Toolern PSP & DCP Review

Amendment C232Melt

Transport Engineering Evidence

Melton City Council

Prepared for:
Harwood Andrews Lawyers on behalf of
Melton City Council

Prepared by:
Marco L Lucioni

15 August 2024

300305617

Stantec Australia Pty Ltd

Acknowledgment of Country

In the spirit of reconciliation, Stantec acknowledges the Traditional Custodians of country throughout Australia and their connections to land, sea and community. We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples.

Cover image source: Nearmap, dated 2 Aug 2024

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1 Introduction

1.1 Background

The Melton City Council (Council) is the Planning Authority for Melton Planning Scheme Amendment C232melt, which endeavours to update the Toolern Development Contributions Plan (DCP) and the Toolern Precinct Structure Plan (PSP), and revise Schedule 3 to the Urban Growth Zone, Schedule 3 to the Development Contributions Plan Overlay and other operational provisions to facilitate the delivery of infrastructure within the Toolern precinct.

Amendment C232melt commenced public exhibition on Thursday, 11 April 2024 and closed on Thursday, 16 May 2024.

Council received 35 submissions to the Amendment and resolved to refer all submissions and the amendment to an Independent Planning Panel for review. The Panel hearing is scheduled for the week commencing 26 August 2024.

Harwood Andrews is acting for the Council in relation to the above referral and have engaged me in late July 2024 to review the exhibited amendment background materials and submissions, and to prepare and provide expert evidence in relation to issues raised in the submissions as relevant to my expertise in transport planning, including specifically in relation to the submission from the Department of Transport and Planning (DTP).

In preparing this report, I have relied upon the relevant information provided by Harwood Andrews and the information publicly available on Victorian Planning Authority (VPA) website.

1.2 Expert Witness Details

Name: Marco Luigi Lucioni

Qualifications: BEng Civil CPEng NER APEC IntPE(Aus) FIEAust

Position: Group Leader, Engineering & Design - Transport Planning & Advisory, Stantec

Address: Stantec Australia Pty Ltd Level 28, 600 Bourke Street, Melbourne VIC 3000

I was awarded a Bachelor of Engineering with Honours (Civil Engineering) degree from Victoria University in 1997 and am a chartered member and fellow of Engineers Australia as well as a Registered Professional Engineer in Victoria (RPEV / PE0011257)

I hold 24 years of experience in the traffic & transport industry within Victoria and currently as a Group Leader am responsible for managing various team leaders of traffic and transport specialist teams including, traffic engineers and designers.

I have previously appeared at the Victorian Civil and Administrative Tribunal (VCAT) and Panels Victoria as an independent expert witness in the field of traffic and transport engineering.

Further details of my experience are provided within my Curriculum Vitae in Appendix A.

1.3 Instructions & Scope of Report

I have been engaged by Harwood Andrews on behalf of Melton City Council to provide traffic and transportation evidence in relation to Amendment C232melt to the Melton Planning Scheme GC224. My instructions were as follows:

> *"We are instructed to brief you to prepare an expert witness statement, participate in any relevant conclave and provide evidence at the upcoming planning panel hearing.*
>
> *Your expert witness statement must comply with the requirements of Planning Panels Practice Note 1 (a copy of which is included in the enclosed brief) and in addition to any other matter you consider relevant, address the following:*
>
> - *Provide an overview of Stantec's previous involvement with the Amendment.*
> - *Consider and respond to the issues raised in submissions as relevant to your expertise in transport planning.*
> - *Specifically in respect the submission from the Department of Transport, consider any additional materials filed by DTP in support of its submission."*[1]

This expert evidence summarises and addresses the matters raised in submissions to the Amendment that are relevant to transport, roads and relevant infrastructure.

Through 2019 to 2022, Cardno (now known as Stantec) was engaged by Council as part of a Transport Infrastructure Review of the Toolern PSP and DCP documents to undertake the following:

- Review the additional transport projects identified in the Cobblebank Metropolitan Activity Centre (CMAC) and Cobblebank Employment Mixed Use (CMEU) to be included in the Toolern PSP and DCP.
- Prepare Concept (horizontal alignment) Functional Layout Plans (FLP's) for identified transport projects and incorporate previously approved functional layouts within the precinct as provided by Council with reference to the VPA's benchmark designs
- Provide preliminary designs for road and pedestrian bridge structures
- Provide revised land take drawings for the transport projects based on the new concept FLP's
- Prepare cost estimates for road, intersection & bridge structures based on the VPA's benchmark cost estimate rates

The above works were documented in the Cardno report titled "*Recommended Changes to Toolern PSP and DCP Documents" dated the 17th of March 2022*.

With regard to Traffic modelling, through 2017 & 2019 GTA Consultants Pty Ltd (now known as Stantec) provided Victorian Integrated Transport Model (VITM) modelling for the Toolern Town Centre UDF and the Toolern Employment and Mixed-Use Land UDF. This modelling supplemented the earlier assessments carried out by Veitch Lister Consulting (VLC) in 2008 & 2011.

While I was not involved with the advice prepared by Cardno or GTA Consultants, I have confirmed the extent of Stantec's previous involvement.

[1] *No additional material has been received from DTP*

1.4 References

The source of images within this report (extracts of various documents) are referenced and images not been modified.

In preparing this evidence, reference has been made to the following:

- The Melton Planning Scheme.
- Amendment C232melt Brochure.
- Toolern Development Contributions Plan Review and Precinct Structure Plan Refresh – Planning Report, Melton City Council, February 2024.
- Toolern Precinct Structure Plan.
- Paynes Road Precinct Structure Plan.
- Rockbank Precinct Structure Plan.
- Cobblebank Metropolitan Activity Centre (Toolern Town Centre) Urban Design Framework.
- Cobblebank Employment and Mixed-Use Urban Design Framework.
- Other advertised material, relevant submissions and background reports associated with Amendment C232melt of the Melton Planning Scheme.
- Cardno (now known as Stantec) report no.V190196REP003F01a " *Recommended Changes to Toolern PSP and DCP Documents*" dated 17 March 2022
- Technical data and design standards as referenced in this report.
- A review of the site and surrounding road network.
- GTA Consultants (now known as Stantec) VITM Modelling.
- Letter of Instruction from Harwood Andrews.
- Other documents as nominated.

1.5 Evidence Limitation

The strategic modelling discussed in this report is considered 'fit-for-purpose' and it is beyond the scope of the evidence to carry out a detailed review.

The functional layout plans of roads and intersections prepared in the past for the PSP are concepts only that primarily address the horizontal alignment of road design per agreed scope and it is understood did not provide a detailed review of vertical design (apart from some localised sites) and other engineering aspects such as drainage, pavement, geotechnical design and utilities. It is beyond the scope of this evidence to undertake a review of these items.

A review of cost estimates is also beyond the scope of this evidence.

1.6 Preparation of this Evidence

In preparing this evidence, I received assistance from the following people:

Ms Margeaux Hawkins - Principal Transportation Engineer, B.Eng (Hons), BBA

Ms Abseen Anya - Principal Transportation Engineer, M.Sc., CPEng, NER

Mr Rob Dus - Technical Director & Practice Leader for Transport Modelling, B.Eng. (Hons)

Mr Vadim Osadchiy – Senior Principal, Transport Design, AdvDipEngTech(CivilEngDes)

Mr. Faraz Ahmed - Technical Director - Civil Transport, B.Eng.

1.7 Relationship with Proponent

I have no ongoing private or business relationship with the Proponent and have been engaged to provide expert witness services at this Hearing for a mutually agreed fee.

I was not involved with the advice prepared by Cardno or GTA Consultants referenced in this report.

1.8 Anomalies & Exclusions

I have made the inquiries I believe are necessary to form my opinion and I am not aware of any anomalies or exclusions which would alter my opinion regarding the matters I have been requested to address.

1.9 Practice Note Declaration

I have made all the enquiries that I believe are desirable and appropriate and no matter of significance which I regard as relevant have to my knowledge been withheld from the Panel. I have read the expert evidence Practice Note 1 provided by Planning Panels Victoria and agree to be bound by it.

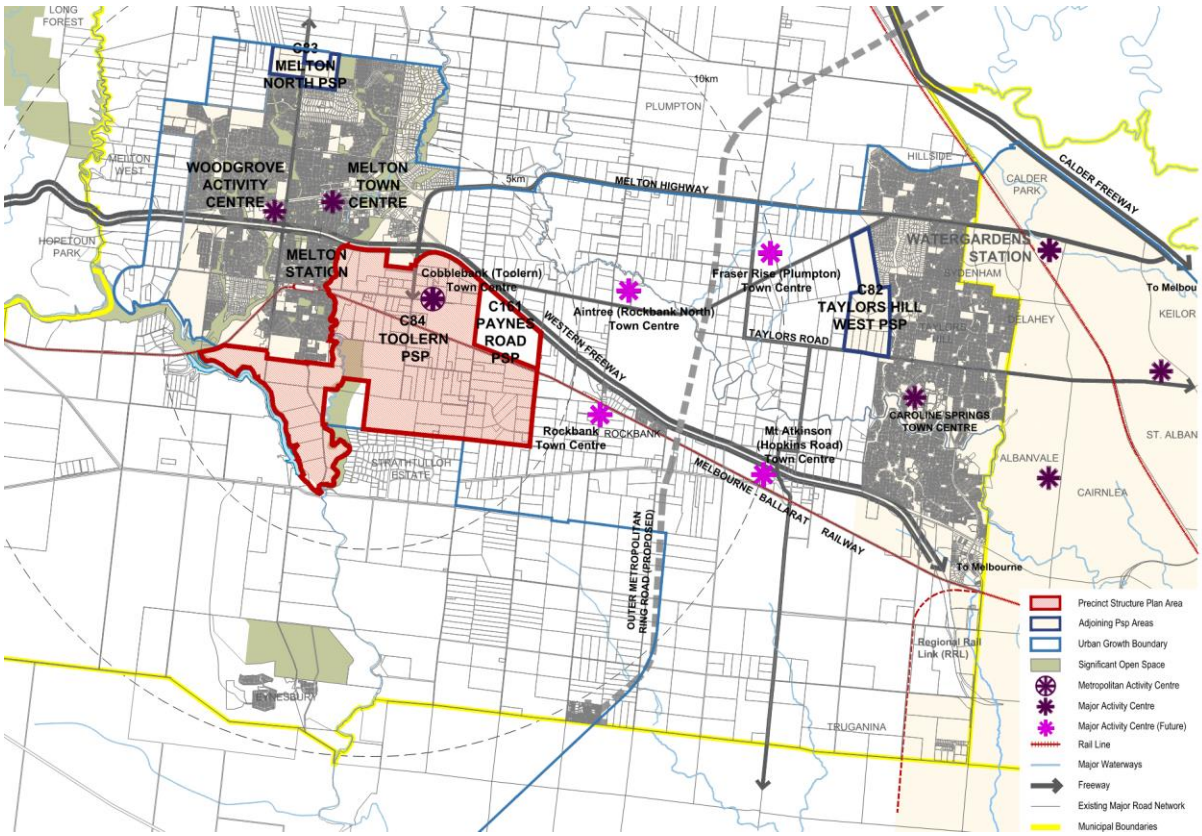
2 Toolern Precinct Structure Plan

2.1 General

The Toolern Precinct Structure Plan (PSP) was released by the Victorian Planning Authority (VPA) in 2011, with amendments in December 2015 and February 2019. The PSP applies to approximately 2,200 hectares of land south of the Western Freeway to the southeast of the Melton town centre, as shown in Figure 1.

The precinct is abutted by the Rockbank PSP and the Paynes Rd PSP, both of which are discussed further in Section 4.1 & 4.2. The Cobblebank Metropolitan Activity Centre (Toolern Town Centre) Urban Design Framework (CMAC UDF) and the Cobblebank Employment and Mixed Use UDF (CEMU UDF) fall within the Toolern precinct as discussed further in Section 4.3 & 4.4 respectively.

Figure 1: Toolern PSP Plan 2 Excerpt (June 2022)



2.2 Transport Infrastructure

2.2.1 Road Network Plan

The Road Network Plan of the Toolern PSP is provided in Figure 2, whilst further details regarding the various road categories and other infrastructure is compiled in Sections 2.2.2 to 2.2.4

During the development of the exhibited PSP & DCP various existing projects within the precinct were acknowledged and incorporated into the concept layout plans prepared in support of the PSP. These include projects form the abutting precinct plans, including the Paynes Rd PSP, Rockbank PSP and the Cobblebank Metropolitan Activity Centre (CMAC, Toolern town centre) Urban design framework (UDF).

Melton City Council have prepared a high-level summary of the current status of infrastructure delivery as shown in Figure 3.

The status of the following intersections within the PSP are noted.

Table 2-1. Intersection Status

Status	Intersection
Interim layout constructed	IT19, Mt Cottrell Rd & Baxterpark Dve IT26, Mt Cottrell Rd & Alfred Rd IT14, Ferris Rd & Hollingsworth Dve IT15, Ferris Rd & Bridge Rd IT27, Ferris Rd & Alfred Rd IT24, Exford Rd & Connector Rd
Under construction	IT05, Ferris Rd & Toolern Rd (interim layout) IT23, Exford Rd & western north-south connector
Partially constructed	IT10, Mt Cottrell Rd & Shogaki Rd (Interim layout) IT28, Ferris Rd & Wemley St (Interim layout)

Figure 2: Toolern PSP (June 2022) Plan 15 Road Network Plan

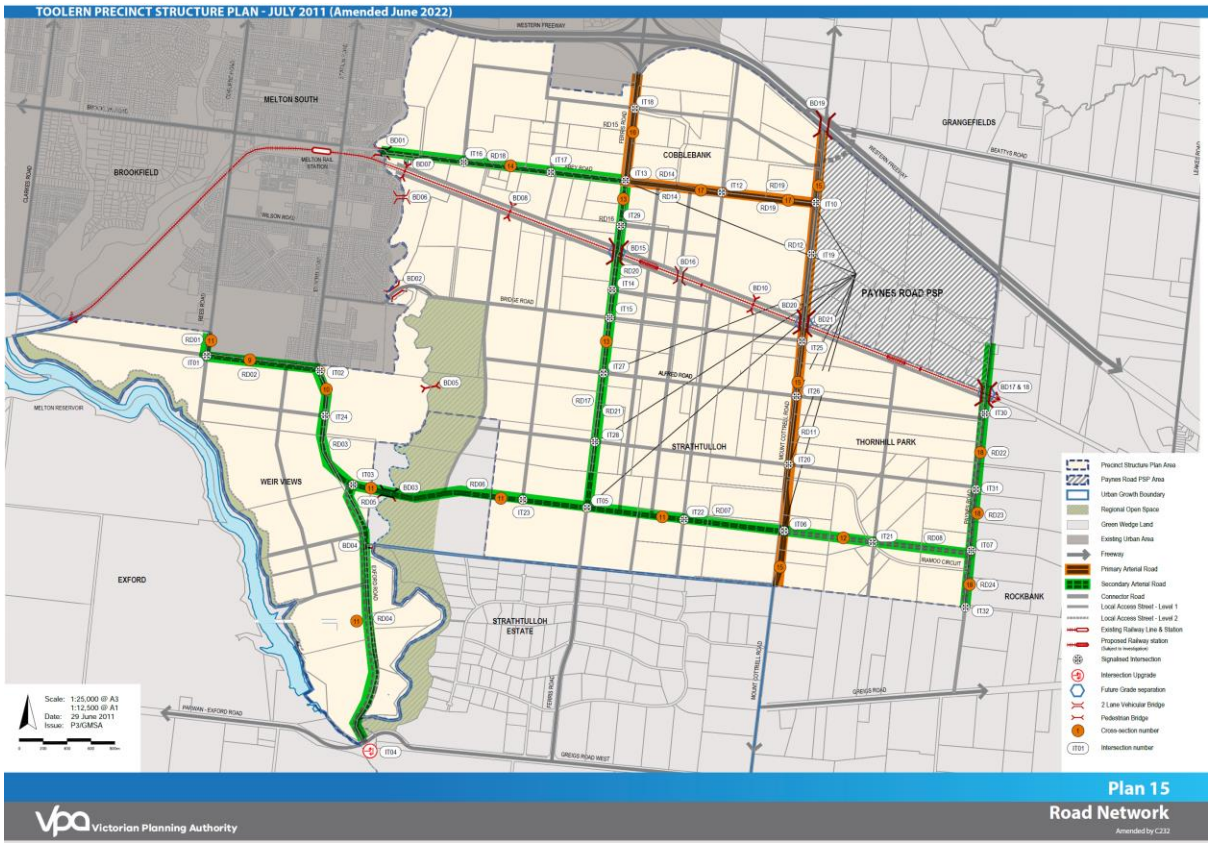
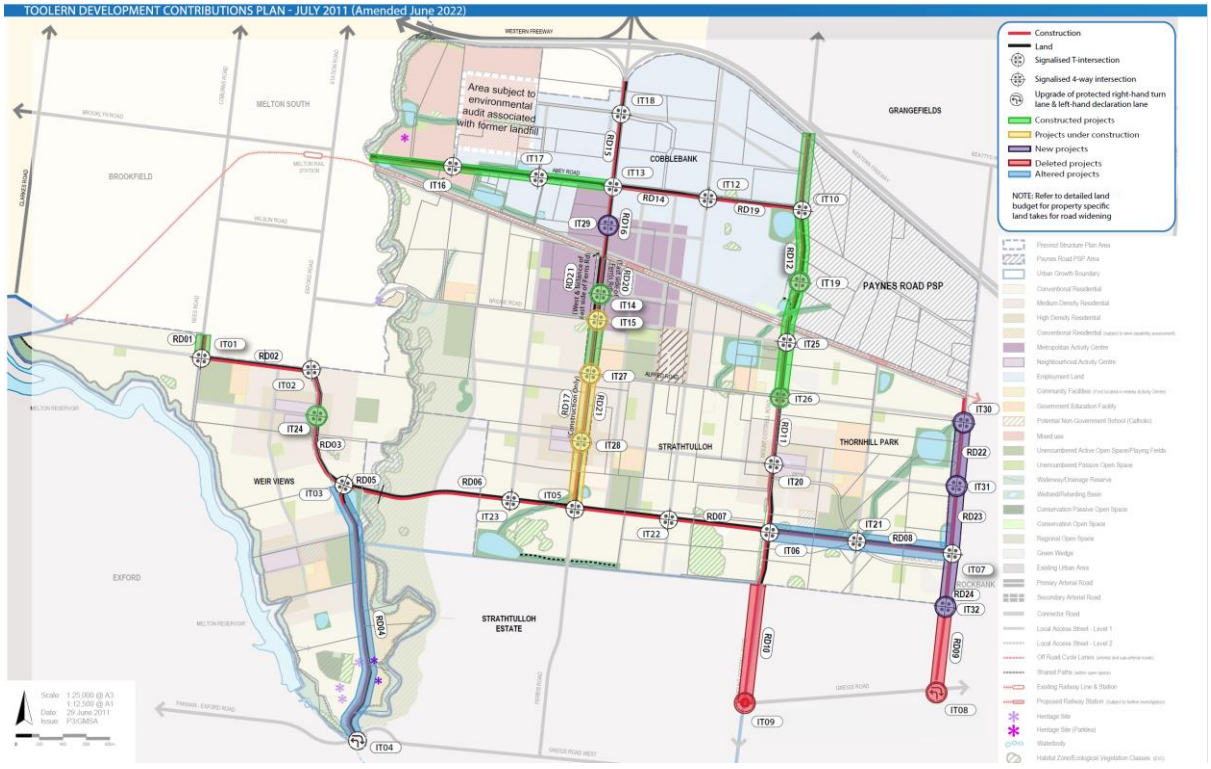


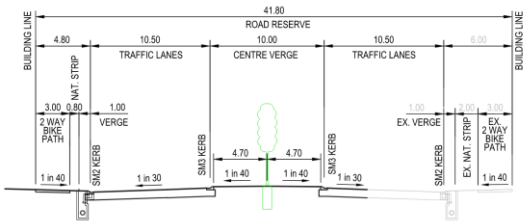
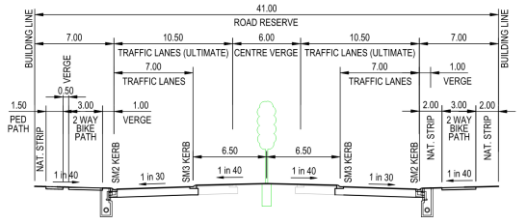
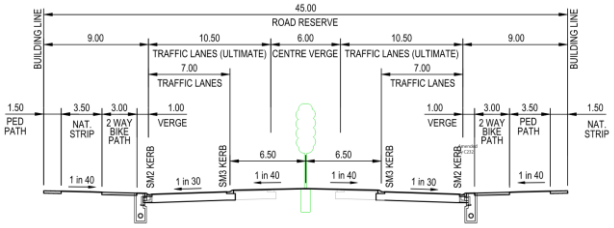
Figure 3: Exhibited background document to the DCP (Project status Plan 4) Roads and Intersections



2.2.2 Primary Arterial Roads

There is a range of cross sections nominated in the PSP for different roads nominated as a Primary Arterial.

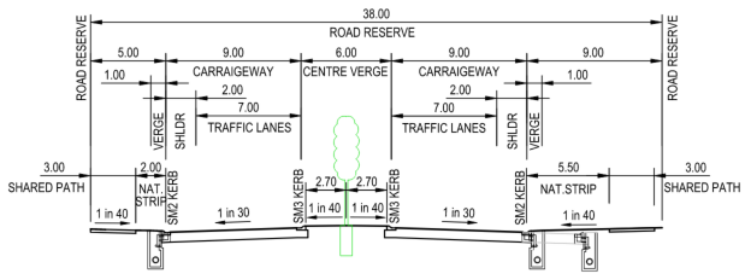
Table 2-2. Toolern PSP Primary Arterials (80kph)

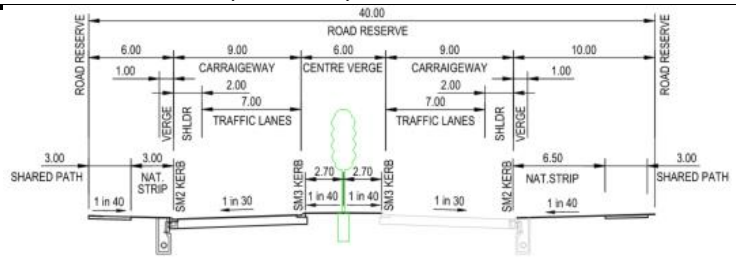
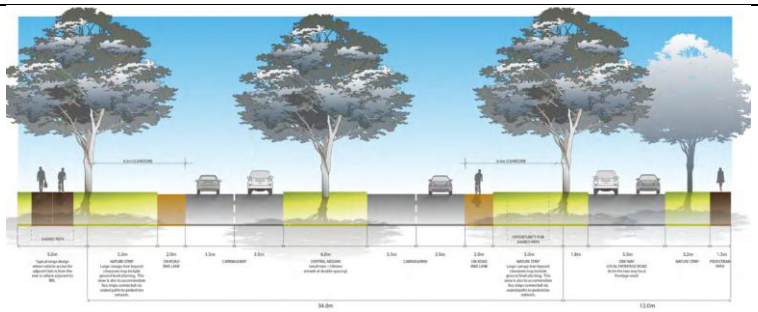
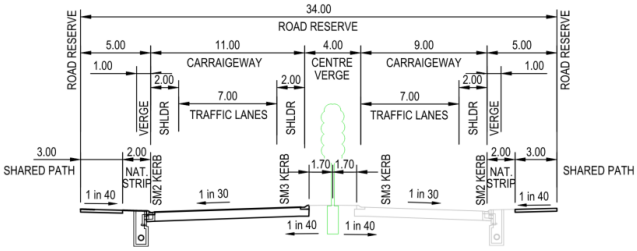
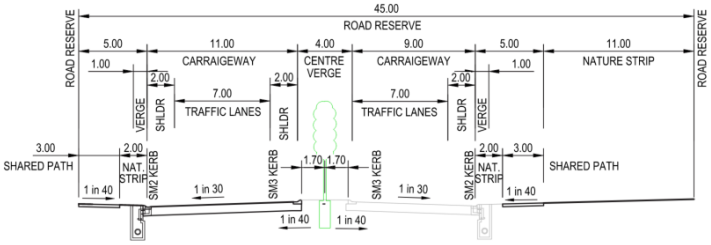
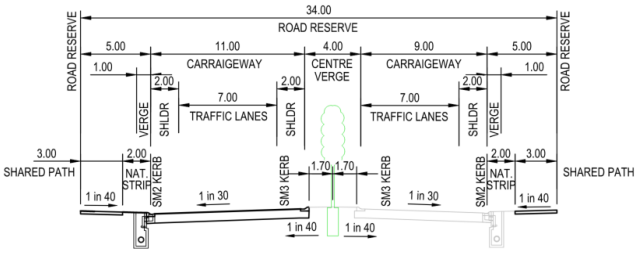
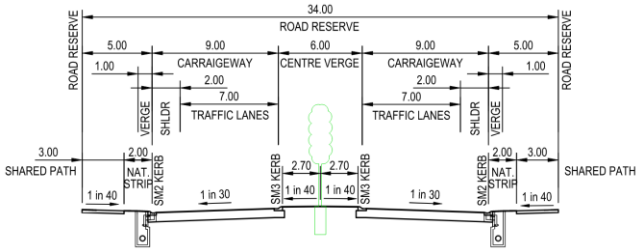
Road	Lanes (Ultimate)	Cross Sections *Source Toolern PSP (June 2022)*	Note
Ferris Rd RD15	6		This cross section requires updating to reflect the functional layout plans. RD15 includes a reserve width of 45m. (north of Shogaki Dve)
Mt Cottrell Rd RD 11 & 12	6		Road reserve width of 41m consistent with the 2016 Paynes Rd PSP, refer Figure 12
Shogaki Rd 14 &19	6		Refer response to DTP submission response in Section 7.2

2.2.3 Secondary Arterial Roads

There is a range of cross sections nominated in the PSP for different roads nominated as a Secondary Arterial

Table 2-3. Toolern PSP Secondary Arterials (60kph)

Road	Lanes (Ultimate)	Cross Sections *Source Toolern PSP (June 2022)*	Note
Ferris Rd RD16 & 17	4		

Road	Lanes (Ultimate)	Cross Sections *Source Toolern PSP (June 2022)*	Note
Abey Rd RD18	4		
Paynes Rd RD22 to 24	4		Reserve width of 34m consistent with 2016 Paynes Rd PSP, refer Figure 13
Toolern Rd (west of Mt Cottrell Rd) RD05 to 07	4		Reserve width of 34m Figure 13
Toolern Rd (east of Mt Cottrell Rd) RD08	4		Reserve width of 34m (Excl 11m nature strip) consistent with Rockbank PSP, refer Figure 9Figure 13
Exford Rd RD01, 03 & 04	4		Reserve width consistent with Toolern Rd (west of Mt Cottrell Rd)
Exford Rd RD02	4		Reserve width consistent with Toolern Rd (west of Mt Cottrell Rd)

2.2.4 Rail Infrastructure and Crossings

2.2.4.1 General

The Melbourne to Ballarat railway line operates through the Toolern PSP area. The PSP contemplates two new railway stations within the area, one to the east of Ferris Road and the other between Mount Cottrell Road and Paynes Road. The PSP notes that these stations are subject to investigation.

2.2.4.2 Pedestrian rail underpasses

The Toolern PSP includes 3 pedestrian rail underpasses identified as BD07, BD08 & BD10 as located on the Road Network Plan provided in Figure 2.

2.2.4.3 Level Crossing Removals

As part of Victoria's Big Build, four level crossings are planned to be removed at Coburns Road, Exford Road, Ferris Rd and Hopkins Rd.

Within the Toolern PSP there are four rail overpasses envisioned including the above-mentioned at Ferris Rd (BD15) along with East Road (BD16), Mt Cottrell Rd (BD20/21) and Paynes Rd (BD17/18) as located in Figure 2.

2.2.4.3.1 Ferris Road Rail Overpass

The Ferris Road level crossing (BD15) will be removed through the construction of a rail over pass. The State Government has announced funding and works are anticipated to commence in 2026.

As stated in the Melton City Council Planning report dated February 2024, in support of the DCP & PSP refresh, the Toolern DCP was amended to delete the land acquisition and construction costs for the Ferris Rd Rail overpass project given that the State Government will be undertaking these works.

A 'planning project boundary' has been determined by the Level crossing Removal Authority in the vicinity of Ferris Road, as shown in Figure 4, indicating a boundary width of 34m east of the railway line.

The Toolern DCP identifies the Ferris Rd and East Road rail over passes as BD15 and BD16 respectively, however there is an error in bridge ID numbers presented on DCP drawings V191096-CI-DG-2007-2 (sheet 101) & V191096-CI-DG-2008-2 (sheet 102). The detail for the Ferris Road rail overpass bridge is shown on DCP drawing V191096-CI-DG-2008-2 (sheet 102) and includes 4 lanes within a cross section width of 25.4m, as shown in Figure 5.

These details are reflected in the Cobblebank Metropolitan Activity Centre (Toolern Town Centre) UDF dated 22 November 2019 as shown in Figure 6.

The land take drawings provided within the Toolern DCP for the Ferris Rd rail overpass were prepared assuming the provision for earth batters rather than retaining walls as shown in Figure 7.

It is noted that early schematic designs publicly released by Engage Victoria (Victorian Government's Online Consultation platform) dated November 2023 indicate a provision for 1 lane in each direction, with artist impressions indicating the use of retaining structures, limiting the footprint of the crossing.

Figure 4: Level Crossing Removal Investigation Area

Source: Level Crossing Removal Authority MET750-G-MLX-MAP-001 Project Area Resave Rev C

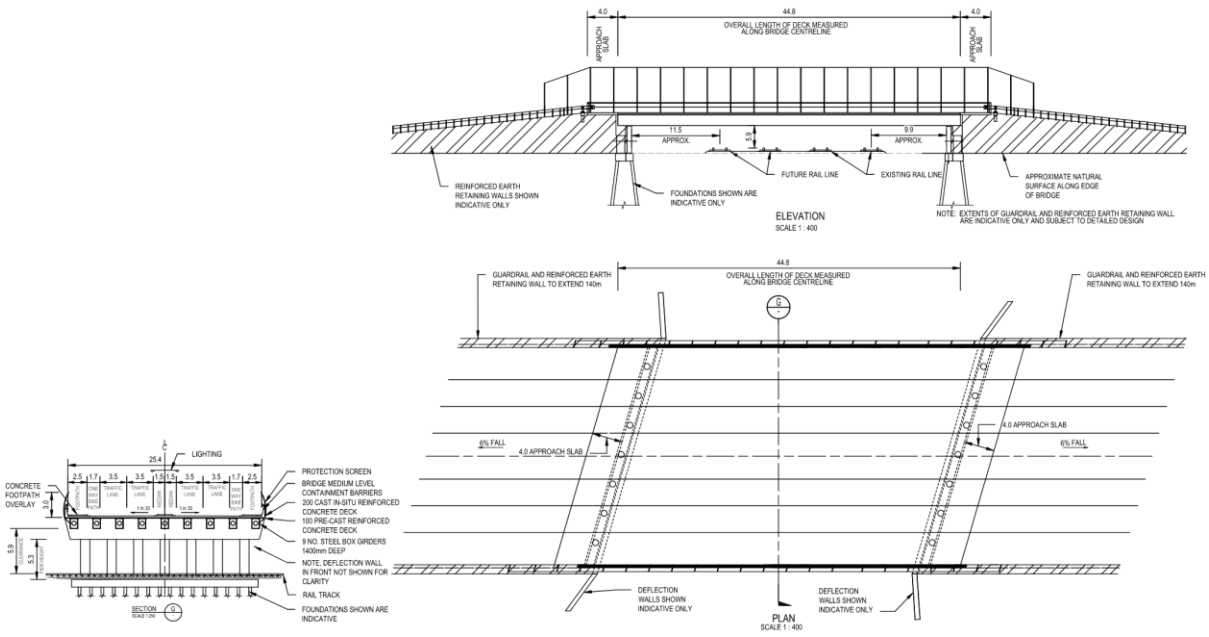


Figure 5: Toolern DCP (June 2022) Benchmark Design, Ferris Rd V191096-CI-DG-2008-2 (25.4m)

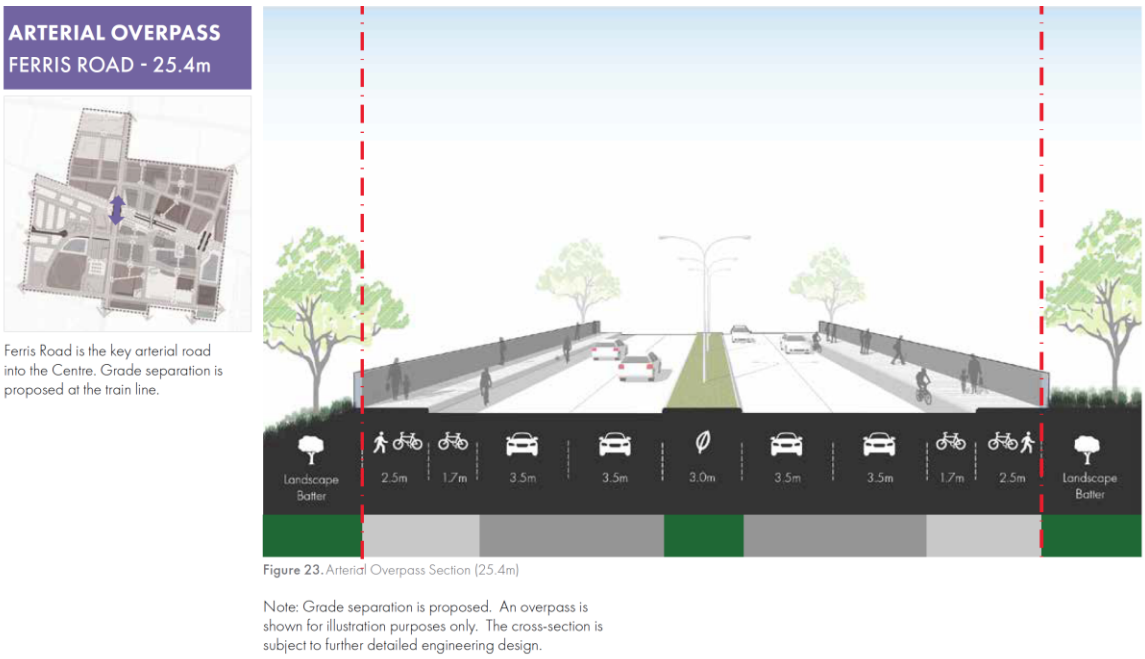


Figure 6: CMAC (Toolern Town Centre) UDF 2019

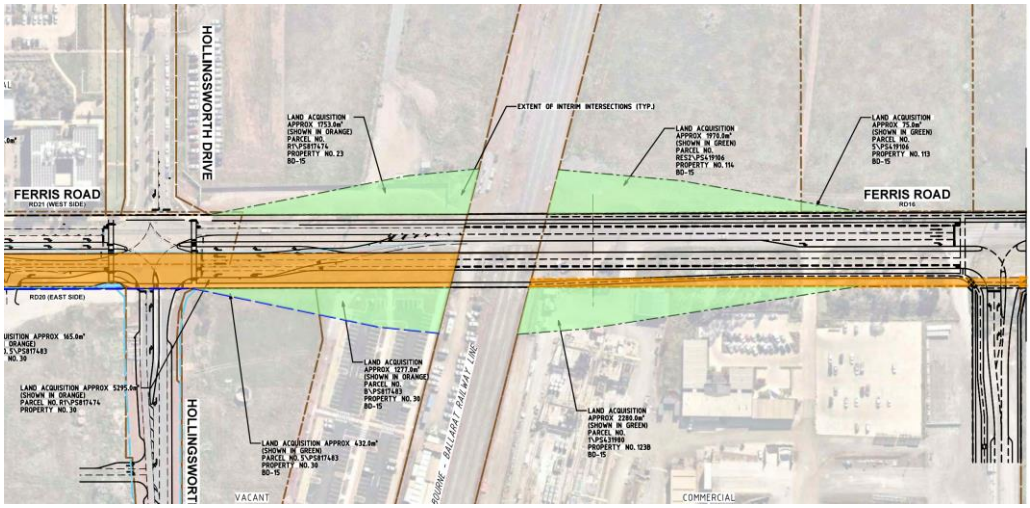


Figure 7: Toolern DCP (June 2022) Land Take drawing V191096-CI-SK-2614-4 (sheet 76)

3 Transport Modelling Considerations

3.1 Background

The transport modelling for the Toolern PSP area has undergone various iterations between 2008 to 2019, as follows:

- 2008: Veitch Lister Consulting (VLC) prepared undertook transport modelling for the 2031 forecast year using the Zenith Travel Forecasting Model.
- 2011: As part of the Toolern Major Activity Centre Urban Design Framework (UDF), the 2008 model was updated by VLC to reflect revised land uses for full development of the PSP in 2031.
- 2017: Stantec (then GTA Consultants) were engaged to revise the Toolern Town Centre UDF and prepare the Toolern Employment and Mixed-Use Land UDF. As part of these works, The Victorian Integrated Transport Model (VITM)[2] tool developed and maintained by the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) was utilised to evaluate the performance of the Toolern PSP road network and identify potential infrastructure options for 2031 and 2046 forecast years.
- 2019: Stantec (then GTA Consultants) updated the modelling works undertaken for the Toolern Town Centre UDF and the Toolern Employment and Mixed-Use Land UDF to reflect revised land use assumptions to review suitability of the road network under the 2051 forecast year.

While it is beyond the scope of this evidence to undertake a detailed review of the modelling carried out to date my high level review is provided in the following sections.

[2] VITM is a multi-modal strategic model that contains existing and anticipated major freeways, main arterials, and connector roads within the Melbourne Statistical Division, inclusive of the future OMR Transport Corridor and interchanges in the appropriate future model years. The model also includes existing and future public transport network, including key recent projects such as the Metro rail, Ballarat Line upgrades and the Cobblebank Railway Station.

3.2 Forecast Traffic Volumes

Table 3-1 provides a comparison of the demographic inputs for the Toolern PSP Amendment and the strategic level transport modelling done between 2008 and 2019.

Table 3-1. Strategic Transport Modelling Demographic Data

Demographic Type	Zenith Model, 2008	Zenith Model, 2011^	VITM Model, 2019	Toolern PSP Amendment, 2024
Residential Population	58,545	n/a	65,353	68,000
Employment	20,580	n/a	26,298	25,000

^ demographic data not readily available however report references updates to current Toolern MAC plans and latest DOT land use and demographic assumptions beyond the PSP region as they include the revised urban growth boundary

The demographic data for the more recent 2019 VITM model is relatively close to the demographic forecasts in the amended Toolern PSP, including 2,647 fewer residents and 1,298 additional jobs.

A summary of the 2051 forecast daily traffic volumes for Primary and Secondary Arterials within the PSP from the most recent modelling exercise is presented in Table 3-2.

The Table also offers an indication of capacity limits per Austroads Guidelines for the nominated road configurations and a comparison with the 2011 Zenith modelling results.

Following my review, it is my opinion that

- the 2019 VITIM model is fit for purpose
- the “indicative vehicles per day” listed in Table 10 of the PSP include some anomalies and should be amended to better reflect the 2019 VITIM Model results summarised in Table 3-2.
- The nominated road classifications and number of lanes nominated in the PSP are suitable

Table 3-2. Strategic Transport Modelling Daily Traffic Volumes Comparison

Road class	Road Section	Daily Traffic Volumes (vpd) Zenith (2011) 2031 Forecast	 VITM (2019) 2051 Forecast	Toolern PSP Indicative Vehicles per day (Table 10)	Cross Section	Austroads Capacity Threshold (based on no. Of lanes) [1]
Primary Arterial	Ferris Road (north of Shogaki Drive) RD15	29,200	26,000 to 32,000	Up to 65,000	6-lane	56,000 to 60,000 vpd
	Shogaki Drive RD14 and RD19	22,100	27,000 to 38,100	15,000 to 30,000	6-lane	56,000 to 60,000 vpd
	Mount Cottrell Road RD11 and RD12	5,500 to 23,480	21,500 to 48,000	Up to 12,000	6-lane	56,000 to 60,000 vpd
Secondary Arterial	East-West Arterial (east of Mount Cottrell Road) RD08	11,300 to 12,800	18,500 to 19,500	Up to 12,000	4-lane	38,000 vpd to 40,000 vpd
	Ferris Road (Shogaki Drive to East-West Arterial) RD16 and RD17	7,500 to 12,600	10,900 to 32,000	Up to 12,000	4-lane	38,000 vpd to 40,000 vpd
	East-West Arterial (west of Mount Cottrell Road) RD06 and RD07	8,700 to 10,000	17,500 to 18,500	Up to 12,000	4-lane	38,000 vpd to 40,000 vpd
	Rees Road RD01	8,200	10,330	Up to 13,000	4-lane	38,000 vpd
	Sub-arterial (Rees Road to Exford Road) RD02	8,200	9,040	Up to 13,000	4-lane	38,000 vpd to 40,000 vpd
	Exford Road (north of East-West Arterial Road) RD03	9,700	19,920	Up to 12,000	4-lane	38,000 vpd to 40,000 vpd
	Exford Road (south of East-West Arterial Road) RD04	6,100 to 8,700	15,180	Up to 12,000	4-lane	38,000 vpd to 40,000 vpd
	Abey Road RD18	11,500 to 14,500	15,500 to 17,210	Up to 12,000	4-lane	38,000 vpd to 40,000 vpd
	Paynes Road RD22, RD23 and RD24	900 to 5,000	7,100 to 9,800	Up to 12,000	4-lane	38,000 to 40,000

[1] Austroads Standards "Guide to Traffic Management – Part 3 Traffic Studies and Analysis, Table 6.1 Typical mid-block capacities for urban roads with interrupted flow

4 Associated Precincts and Activity Centres

4.1 Rockbank PSP

The road network considered under the Rockbank PSP abuts the eastern boundary of the Toolern PSP as illustrated Figure 8. Both precinct plans address Paynes Road & Toolern Road.

The Rockbank PSP nominates both Paynes Rd & Toolern Rd as a “Secondary Arterial Road 4 Lane” within a 34m road reserve as depicted in Figure 9, including a divided carriageway with opportunity for an off-road Shared user path on one side of the road and one on-road bicycle lanes in each direction.

In 2010, the Urban Growth Boundary was changed, which led to the approval of the Rockbank PSP and DCP in 2016 under Amendment C145 to the Melton Planning Scheme. The Transport Infrastructure Review identified nine (9) transport project to be added to the Toolern PSP with costs shared between the Toolern PSP area and the Rockbank PSP Area.

In January 2024, the Rockbank DCP was amended under Amendment VC249. The amended DCP retains the ultimate vision of a 4 lane carriageway for both Toolern Rd & Paynes Rd with reference to a 34m road reserve for Toolern Rd & Paynes Rd, proximate to the intersection.

As shown in Figure 10, the DCP offers a concept layout for the interim layout of the intersection of Toolern Rd & Paynes Rd with 34m road reserves and a 3m wide shared user path on each side of both roads.

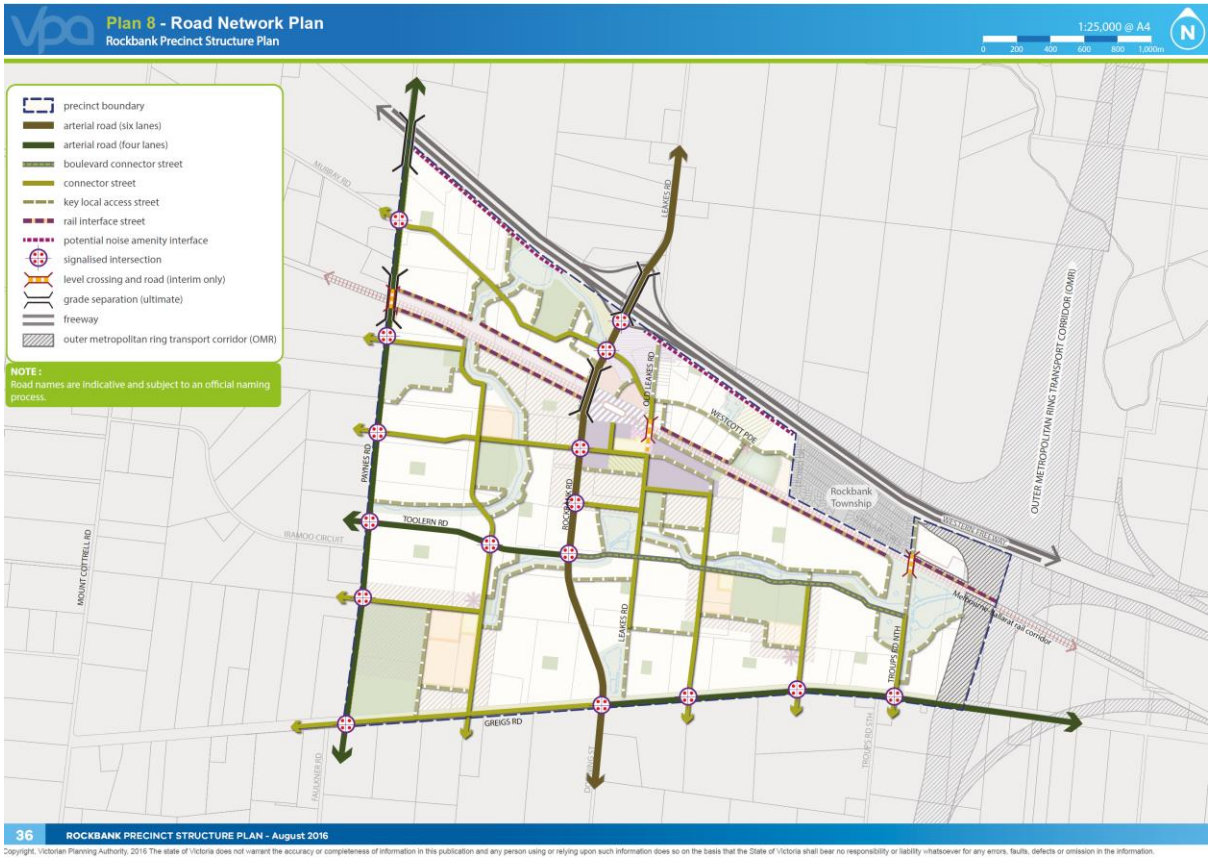


Figure 8: Rockbank PSP (August 2016) Plan 8, Road Network Plan

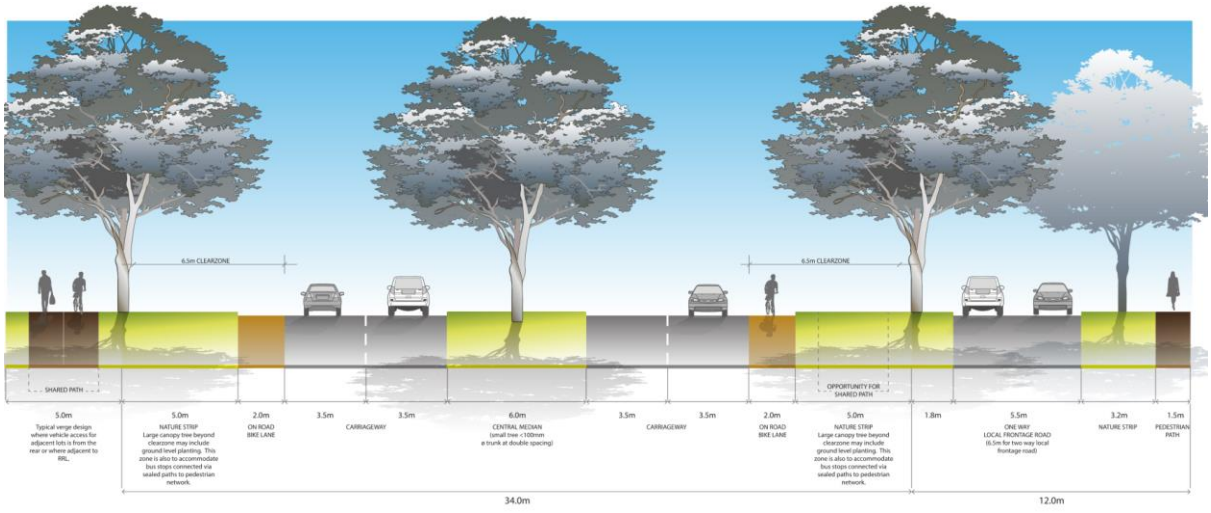


Figure 9: Rockbank PSP (August 2016) Secondary Arterial 4 Lane (34m), Toolern Rd / Paynes Rd

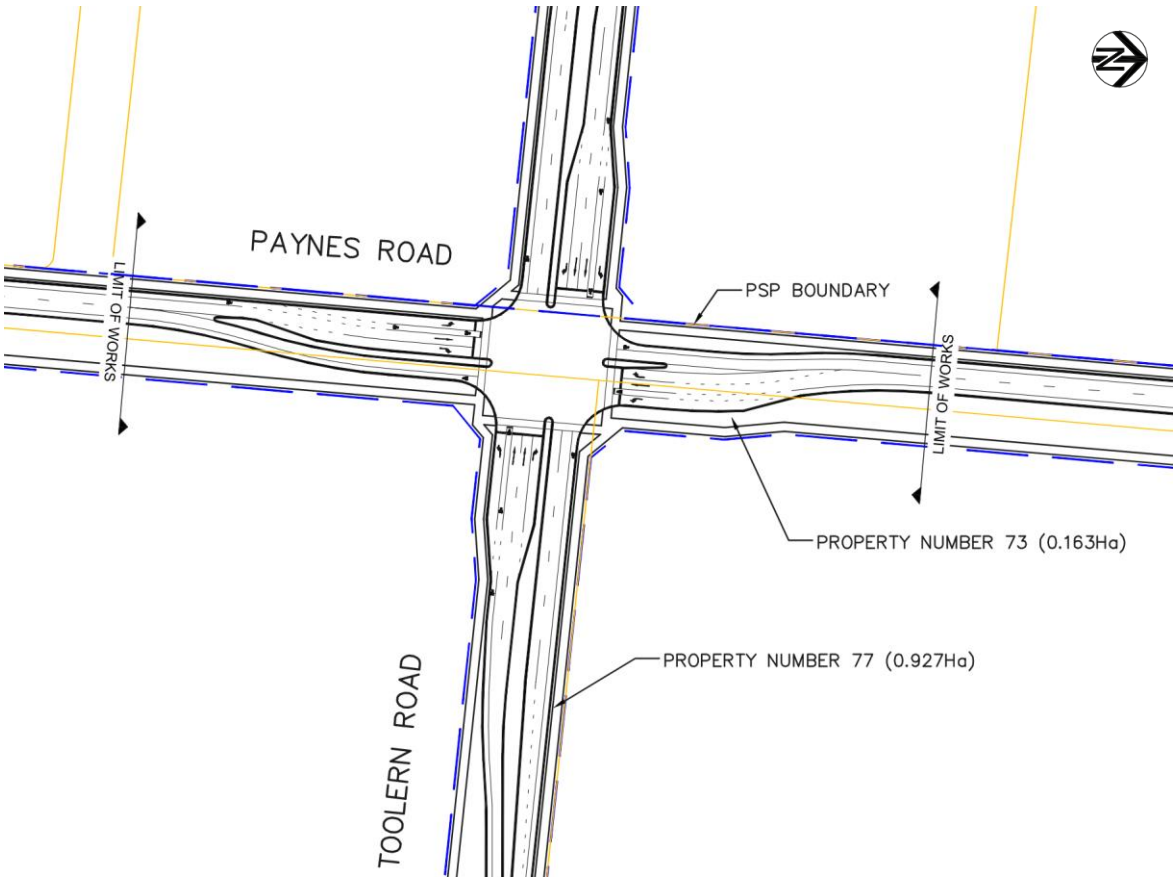


Figure 10: Rockbank DCP (Dec 2023) Paynes Rd/Toolern Rd (IT07 / sheet 58)

4.2 Paynes Rd PSP

The Paynes Rd PSP abuts the northeast corner of the Toolern PSP, in particular it abuts Mt Cottrell Rd north of the rail corridor. The road network envisioned in the Paynes Rd PSP is illustrated in Figure 11. The cross section included for Mt Cottrell Rd (Primary Arterial Road 6 lane) is provided in Figure 12, and includes a reserve width of 41.0m consistent with the Toolern PSP. Similarly, a reservation width of 34m is included for Paynes Rd, consistent with the Toolern PSP.

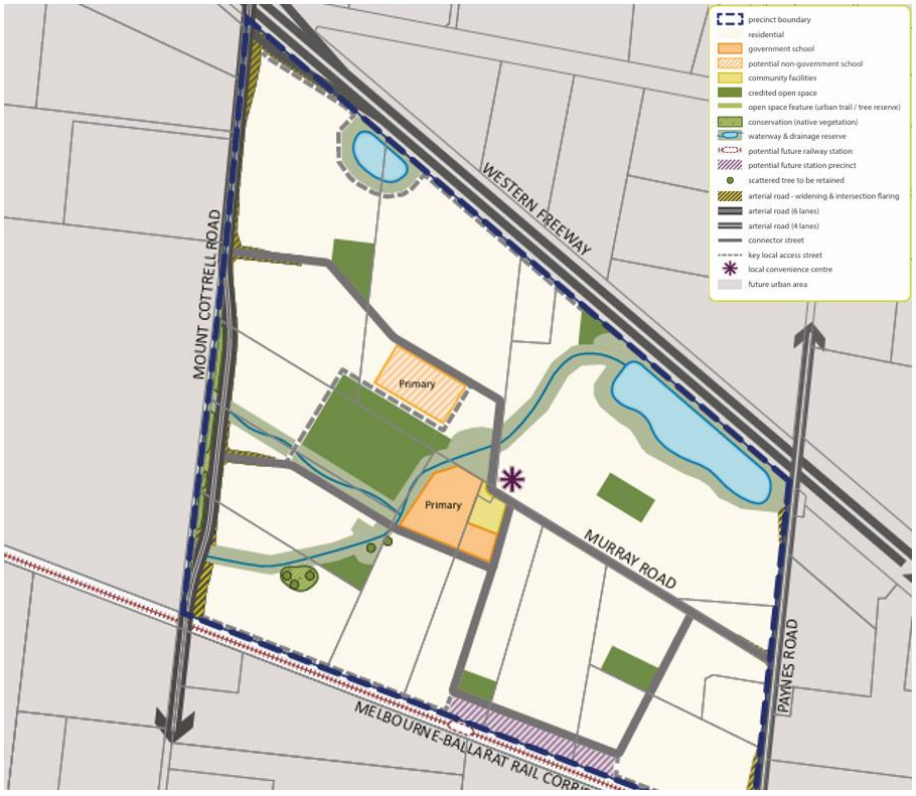


Figure 11: Paynes Road PSP (2016) Plan 3

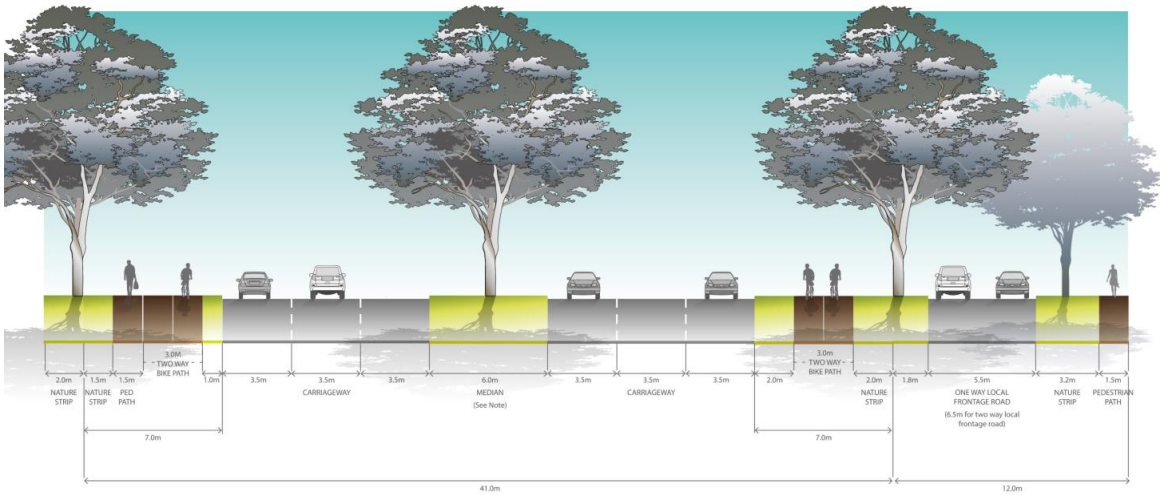


Figure 12: Paynes Road PSP (2016), Primary Arterial 6 lane (Mt Cottrell Rd), 41m

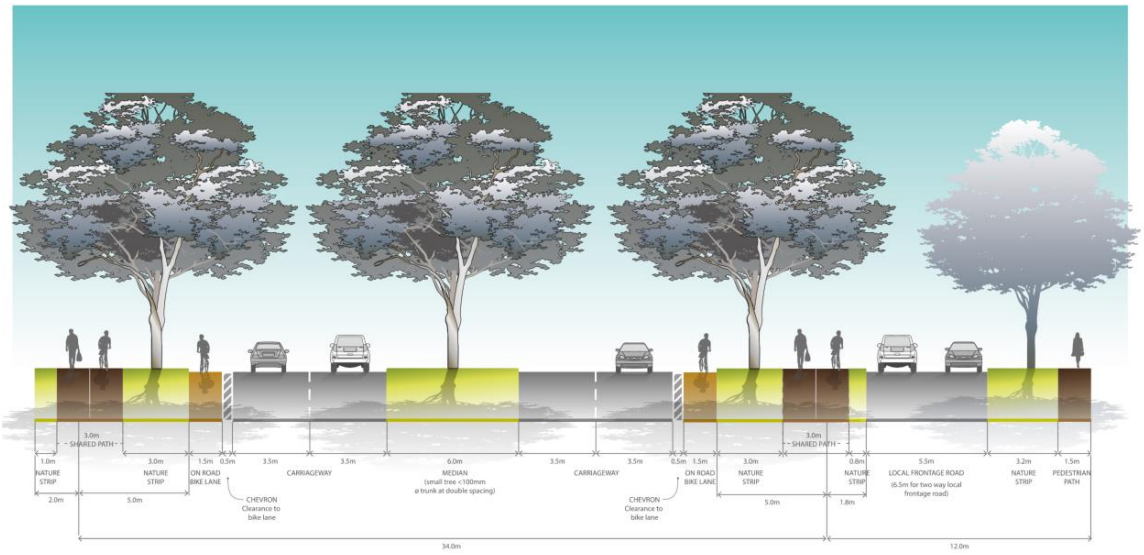


Figure 13: Paynes Road PSP (2016), Secondary Arterial 4 lane (Paynes Rd), 34m

4.3 Cobblebank Metropolitan Activity Centre

The CMAC UDF falls within the Toolern PSP and addresses the zone surrounding the Ferris Rd Rail overpass. The road network envisioned under the CMAC UDF is illustrated in Figure 14.

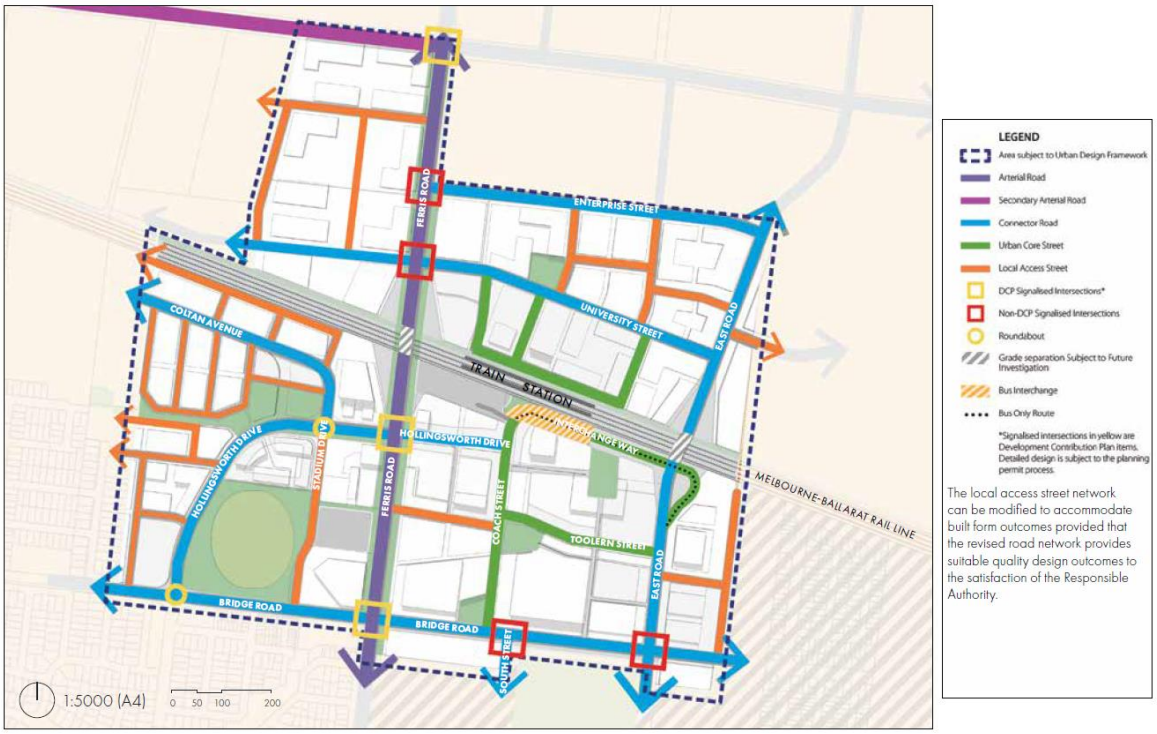


Figure 16. Vehicle Movement Plan

Figure 14: CMAC UDF dated Nov 2019

4.4 Cobblebank Employment and Mixed-Use UDF

The CEMU UDF falls within the Toolern PSP and addresses the zone extending from the rail corridor to the Western Freeway. The road network envisioned under the CEMU UDF is illustrated in Figure 15 with the UDF including road reservation widths and road classifications consistent with the Toolern PSP for Mt Cottrell Rd, Shogaki Dve, Abey Rd & Ferris Rd.

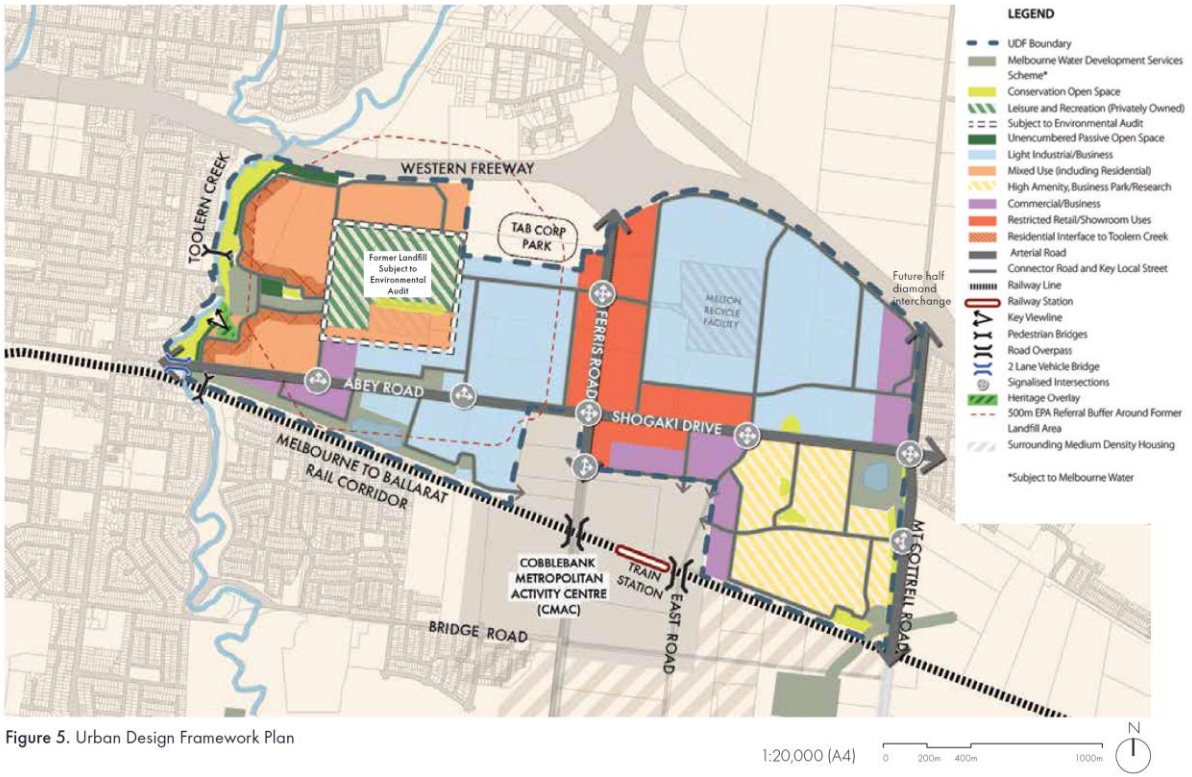


Figure 15: CMEU Urban Design Framework 2019

5 The Amendments

5.1 Overview

Recently, Melton City Council noted that while parts of the PSP had changed since its initial release in 2011, a complete review had not been undertaken to assess how the development of the area had been progressing and whether changes to the PSP were required to respond to the needs of the growing and changing population.

Melton City Council prepared a planning report, the Toolern Development Contributions Plan and Precinct Structure Plan Review (dated February 2024), which was publicly exhibited for review and comment. The review looked at all aspects of the PSP and included a Transport Infrastructure Review.

6 Design Considerations

6.1 General

The functional layout plans prepared for roads and intersections in the past for the PSP are concepts only that primarily address the horizontal alignment of road design per agreed scope, and it is understood did not provide a review of vertical design (apart from some localised sites) and other engineering aspects such as drainage, pavement, geotechnical and utilities.

Within the context of the original scope / instruction, my review of the concept FLP's prepared for the PSP indicate that they are generally fit for purpose (subject to the recommendations / adjustments mentioned in this report) however there are various design refinements required and non-conformances that have been identified, which are discussed below.

6.2 Horizontal Design

In various instances it was identified that the horizontal alignments did not meet the following Austroads Road Design Guideline Requirements (AGRD), however it is expected that these can be addressed in detailed design and for the majority of cases are not anticipated to impact on the road reserves nominated in the PSP.

- AGRD Part 3 Section 7.5 - Length of Straight between curves
- AGRD Part 3 Section 7.6.2 / Table 7.7 – Curve Length
- AGRD Part 3 Section 7.9 – Pavement widening on curves.
- AGRD Part 3 Section 7.8 – Curves with adverse crossfall (subject to detailed design / crossfalls/superelevation)

6.3 Intersection Design

6.3.1 General

In various instances, it was identified that intersection design will require refinement to address and improve outcomes for pedestrian crossings and vehicle swept paths, however it is expected that these can be addressed in detailed design and are not anticipated to impact on the road reserves nominated in the PSP. With regard to auxiliary lanes, it is expected that during detailed design and detailed traffic analysis that some auxiliary lanes / turning movements may need to be augmented or extended, which will impact on land take requirements.

6.3.2 Ferris Rd / Shakamaker Rd / Treeleaf Rd (IT18)

The alignment of intersection (IT18) of Ferris Rd, Shakamaker Dr & Treeleaf Ln is influenced and constrained by the existing offset in the road reserves of Shakamaker Dr & Treeleaf Ln.

It is understood that through the design process, the following compromises were adopted exacerbated by supplementary constraints of land ownership in the southwest corner and topography of the northeast corner (refer batter/level change in the aerial image below).

- Omission of the eastbound through movement (ie left and right turn exit only from Shakamaker Dr)
- Adoption of Split phasing for the eastern and western approaches
- Abrupt alignment for the westbound through movement

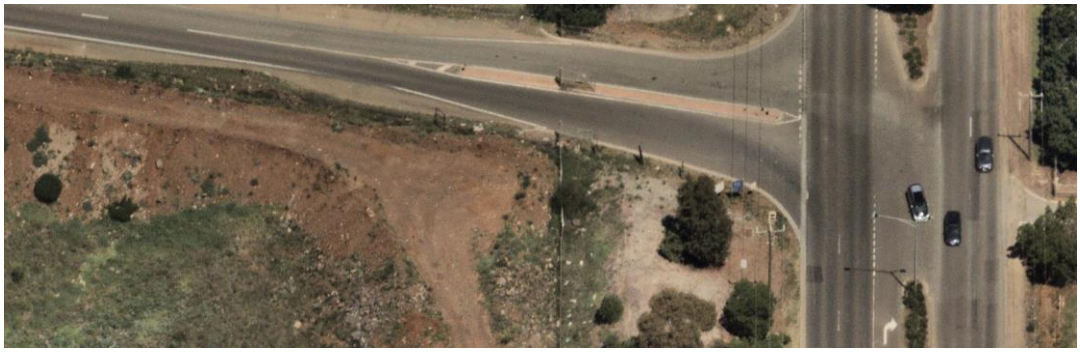


Figure 16: Northeast corner of the Ferris Rd & Treeleaf Rd intersection (Source: Nearmap)

The intersection layout (IT18) and operational constraints are undesirable and there is opportunity through further design development to provide an improved outcome.

A high-level concept illustrating this potential refinement is provided in Appendix B, refer 300305617-TR-SK-01, allowing the retention of the eastbound through movement, removal of a need for split phasing along with a broad improvement in the east-west alignment.

This concept layout is of course subject to further design development and investigation; however, it illustrates significant improvement in functionality through a marginal increase in land acquisition in the southwest and northeast corner.

The concept design is also sympathetic to the topography in the northeast quadrant of the intersection, seeking to limit the realigned verge to fall clear of the existing batter.

It is my opinion that the amended design included in Appendix B should be incorporated into the PSP.

7 Submissions

7.1 General

Thirty-five (35) submissions were received, from a variety of parties, including local residents, land owners and authorities. I have reviewed and considered all submissions relevant to transport engineering and planning.

For convenience the following table's highlight responses which prompt an amendment to the PSP with an orange shade, while items presented in a grey text are deferred to Council or not considered to fall within my scope or area of expertise

7.2 Department of Transport (#35)

The submission received from DTP offered several high level comments followed by a detailed table of specific comments. Table 7-1 and Table 7-2 provide a response to items relevant to my scope and expertise.

Table 7-1. Relevant transport submissions - General Comments (DTP)

No.	Comment / Response
A	Mount Cottrell Road Adequate land provision for the future freeway interchange needs to be considered and provided. - Adequate land for the future intersections between Shogaki Drive and the Western Freeway needs to be considered and protected. - The reduction of RD12 from 45m to 41m is not supported as current designs indicate that a minimum of 45m will continue to be required to deliver the ultimate primary arterial corridor's configuration.
	Response Mt Cottrell Rd Fwy interchange (Southern approach) BD19 - A review of the land take required to facilitate BD19 was prepared by others as part of the Paynes Rd PSP. This was reflected in drawing V191096-CI-SK-2619 provided at sheet 81 of the Toolern Rd DCP. It is outside the scope of this review to investigate the suitability of the land acquisition contemplated. Mt Cottrell Rd / Future Connector Rd (north of Shogaki Dve) - It is assumed DTP may also be referring to the future connector road intersection on Mt Cottrell Rd indicated on the Road Network Plan of the PSP (plan 15), north of IT10. Given the proximity to the abovementioned Fwy interchange upgrade and future bridge, it is my opinion that should a road be introduced in this zone it will likely be inhibited to a local Access Street and a left in/out arrangement. Mt Cottrell Rd Reserve width (RD12) - Refer response provided to DTP item# 25.15

No.	Comment / Response
B	Shogaki Drive - The ultimate alignment of the Shogaki Drive, including the intersections and consideration towards the existing sewer pumping station is unresolved. The Department seeks further discussion with Council to resolve this matter. Possible relocation or protection of the sewer pump and the potential costs and responsibilities for doing so require resolution. - Discussions were held between MRPV and Council around the ongoing need for Shogaki Drive to be included as a 6-lane, primary arterial road corridor. The Department and MRPV would like to understand why, following the advice from MRPV that a 4-lane arrangement is appropriate, the updated PSP and DCP retains a 6-lane corridor.
	Response Sewer pump relocation/protection Response to be provided by Council. Shogaki Dve RD14 & 19 (Shogaki Rd) – The DTP submission expresses comfort that Shogaki Rd comprise an ultimate cross section of 4 lanes and based on the forecast data discussed in Section 3 it is my opinion that 6 lanes should be retained
C	Ferris Road - Adequate land provision and appropriate intersection design is required for the Ferris Road / Treeleaf Lane / Shakamaker Drive intersection. The current FLP does not adhere to current road design standards. - The Department does not support the reduction of RD15 from 45m to 41.8m. Preliminary work undertaken indicates that 41m would be insufficient to enable the corridor's ultimate configuration. The existing width should be retained to ensure future upgrades can be delivered without delay or additional costs - As such, it is the Department's preference is that the full extent of the (existing) easement is maintained.
	Response Ferris Road / Treeleaf Lane / Shakamaker Drive intersection (IT18) - My opinion on the intersection is provided in Section 6.3.1, including recommended realignment of the intersection. Ferris Road (RD15) road reserve width - The RD15 cross section provided in the PSP for Ferris Rd (north of Shogaki Dve) is incorrect and in my opinion should be amended to reflect a 45m reserve width as illustrated on the relevant functional layout plan (refer drawing V191096-TR-DG-2618), including pedestrian and off-road bicycle facilities. South of Shogaki Rd, Ferris Rd progressively adopts a different cross section under RD16 & 17 where it transitions from a Primary Arterial to a Secondary Arterial Road.
D	Rail corridor interface The Department notes that there are a several proposed changes to the PSP and DCP documents that directly interface with the planning of the rail corridor infrastructure including: - The Department seeks further clarification to understand how land requirements for the Paynes Road and Ferris Road road-over-rail grade separations will be delivered. It is

No.	Comment / Response
	noted that these (grade separations) and their corresponding land requirements have not been included in the PSP or DCP. The Department seeks to discuss this matter with Council and for the DCP and PSP to be updated as agreed / necessary. - A connection across the rail corridor (BD11) has been removed under the assumption that a connection will be provided with the construction of a future rail station in the vicinity of this location. There is no commitment to deliver the connection at this location as part of any future station upgrade. This item must be reinstated in the DCP. Any discussion / agreement on the delivery of a bridge over the rail corridor is subject to agreement as part of any future project.
	Response Ferris Rd Rail overpass - Detail of the provisions for the Ferris Rd rail overpass including cross section and concept land take plans provided in the Toolern PSP & DCP is provided under Section 2.2.4.3.1. It is outside the scope of this review to investigate the suitability of the land acquisition contemplated. BD11 Rail underpass removal - This item is considered to be outside of my scope

Table 7-2. Relevant transport submissions – Detailed Comments (DTP)

No.	Comment / Response	Change requested
35.01	Exford Road/Toolern Road has been reduced to a secondary arterial east of Mt Cottrell Rd. This is reflected in the Rockbank PSP east of Paynes Road. This would otherwise be 4 lane west of Mt Cottrell and east of Paynes, with 6 lanes in between. Whilst this is supported by the Department, the off-road cycle lane is also removed from this section. This is included in the Rockbank PSP meaning removing this section would cause a gap in the cycling network.	Include an off-road cycle path on Exford Road/Toolern Road between Mount Cottrell Road and Paynes Road aligning with the Rockbank PSP.
	Response As shown in Figure 9 the Rockbank DCP indicates opportunity for a 3m wide SUP on either side of Toolern Rd (east of Paynes Rd) within a 34m road reserve along with 2m wide on-road bicycle lanes. This is consistent with the cross-sections for Toolern Rd within the Toolern PSP and the provision of SUP's stretching from Toolern Creek to Paynes Rd (RD05 to RD08) as shown in Table 2-3. As such in my opinion no change is required.	
35.02	Plan 7 of the PSP - 'North west mixed use precinct' should now read 'North West Precinct Urban Design Framework Area'.	Update text.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.03	'The OMR is shown in the West Growth Corridor Plan… and continues to be a committed project in Plan Melbourne 2017-2050' – Whilst the OMR continues to be a planned project and needs to be considered within the PSP, there has been no commitment to deliver the corridor.	Update text to 'potential future' to align with wording in Plan Melbourne 2017-2050
	Response Agreed, noting the OMR is discussed in Section 2.2.5 of the PSP and illustrated in Plan 2.	
35.04	3.2.5 references road over rail at Ferris Road, but 4.1.5 C8 mentions the requirement to 'provide a well-designed and high-quality rail underpass' – planning for this grade separation is for road-over-rail and reference to an underpass should be reworded.	Update wording to reflect road-over-rail.
	Response Character Area C8 under Section 4.1.5 of the PSP addresses the vision for Ferris Road at Mt Cottrell Rd along the extents indicated in Plan 7 of the PSP (ie north of the rail corridor). Given the presence of Pedestrian Underpasses (BD07, BD08 & BD10) and Road Rail Overpasses within the PSP it is my opinion that C8 under Section 4.1.5 of the PSP should be updated to clarify the intended scope. If the intent is to address the Road Rail Overpass, C8 should be amended to specifically refer to the Ferris Rd Rail overpass (BD15).	
35.05	Changes to the DSS and what is subsequently shown in the integrated water management plan - it would be good to have a comparison showing the changes visually so we can understand transport network impacts.	Provide a figure showing changed DSS infrastructure. Whilst this should not be included in

No.	Comment / Response	Change requested
		the PSP/DCP, it would be useful to further understand any impacts on the transport network.
	To be addressed by Council and not considered to be fall within my scope/ area of expertise	
35.06	The road network figure shows '2 lane vehicular bridge' for grade separated crossings on arterials - these need to reflect the ultimate cross section of the specific road corridor. It is currently ambiguous in this figure which of these bridges are expected to be four or six lanes.	Update figure to be more specific and reflect required cross sections for each bridge.
	Response Agreed, the legend on relevant plans within the PSP or DCP should be updated to identify bridges with more than 2 lanes or alternatively default to a single icon for all road bridges.	
35.07	BD17 and BD18, and BD19 (land only) and BD20 are shown as separate projects for the interim and ultimate Paynes Rd and Mount Cottrell Rd rail overpass. Other LX projects are only shown for the ultimate.	Clarify the intention of each crossing and why some are interim/ultimate, as well as the reasoning for the ultimate scope to upgrade an already removed level crossing with gates.
	Response Paynes Rd - It is understood that BD17 & BD18 seek to address the staged introduction of the Paynes Rd rail overpass (interim standard) as described under Section 1.4.3 of the DCP. As shown on Sheet 110 of the Toolern DCP, BD17 contemplates a 2 lane rail overpass consistent with the details of BR04 (sheet 80) within the Rockbank DCP. As shown on Sheet 111 of the Toolern DCP, BD18 addresses an at-grade (level) pedestrian crossing upgrade, prior to the construction of a 2 lane rail overpass addressed under BD17. - It is understood that the duplication of the rail over pass (ultimate standard) is outside the scope of funding contemplated in the DCP Mt Cottrell Rd Freeway interchange - BD19 – per table 3 of the Toolern DCP BD19 relates to the purchase of land for the construction of a half diamond interchange (ultimate standard, southern approach only) Mt Cottrell Rd Rail overpass - BD20 relates to the “purchase of land for the construction…” of the rail overpass contemplating the “..(ultimate standard)”. The land acquisition for the rail overpass is depicted on Sheet 113 of the Toolern DCP, including consideration of an interim 2 lane road and an ultimate 6 lane road. - BD21 addresses an at-grade (level) pedestrian crossing upgrade, prior to the construction of a rail overpass.	

No.	Comment / Response	Change requested
	- It is understood that the construction of the rail over pass (interim and / or ultimate standard) is outside the scope of funding contemplated in the DCP	
35.08	Paynes Rd overpass is for construction; Mt Cottrell Rd overpass is just for the land; Ferris Rd overpass is included, but with no funds attributed to it. This is despite the FLP showing land acquisition being required. Why is there this inconsistency?	Clarify the intention for each crossing and why some for construction / land / no funds included.
	Response Mt Cottrell Rd Rail overpass - Refer response to item 35.07 regarding BD20 & BD21 Paynes Rd - Refer response to item 35.07 regarding BD17 & BD18 Ferris Rd - As stated in Section 2.2.4.3.1, the Toolern DCP was amended in February 2024 to delete the land acquisition and construction costs for the Ferris Rd rail overpass given that the State Government will be funding these works.	
35.09	What is the justification for removing BD09, BD11, BD12, and BD13 (it is not clear from old or updated documents where 12 and 13 were meant to be located)?	Provide clarification (further action required below on BD11).
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.10	RD08 (East-west arterial east of Mount Cottrell Road) cross section is also not consistent for both carriageways (2m should on both sides of one carriageway, only one side of the other). Why? Why is there 6m of shoulder included in the cross section when original cross sections had no shoulder but included protected bike lanes. Recommend removing/reducing the shoulder width and providing additional width on the SUP (or dedicated cycling if possible).	Clarify reason for inconsistent carriageway width and consider updating to include protected cycling facilities where possible (would need to consider full corridor design, including at intersections, to ensure this is possible).
	Response The 2m wide “shoulders” are included as an on-road bicycle lane per Table 10 of the PSP (Table 9 of the previous revision of the PSP) and illustrated on relevant functional layout drawings. As shown in Table 2-3, various Sub Arterial Roads were documented to include one carriageway with two shoulders (2m wide each) including RD01 and RD03 to 08. This is discussed further in response to item 35.12. On review of the functional layout plans, it is apparent that the supplementary shoulder abutting the median is a remnant of the ‘interim design’ in which one carriageway is utilised temporarily for two-way traffic (including an on-road bicycle lane in each direction). As shown on the functional layout plans, the supplementary shoulder that abuts the ultimate median becomes redundant under the ‘ultimate’ arrangement and is to be removed under the ultimate arrangement via a widening of the median (from 4m to 6m) while retaining one on-road bicycle lane (shoulder) on each ‘ultimate’ carriageway.	

No.	Comment / Response	Change requested
	It is my opinion that the PSP should be updated to clarify this strategy, with due consideration to the outcome to be resolved for DTP item 35.12.	
35.11	Why is RD08 reduced in the number of lanes but retains the same cross section width. What is the purpose for providing an 11m nature strip? This is also not consistent with the rest of this corridor to the east of Mount Cottrell Road.	Council to clarify reason behind 11m nature strip.
	Response RD08 (Toolern Rd, East of Mt Cottrell Rd) was originally identified as a primary arterial road in the 2011 Toolern PSP and DCP and including 6 lanes within a 45-metre reserve. The amendment flags RD08 as a 4 lane secondary arterial with a cross section consistent with the vision for Toolern Rd within the Rockbank PSP (east of Paynes Rd), which includes a 34m reserve and a 12m supplementary zone along the southern side of the road allowing potential for a local frontage road as shown in Figure 9.	
35.12	Shared use paths on Strategic Cycling Corridors do not meet the target level of service for a SCC's and should only be provided as a last resort. Previous designs included SUPs but now have unprotected shoulders that could be used as bike lanes, as well as SUPs. Feedback in 2020 asked for separated facilities on SCCs. Melton's response stated that 0.5m chevron line marking could be used in the 2m on road lanes however this is not adequate physical separation. Further discussion indicated that this can be worked out at detailed design stage, however, it is recommended that this is shown in current plans if feasible (again, would need to consider full corridor design, including at intersections, to ensure this is possible).	Update cross sections to include protected cycling facilities where possible on Strategic Cycling Corridors.
	Response The concept intersection layouts were prepared for the Toolern PSP were developed primarily through early to late 2020 with refinements made in 2021/22 and include 2m wide unprotected on-road bicycle lanes / shoulders on the 60kph Secondary Arterial roads (refer Table 2-3) A 2m wide unprotected on-road bicycle lane is also included on Arterial Roads within the Rockbank PSP, GMAC UDF and the Paynes Rd PSP (which includes a 1.5m lane and 0.5m painted chevron) Figure 2.2 of the 2017 Guide (AP-G88-17) for Cycling Aspects of Austroads allows unprotected on-road bicycle lanes (shared carriageway) for 60kph roads with 'very low' traffic volumes. It is noted that at the time it was relatively standard practice in the industry to document un-protected on-road bicycle lanes (with SUP's for non-confident riders) per the requirements of AGRD Pt3 Section 4.8.7 which includes a minimum desirable width of 1.5m for 60kph roads and 2.0m for 80kph roads, with Section 4.8.7 suggesting consideration of physically separated bicycle lanes within the context of *"…urban roads with a posted speed greater than 80 km/h (e.g. 100 km/h) will usually be a freeway or expressway that carries a high volume of high speed traffic….."* Through November & December 2020, DTP released the following documents in relation to	

No.	Comment / Response	Change requested
	cycling corridor requirements - The Strategic Cycling Corridors Review (December 2020) - Movement & Place Guidance note (M&P Cycling) (November 2020 update) More recently in June 2024, DTP released the Treatment of Strategic Cycling Corridors Road and Roadside Safety Policy Fact Sheet which stated the following Policy Position - *New or upgraded projects that occur on strategic cycling locations (C1 and C2), must have the following minimum cycling treatments:* o *Physically separated cycling lane from vehicles, or;* o *reduced vehicle operating speed to 30km/hr.* In light of the current standards and industry practice it is my opinion that the verges of the relevant Secondary Arterials (refer Table 2-3) should be increased to absorb the shoulder width (without change to the nominated road reserve width) with verges reviewed to include a separate pedestrian footpath (1.5m) and a separate bike path. It is noted that this change will present a reduction in the extent of full depth pavement.	
35.13	Most of the secondary arterials include unprotected bike lanes in the shoulders with 60km/h speed limit - this is not supported - Cross sections RD01, RD02, RD03, RD04, RD05, RD06, RD07, RD08 (originally primary arterial), RD16, RD17, RD18, originally included protected paths. The cross section taken from the Rockbank PSP for Paynes Rd should also replace the proposed 2m unprotected bike lanes with protection.	Council to clarify why protected paths have been removed from cross sections and update if feasible.
	Response Refer response provided to 35.12	
35.14	RD15 (Ferris Rd) cross section shows 41.8m but is shown as 45m in table 10. Cross section north of Shogaki Dr (RD15) doesn't include any facilities for pedestrians.	Ensure cross sections and tables are consistent. Confirm how pedestrian movements will be accommodated within the cross section where they aren't currently shown. If there will be additional width provided outside of what is shown here, this should also be included in the figure.
	Response The RD15 cross section provided in the PSP for Ferris Rd (north of Shogaki Rd) is incorrect and should be amended to reflect a 45m reserve width as illustrated on the relevant functional layout plan (refer drawing V191096-TR-DG-2618), including pedestrian and off-road bicycle facilities. South of Shogaki Rd, Ferris Rd progressively adopts a different cross section under RD16&17 where it transitions from a Primary Arterial to a Secondary Arterial Road.	

No.	Comment / Response	Change requested
35.15	What is the justification behind reducing the Mount Cottrell Rd cross section from 45m to 41m? (reduces ped path to 1.5m on one side only). Given there is a town centre on one side of Mount Cottrell Road and a potential rail station on the other, why provide a footpath on only one side? If this is proposed to be included in frontage roads considered outside the 41m, then this should be shown. DTP and MRPV does not support this reduction as stated above.	Update cross section to ensure sufficient width is provided for all required elements.
	Response A midblock road reserve width of 41m for RD11 & RD12 is consistent with the vision for Mt Cottrell Rd provided in the Paynes Rd PSP as shown in Figure 12, including the omission of a separate eastern footpath within the 41m reserve width (with the Paynes Rd PSP offering a supplementary frontage road reserve along the eastern side of Mt Cottrell Rd which includes a footpath) As mentioned previously in the report, some sections of Mt Cottrell Rd have been constructed with consideration of the Paynes Rd PSP and the Toolern PSP. Along the eastern side of Mt Cottrell Rd, the form of pedestrian access varies, reflecting the intent / flexibility of the PSP as follows 1. Between Western Fwy to Lynwood Dve a. A 3m wide bicycle path and a staggered provision of the supplementary frontage road with footpath. b. In some instances, the function of the 3m wide bicycle path is converted to a shared user path, (without a separate footpath) such as through the Wiltshire Bvd intersection and the Baxterpark Dve intersection and over the creek. 2. Lynwood Dve to Whitecross Dve a. A 3m wide bicycle path and abutting 1.5m footpath (excluding supplementary frontage road) within a 7m verge duplicating the arrangement for the western verge in the Toolern and Paynes Rd PSP. In light of above, in instances where a supplementary frontage road reserve is not included, consideration should be given to the introduction of a separate / adjacent 1.5m wide pedestrian path, duplicating the western verge documented for RD11 & RD12 (noting both are 7m wide) offering a 3m wide two-way bike path and a 1.5m pedestrian path on each side of the road (as currently constructed south of Lynwood Dve). Noting that the ability to achieve separate paths along the east side of Mt Cottrell Rd may not be viable through each intersection (as is the case through the Wiltshire Bvd intersection and the Baxterpark Dve intersection in which case the 3m path is locally converted to a Shared user path) These nuances are functional and consistent with the intent of the Toolern & Paynes Rd PSP's and the current amenity along Mt Cottrell Rd and do not impact the viability of the 41m reserve width nominated for RD11 & RD12. It is my opinion that the nominated reserve width of 41m is functional and should be retained.	
35.16	Mount Cottrell Road cross section (RD11 and RD12) includes 4 lanes with additional width for 6 lanes (ultimate). Given the DCP includes an interim 2 lane arrangement, why does the ultimate cross section include both 4 and 6 lane cross sections?	Ensure consistency between cross sections, table and what will be provided in the DCP. Update RD11, RD12,

No.	Comment / Response	Change requested
	Same goes for Shogaki Dr (RD14 and RD19). RD11 in the DCP also includes widening to 45m whereas table 11 of the PSP and the cross section show 41m.	RD14, and RD19 accordingly.
	Response RD11&12 (Mt Cottrell Rd) cross section - The DCP provides funding for the construction of a pre-interim layout comprising a 2 lane cross section as noted in Table 3 of the DCP. It is understood that Council is then responsible for the upgrade to a 4-lane cross section (Interim Standard) through consolidated revenue (rates). The construction of the ultimate layout (6-lanes) falls outside the funding of the DCP which will be funded by Council or the Victorian Government. RD11 (Mt Cottrell Rd) reserve width - refer to response provided to item 35.15, Section 1.4.3 of the DCP should be amended to refer to a 41m reserve width not 45m, reflecting the 41m width noted in Table 3 to 5 & table 7 of the DCP RD14&19 (Shogaki Rd) - It is noted that the DTP submission expresses comfort that Shogaki Rd comprise an ultimate cross section of 4 lanes and it is my opinion that based on the forecast data discussed in Section 3 that 6 lanes should be retained. - The DCP provides funding for the construction of a pre-interim layout comprising a 2 lane cross section as noted in Table 3 of the DCP. It is understood that Council is then responsible for the upgrade to a 4-lane cross section through consolidated revenue (rates).	
35.17	Why are so many secondary arterials proposed to be council roads? What modelling has been undertaken to understand the volumes on these roads? If these corridors are ever required to be declared as state arterial roads, then there may be significant costs to do so if they are not constructed to adequate standard. Noting that any modelling that was undertaken as part of the development of this PSP is likely to be outdated and incorrect.	Confirm expected volumes and intent behind arterial status to cater for these volumes. Confirm intent that corridors are not expected to become declared state arterials.
	Response Detail of traffic modelling carried out in support of the PSP is discussed in Section 3 including a 2051 forecast and as stated in Section 1.5 is considered fit for purpose. It is however outside the scope of this review to carry out a detailed review of prior traffic modelling carried out for the PSP.	
35.18	Abey Road bridge over Toolern Creek has 2.5m SUPs (needs to be at least 3), and doesn't consider the ultimate 4 lane arrangement (second bridge). Can council confirm that the road reservation for RD18 includes land to provide the second structure over Toolern Creek? Note that there is a requirement in section 4.6.3 that states that they must 'provide 4 vehicle lanes for the Abey Road creek crossing'.	Update cross section to ensure SUP desirable minimum width is met. Confirm that the land reservation for the bridge accounts for the ultimate corridor required, and ensure consistency between the figure, DCP, and requirement 4.6.3.

No.	Comment / Response	Change requested

Response

Existing Bridge

- A bridge for Abey Rd over Toolern Creek was built in 2017 and includes a width between barrier faces of approximately 10.5m providing 2x3.5m traffic lanes and a footpath (1.5m wide approx.) on the northern edge and an on-road bicycle lane along the southern edge at 2m width.

PSP Cross Section (BD01) Interim Layout

- The PSP cross section for the Abey Rd bridge (BD01) provides a vision for the 'interim' layout (1 Lane in each direction) and includes a clear width of approximately 12m and is documented to allow for 2x3.5m traffic lanes and 2x2.5m shared paths.

  An SUP width of 2.5m complies with the 'minimum' width for a Local Path (2.0m) under AGRD Pt6A Table 5.3 with provision for 0.5m clearance per Section 5.5.1 of AGRD Pt6A.

- Having said that, with regard to BD01 my opinion is as follows
  - Consideration should be given to the utilisation of the existing bridge given the relatively recent construction of the bridge in 2017, the future duplication, and viability for the existing structure as an 'ultimate' eastbound carriageway (subject to a civil & structural engineering review). This would include investigating the viability of retaining / reconfiguring the existing cross section for the 'interim' arrangement and would of course include a compromise in the provision of SUP's. As the 'ultimate' eastbound carriageway the existing clear width offers opportunity for the desired 3m SUP, 2x3.5m eastbound lanes with a 0.5m shoulder to the southern barrier (subject to a detailed engineering review including structural engineering).
  - Should this be deemed in unacceptable the verges/SUP's illustrated on BD01 should be increased to 3m width to provide consistency with the balance of the PSP and RD18, noting the surplus width this will result in for the eastbound bridge under the ultimate arrangement

Existing bridge Source: Googlemaps Streetview

Existing Road Reserve Width (west of Toolern Creek)

- While a general midblock road reserve width of 40m is contemplated in the Toolern PSP for RD18 (Abey Rd) east of Toolern Creek, the existing reserve width west of the bridge is 28.5m approx. (between existing residential properties).

  As such any future duplication of the Toolern Creek bridge will need to address the existing 28.5m approx. reserve width (assuming retention of existing properties)

- A preliminary/high level assessment indicates that a 28.5m reserve could functionally accommodate a 4 lane carriageway, including provisions for off road shared user paths.

  (ie 4x3.5m lanes & 7.25m verges (suitable for SUP's and capacity to consider provision for a central barrier/median and/or on-road bicycle lanes))

No.	Comment / Response	Change requested
	- It is my understanding that there is adequate reservation for the future duplicated bridge (subject to design development)	
35.19	RD03 - Exford Rd north of East-west arterial includes a sub-standard 2.5m SUP.	Update cross section to ensure SUP desirable minimum width is met.
	Response The road cross-section for RD03 includes an as-built SUP of 2.5m, particularly through IT24 (Exford Rd & Elpis Rd, refer V191096-TR-DG-2602) which will be retained / tied into. Agreed, where a new SUP is proposed the width should be increased from 2.5 to 3m.	
35.20	RD05 Exford Rd from IT03 to Toolern Creek is not included in road hierarchy table.	Include all required sections in the road hierarchy table.
	Response Agreed, RD05 should be added to Table 10 of the PSP (Road hierarchy)	
35.21	BD10 is still included as an underpass despite other changes to the document providing overpasses. Can council confirm that this is the intent, and why it is included as an underpass rather than an overpass?	Confirm intent, wording, and assumptions behind costing for BD10. Update if required.
	Response BD07, BD08 & BD10 are pedestrian rail underpasses. Given the different vertical clearance requirements an underpass offers a more convenient outcome for pedestrians which is more likely to be utilised (less vertical travel) along with a reduced infrastructure footprint. The intent and assumptions behind costings to be addressed by others.	
35.22	BD11 has been removed and its said 'to be constructed as part of the Thornhill Park Railway Station project' - this is pushing the cost to the state. Any land required for this connection also needs to be protected - removing this from the PSP has potential to lose this.	Include BD11 in the PSP and DCP.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.23	Road Hierarchy table (Table 10) uses the title 'Access Management Policy' for column 3, however the tracked changes document uses 'Indicative Vehicles per Day'. These indicative vehicles are far less than the capacity of primary and secondary arterials and also what these corridors specifically are likely to see. Can Melton provide the justification behind these figures?	Update column headings. See item 17 above.
	Response **Road Hierarchy Table** The data in Table 10 has been entered incorrectly (from column 3) and is offset from the relevant column headings, in particular the relevant Access Management Policy data for each road has been overwritten by 'indicative vehicles per day' data. This error becomes apparent following a comparison with Table 9 of the previous version of the PSP. Table 10 should be updated/corrected.	

No.	Comment / Response	Change requested
	Traffic volumes / modelling Detail of traffic modelling carried out in support of the PSP is discussed in Section 3 including a 2051 forecast and as stated in Section 1.5 is considered fit for purpose. It is however outside the scope of this review to carry out a detailed review of prior traffic modelling carried out for the PSP. As stated in Section 3 of this report a review of the 2019 traffic modelling forecast (2051 design year) against the data listed in Table 10 indicates that there are some anomalies in the "Toolern PSP Amendment – Daily Volumes" in particular for Ferris Rd, Mt Cottrell Rd, Shogaki Rd, Toolern Rd & Abbey Rd It is recommended that Table 10 be reviewed/updated to address data placement error and better alignment to modelling forecasts as detailed in Section 3. Following my review, it is my opinion that - the 2019 VITIM model is fit for purpose - the "indicative vehicles per day" listed in Table 10 of the PSP include some anomalies and should be amended to better reflect the 2019 VITIM Model results summarised in Table 3-2. - The nominated road classifications and number of lanes nominated in the PSP are suitable	
35.24	RD06 uses the phrase 'create road reserve 34m (ultimate)' which is different to 'purchase land…' used for other corridors. Confirm whether these should be different and why. The wording here is not consistent with the DCP.	Confirm intent behind different wording and update if required.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.25	Phrasing between sections is inconsistent - Table 11 references 'Exford Road' which is called 'East-west arterial' in other sections. This should also be consistent with the DCP tables. This is called 'Exford Road', 'East-west arterial', and 'Toolern Road' at different times throughout the documents.	Ensure reference to this corridor is consistent.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.26	RD14 - Shogaki Dr should be 'Ferris Road (IT13) to Industrial…'	Update reference to include correct intersection reference.
	Response Agreed, Table 11 of the PSP and any other relevant sections should be corrected to define RD14 as falling between IT13 & 12 (not IT14 & IT12)	
35.27	Table 10 and cross section shows RD18 (Abey Road) to be 40m whereas table 11 says to purchase land to make it 38m.	Confirm which figure is correct, and whether the correct width has been used in calculating the DCP costs for the additional land.

No.	Comment / Response	Change requested
	Response A 40m reserve width is illustrated on functional layout plan V191096-TR-DG-2617 and Table 11 should be updated accordingly. A review of the DCP to be carried out by others	
35.28	It is not clear whether the entirety of Paynes Rd north of Alfred Road is fully covered under BD17 and IT30? There is no road number or FLP for this section is not included.	Confirm whether BD17 and IT30 includes the road section for this part of Paynes Road, and update to include if not.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.29	Why is the widening of Paynes Road (RD22, RD23, RD24) from existing (~21m) to 34m not included (just the 2-lane construction).	Clarify why the land to enable the widening is not included and update if required.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.30	All intersections, bar IT18 - Ferris Road and Shakamaker Drive, are included as interim. Can Melton confirm that the land for the ultimate intersection is also provided, as well as land for interim intersections where land is not explicitly stated (IT01, IT02, IT03, IT12, IT14, IT15, IT16, IT17, IT19, IT20, IT21, IT22, IT23, IT24, IT25, IT26, IT27, IT28, IT29, IT30, IT31, IT32)?	Clarify and update tables and figures if required.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.31	Tables explaining bridge projects should specify the number of lanes to be constructed under 'construction of an arterial road bridge'.	Update wording.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.32	Where bridges are required and the DCP is only constructing an interim arrangement, can council confirm that they will provide the ultimate arrangement on arterial roads that will be retained under council's responsibility?	Melton Council to confirm.
	To be addressed by others	
35.33	Please confirm that all bridge projects constructed to interim arrangements also provide the ultimate land take required for a second carriageway.	Melton Council to confirm.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.34	Previous correspondence indicated that IT25 (Bridge Road and Mount Cottrell Road) would be removed due to the	Confirm why IT25 is still included, and how the

No.	Comment / Response	Change requested
	vicinity with the rail corridor and planned future grade separation. The FLP shows the interim design with LILO as discussed, however the signalisation of the intersection has not been removed from the PSP or DCP. Whilst Council has indicated that modelling shows that the traffic from removing this intersection can be adequately accommodated elsewhere, it has not been specifically tested. How the active transport facilities are accommodated with the removal of the intersection has also not been addressed.	removal (as discussed previously) will account for all movements being removed.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.35	BD16 (East Street over the rail corridor) is a non-existing road that will be a future council road but has DTP as the lead agency.	Update to include Melton City Council as the lead agency.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.36	Consistency is required between table 11 of the PSP and what is included in the DCP. This includes any comments made on items in this table which are also applicable to the DCP (particularly section 1.4.3 and Tables 3, 4, 5, 6, and 7).	Ensure consistency, including with any updates made due to comments made in this response.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.37	RD06 uses the phrase 'create road reserve 34m (ultimate)' which is different to 'purchase land…' used for other corridors. Confirm whether these should be different and why. The wording here is not consistent with the DCP.	Clarify wording and ensure consistency between the PSP and DCP.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	
35.38	The East-west arterial and Paynes Road intersection (IT07) does not include the purchase of land in the DCP but is included in table 11 of the PSP.	Confirm that sufficient land to provide the ultimate intersection is included and update wording/table accordingly.
	To be addressed by Council and not considered to fall within my scope and or area of expertise	

7.3 Growland (#1)

The submission supports the inclusion of Paynes Road sections RD22 to 24.

There are no objections directly related to my area of expertise.

7.4 Insight Planning Group

7.4.1 Roman Catholic Trust Corporation (#16)

Table 7-3. Relevant transport submissions – Roman Catholic Trust

No.	Comment / Response
16.01	We do not believe that BD16 is essential for the precinct, and it therefore should not be included in the DCP. There are other bridges providing road connections across the rail line to the west, along Ferris Road, and east, along Mount Cottrell Road, which could be utilised in lieu of the proposed BD16. Further, the land to the north of the rail line is currently being utilised by WestKon, a major pre-cast concrete manufacturer and supplier, and is unlikely to be redeveloped in the short-medium term. Given that there is not likely to be a road to connect to on the other side for quite some time, we do not believe there is a broader benefit to the precinct in identifying this bridge in the DCP.
	Response The East Road Rail overpass (BD16) included in the Toolern PSP/DCP is reflective of the Cobblebank Major Activity Centre UDF dated November 2019. The activity centre is segregated into 4 quadrants, by Ferris Rd and the Rail corridor. The East Road Rail Overpass is envisioned in the UDF as a valuable asset for the integration of the commercial focus on the east side of Ferris Rd. Its inclusion will lessen travel demands on Ferris Rd as reflected in the modelling prepared in support of the PSP in 2011 & 2019 as discussed in Section 3 of this report. It is my opinion that BD16 should be retained.

7.4.2 Australian Unity (#17)

Table 7-4. Relevant transport submissions – Australian Unity

No.	Comment / Response
17.01	Deletion of BD16 from the PSP and DCP.
	Refer response provided to submission item 16.01 under Section 7.4.1 of this report

7.4.3 Miravor Property (#12/18)

Table 7-5. Relevant transport submissions – Australian Unity

No.	Comment / Response
12.01	In particular, we do not believe that BD16 is essential for the precinct and it therefore should not be included in the DCP. There are other bridges providing road connections across the rail line to the west, along Ferris Road, and east, along Mount Cottrell Road, that could be utilised in lieu of the proposed BD16. Further, the land to the north of the rail line is currently being utilised by WestKon, a major pre-cast concrete manufacturer and supplier, and is unlikely to be redeveloped in the short-medium term. Given that there is not likely to be a road to connect to on the other side for quite some time, we do not believe there is a broader benefit to the precinct in identifying this bridge in the DCP
	Response Refer response provided to submission item 16.01 under Section 7.4.1 of this report

7.4.4 Thornhill Gardens Development Corporation (#20)

There are no objections directly related to my area of expertise.

7.5 Exford Waters (#19)

There are no objections directly related to my area of expertise.

7.6 Lend Lease (#28)

The submission received from Lend Lease is generally supportive of the PSP, however offered two concerns relevant to Transport engineering, with my response provided in Table 7-6

Table 7-6. Relevant transport submissions – Lend Lease

No.	Comment / Response
28.01	Addition of Southern Leg to IT23 Lendlease also proposes that the scope of the Toolern PSP & DCP be increased to include the southern leg of IT23(Figure 1) - SMEC is of the opinion that, similar to IT21 and IT22, the Billeroy urban design and subsequent traffic volumes may warrant the inclusion of the southern leg of this intersection in the DCP scope. - It is usual practice for DCP intersection projects to include the portion of road that is required within the development that is necessary for the signalised intersection to function as intended (including turn lanes, and detector loops that are a necessary part of the intersection works).
	Response While the introduction of a southern leg at IT23 certainly makes sense for the Billeroy zone within the Atherstone Estate (south side of Toolern Rd (RD06)) it is outside of my scope to assess the need for this access.

No.	Comment / Response
28.02	**Extension of Ferris Road South of IT05 (RD17)** Lendlease proposes that the scope of The Amendment be increased in scope to include the extension of Ferris Rd south of IT05 to the southern boundary of the Toolern PSP (Figure 1). The reasoning for the inclusion of this section of Ferris Rd into the DCP is as follows: - Similar to Mt Cottrell Road, the future full extent of Ferris Rd will continue south of IT05 through the Strathtulloh estate for approximately 2 kilometers to Greig's Road. - Ferris Rd road will ultimately be a main thoroughfare for traffic travelling north / south and whilst possibly not accommodating the same traffic volumes as Mt Cottrell Rd, Ferris Rd will likely include volumes that warrant inclusion in the Toolern DCP. Lendlease can prepare a traffic impact assessment to support the above assertion.
	Response The functional layout for IT05 within the PSP (V191096-TR-DG-2605) makes allowance for a southern leg at this intersection transitioning to a road reserve width of 25m for a Connector Road (as identified in the PSP Road Network Plan #15 in the PSP) It is noted that Mt Cottell Rd offers the greatest opportunity for a strategic north/south trunk through the broader precinct, with a future connection to the future Outer Metropolitan Ring Road (OMR) suggested in Plan 1 of the Paynes Rd PSP, while a projection of Ferris Rd is somewhat constrained by the convergence of Toolern Creek. This 'preference' for Mt Cottrell Rd is visible in the modelling prepared in support of the PSP in 2011 & 2019 discussed in Section 3. The existing 40m reserve width to Greigs Road is noted presenting a future corridor of over 2km to Toolern Rd. It is my opinion that extension of RD17 to the southern boundary of the Toolern PSP is reasonable and should be incorporated.

7.7 Melbourne Water (#34)

There are no objections directly related to my area of expertise.

7.8 Other submissions

A response to traffic engineering items raised in the balance of submissions is provide in Table 7-7

It is noted that the following submissions support the amendment xx,xx,10,

Table 7-7. Relevant transport submissions – Various

No.	Comment / Response
05.03	Landowner Does this plan cater for the E-W transport links to integrate Parwan PSP? Suspect future traffic volumes exceed the capacity of Parwan-Exford Rd and adjoining intersections without intervention
	Response Transport modelling carried out in support of the PSP, as discussed in Section 3, included the Parwan-Exford Road in the VITM model and 2051 forecast. The Parwan precinct is located west of the Toolern Precinct by an order of 8km. As stated in the High Level Servicing Report for the Parwan Station PSP & Parwan Employment Precinct, prepared by Reeds Consulting in April 2020 *"…The proposed road network for the Parwan precincts is currently undetermined and subject to detailed traffic reports to be prepared by qualified traffic engineers. It is anticipated that the Geelong-Bacchus Marsh Road will be ultimately widened and upgraded by the Department of Transport to a 4-lane arterial road. Funding for part of the construction of this ultimate road may be facilitated through a future Infrastructure Contribution Plan (ICP) levy for the Parwan Station PSP and PEP…."* It is my opinion that the 2019 VITM modelling carried out in support of the PSP is fit for purpose.
06.01	Landowner "..I am a resident of Thornhill Park, the city of Melton. I have built my property there and I live there now. I and other residents were promised that we would have easy access to the freeway making it easier for us to go to work and return home quicker. Unfortunately, none of the promises.."
	Response The PSP includes a vision and planning for a half diamond freeway interchange at Mt Cottrell Road.
21.01	Breese Pitt Dixon for Ecnam Properties amendments indicate no connection from 87 to 86, suggest a N-S road connection
	Response A connector road is provided further east via a signalized intersection (IT16) with Abey Road. Lower order roads are to be developed as part of future subdivision planning and application process. Further consideration of this concern to be provided by Council.

No.	Comment / Response
22.01	Melbourne Archdiocese Catholic Schools Request addition of following requirement into the PSP "..Any connector road or access street abutting a school must be designed to achieve slow vehicle speeds and provide designated pedestrian crossing points as required by the Responsible Authority.."
	Response While I agree with the general intent of the addition, it is noted that the PSP inherently prompts suitable road corridor characteristics for the nominated land use zones with associated road design attributes and pedestrian/cyclist amenity. With Table 3 & 4, Section 4.4 & 4.6.3 of the PSP offering general Planning and Design Requirements and Guidelines, including the following statements. It is my opinion that these statements are adequate to prompt / guide suitable management of pedestrians to all land uses including nominated education zones. Table 3 - Ensure the pedestrian environment is characterised by active frontages at street level. - Create a permeable street network with pedestrian priority that allows maximum freedom of movement and multiple transport options. - Design streets and roadways to support the safe and efficient conveyance of vehicles as well as the civic and commercial activities that front them. Table 4 - Plan for accessible and safe pedestrian and cycling links to, from and within the employment area, and linked to the broader walking and cycling network. - Provide a continuous pedestrian connection between the Metropolitan Activity Centre and Employment Area. Section 4.4 - Ensure safe and convenient access to community facilities by walking, cycling, public transport and car. Section 4.6.3 - Design all roads to consider the needs of pedestrians and cyclists - Provide off-road cycling facilities on arterial and sub-arterial roads. - Provide dedicated on-road cycling facilities on collector roads. - Design intersections to accommodate pedestrian and cyclist crossings. - Continue dedicated pedestrian routes and cycle lanes through intersections. - Signalise pedestrian crossing points in areas where pedestrian and/or vehicle traffic is high.

8 Summary of Opinion

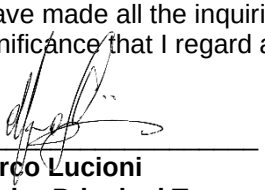
8.1 General

Based on the analysis and discussions presented within this report, the following conclusions are made:

1. The 2019 VITIM model undertaken in support of the PSP is fit for purpose
2. The “indicative vehicles per day” listed in Table 10 of the PSP include some anomalies and should be amended to better reflect the 2019 VITIM Model results summarised in Table 3-2.
3. The nominated road classifications and number of lanes nominated in the PSP are suitable
4. Within the context of Cardno’s (now known as Stantec) original scope my review of the concept functional layout plans (FLP’s) prepared for the PSP indicates that they are generally fit for purpose (subject to the recommendations mentioned in this report.)
5. In various instances it was identified that the horizontal alignments of the FLP’s did not meet certain requirements of Part 3 of the Austroads Guide to Road Design, however it is expected that these non-conformances can be addressed in detailed design and for the majority of cases are not anticipated to impact the road reserves / land takes nominated in the DCP.
6. In various instances, it was identified that intersection designs will require refinement to improve outcomes for pedestrian crossings and vehicle swept paths, however it is expected that these can be addressed in detailed design and are not anticipated to impact on the road reserves nominated in the DCP.
7. With regard to auxiliary lanes it is expected that during detailed design and detailed traffic analysis that some auxiliary lanes / turning movements may need to be augmented or extended, which may impact on land take requirements
8. The layout and operational compromises adopted for the intersection of Ferris Rd / Shakamaker Rd / Treeleaf Lane (IT18) is undesirable and there is opportunity through further design development to provide an improved outcome. It is my opinion that the amended design included in Appendix B should be incorporated into the PSP.
9. With regard to Shogaki Rd (RD14 & 19) it is my opinion that an ultimate 6 lane cross section should be retained, following consideration of the 2019 VITM modelling carried out for the PSP
10. With regard to Ferris Rd (RD15) the cross section provided in the PSP is incorrect and, in my opinion, should be amended to reflect a 45m width.
11. With Regard to Mt Cottrell Rd (RD11 & RD12) it is my opinion that a midblock road reserve width of 41m is functional and is consistent with the vision provided in the Paynes Rd PSP.
12. It is my opinion that extension of Ferris Rd (RD17) to the southern boundary of the Toolern PSP is reasonable and should be incorporated.
13. It is my opinion that the East Road Rail Overpass (BD16) should be retained within the PSP

8.2 Declaration

I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant have, to my knowledge, been withheld from the Panel.



Marco Lucioni
Senior Principal Transportation Engineer
Group Leader Engineering & Design - Planning & Advisory, Stantec
14 August 2024

Appendices

Appendix A Marco Lucioni Curriculum Vitae

Stantec

Marco Lucioni

Senior Principal - Transport, Group Leader (VIC)

BEng Civil (Hons) CPEng NER APEC IntPE(Aus)

With over 20 years of experience, including a business leadership role at Cardno and currently as a Group Lead at Stantec, Marco has headed specialty traffic engineering services on a wide range of significant commercial and infrastructure projects. A natural problem solver and lateral thinker, Marco provides efficient engineering and design solutions across all stages of projects, proactively collaborating and directly influencing successful outcomes through planning and delivery.

This ability and focused dedication can be seen in his involvement with an array of Australia's largest infrastructure projects including both Tender & Delivery phases of North East Link PPP. It's also exemplified through his role on various major expansions of Melbourne's largest shopping centers and his comprehensive traffic management review for Sydney Markets, one of the largest commercial food distribution centers in the southern hemisphere.

Acting as the Traffic Staging Lead on NEL PPP & Western Distributor Marco was responsible for developing traffic management strategies and managing all reporting and detailed drawings across the full scope of each project. This included close collaboration with DJV & CJV leads to resolve viable solutions for various complex interfaces, interchanges and portals. His role also included formal presentations to the state and various stakeholders including Transurban & DoT/VicRoads.

Following through to the Delivery Phase, Marco led traffic engineering services for the detailed design of major long term road diversions to facilitate the construction of the north and southern NEL Tunnel Portals.

Project Experience

Infrastructure Design

NEL PPP Tender & Delivery (Spark), Traffic Staging Lead (Tender) & Traffic Engineering Lead (Delivery), 2019-Present

Through the Tender, acting as Traffic Staging methods lead, Marco managed and resolved the delivery of Traffic Staging strategy and detailed solutions for all primary and secondary packages of the North East Link project. While coordinating a large team of engineers and designers, Marco worked intimately with all CJV/DJV leads to resolve viable solutions and detailed drawings for long term traffic management arrangements for each tunnel portal along with multiple complex freeway interchanges, troughs and land bridges. Marco was also responsible for the presentation of these solutions to the State at various formal interactive workshops. Deliverables also included detailed reporting and supporting traffic analysis and ongoing negotiations with the state through Financial close. Following the success of the Tender, Marco role has continued as Traffic Engineering lead for various detailed design packages for the temporary road diversions he resolved during the Tender to facilitate the construction of the northern portal / TBM launch site and the southern portal in Bulleen. Similarly, Marco has been intimately involved in moving these projects along and resolution of approvals with the State and road authorities.

Suburban Roads Upgrade Tender (CPB) Access Arterial, Traffic Engineering Lead - North , 2019-2020

Marco acted as Traffic Engineering Lead for all northern packages of the Tender, including Epping Rd, Fitzsimons Lane, Childs Rd, Craigieburn Rd, Bridge-Inn Rd & Sunbury Rd. Marco managed the resolution of solutions to move the project forward and the delivery of Functional layout design for all packages, supporting traffic analysis, and supplementary assessments such as Safe Systems, Movement & Place, Traffic Signal design and Wayfinding & Directional signage deliverables. Working proactively & closely with DJV & CJV Design leads, Marco provided various alternate design initiatives that offered positive outcomes for the Tender.

Western Distributor / WGT Bid (Fastflow), Traffic Staging Lead, 2016-2017

As Traffic Staging Lead, Marco was responsible for developing traffic management strategies and managing the generation of reports / supporting analysis and detailed traffic management drawings across all components of the project. Solutions were resolved for various complex interfaces including the southern portal, the Citylink / Wurundjeri Way / Dynon Road interchanges along with the elevated deck over Footscray Road, through to the widening of the M1 from Williamstown road to (and including) the M80 interchange upgrade. His role included formal presentations to Transurban and VicRoads at multiple workshops and successfully resolving confidence through various complex challenges. Detailed traffic management strategies and drawings were resolved in close collaboration with a wide range of disciplines to ensure constructability, including extensive interactions with Construction, Structural, Tunnel, ITS, Utilities & Highway leads, often prompting refinements and changes to the design to enable improved constructability and traffic management outcomes. Of particular note was a detailed traffic staging strategy for the construction of the southern portal on the M1 (adjacent the Williamstown Road interchange) which included the construction of dive structures that cut across each existing carriageway on the M1 and was required to facilitate TBM requirements and activity.

Mulgoa Road Upgrade NSW (CPB)

Plenty Rd Bid Stage 2 (BMD)

Albion Park Rail Bypass & Moorebank Rd Bids (CPB)

Puhoi to Warkworth Mwy NZ (CPB)

The Northern Road Upgrade, Stage TNR2, TNR3 & TNR5, Penrith NSW (CPB)

WRU Duncans Rd Interchange (WBHO) Construction staging

M80 Northern Sections Bid (BMD/Decmil)

Level Crossing Removal - Melton Hwy Sydenham & Thompson Rd Upgrade (BMD)

Batemans Bay Bridge Bid (CPB)

Monash Fwy Upgrade Bid (BMD) Chadstone to Pakenham

Sydney Airport East Bid (CPB)

Melbourne & Sydney Fruit, Vegetable & Flower Markets

Shopping Malls

Chadstone, Vicinity, Transport Engineering, Panning & Design, 2001-Present

Marco has a long history at the Chadstone and has had an influence on the infrastructure at various locations around the center. Since 2001, Marco has provided traffic engineering, analysis and design services for multiple expansions including Stages 20 to 33 & 49 along with planning scheme amendments C32 & C154. With an intimate knowledge of the centre, Marco played a significant role in the grade separation of Middle Road and the West Mall retail development and associated road works and loading facilities and multi deck car parking solutions and authority approvals. This role included detailed analysis of parking demand and traffic generation for multiple expansions at the centre. Marco has also managed the delivery of traffic management services at Chadstone through the construction of Stage 25 to stage 45. Marco has also recently resolved the design of a major new basement loading dock at the center through concept to detailed design phases.

Highpoint

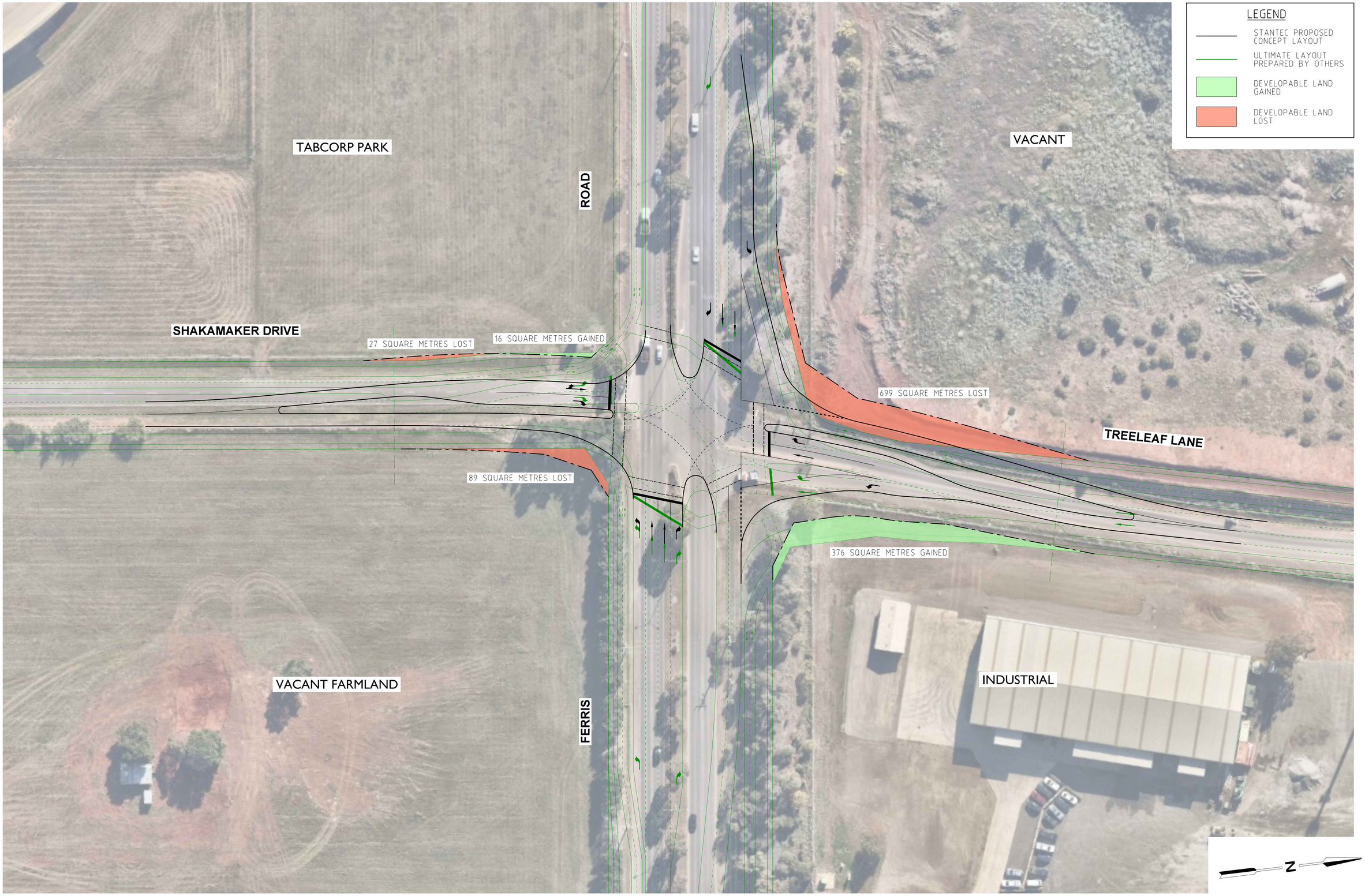
Northland

Karingal Hub

Broadmeadows

QV Melbourne

Appendix B Alternate Concept Layout Investigation



MAP REF 337/F12

ON 14/08/2024 AT 12:00:38 PM

PLOTTED BY : bklinko

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PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

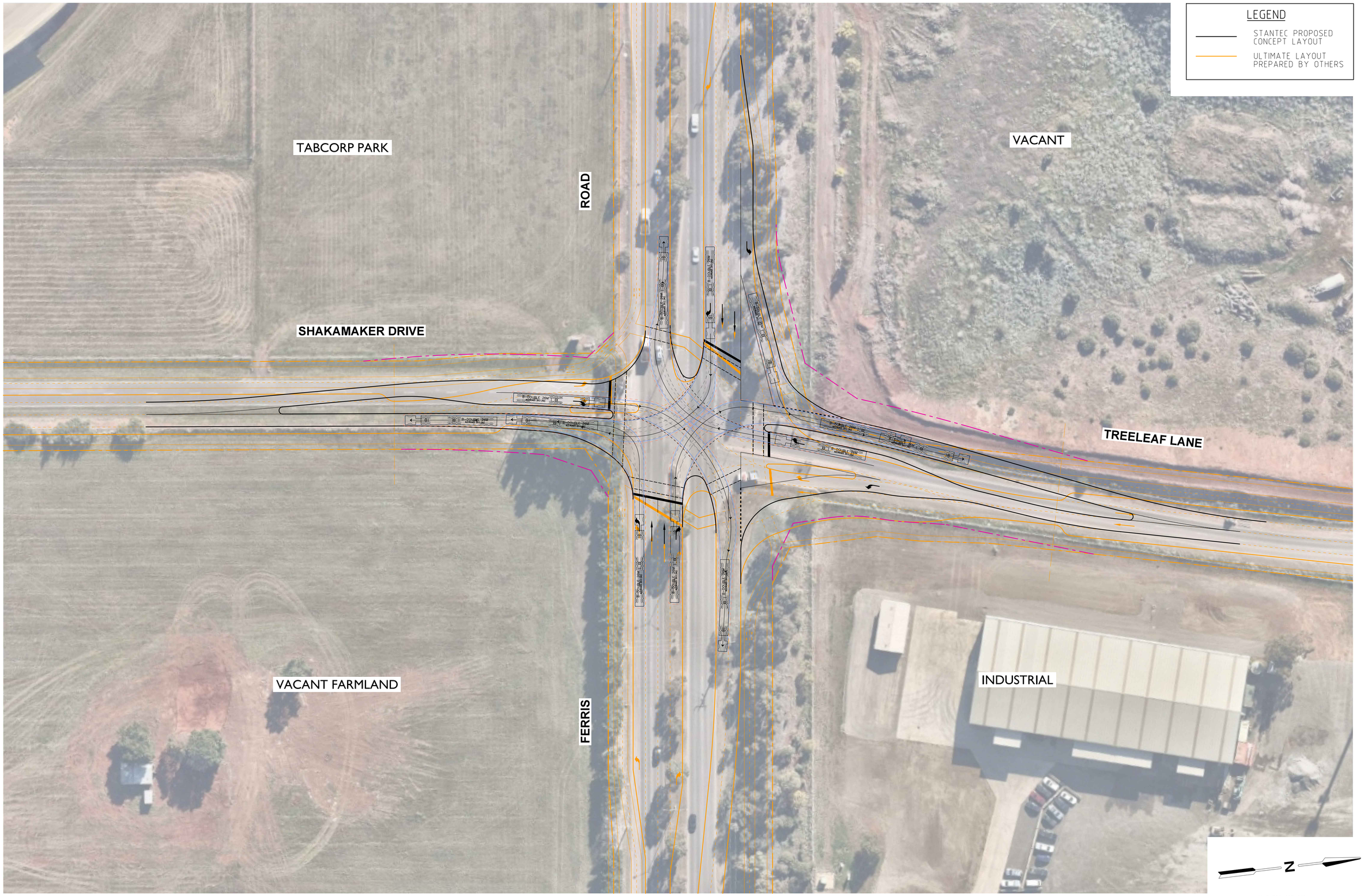
DESIGNED B. KLINKO	DESIGN CHECK A. DELL'ISOLA
APPROVED BY M. LUCIONI	DATE ISSUED 14 AUGUST 2024

SCALE A3 — 0 10 20 — 1:1000

CAD FILE NO. 300305617-TR-SK-01-02.dgn

PROPOSED INTERSECTION MODIFICATION FERRIS ROAD / SHAKAMAKER DRIVE / TREELEAF LANE, COBBLEBANK CONCEPT LAYOUT

DRAWING NO. 300305617-TR-SK-01 ISSUE 02



MAP REF 337/F12

PLOTTED BY : bklinko ON 13/08/2024 AT 12:17:27 PM

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DESIGNED B. KLINKO	DESIGN CHECK A. DELL'ISOLA
APPROVED BY M. LUCIONI	DATE ISSUED 13 AUGUST 2024

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PROPOSED INTERSECTION MODIFICATION FERRIS ROAD / SHAKAMAKER DRIVE / TREELEAF LANE, COBBLEBANK CONCEPT LAYOUT

DRAWING NO. 300305617-TR-SK-01 ISSUE 01

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