onemilegrid
TRAFFIC ENGINEERING

Minta Farm

Amendment C269
Expert Evidence – Traffic & Transport

190315PAN001C-F

3 April 2020

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DOCUMENT INFORMATION

Prepared for	The Minta Group		
File Name	190315PAN001C-F	**Report Date**	3 April 2020
Prepared by	Valentine Gnanakone	**Assisted by**	Trevor Waugh
Signature		**Signature**	

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1 PRACTICE NOTE

Amendment Number	C269
Date of this Report	3 April 2020
Address of Property	110 and 118S Soldiers Road, Berwick
Date(s) of any inspection	24 August 2019
The party for whom the report has been prepared	This report has been prepared at the request of The Minta Group
The person from whom the expert received instructions	Ms. Jessica Kaczmarek of Norton Rose Fulbright

In accordance with the requirements of the Committee, my qualifications, experience and expertise to provide my opinions on this matter are summarised below:

Name:	Valentine Premkumar Gnanakone
Address:	56 Down Street Collingwood Victoria 3066
Professional Qualifications:	Bachelor of Engineering (Civil), RMIT University 2003 Master of Business Administration (MBA), Deakin University 2013
Professional Registration:	Board of Professional Engineers of Queensland – Registered Professional Engineer of Queensland (RPEQ) VicRoads Accredited Road Safety Auditor
Professional Experience:	Director, **one**mile**grid**, 2014 – present Associate, Cardno, 2011 – 2014 Senior Traffic Engineer, Cardno, 2007 – 2011 Engineer, Grogan Richards, 2004 – 2007
Areas of Expertise:	Car parking and traffic engineering design and compliance. Traffic advice and assessment of land use and development proposals to local and state planning authorities, government agencies, corporations and developers for a variety of projects including low, medium & high density residential, commercial, retail, industrial, institutional, service orientated and mixed use projects. Preparation and presentation of expert evidence before VCAT and Planning Panels.

Expertise to Prepare this Report:	My professional qualifications, training and experience over a number of years on all forms of development and infrastructure projects qualifies me to comment on the car parking and traffic implications of the proposal.
Relationship to the Applicant:	I do not have any private or business relationship with the applicant.
Instructions:	I have been requested by The Minta Group to provide my expert opinions in relation to the traffic engineering implications of the Amendment where relevant to the subject land.
Facts, Matters, and Assumptions Relied Upon:	Letter of instruction from Norton Rose Fulbright dated 21/02/2020 Minta Farm PSP Minta Farm ICP - Interim (July 2019) Casey Planning Scheme Public Acquisition Overlay Plan – 23/06/2019 Benchmark Infrastructure Report prepared by Cardno dated 11/04/2019 Benchmark Infrastructure Costing – Selected Minta Farm ICP Items dated 14/03/2019 VPA MINTA FARM SELECTED INFRASTRUCTURE COSTING Plans prepared by Cardno dated 19/02/19 Department of Transport (DoT) letter dated 21/02/2020 MRPV O'Shea Road Monash Freeway Upgrade Plans – February 2019 Cardno letter dated 13 March 2020 including 60km/h road design option
Identity of Persons Undertaking the Work:	Valentine Gnanakone, Director **one**mile**grid** (BE Civil, MBA) Assisted by Trevor Waugh, Director **one**mile**grid**

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 Committee.

_____

Valentine Gnanakone
Director – Senior Traffic Engineer
onemile**grid**

2 INTRODUCTION

My name is Valentine Gnanakone and I am Director at **one**mile**grid** where I practice as a traffic engineer.

I have been requested by Norton Rose Fulbright on behalf Ian Marshall Baillieu and The Minta Group (TMG) to provide my expert opinions in relation to the proposed update to the Infrastructure Contributions Plan (ICP) that applies to the land affected by the PSP and present expert evidence to the Panel.

In the course of preparing this report, I have inspected the site and its environs, reviewed relevant data and background reports and assessed the implications of the ICP on the land.

My evidence has been prepared in accordance with the 'Guide to Expert Evidence' published by Planning Panels Victoria as required by the Committee.

3 INSTRUCTIONS

Specifically, I have been instructed to provide my opinions in relation to the following matters:

(a) the intersection designs for projects within TMG's land; and

(b) the extent of the proposed Public Acquisition Overlay (PAO); and

4 MY INVOLVEMENT

My firm was engaged by TMG in May 2019 to undertake a review of the road alignment and subsequent intersection designs along the length of the north – south arterial. Our work involved critically reviewing the road and intersection designs prepared by Ratio Consultants (on behalf of Stockland), intersection designs prepared by the MRPV for IN-01 and subsequently recommending an alternative alignment for the north – south arterial.

I was involved with discussions with the MRPV and the TMG consultant team and managed the design work undertaken by **one**mile**grid**.

Since that time, I have been requested to undertake a similar review of the intersection designs prepared by Cardno as well as the currently exhibited PAO.

My opinions follow.

5 MINTA FARM PRECINCT STRUCTURE PLAN (PSP)

5.1 General

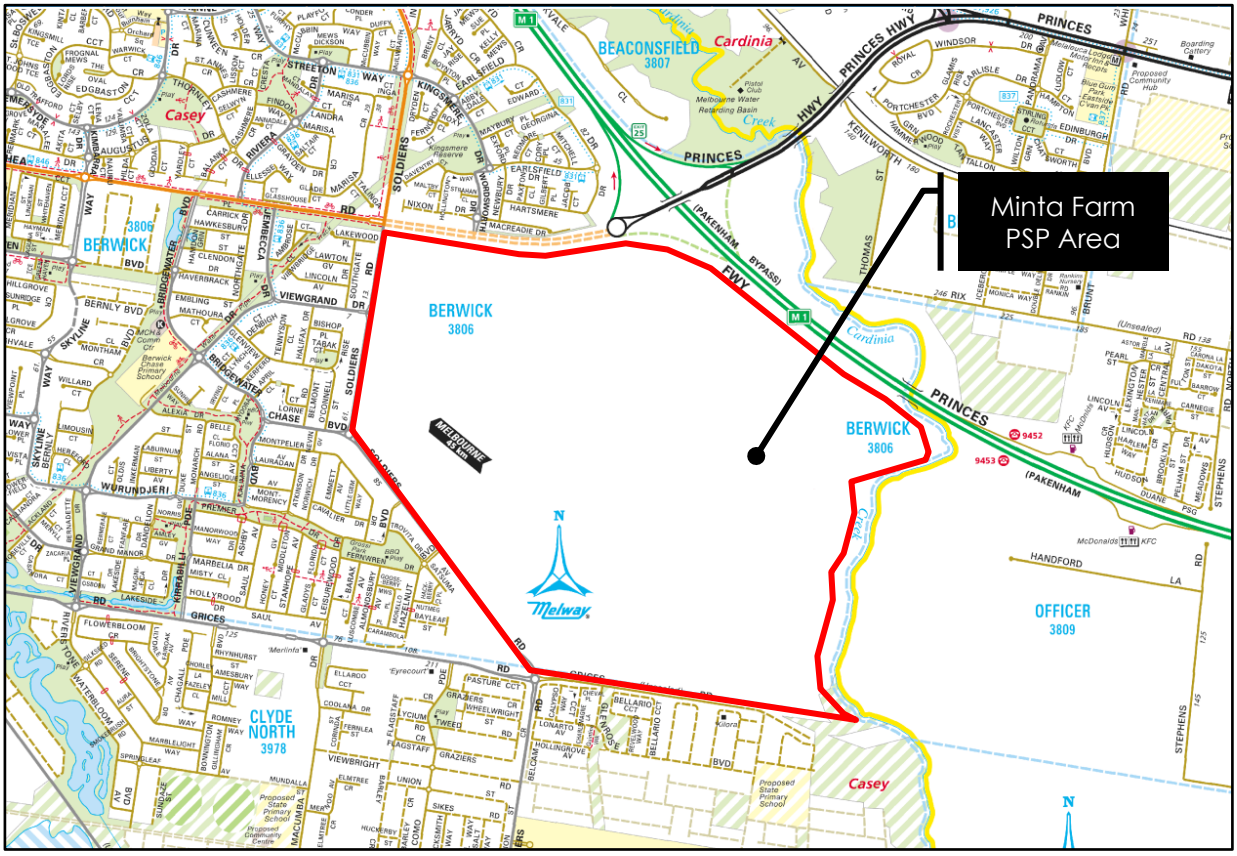
The Minta Farm PSP area has a total land area of approximately 286 hectares within the City of Casey. The irregularly shaped area is bounded by the Princes Freeway to the northeast, Cardinia Creek to the east, Grices Road to the south and Soldiers Road to the west.

It is anticipated that Minta Farm will accommodate a residential population of approximately 8,500 people (in approximately 3,050 dwellings) and ultimately provide for approximately 11,450 local jobs.

As part of the PSP a key north – south arterial road is proposed as an extension of Bells Road (to the south). The north – south road will connect into the O'Shea Road extension which will connect the Beaconsfield Interchange.

The location of the PSP area and the subject site in the context of the surrounding area is provided in in Figure 1.

Figure 1 Locality Plan

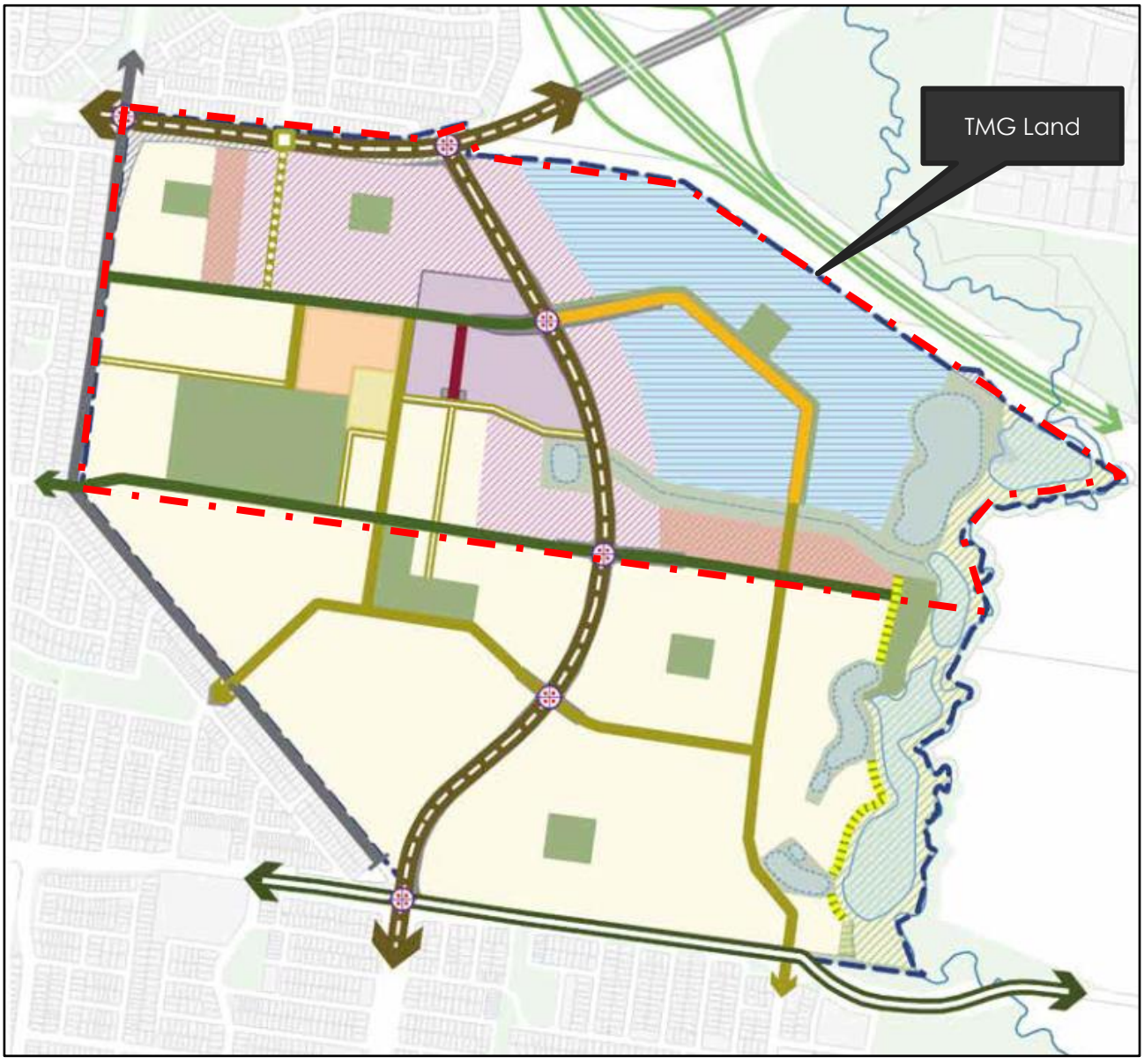


5.2 Road Network

As part of the PSP, a road network is proposed through the site. The primary component of the road network is the construction of the north – south arterial which will connect the future O'Shea Road and the existing Bells Road to the south.

An extract of the proposed road network is provided in Figure 2.

Figure 2 PSP Road Network (Plan 10 of PSP)

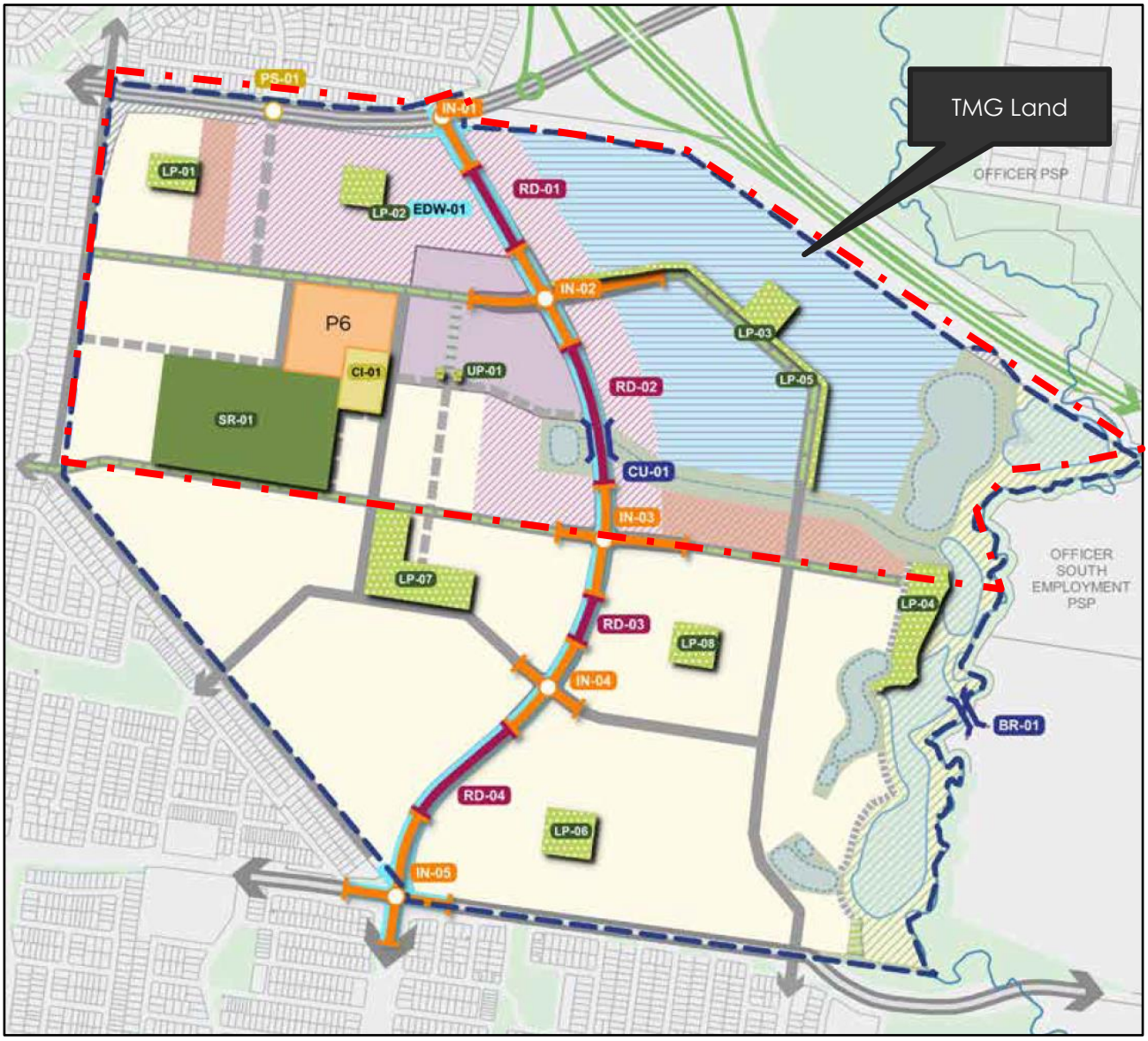


5.3 Precinct Infrastructure Plan

The identified road network includes infrastructure items within the PSP area. In regards to traffic engineering matters, the delivery of roads and intersections are of particular relevance.

A view of the Precinct Infrastructure Plan for the PSP is provided in Figure 3.

Figure 3 Precinct Infrastructure Plan (Plan 13 of PSP)



Of relevance to TMG's land holding, I note the following: -

Table 1 Infrastructure Items Relevant to TMG

Reference	Type	Details
IN-01	Signalised Intersection	North – South Arterial / O'Shea Rd Construction of a primary arterial to primary arterial T-signalised intersection (interim treatment)
IN-02	Signalised Intersection	North – South Arterial / Boulevard Connector Rd Construction of a primary arterial to connector signalised 4-way intersection (interim treatment)
IN-03	Signalised Intersection	North – South Arterial / Boulevard Connector Rd Construction of an arterial to connector signalised 4-way intersection (interim treatment)
RD-01	Road	North – South Arterial, 150m
RD-02	Road	North – South Arterial, 180m

6 NORTH – SOUTH ARTERIAL ALIGNMENT REVIEW

6.1 General

There are a number of factors involved with road design, these include speed, horizontal configuration, vertical alignment and intersection configurations.

The exhibited documentation includes an alignment for the future north – south arterial road. The design of the road has been undertaken by Cardno for the VPA and has subsequently resulted in the establishment of the Public Acquisition Overlay (PAO) for the roads and intersections along its length through the PSP area.

6.2 Intersection Configuration

Within TMG's land parcel, the alignment of the future road effectively holds intersection IN-03 in the south and IN-01 in the north with a constant radius applied. From a high level, I have no concern with this alignment as a general principal for the main road however I do note that the alignment does result in skewed intersections at IN-03 and IN-02. The skewed nature has resulted in angled approaches to the intersection which, where they can be avoided, should as a matter of best practice and good transport planning.

In this regard, my firm undertook a design exercise to review the intersection arrangements for IN-03 and IN-02 to provide for a more conventional intersection configuration. Whilst the angled approaches cannot be completely removed, the design prepared by my firm in my view improves the intersection arrangements. As noted previously, intersections along the length of a road impact on the alignment and as such my review results in a revised alignment for the north – south arterial and a marginal relocation of IN-02. Specifically, the following has resulted:

- IN-02 has shifted approximately 8 metres north to provide a straight alignment through the intersection, rather than a radius within the intersection.
- The north – south arterial road has been realigned between IN-02 and IN-03 to provide a single 550 metre horizontal alignment radius for an 80km/h roadway.

At the northern end of the arterial road at IN-01, the Cardno design has been retained to match into the O'Shea Road 6-lane cross section.

6.3 Revised Alignment

Based on my recommendations, the PAO for the north – south arterial road is altered however the land take has stayed consistent with what has been exhibited. Functionally, there is no change to the operation of the north – south arterial or any of the intersections.

In view of the above, it is my view that the alignment of the north – south arterial road and subsequently the PAO should be modified in line with my design which will provide for an improved road alignment and future intersection layout. I note that the current PAO design is not unreasonable and could be implemented however the revised design I have proposed results in improvements which in a green field setting with one land ownership should be considered.

6.4 Benefits

Based on the above review, the benefits to the redesign are as follows: -

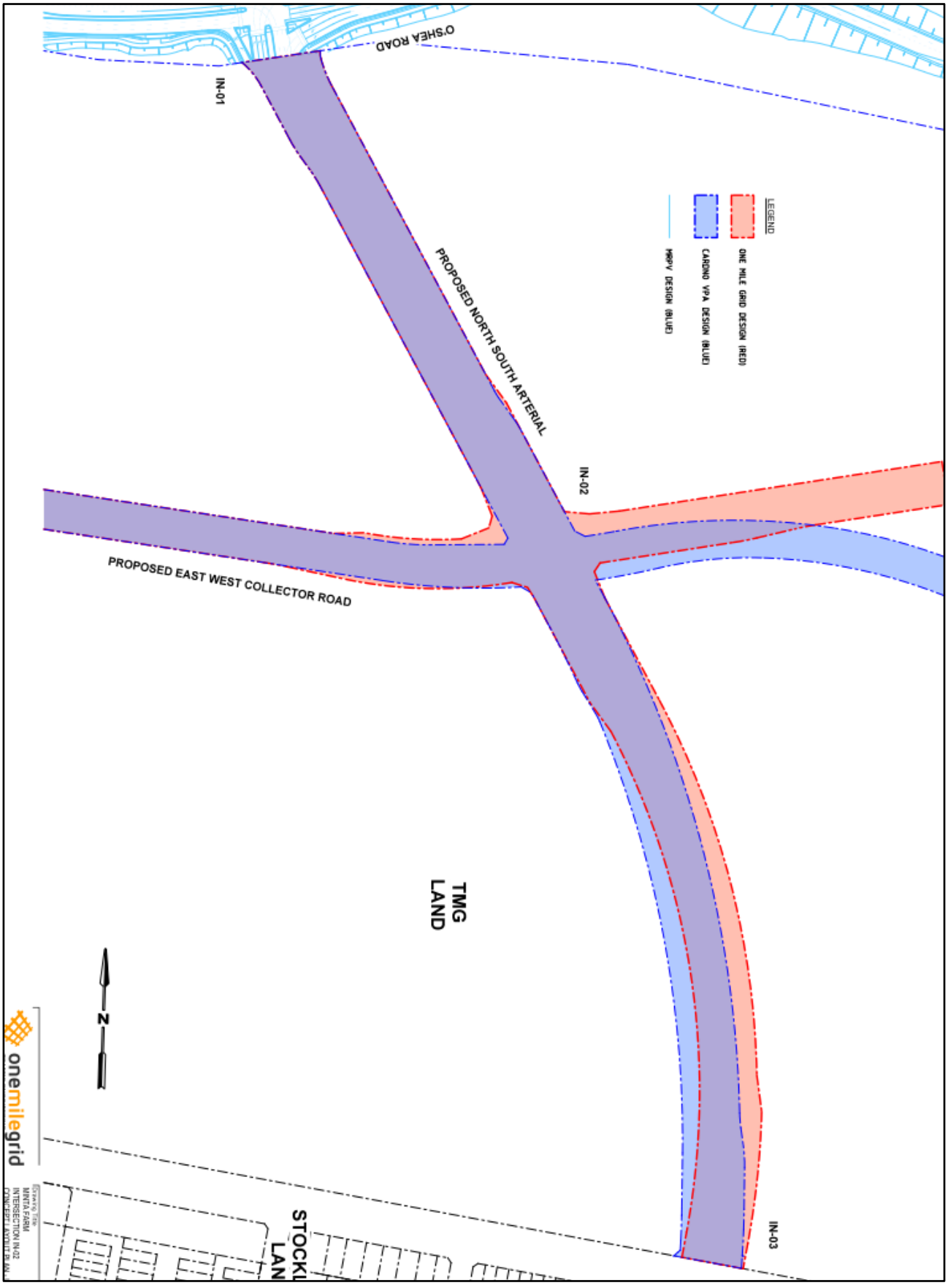
- Reduces angled intersection approaches;
- More conventional intersection design;
- Improved sightlines for motorists on all approaches to other vehicles and importantly pedestrians;
- Improved lot orientation to main roads.

6.5 Overview

The recommended modifications to the alignment of the north – south arterial and corresponding intersections are provided within the attached functional layout plan, with an extract of which provided in Figure 4 (Green – Cardno design, Black – **one**mile**grid**). A shaded comparison diagram to provide for clarity between the two designs is provided in Figure 5 which shows the Cardno design in blue, the **one**mile**grid** design in red and overlay area (common) in purple.

Figure 4 Recommended Modifications (Extract)

Figure 5 Design Comparison



7 INTERSECTION DESIGN REVIEW

7.1 IN-01

As part of my review, I have retained the alignment and orientation of IN-01 as exhibited within the PAO. I note that this arrangement is not in line with the original MRPV road design however as noted within the Department of Transport (DoT) submission, any intersection arrangement should be designed to integrate within the 6-lane cross section for O'Shea Road (which it does) with any modifications to the north – south arterial alignment accordingly adjusting the PAO.

7.2 IN-02

I have recommended modifications to the intersection orientation for IN-02 to provide for a more conventional intersection arrangement. Effectively, my review has removed the radius which was applied through the intersection in both directions and instead provided a straight which allows for improved approaches to the intersection and sightlines.

I note that the PSP design includes a left turn slip lane on the northwest corner of the intersection from the collector road to the arterial. As this intersection is located within a local town centre and commercial precinct, typical practice to promote pedestrian safety is not to provide slip lanes due to the potential vehicular / pedestrian conflicts. The slip lane should therefore be removed.

An extract of the proposed modifications to the intersection arrangements for IN-02 is shown in Figure 6 (Green – Cardno design, Black – **one**mile**grid**), with the full design provided in Appendix A. A shaded comparison diagram to provide for clarity between the two designs is provided in Figure 7 which shows the Cardno design in blue, the **one**mile**grid** design in red and overlay area (common) in purple at the intersection.

As noted, there is no change to the functionality of the intersection.

Figure 6 IN-02 – Modified Functional Layout

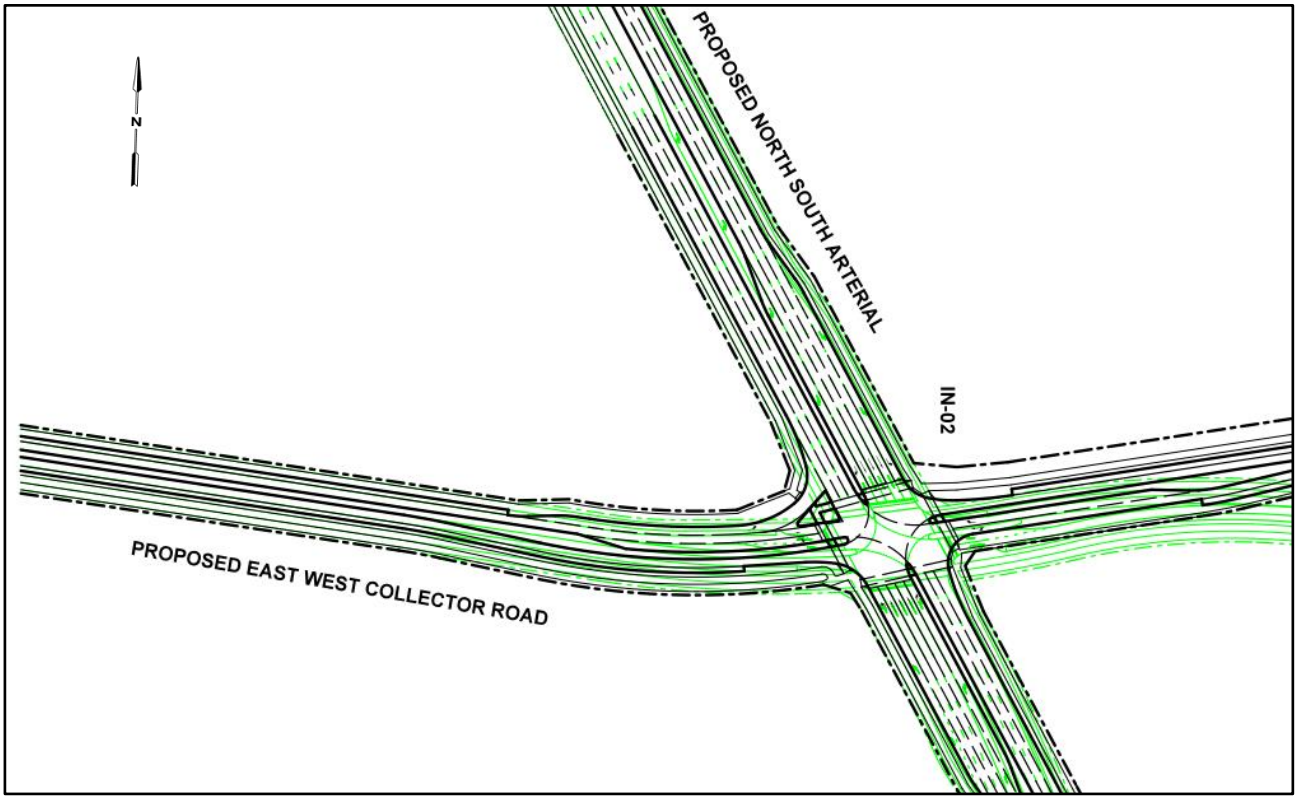
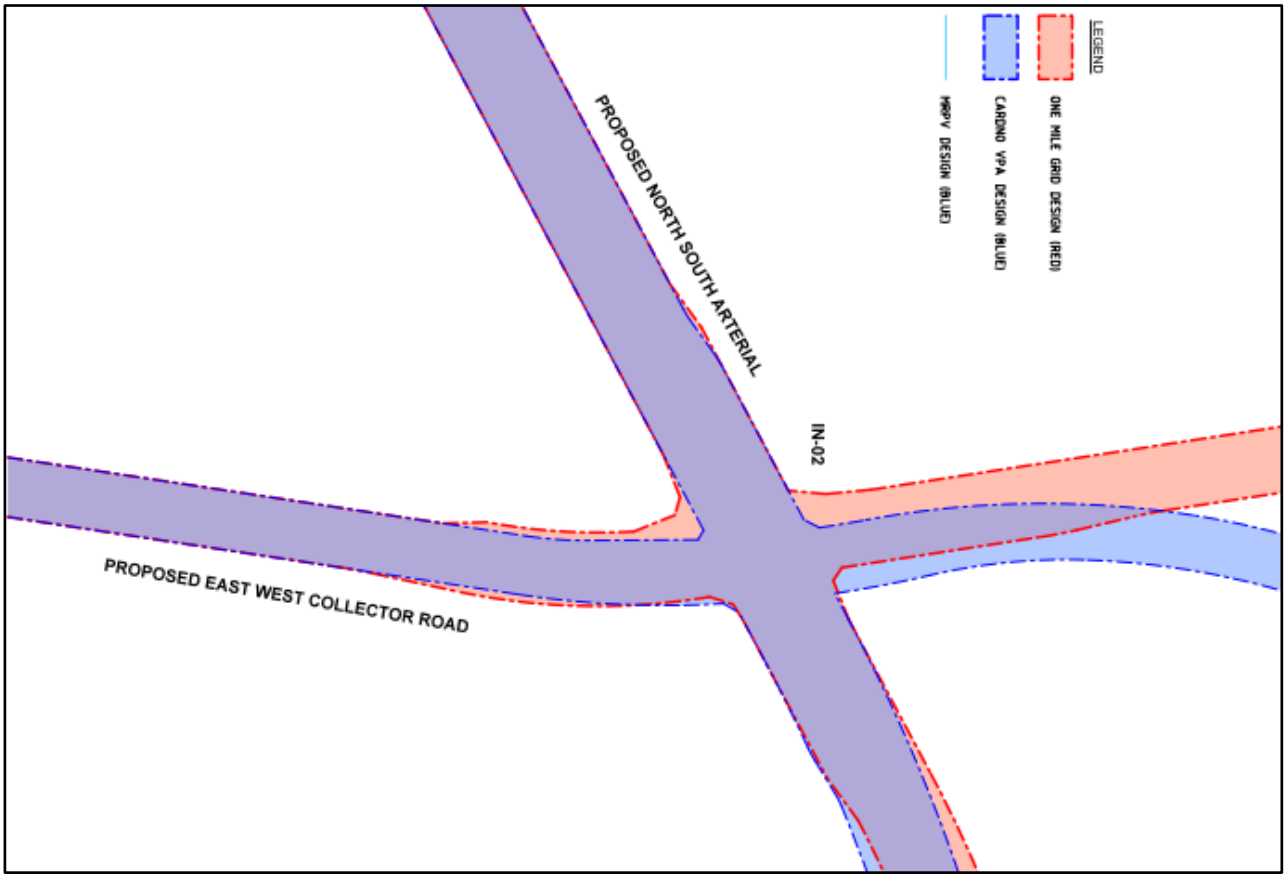


Figure 7 Design Comparison at IN-02

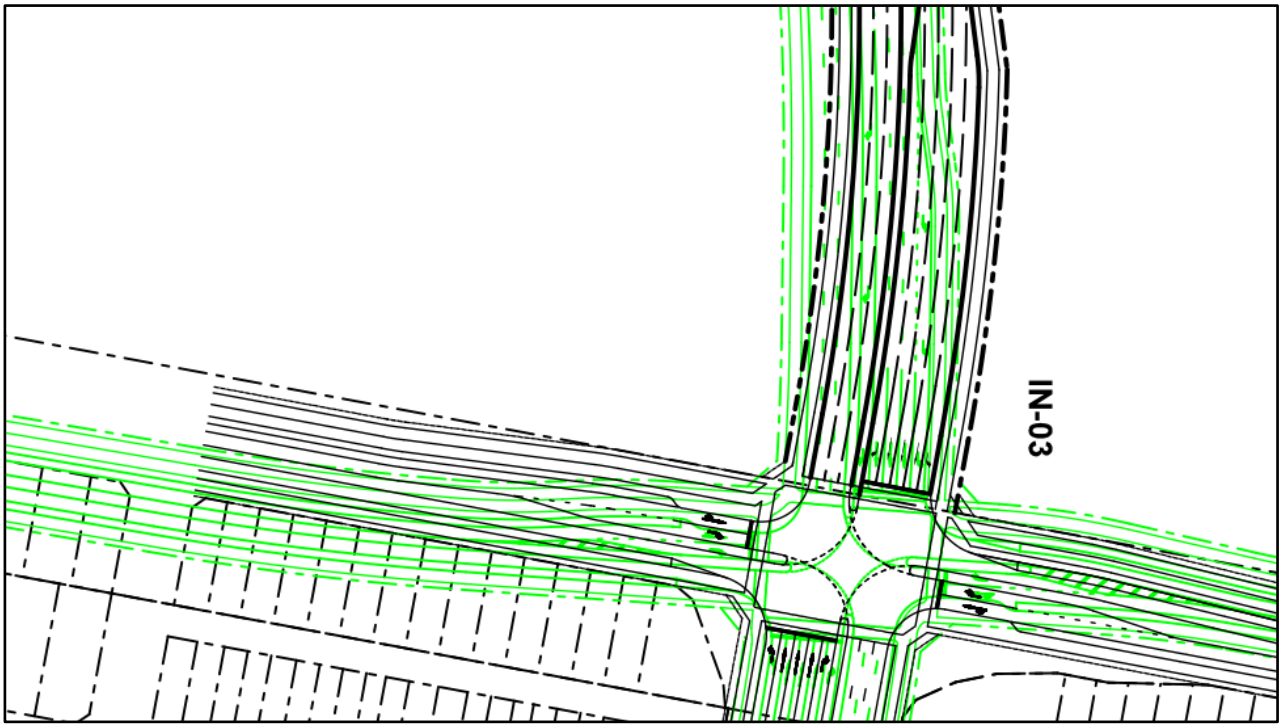


7.3 IN-03

Ratio were engaged by Stockland to undertake a similar intersection review within the Stockland land parcel. My design review has held the Ratio intersection configuration at the land boundary with minor adjustments to the northern leg of the intersection to facilitate the modifications to the alignment of the north – south arterial.

An extract of the proposed modifications to the intersection arrangements for IN-03 are provided in Figure 8 (Green – Cardno design, Black – **one**mile**grid**), with the full design provided in Appendix A.

Figure 8 Recommended IN-03



8 CARDNO REVISED CONCEPT PLANS

I understand that Cardno on behalf of the VPA prepared a new suite of plans which amongst other things adopted a 60km/h design speed for the north – south arterial. The result of the revised design largely results in a shortening of turn lanes as the deceleration length required naturally reduces. In terms of the alignment whilst the maximum permissible radius reduces due to the reduced speed, from a design point of view there would not be a need in my view to adjust the design.

Accordingly, my opinions are not altered.

9 CONCLUSION

Based on the foregoing assessment, a summary of my opinions follows: -

- I have reviewed the Cardno design prepared for the VPA for the alignment of the north – south arterial through TMG land;
- It is my view that the approach angles for IN-02 are not ideal and could be simply modified to provide for an improved intersection;
- The adjustments to the intersection would necessitate an alteration to the alignment of the north – south arterial;
- The recommended adjustments to the alignment and intersections with the north – south arterial in my view provide for an overall improved outcome and furthermore does not change the land take or the functionality of the roads and intersections;
- The amended Cardno design for 60km/h does not alter my opinions.

Appendix A onemilegrid Road Alignment Plan

LEGEND

ONE MILE GRID DESIGN (BLACK)

CARDNO VPA DESIGN (GREEN)

MRPV DESIGN (BLUE)

IN-01

IN-02

IN-03

PROPOSED NORTH SOUTH ARTERIAL

O'SHEA ROAD

PROPOSED EAST WEST COLLECTOR ROAD

TMG
LAND

STOCKLAND
LAND

N

CAD File: N:\Projects\2019\190315\PDF\190315CLP100C.dgn

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Aerial Photography
Aerial photography provided by Nearmap

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Scale
1:2500 @ A3
0 12.5 25 50

Drawing Title
MINTA FARM
INTERSECTION IN-02 (ONE MILE GRID DESIGN)
CONCEPT LAYOUT PLAN - ULTIMATE

Designed	Approved	Melway Ref
TCW	VG	131 J6

Project Number	Drawing Number	Revision
190315	CLP100	C

LEGEND

ONE MILE GRID DESIGN (RED)

CARDNO VPA DESIGN (BLUE)

MRPV DESIGN (BLUE)

IN-01

IN-02

IN-03

PROPOSED NORTH SOUTH ARTERIAL

O'SHEA ROAD

PROPOSED EAST WEST COLLECTOR ROAD

TMG
LAND

STOCKLAND
LAND

N

CAD File: N:\Projects\2019\190315\Drawings\190315CLP102.dgn

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Aerial Photography
Aerial photography provided by Nearmap

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Drawing Title
MINTA FARM
INTERSECTION IN-02
CONCEPT LAYOUT PLAN - ULTIMATE

Designed	Approved	Melway Ref
TCW	VG	131 J6

Project Number	Drawing Number	Revision
190315	CLP102	A