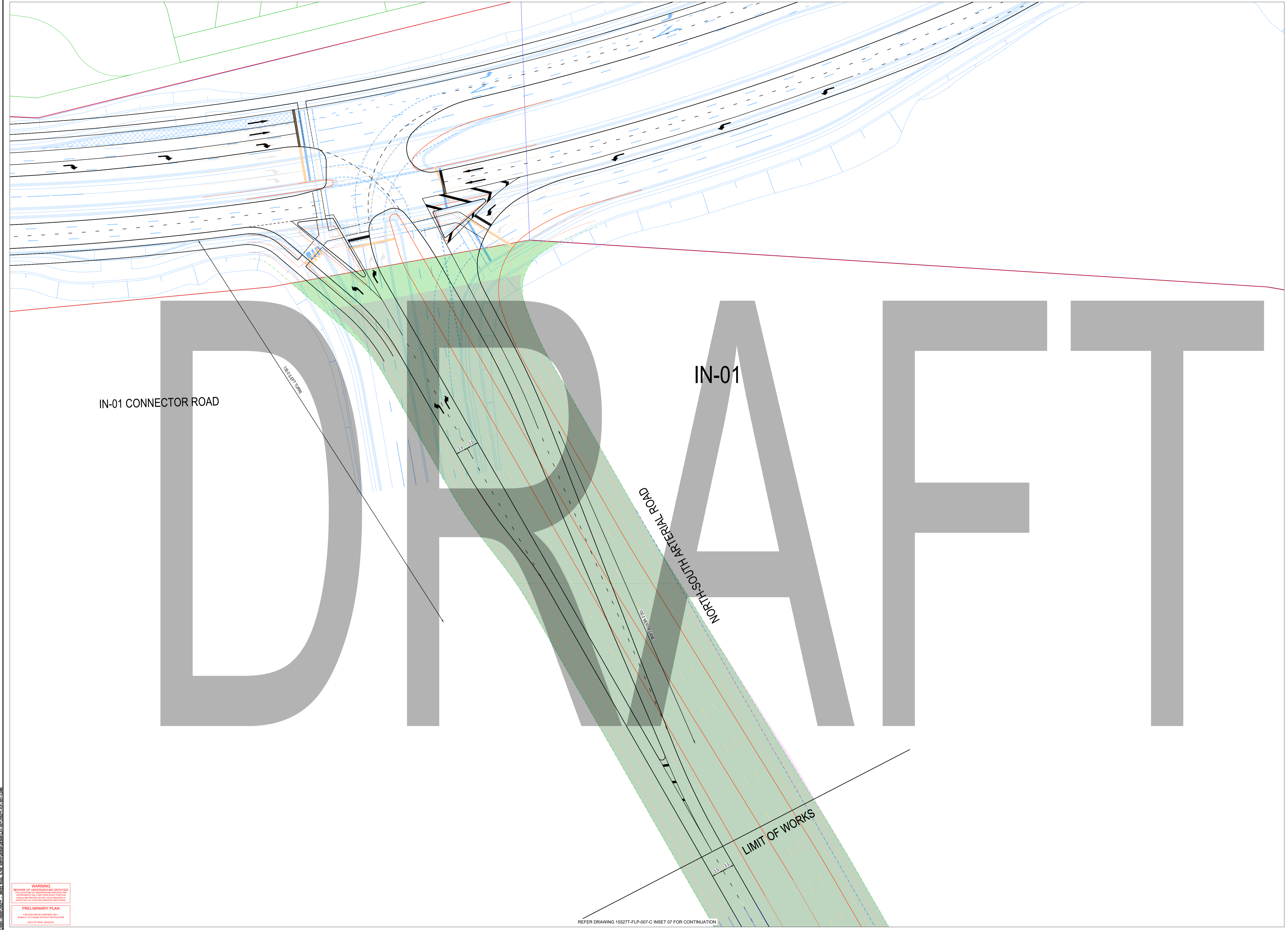
GENERAL NOTES	
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 3/10/18	6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KMH
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017	7. GRICES ROAD - DESIGN SPEED LIMIT 60 KMH
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "161544-CI-DG-0401 Rev 1" BY CARDNO DATED 19/02/2019	8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
4. CSHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-452-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019	9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
5. VPA PAD BASED ON PLAN "1149-PA0" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019	10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020
<small>RATIO CONSULTANTS PTY LTD ACN 094 622 904 8 ROYAL STREET CHRISTCHURCH, VIC 3021 TELEPHONE 039493 9111 FACSIMILE 039493 9011</small>		
SCALE		
1:500 @ A1		

Minta Farm - North/South Arterial Road		Clyde City Council	
Interim Configuration - Functional Layout Plan			
Inset Plan 7			
DATE	11.02.2020	SHEET NO.	8 of 9
DRAWING NO.	15527T-FLP-007-C	ISSUE	C

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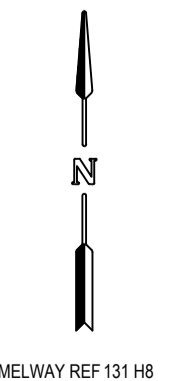
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	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDERS OF UNDERGROUND SERVICES  
SHOULD BE ADVISED OF ANY PROPOSED WORK  
AND BE PROVIDED WITH A COPY OF THIS PLAN  
AND THE VPA PAD TO BE INSTALLED AND MAINTAINED  
IN ACCORDANCE WITH THE RELEVANT STANDARDS.

**PRELIMINARY PLAN**  
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DATE OF ISSUE: 15/01/2020

REFER DRAWING 155277-FLP-007-C INSET 07 FOR CONTINUATION



MELWAY REF 151 HB

ISSUE	APPD	DATE	COMMENTS
C	D.Y.	11.02.2020	Updated As Per Client
B	D.Y.	05.02.2020	Updated As Per Client
A	D.Y.	15.01.2020	Issued for Information

GENERAL NOTES	
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18	6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KMH
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16196-CPT" BY TRAFFICWORKS DATED 04/10/2017	7. GRICES ROAD - DESIGN SPEED LIMIT 60 KMH
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 Rev 1" BY CARDNO DATED 19/02/2019	8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
4. O'SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019	9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KMH
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019	10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	11.02.2020
CHECKED	P.M.	11.02.2020
AUTHORISED	A.W.	11.02.2020

SCALE: 1:500 @ A1

**ratio:**  
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ACORN 004 622 104  
8 GUYMERE STREET  
GEORGINA, VICTORIA 3101  
TELEPHONE 039493 9111  
FACSIMILE 039493 9011

Minta Farm - North/South Arterial Road Clyde City Council Interim Configuration - Functional Layout Plan Inset Plan 8	
DATE	11.02.2020
SHEET NO.	9 of 9
DRAWING NO.	155277-FLP-007-C
ISSUE	C



## Appendix D: Amended Cardno Plans

Our Ref: V181544:BM  
Contact: Benjamin Mentha

13 March 2020

Victorian Planning Authority  
Level 25, 35 Collins Street  
**Melbourne VIC 3000**

Attention: David Portelli

Cardno Victoria Pty Ltd  
ABN 47 106 610 913

Level 4  
501 Swanston Street  
Melbourne VIC 3000  
Australia

Phone +61 3 8415 7777  
Fax +61 3 8415 7788

[www.cardno.com](http://www.cardno.com)

Dear David,

**MINTA FARM ICP  
REVISED CONCEPT LAYOUT PLANS**

We refer to your request to prepare revised concept layout plans for the Minta Farm ICP.

**Background:**

The currently exhibited concept layout plans prepared by Cardno adopted the previous interim layouts prepared by Traffix Group that adopted an 80km/h design speed.

The exhibited plans expended upon the Traffix Group plans by considering the sequencing of the delivery, which resulted in a second carriageway being provided in a boulevard configuration following full delivery of the North-South Arterial and associated signalised intersections.

**Revised Plans:**

Following consultation with VPA, DoT and Council, it was agreed that the interim design speed for the North-South Arterial should be 60km/h, which resulted in the need to revise turn lane and taper lengths for the interim intersection layouts.

The revised interim concept layout plans (see attached) consider the following:

- > The delivery of IN-01 and IN-05 with a single two-lane carriageway along the west side of the North-South Arterial reserve as part of the early delivery works;
- > Subsequent delivery of IN-02, IN-03 and IN-04 independently as 'outside-in' designs;
- > Adoption of a 60km/h design speed for the North-South Arterial;
- > VicRoads' Guidance for Planning Road Networks in Growth Areas for lane configuration along the North-South Arterial;
- > Single left and right turn lanes on O'Shea Road for vehicles turning into the North-South Arterial at IN-01;
- > The inclusion of a left turn slip lane on the north-east corner of IN-02 for vehicles turning into the industrial connector from the North-South Arterial;
- > Adoption of the ultimate lane configuration for the connector legs at IN-02, IN-03 and IN-04;
- > A boulevard configuration of the southern leg of IN-05 to match existing conditions; and
- > Matching to existing conditions along Grices Road at IN-05.



We trust the attached concept layout plans are suitable for circulation. Should you have any queries regarding the designs, please contact the undersigned.

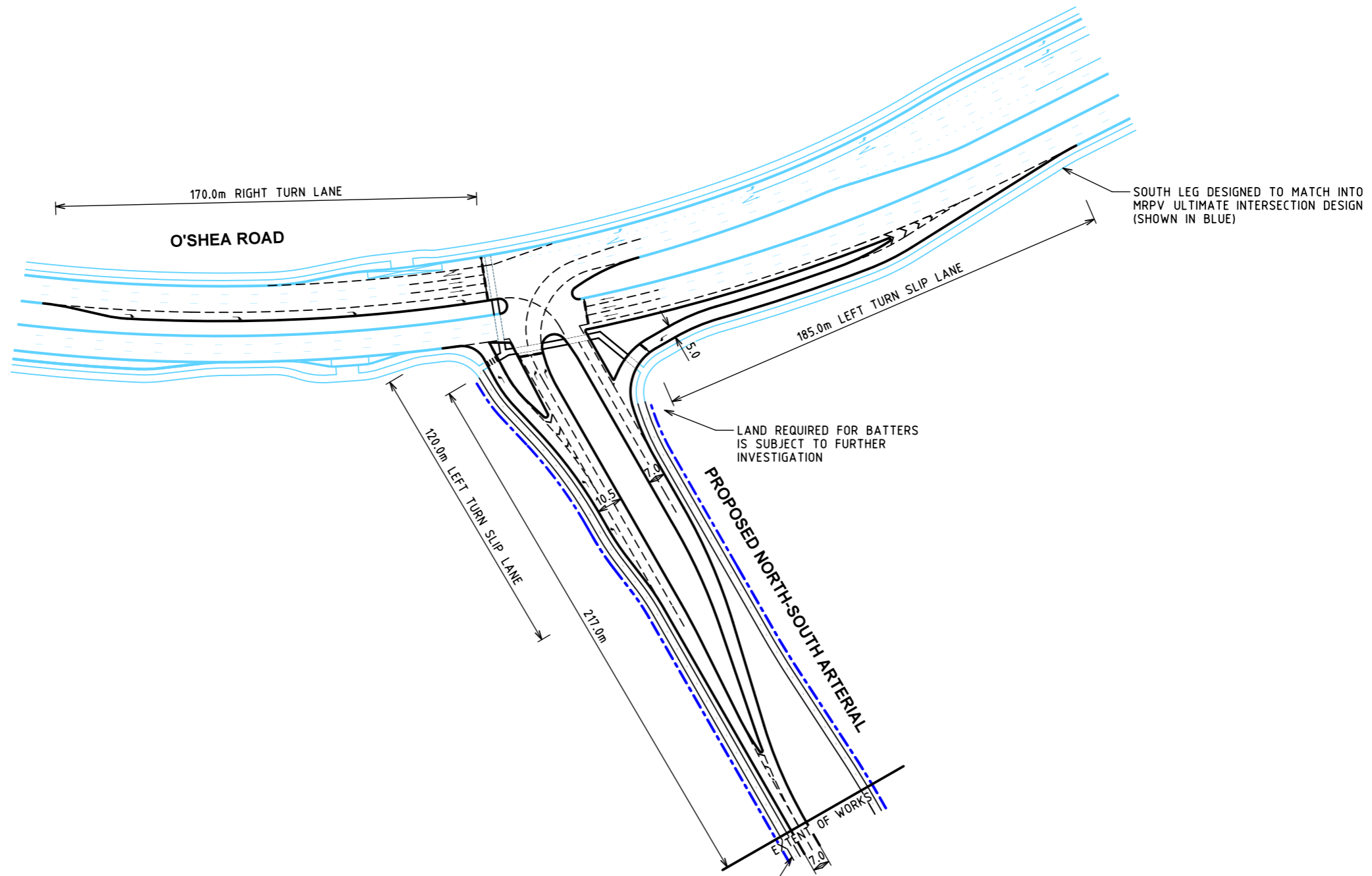
Yours sincerely,

A handwritten signature in black ink that reads "B. Mentha".

Benjamin Mentha  
Associate  
for Cardno  
Direct Line: +61 3 8415 7574  
Email: benjamin.mentha@cardno.com.au

Enc: Concept Layout Plans

cc: Rory O'Connor - Hall & Wilcox Lawyers



COSTINGS FOR MINTA FARM  
ICP PROVIDE FOR SINGLE  
3.0m BIKE PATH



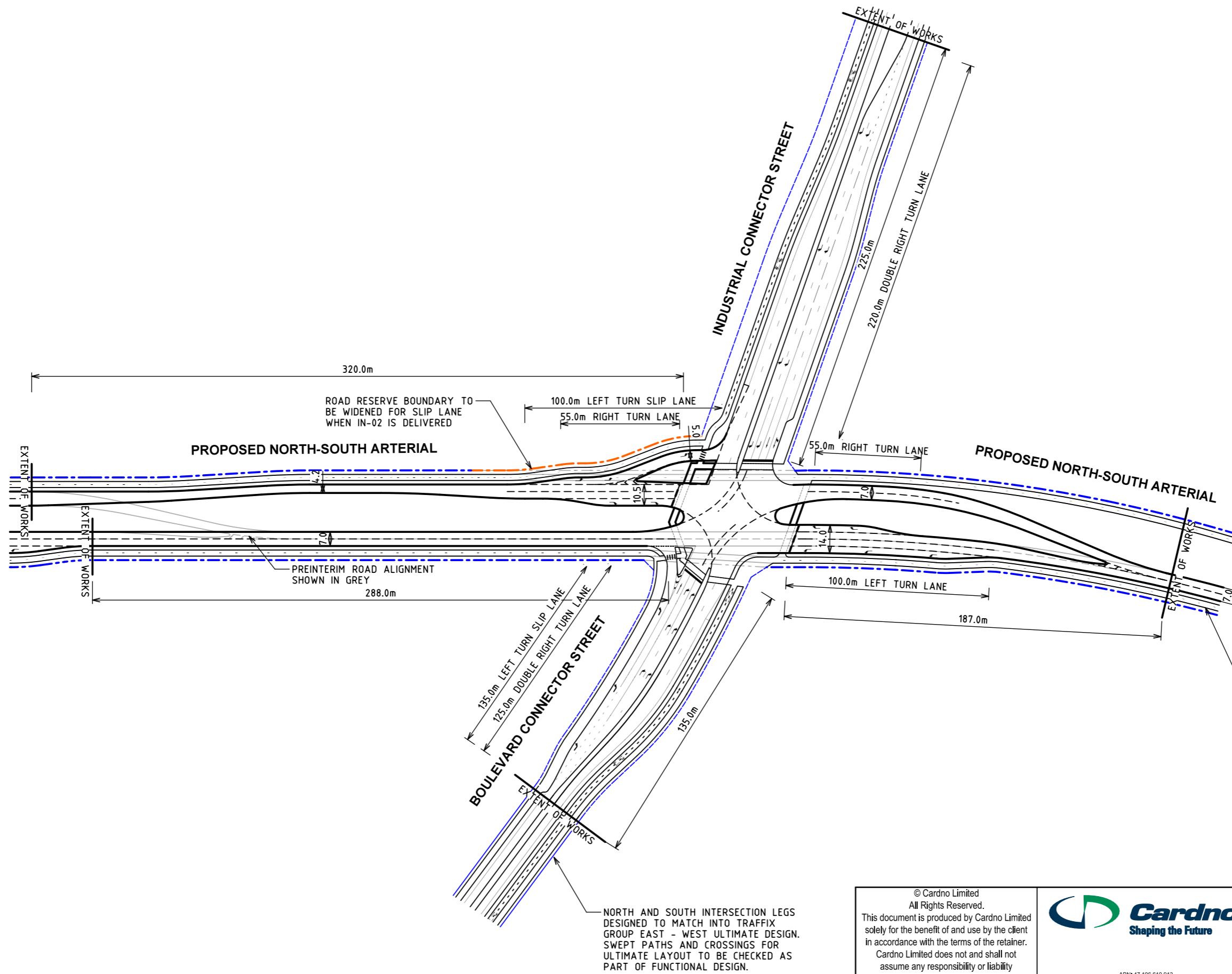
MELWAY MAP REF 131 H4

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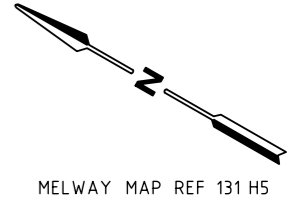


ABN: 47 106 610 913  
501 Swanston Street, Melbourne, VIC Australia 3000  
Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788  
Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria

VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
O'SHEA ROAD, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
IN-01			
Drawn/Check	Date	Scale	Size
EC / CS	11.03.2020	1:2000	A3
Drawing Number			Revision
V181544-TR-DG-0301			3



COSTINGS FOR MINTA FARM ICP PROVIDE FOR A SINGLE 3.0m BIKE PATH

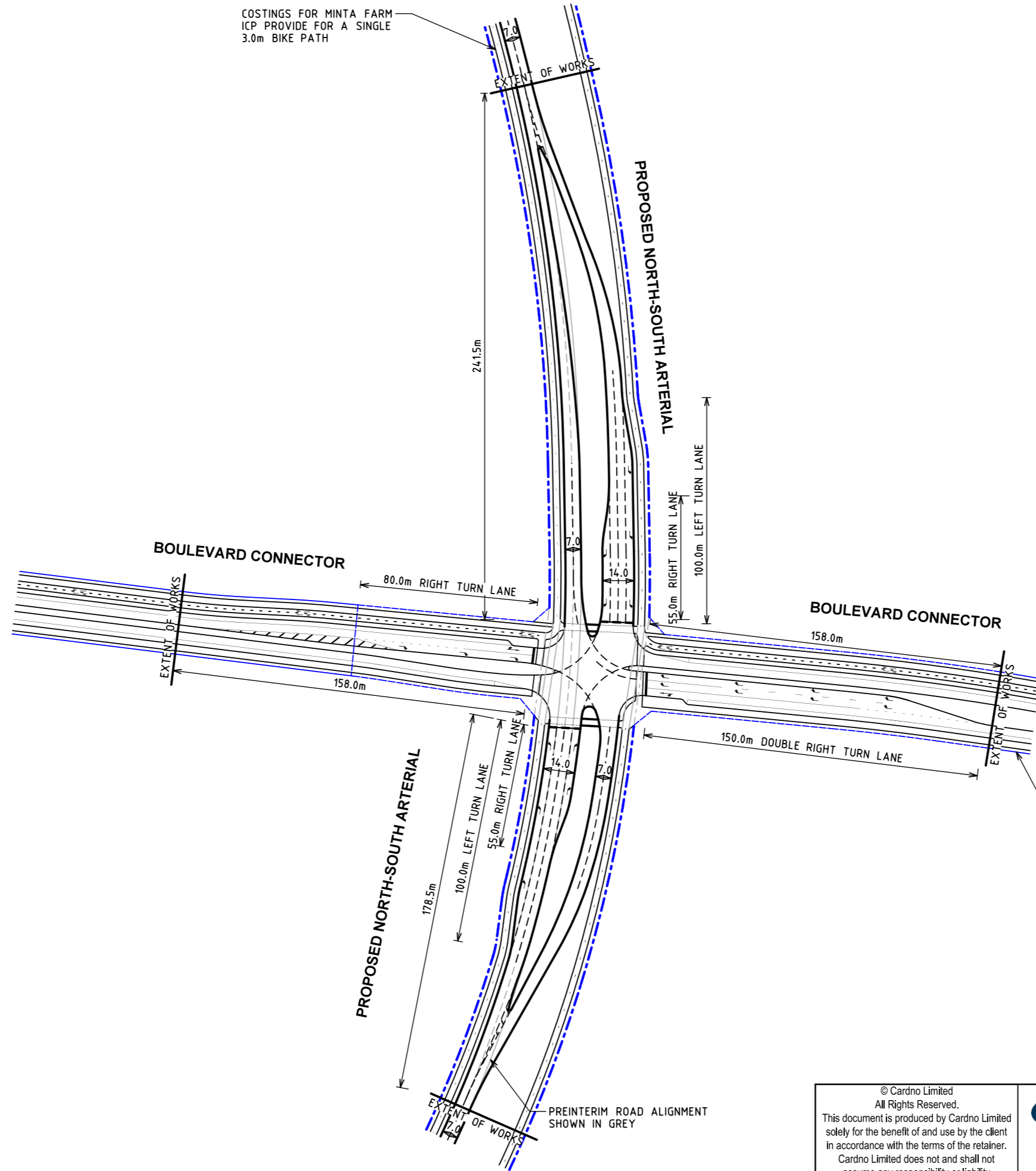


NORTH AND SOUTH INTERSECTION LEGS DESIGNED TO MATCH INTO TRAFFIX GROUP EAST - WEST ULTIMATE DESIGN. SWEEP PATHS AND CROSSINGS FOR ULTIMATE LAYOUT TO BE CHECKED AS PART OF FUNCTIONAL DESIGN.

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Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788  
Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria

VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
PROPOSED NORTH-SOUTH ARTERIAL, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
IN-02			
Drawn/Check	Date	Scale	Size
EC / CS	11.03.2020	1:2000	A3
Drawing Number			Revision
V181544-TR-DG-0302			2



NORTH AND SOUTH INTERSECTION LEGS  
DESIGNED TO MATCH INTO TRAFFIX  
GROUP EAST - WEST ULTIMATE DESIGN.  
SWEEP PATHS AND CROSSINGS FOR  
ULTIMATE LAYOUT TO BE CHECKED AS  
PART OF FUNCTIONAL DESIGN.



MELWAY MAP REF 131 H4

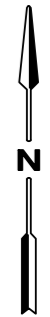
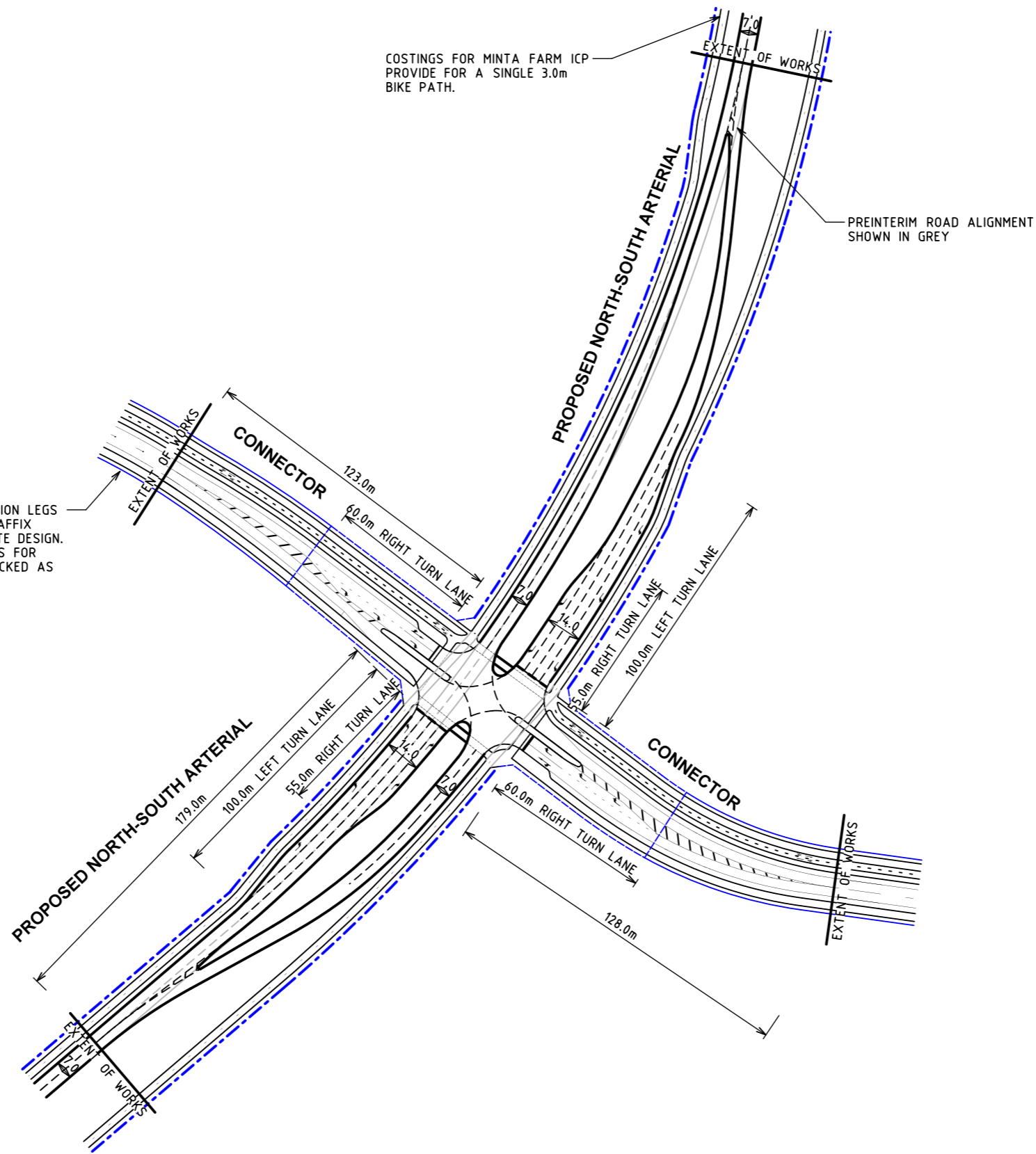
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Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788  
Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria

VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
PROPOSED NORTH-SOUTH ARTERIAL, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
IN-03			
Drawn/Check	Date	Scale	Size
EC / CS	11.03.2020	1:2000	A3
Drawing Number			Revision
V181544-TR-DG-0303			2



NORTH AND SOUTH INTERSECTION LEGS DESIGNED TO MATCH INTO TRAFFIX GROUP EAST - WEST ULTIMATE DESIGN. SWEEP PATHS AND CROSSINGS FOR ULTIMATE LAYOUT TO BE CHECKED AS PART OF FUNCTIONAL DESIGN.



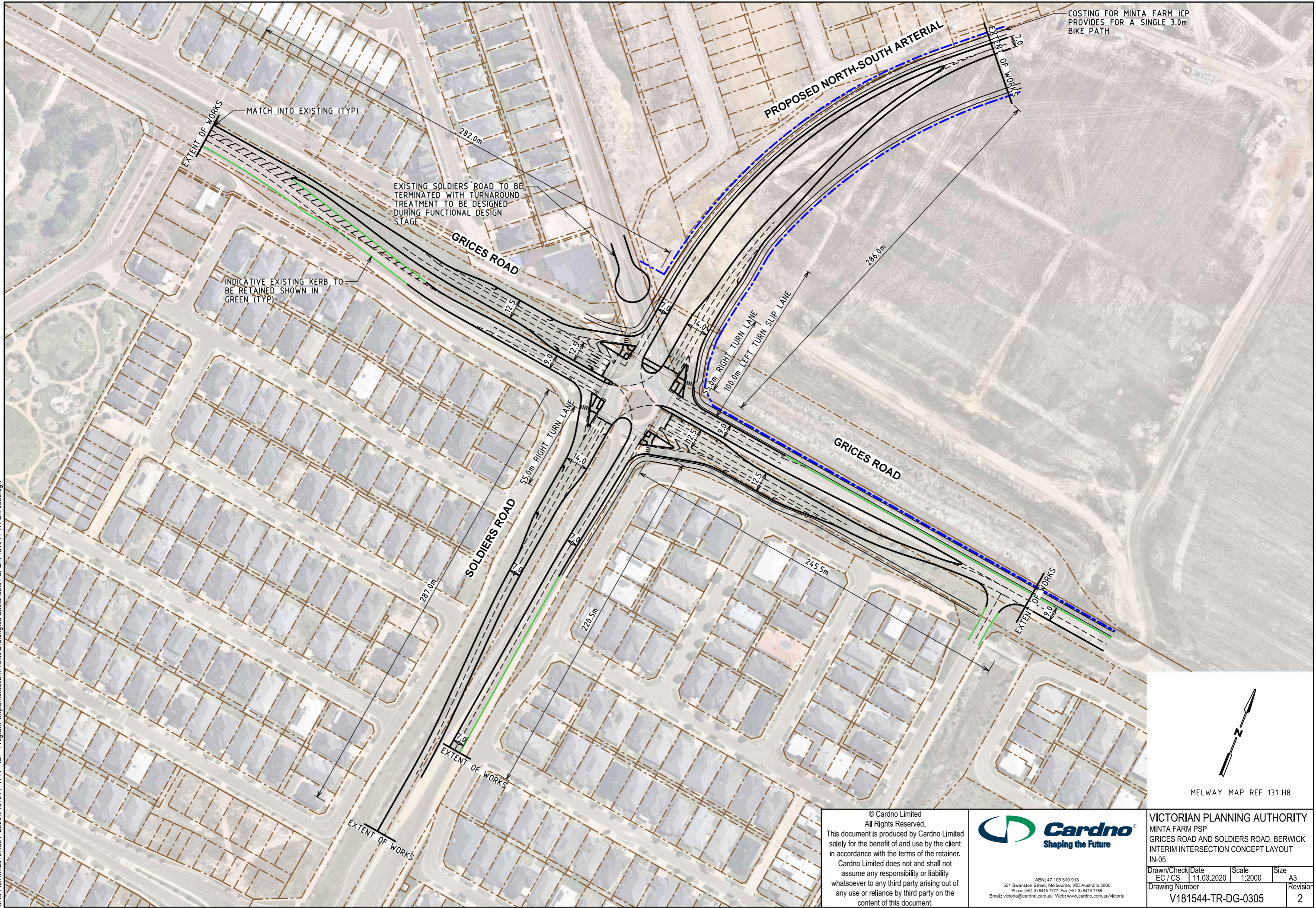
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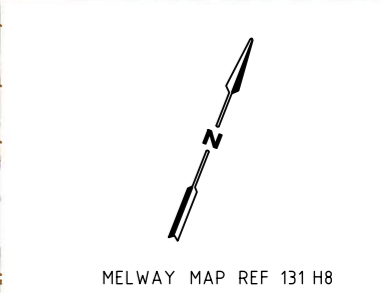


ABN: 47 106 610 913  
501 Swanston Street, Melbourne, VIC Australia 3000  
Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788  
Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria

VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
PROPOSED NORTH-SOUTH ARTERIAL, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
IN-04			
Drawn/Check	Date	Scale	Size
EC / CS	11.03.2020	1:2000	A3
Drawing Number			Revision
V181544-TR-DG-0304			2



COSTING FOR MINTA FARM ICP PROVIDES FOR A SINGLE 3.0m BIKE PATH



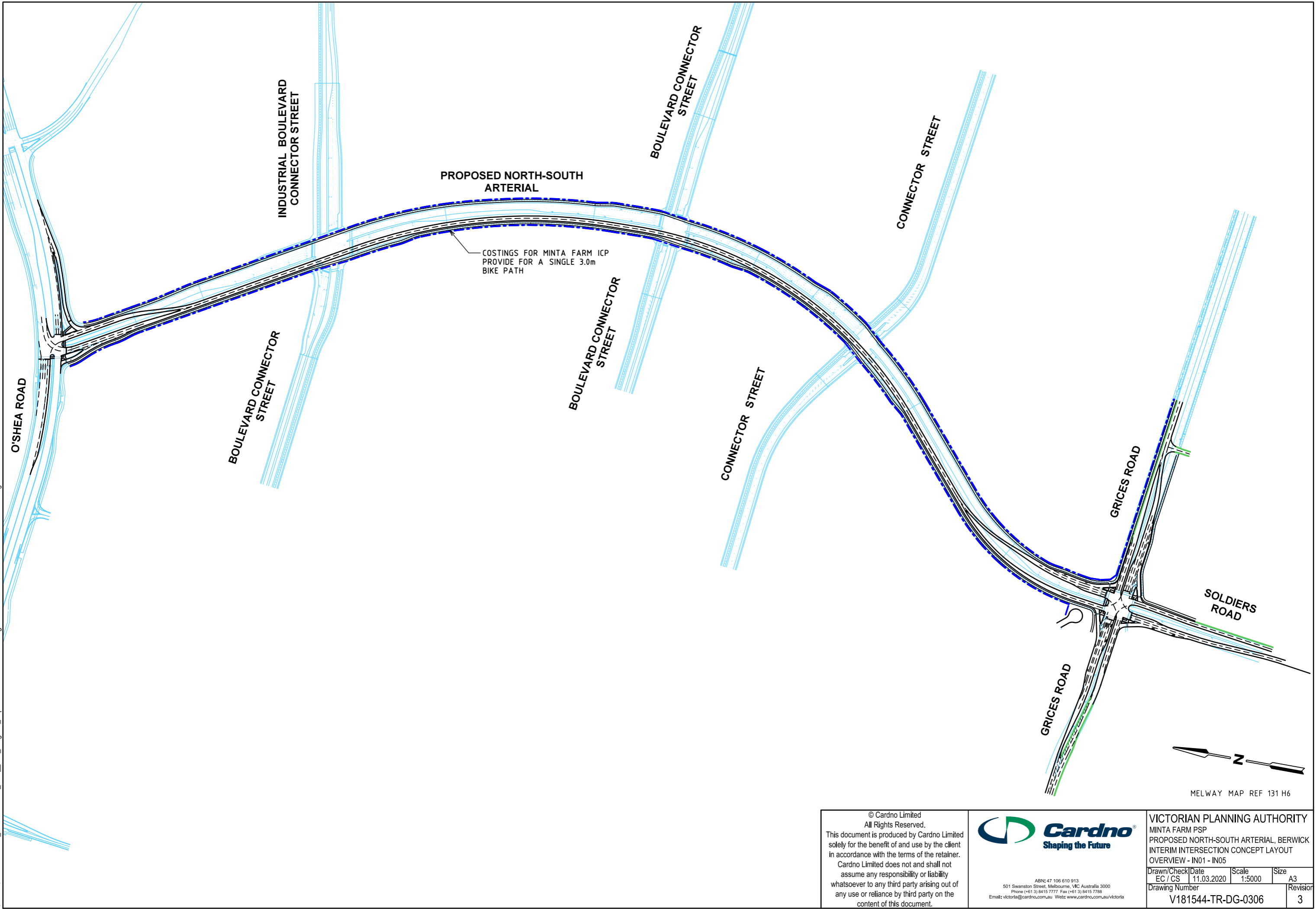
MELWAY MAP REF 131 H8

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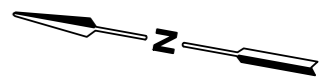
ABN: 47 106 610 913  
501 Swanston Street, Melbourne, VIC Australia 3000  
Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788  
Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria

VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
GRICES ROAD AND SOLDIERS ROAD, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
IN-05			
Drawn/Check	Date	Scale	Size
EC / CS	11.03.2020	1:2000	A3
Drawing Number			Revision
V181544-TR-DG-0305			2



PROPOSED NORTH-SOUTH ARTERIAL

COSTINGS FOR MINTA FARM ICP PROVIDE FOR A SINGLE 3.0m BIKE PATH

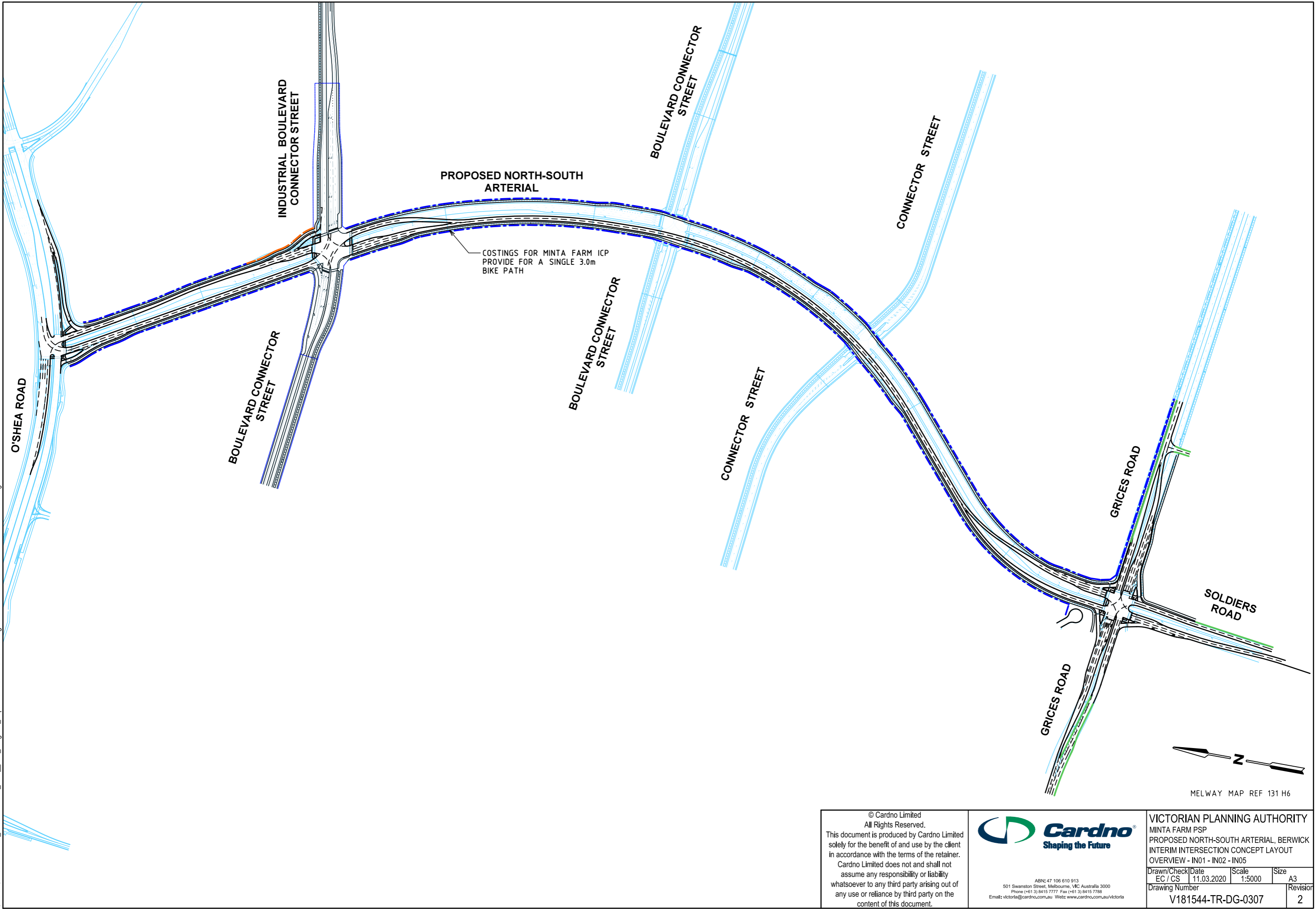


MELWAY MAP REF 131 H6

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 Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788  
 Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria

VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
PROPOSED NORTH-SOUTH ARTERIAL, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
OVERVIEW - IN01 - IN05			
Drawn/Check	Date	Scale	Size
EC / CS	11.03.2020	1:5000	A3
Drawing Number			Revision
V181544-TR-DG-0306			3



PROPOSED NORTH-SOUTH ARTERIAL

COSTINGS FOR MINTA FARM ICP PROVIDE FOR A SINGLE 3.0m BIKE PATH

O'SHEA ROAD

BOULEVARD CONNECTOR STREET

INDUSTRIAL BOULEVARD CONNECTOR STREET

BOULEVARD CONNECTOR STREET

BOULEVARD CONNECTOR STREET

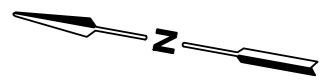
CONNECTOR STREET

CONNECTOR STREET

GRICES ROAD

GRICES ROAD

SOLDIERS ROAD

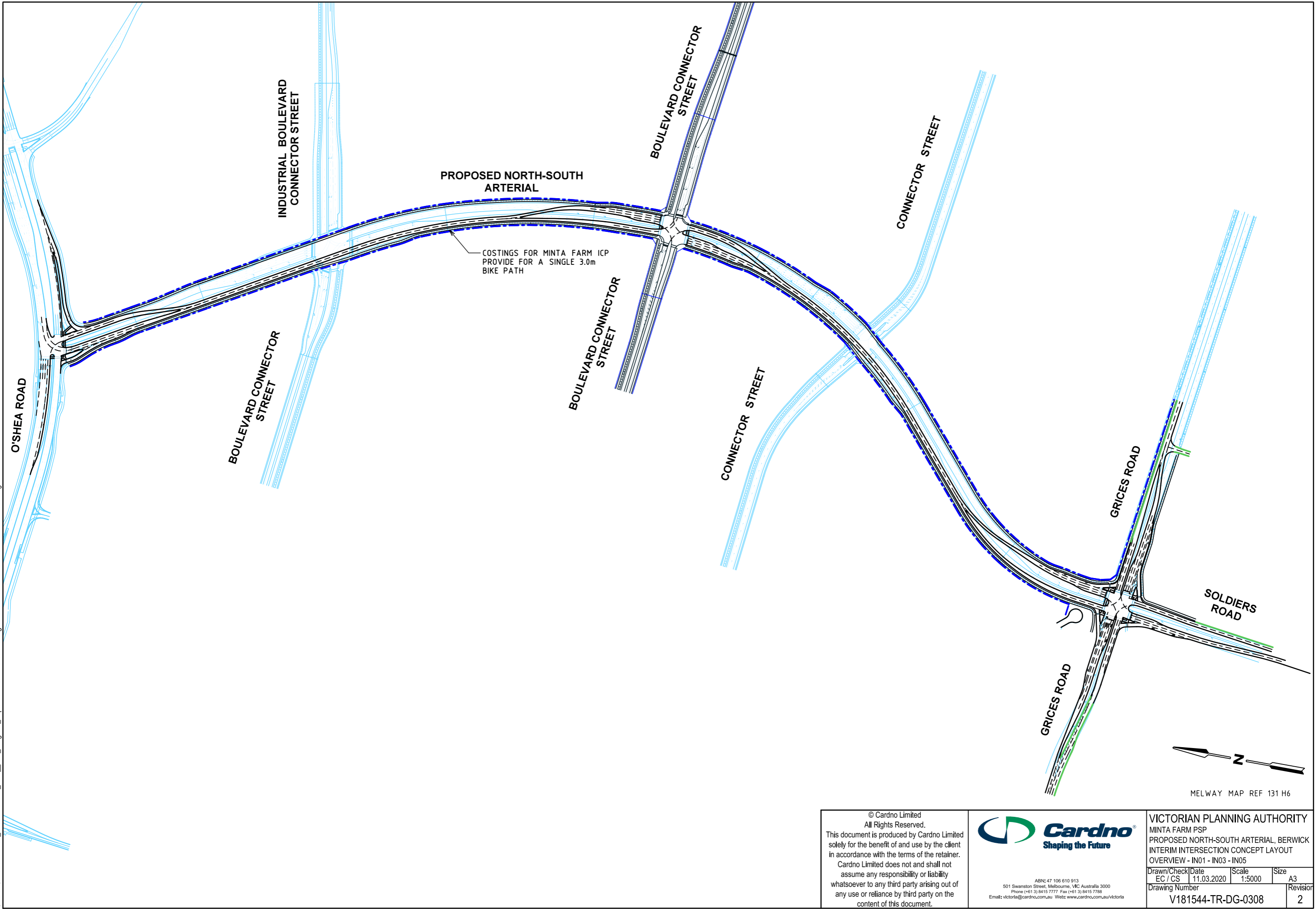


MELWAY MAP REF 131 H6

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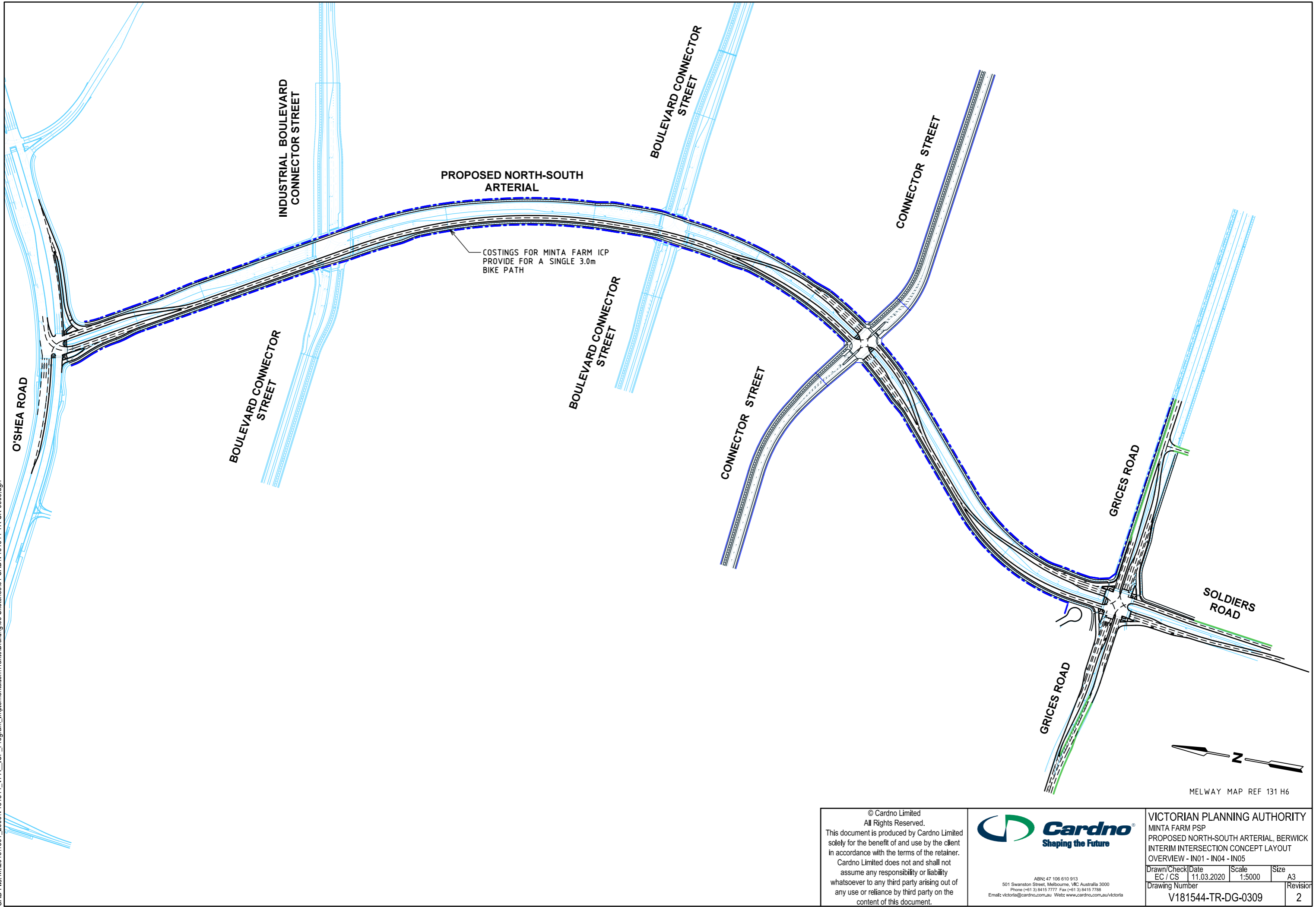
VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
PROPOSED NORTH-SOUTH ARTERIAL, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
OVERVIEW - IN01 - IN02 - IN05			
Drawn/Check/Date	Scale	Size	
EC / CS 11.03.2020	1:5000	A3	
Drawing Number	Revision		
V181544-TR-DG-0307	2		



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VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
PROPOSED NORTH-SOUTH ARTERIAL, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
OVERVIEW - IN01 - IN03 - IN05			
Drawn/Check/Date	Scale	Size	
EC / CS 11.03.2020	1:5000	A3	
Drawing Number			Revision
V181544-TR-DG-0308			2



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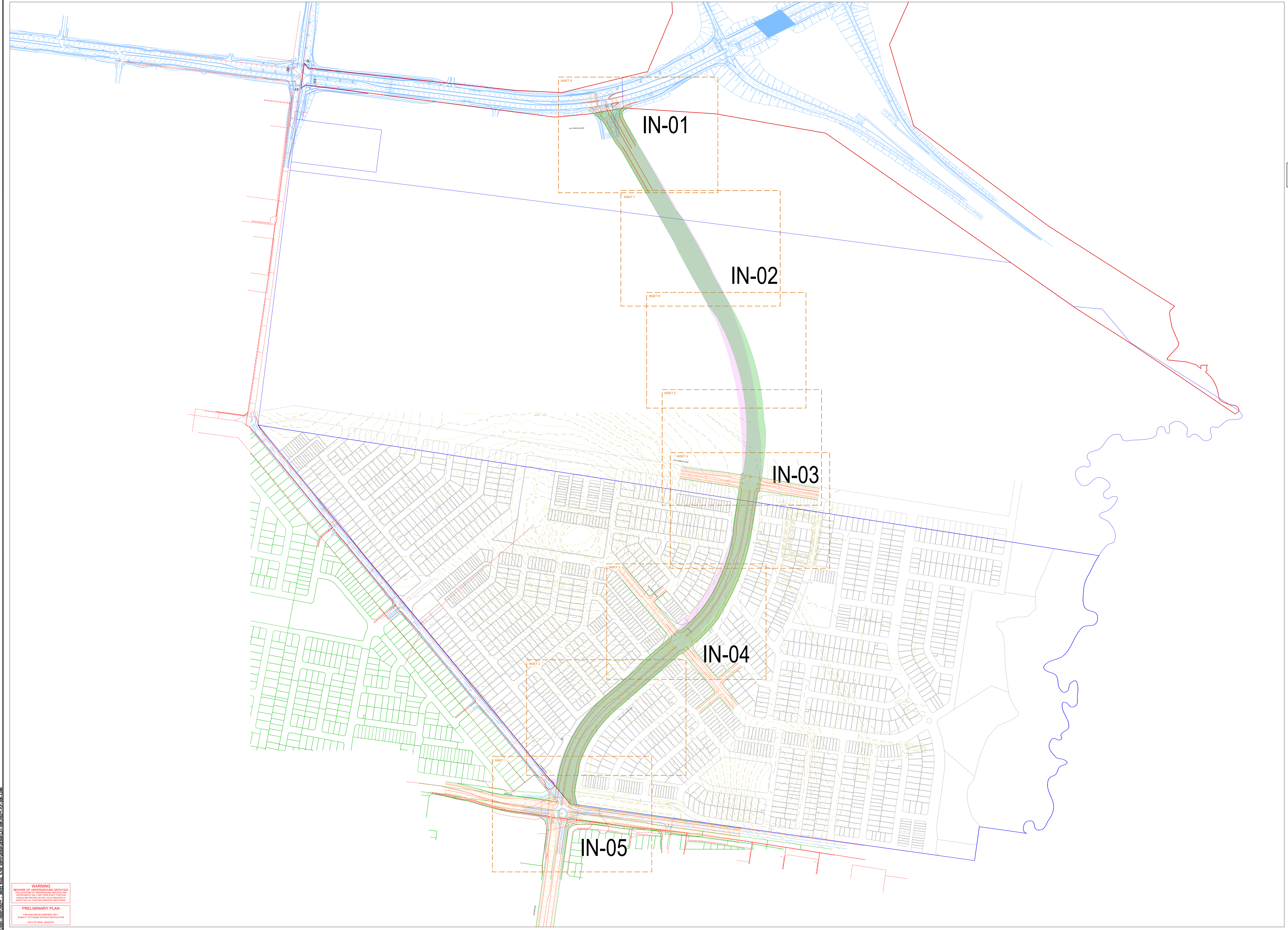
**Cardno**  
 Shaping the Future

ABN: 47 106 610 913  
 501 Swanston Street, Melbourne, VIC Australia 3000  
 Phone (+61 3) 8415 7777 Fax (+61 3) 8415 7788  
 Email: victoria@cardno.com.au Web: www.cardno.com.au/victoria

VICTORIAN PLANNING AUTHORITY			
MINTA FARM PSP			
PROPOSED NORTH-SOUTH ARTERIAL, BERWICK			
INTERIM INTERSECTION CONCEPT LAYOUT			
OVERVIEW - IN01 - IN04 - IN05			
Drawn/Check/Date	Scale	Size	
EC / CS 11.03.2020	1:5000	A3	
Drawing Number			Revision
V181544-TR-DG-0309			2

## Appendix E : Ratio PAO Plans

This plan (or the data transmitted herewith) has been prepared to facilitate the construction and should not be used for any other purpose. Ratio accepts no responsibility whatsoever for the use of unapproved plans in any construction or for any consequential purposes. Set-Out dimensions of all major lines, grid lines, control lines, recovery zones and bench marks should be verified and confirmed against the latest information at construction. Ratio is to be notified immediately of any error or discrepancy and the matter resolved prior to the commencement or continuation of any work. This note is an integral part of this plan/sets. Reproduction of this plan or any part of it without this note being included is not permitted. Information shown on each reproduction level and not available for use.



**LEGEND**

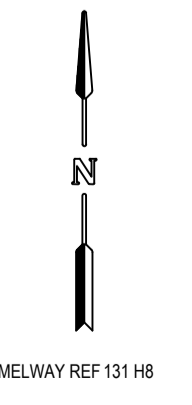
- EXISTING
- MAJOR CONTOUR
- MINOR CONTOUR
- EXISTING DEVELOPMENT
- TITLE BOUNDARY
- ROAD RESERVE
- ELECTRICITY
- TELECOM
- WATER
- DRAIN
- SEWER
- GAS
- FUTURE SITE DEVELOPMENT
- EXTERNAL DEVELOPMENT
- PROPOSED LINE MARKING
- PROPOSED KERB
- ULTIMATE DESIGN
- VPA PAD
- REVISED PAD

**AREA**

CURRENT PAD (SHOWN IN PINK) - 80622M<sup>2</sup>  
 OMC PAD (SHOWN IN GREEN) - 80009M<sup>2</sup>

**WARNING**  
 BEWARE OF UNDERGROUND SERVICES  
 THE PRESENCE OF ANY UNDERGROUND SERVICES IS NOT GUARANTEED AND THE USER SHOULD VERIFY THE LOCATION AND DEPTH OF ANY SERVICES PRIOR TO ANY CONSTRUCTION WORK.

**PRELIMINARY PLAN**  
 FOR CONSULTATION PURPOSES ONLY  
 SUBJECT TO ENGINEERING APPROVAL  
 DATE OF ISSUE: 15/01/2020



- GENERAL NOTES**
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
  2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
  3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 Rev 1" BY CARDNO DATED 19/02/2019
  4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-452-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
  5. VPA PAD BASED ON PLAN "1149 PAD" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
  6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
  7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
  8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
  9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
  10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020

**ratio:**  
 RATIO CONSULTANTS PTY LTD  
 8 SYDNEY STREET  
 MELBOURNE, VICTORIA 3101  
 TELEPHONE: 039493 9111  
 FACSIMILE: 039493 9011

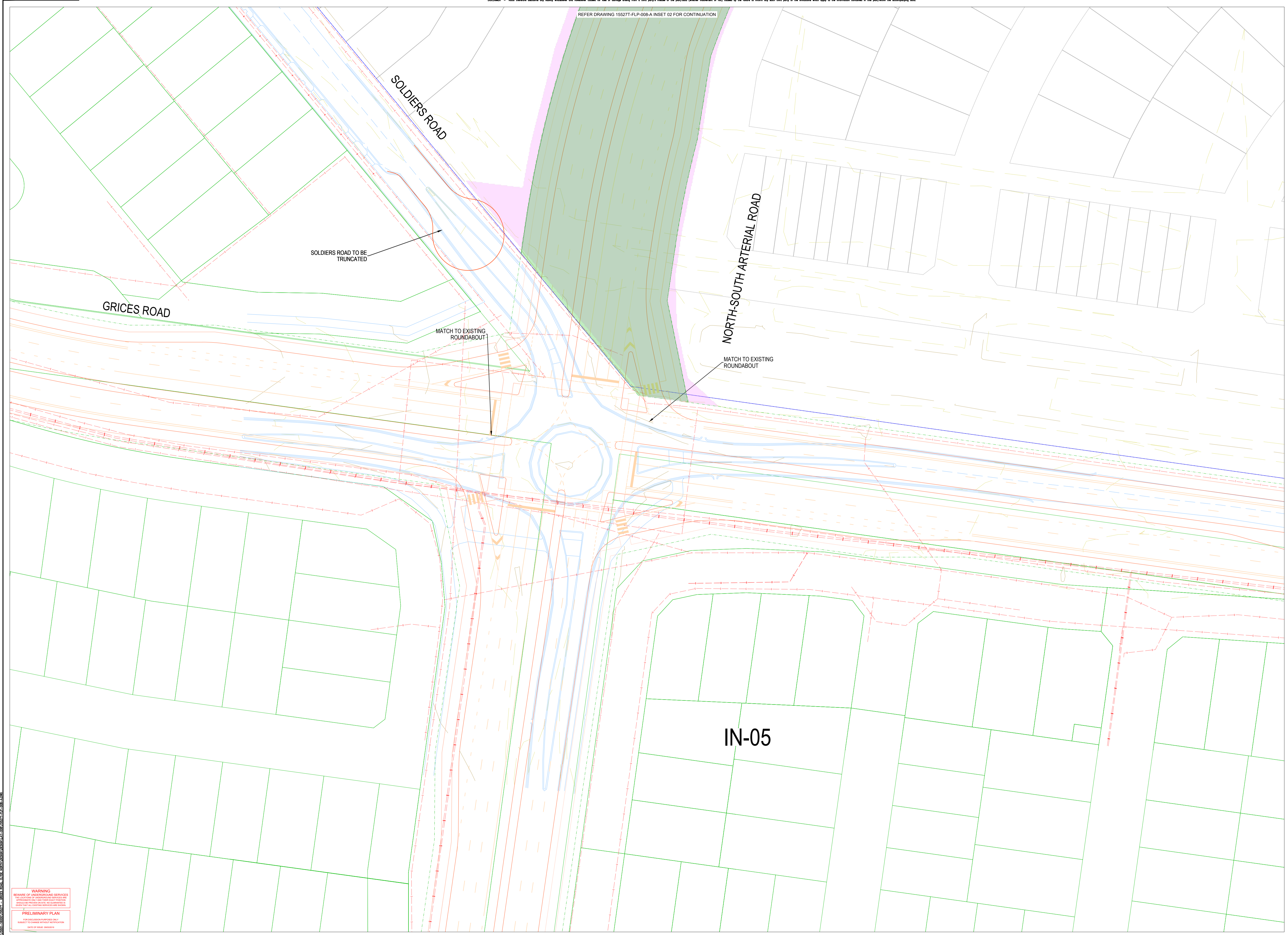
Minta Farm - North/South Arterial Road  
 Clyde City Council  
 Ultimate Configuration - Functional Layout Plan  
 Overall Inset Plan

DATE: 15.01.2020  
 SHEET NO: 1 of 9  
 DRAWING NO: 155277-FLP-008-A  
 ISSUE: A

ISSUE	APPD	DATE	COMMENTS
A	D.Y.	30/01/2020	Issued for Information



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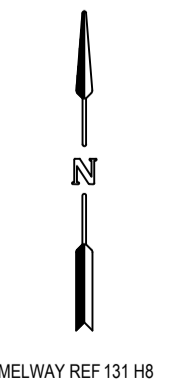


**LEGEND**

- EXISTING
- MAJOR CONTOUR
- MINOR CONTOUR
- EXISTING DEVELOPMENT
- TITLE BOUNDARY
- ROAD RESERVE
- ELECTRICITY
- TELECOM
- WATER
- DRAIN
- SEWER
- GAS
- FUTURE SITE DEVELOPMENT
- EXTERNAL DEVELOPMENT
- PROPOSED LINE MARKING
- PROPOSED KERB
- ULTIMATE DESIGN
- VPA PAD
- REVISED PAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDERS OF SUCH SERVICES SHOULD BE ADVISED OF ANY PROPOSED WORKS TO BE UNDERTAKEN IN ADVANCE OF THE COMMENCEMENT OF SUCH WORKS.

**PRELIMINARY PLAN**  
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DATE OF ISSUE: 15/01/2020



MELWAY REF 151 HB

ISSUE	APPD	DATE	COMMENTS
A	D.Y.	30/01/2020	Issued for Information

**GENERAL NOTES**

1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2019
4. CSHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149-PAD" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020

SCALE: Custom @ A1

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 062 622 104  
8 SOYONGE STREET  
CHRISTCHURCH, VICTORIA 3101  
TELEPHONE 039489 9111  
FACSIMILE 039489 9111

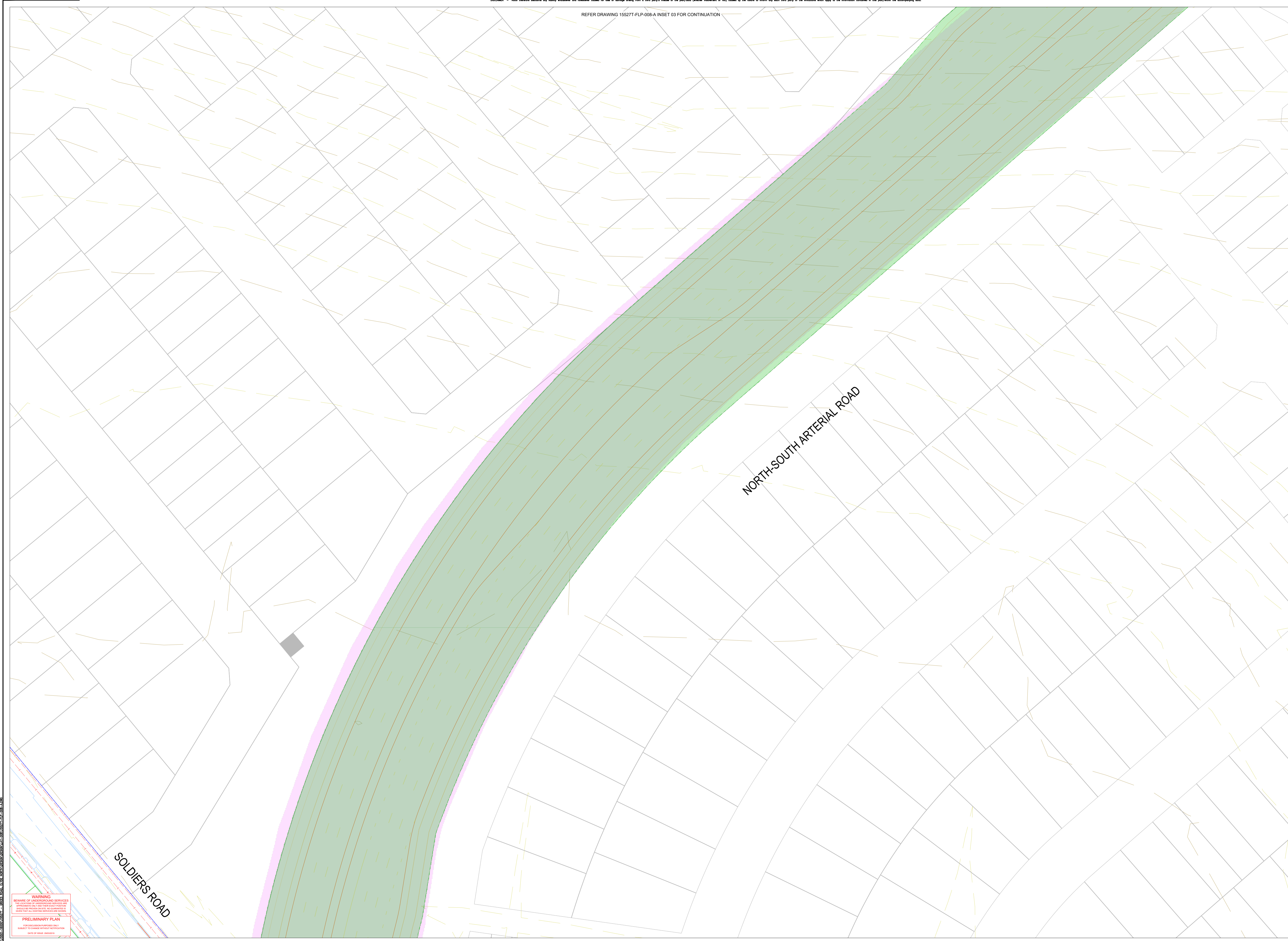
Minta Farm - North/South Arterial Road  
Clyde City Council  
Ultimate Configuration - Functional Layout Plan  
Inset Plan 1

DATE: 15.01.2020  
SHEET NO: 2 of 9  
DRAWING NO: 155277-FLP-008-A  
ISSUE: A

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REFER DRAWING 15527T-FLP-008-A INSET 03 FOR CONTINUATION

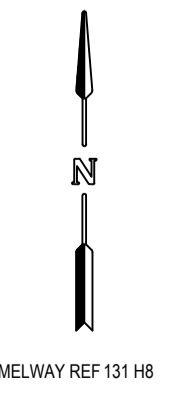
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	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



NORTH-SOUTH ARTERIAL ROAD

SOLDIERS ROAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDED BY OTHER AGENCIES  
AND NOT SHOWN ON THIS PLAN  
AND NOT TO BE TAKEN INTO ACCOUNT  
UNLESS CONFIRMED BY THE  
APPLICABLE AGENCIES.  
**PRELIMINARY PLAN**  
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BY THE LOCAL AUTHORITY.



MELWAY REF 131 HB

ISSUE	APPD	DATE	COMMENTS
A	D.Y.	30/01/2020	Issued for Information

GENERAL NOTES	
1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18	6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017	7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 Rev 1" BY CARDNO DATED 19/02/2019	8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
4. CSIEGA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019	9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019	10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020
SCALE	0 5 10 Custom @ A1	

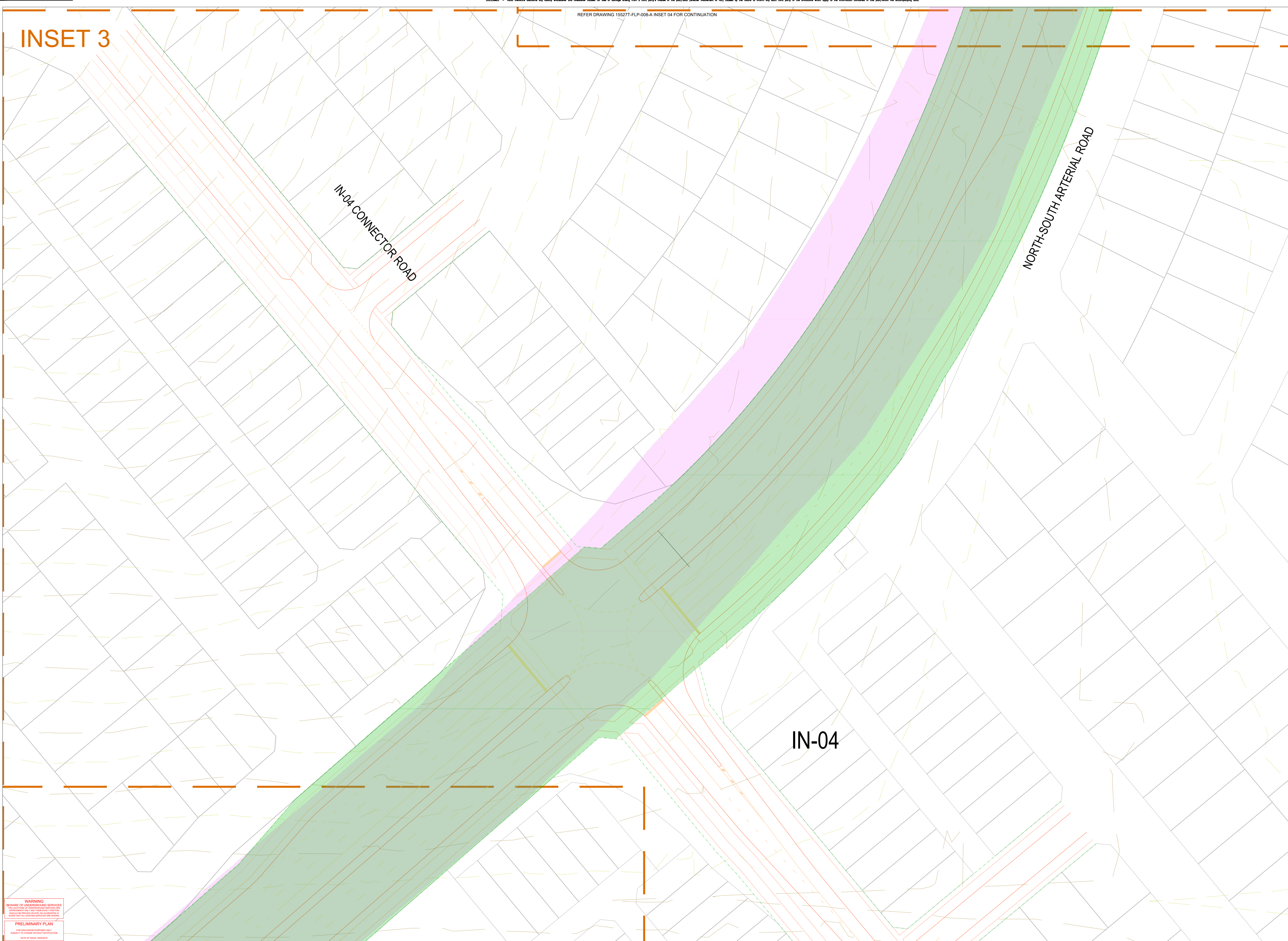


Minta Farm - North/South Arterial Road Clyde City Council	
Ultimate Configuration - Functional Layout Plan Inset Plan 2	
DATE	15.01.2020
SHEET NO.	3 of 9
DRAWING NO.	15527T-FLP-008-A
ISSUE	A

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# INSET 3

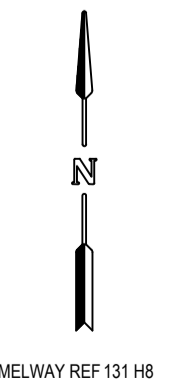
REFER DRAWING 155277-FLP-008-A INSET 04 FOR CONTINUATION



LEGEND	
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	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
THE PRESENCE OF ANY UNDERGROUND SERVICES  
SHOULD BE CHECKED PRIOR TO ANY CONSTRUCTION  
WORK TO AVOID DAMAGE TO SUCH SERVICES AND  
CONSEQUENT DELAYS AND COSTS.

**PRELIMINARY PLAN**  
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BY THE LOCAL AUTHORITY.



MELWAY REF 131 HB

**GENERAL NOTES**

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3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 HW 1" BY CARDNO DATED 19/02/2019
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 104  
8 GOVING STREET  
GEORGETOWN, VICTORIA 3101  
TELEPHONE 039493 3111  
FACSIMILE 039493 3011

Minta Farm - North/South Arterial Road Clyde City Council	
Ultimate Configuration - Functional Layout Plan Inset Plan 3	
DATE	15.01.2020
SHEET NO.	4 of 9
DRAWING NO.	155277-FLP-008-A
ISSUE	A

ISSUE	APPD	DATE	COMMENTS
A	D.Y.	30/01/2020	Issued for Information

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REFER DRAWING 15527T-FLP-008-A INSET 05 FOR CONTINUATION

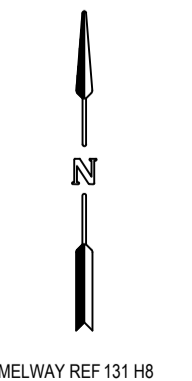
LEGEND	
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	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD

IN-03 CONNECTOR ROAD

IN-03

NORTH-SOUTH ARTERIAL ROAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDERS OF THESE SERVICES SHOULD BE ADVISED OF ANY PROPOSED WORK TO BE UNDERTAKEN IN THE VICINITY OF THESE SERVICES.  
**PRELIMINARY PLAN**  
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DATE OF ISSUE: 15/01/2020



MELWAY REF 151 HB

**GENERAL NOTES**

1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16160-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-001 rev 1" BY CARDNO DATED 19/02/2019
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149 PAD" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACORN 02 422 104  
8 SOUTHWEST STREET  
CHRISTCHURCH 8140  
TELEPHONE 03 349 9111  
FACSIMILE 03 349 9111

Minta Farm - North/South Arterial Road Clyde City Council	
Ultimate Configuration - Functional Layout Plan Inset Plan 4	
DATE	15.01.2020
SHEET NO.	5 of 9
DRAWING NO.	15527T-FLP-008-A
ISSUE	A

ISSUE	APPD	DATE	ISSUED FOR INFORMATION	COMMENTS
A	D.Y.	30/01/2020	Issued for Information	

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REFER DRAWING 15527T-FLP-008-A INSET 06 FOR CONTINUATION

LEGEND	
	EXISTING CONTOUR
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD



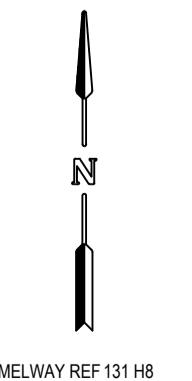
IN-03 CONNECTOR ROAD

NORTH-SOUTH ARTERIAL ROAD

IN-03

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDED BY OTHER AGENCIES  
AND NOT SHOWN ON THIS PLAN  
OR DRAWING. ANY DAMAGE TO  
OR INTERFERENCE WITH SUCH  
SERVICES IS THE RESPONSIBILITY  
OF THE USER.

**PRELIMINARY PLAN**  
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DATE OF ISSUE: 15/01/2020



MELWAY REF 151 HB

GENERAL NOTES	
1.	BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2.	ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
3.	ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 Rev 1" BY CARDNO DATED 19/02/2019
4.	CSHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-452-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5.	VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019

6.	NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7.	GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8.	IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9.	IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10.	DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 954  
8 SOYONG STREET  
GEORGETOWN, VICTORIA 3215  
TELEPHONE 034949 3111  
FACSIMILE 034949 3011

Minta Farm - North/South Arterial Road Clyde City Council	
Ultimate Configuration - Functional Layout Plan Inset Plan 5	
DATE	15.01.2020
SHEET NO.	6 of 9
DRAWING NO.	15527T-FLP-008-A
ISSUE	A

ISSUE	APPD	DATE	COMMENTS
A	D.Y.	30/01/2020	Issued for Information

LEGEND	
[Blue dashed line]	EXISTING
[Yellow dashed line]	MAJOR CONTOUR
[Green dashed line]	MINOR CONTOUR
[Light green dashed line]	EXISTING DEVELOPMENT
[Blue solid line]	TITLE BOUNDARY
[Red dashed line]	ROAD RESERVE
[Red dashed line]	ELECTRICITY
[Red dashed line]	TELECOM
[Red dashed line]	WATER
[Red dashed line]	DRAIN
[Red dashed line]	SEWER
[Red dashed line]	GAS
[Grey dashed line]	FUTURE SITE DEVELOPMENT
[Grey dashed line]	EXTERNAL DEVELOPMENT
[Black dashed line]	PROPOSED LINE MARKING
[Black dashed line]	PROPOSED KERB
[Black dashed line]	ULTIMATE DESIGN
[Black dashed line]	VPA PAD
[Black dashed line]	REVISED PAD

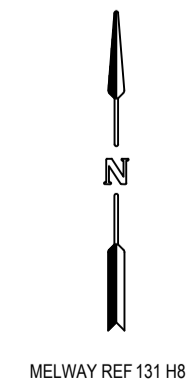
REFER DRAWING 15527T-FLP-008-A INSET 07 FOR CONTINUATION

NORTH-SOUTH ARTERIAL ROAD

REFER DRAWING 15527T-FLP-008-A INSET 05 FOR CONTINUATION

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDERS OF UTILITIES SHOULD BE ADVISED OF ANY PROPOSED WORKS TO BE UNDERTAKEN IN ORDER TO AVOID ANY DAMAGE TO UNDERGROUND SERVICES.

**PRELIMINARY PLAN**  
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SUBJECT TO CHANGE WITHOUT NOTICE  
DATE OF ISSUE: 30/01/2020



GENERAL NOTES

1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2019
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 904  
8 SOUTHWAY STREET  
CHESHAM, VICTORIA 3101  
TELEPHONE 039493 9111  
FACSIMILE 039493 9011

Minta Farm - North/South Arterial Road Clyde City Council		Ultimate Configuration - Functional Layout Plan Inset Plan 6	
DATE	15.01.2020	SHEET NO.	7 of 9
DRAWING NO.	15527T-FLP-008-A	ISSUE	A

ISSUE	APPD	DATE	COMMENTS
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REFER DRAWING 15527T-FLP-008-A INSET 01 FOR CONTINUATION

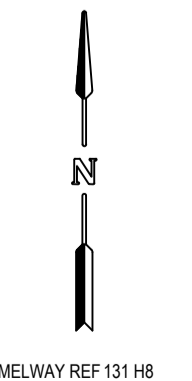
LEGEND	
	EXISTING
	MAJOR CONTOUR
	MINOR CONTOUR
	EXISTING DEVELOPMENT
	TITLE BOUNDARY
	ROAD RESERVE
	ELECTRICITY
	TELECOM
	WATER
	DRAIN
	SEWER
	GAS
	FUTURE SITE DEVELOPMENT
	EXTERNAL DEVELOPMENT
	PROPOSED LINE MARKING
	PROPOSED KERB
	ULTIMATE DESIGN
	VPA PAD
	REVISED PAD

NORTH-SOUTH ARTERIAL ROAD

IN-02

REFER DRAWING 15527T-FLP-008-A INSET 06 FOR CONTINUATION

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
PROVIDERS OF ANY SERVICES SHOULD BE ADVISED BY THE ENGINEER OF ANY SERVICES THAT MAY BE AFFECTED BY THE PROPOSED DEVELOPMENT.  
**PRELIMINARY PLAN**  
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DATE OF ISSUE: 15/01/2020



MELWAY REF 151 HB

**GENERAL NOTES**

1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 3/10/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "161544-CI-DG-0401 rev 1" BY CARDNO DATED 19/02/2018
4. O'SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAD BASED ON PLAN "1149-PAC" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

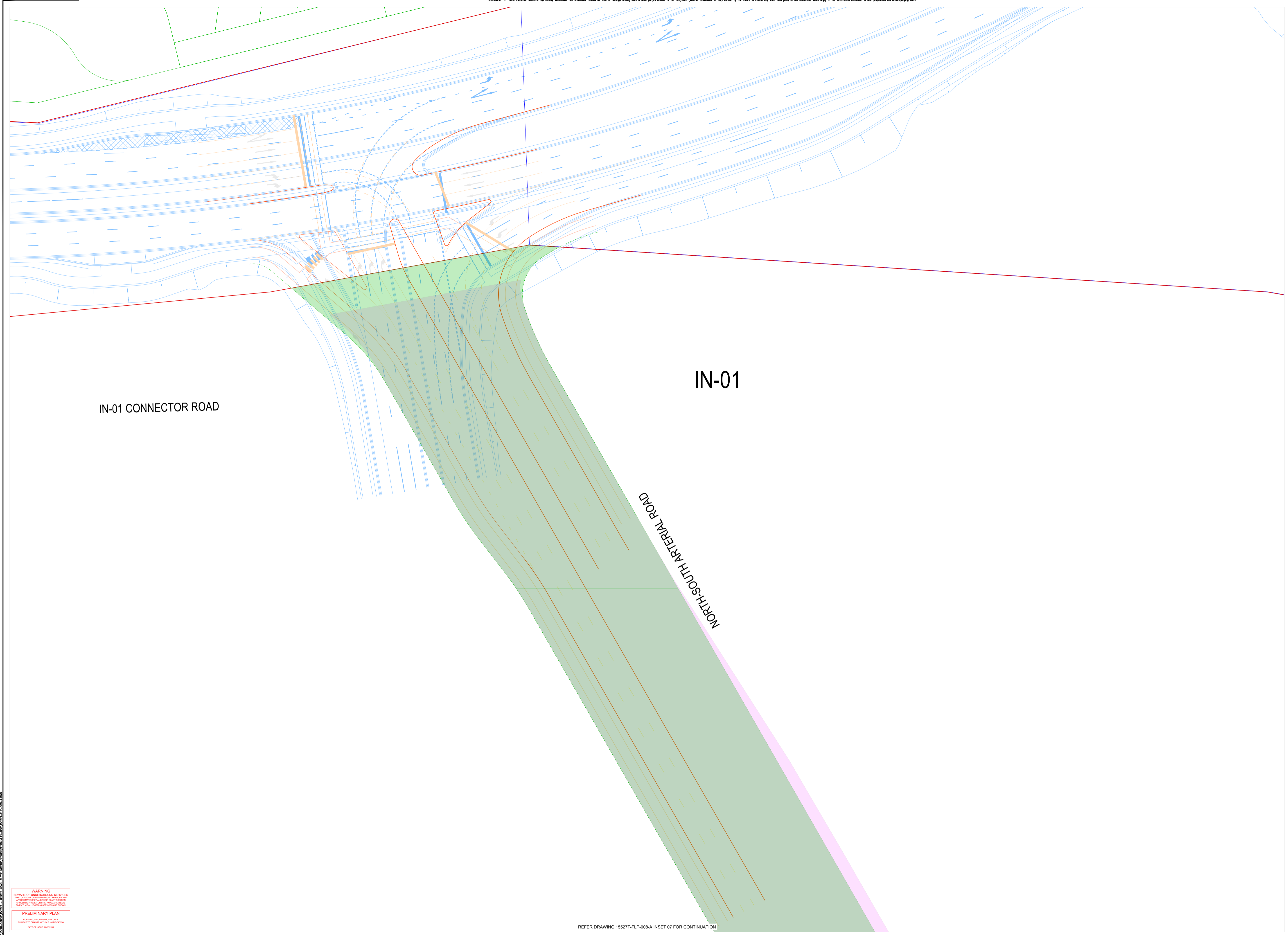
DESIGNED	D.Y.	15.01.2020
CHECKED	P.M.	15.01.2020
AUTHORISED	A.W.	15.01.2020
SCALE	0 5 10 1:500 @ A1	

**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 904  
8 SYDNEY STREET  
CHRISTCHURCH, VIC 3021  
TELEPHONE 039493 9111  
FACSIMILE 039493 9011

Minta Farm - North/South Arterial Road Clyde City Council	
Ultimate Configuration - Functional Layout Plan Inset Plan 7	
DATE	15.01.2020
SHEET NO.	8 of 9
DRAWING NO.	15527T-FLP-008-A
ISSUE	A

ISSUE	APPD	DATE	COMMENTS
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**LEGEND**

- EXISTING
- MAJOR CONTOUR
- MINOR CONTOUR
- EXISTING DEVELOPMENT
- TITLE BOUNDARY
- ROAD RESERVE
- ELECTRICITY
- TELECOM
- WATER
- DRAIN
- SEWER
- GAS
- FUTURE SITE DEVELOPMENT
- EXTERNAL DEVELOPMENT
- PROPOSED LINE MARKING
- PROPOSED KERB
- ULTIMATE DESIGN
- VPA PAV
- REVISED PAV

IN-01 CONNECTOR ROAD

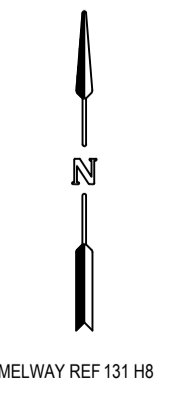
IN-01

NORTH-SOUTH ARTERIAL ROAD

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
UNDETERMINED DEPTHS AND LOCATIONS  
SHOULD BE MAINTAINED TO AVOID DAMAGE TO  
EXISTING SERVICES AND TO PREVENT  
ACCIDENTS TO PERSONNEL AND EQUIPMENT.

**PRELIMINARY PLAN**  
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DATE OF ISSUE: 15/01/2020

REFER DRAWING 15527T-FLP-008-A INSET 07 FOR CONTINUATION



**GENERAL NOTES**

1. BASE AND SURVEY INFORMATION OBTAINED FROM PLAN "1149-CP-R REVISION 1" BY CHARLTON DEGG CONSULTANTS DATED 31/08/18
2. ROAD ALIGNMENT AT IN-03, IN-04 & IN-05 BASED ON PSP CONCEPT PLANS "16190-CPT" BY TRAFFICWORKS DATED 04/10/2017
3. ROAD ALIGNMENT AT IN-01, IN-02 & IN-03 BASED ON PSP CONCEPT PLANS "181544-CI-DG-0401 Rev 1" BY CARDNO DATED 19/02/2019
4. C/SHEA ROAD ALIGNMENT AT IN-01 BASED ON PLAN "789-9739-492-791493-B" BY MAJOR ROAD PROJECTS AUTHORITY DATED 22/01/2019
5. VPA PAV BASED ON PLAN "1149-PAV" BY CHARLTON DEGG CONSULTANTS DATED 12/09/2019
6. NORTH SOUTH ARTERIAL ROAD - DESIGN SPEED LIMIT 60 KM/H
7. GRICES ROAD - DESIGN SPEED LIMIT 60 KM/H
8. IN-03 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
9. IN-04 CONNECTOR ROAD - DESIGN SPEED LIMIT 60 KM/H
10. DIMENSIONS IN METRES AND MEASURED FROM FACE OF KERB / CENTRE OF LINE MARKING

ISSUE	APPD	DATE	COMMENTS
A	D.Y.	30/01/2020	Issued for Information

DESIGNED	D.Y.	15.01.2020
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**ratio:**  
RATIO CONSULTANTS PTY LTD  
ACN 094 622 904  
8 SYDNEY STREET  
GEORGETOWN, VICTORIA 3211  
TELEPHONE 039493 9111  
FACSIMILE 039493 9011

SCALE: 0 5 10  
1:500 @ A1

Minta Farm - North/South Arterial Road Clyde City Council	
Ultimate Configuration - Functional Layout Plan Inset Plan 8	
DATE	15.01.2020
SHEET NO.	9 of 9
DRAWING NO.	15527T-FLP-008-A
ISSUE	A