

**Prepared for:**

Planning & Property Partners on  
behalf of Griffith Avenue Pty Ltd

**Prepared by:**

Stephen Hunt

**Traffic and Transport Expert Evidence  
Glen Eira Planning Scheme Amendment  
C155**

22 November 2019

**ratio:**consultants

8 Gwynne Street  
Cremorne VIC 3121  
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**Prepared for:**

Planning & Property Partners on behalf of  
Griffith Avenue Pty Ltd  
Our reference 166603PANELF01-  
EastVillageC155

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# 1 Statement of Evidence

## Reference

Glen Eira Planning Scheme Amendment C155

## Name and Address

Stephen John Hunt - Principal  
Ratio Consultants Pty Ltd  
8 Gwynne Street, Cremorne, VIC 3121

## Professional Qualifications

Bachelor of Engineering (Civil), 1975, Swinburne University of Technology.  
Graduate Diploma of Highway and Traffic Engineering, 1981, Chisholm Institute of Technology.

## Professional Experience

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

## Professional Expertise

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

## Instructions which define the scope of this report

- 1.1.3 I have been instructed by Planning & Property Partners on behalf of the Griffiths Avenue Pty Ltd, to undertake a review of the Amendment C155 to the Glen Eira Planning Scheme and prepare an expert evidence statement for submission and presentation at the upcoming panel hearing.
- 1.1.4 My instructions from Planning & Property Partners are included in Section 2.2.

## Facts, Matters and Assumptions Relied Upon

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

## Identity of Persons Undertaking the Work

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



### **Declaration**

- 1.1.7 I have read the Planning Panels Victoria Expert Witness guidelines (April 2019) and understand my obligations to the Panel.
- 1.1.8 I have no relationship with the client other than a business engagement to comment on this matter.
- 1.1.9 My involvement in this project commenced in August 2019 and I was not involved in the preparation of the Amendment or any associated planning.
- 1.1.10 I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge, been withheld from the Panel.

A handwritten signature in black ink, appearing to be 'S. Hunt', written in a cursive style.

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

## 2 Introduction

### 2.1 Overview

- 2.1.1 I have been instructed by Planning & Property Partners, on behalf of Griffiths Avenue Pty Ltd to provide my expert opinion with respect to the proposed Amendment to the Glen Eira Planning Scheme (Amendment C155).
- 2.1.2 Amendment C155 seeks to make changes to the Glen Eira Planning Scheme to facilitate the use and development of the land within the *East Village Comprehensive Development Plan* area for commercial, retail, residential and a mix of other purposes.
- 2.1.3 This report has been prepared in accordance with the recently updated Planning Panels Victoria Expert Witness guidelines.
- 2.1.4 In the course of preparing this assessment, I have reviewed the existing conditions, examined plans of proposed road network upgrades proposed to support proposed development of the land and referred to the documents and plans outlined in the following instructions.
- 2.1.5 My opinions with respect to the traffic and transport issues I have been asked to review, relating to Amendment C155, are set out in the following report.

### 2.2 Instructions

- 2.2.1 My preliminary instructions in this matter were provided by Planning and Property Partners on the 21st August 2019. The instructions were to undertake the following:
  - 1. *Review the background documents contained in my brief;*
  - 2. *Consider and formulate my own opinions, within the limits of my expertise, with respect to the appropriateness of the Amendment in relation to traffic considerations; and*
  - 3. *Prepare a statement of evidence which sets out the conclusions I have reached.*
- 2.2.2 I was subsequently instructed to prepare an expert witness statement which:
  - 1. *Considers the VPA East Village background document and Glen Eira Planning Scheme Amendment C155 exhibited documents as relevant to my expertise, in particular:*
    - ***East Village Structure Plan 2018-2031 prepared by Glen Eira City Council;***
    - ***East Village Access and Movement Report October 2018 prepared by GTA Consultants for the VPA;***
    - ***East Village Comprehensive Development Plan prepared by the VPA dated December 2018; and***
    - ***East Village Development Contributions Plan prepared by the VPA dated October 2018.***
  - 2. *Provides my opinions on the traffic implications of the proposed development of the East Village Precinct as envisaged in the CDP and the adequacy of the extent of roadworks proposed to be implemented as contemplated in the DCP; and*
  - 3. *Provides a review of the proposed landowner revisions to the Future Urban Structure Plan (Plan 1) and my opinions with respect to the traffic implications of the revised plan.*
- 2.2.3 I was also instructed to review and provide my opinions on:
  - *the proposed cross sections prepared by the Landowners;*

- *Whether 'local access streets' should be shown on the Future Urban Structure - Plan 1';*
- *The proposed North Drive relocation,*
- *The trigger (per the exhibited DCP) for the delivery of IN-1 (North Road / East Boundary Road) in relation to traffic generated by the future proposed School;*
- *The trigger (per the exhibited DCP) for the delivery of IN-3 (Cobar Street / Crosbie Road / North Road).*

2.2.4 Finally, on the 21st November 2019, I was requested to consider and provide my opinions on a revised package of transport infrastructure works detailed in a memo prepared by Traffix Group, dated 18th November, 2019.

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

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

- Amendment C155 as exhibited.
- East Village Structure Plan prepared by Glen Eira City Council.
- East Village Access and Movement Report prepared by GTA dated 19/10/2018.
- East Village Comprehensive Development Plan.
- East Village Development Contributions Plan.
- Submission to the Amendment by Planning & Property Partners on behalf of Griffiths Avenue Pty Ltd dated 9<sup>th</sup> October 2019
- Memo prepared by Traffix Group dated 18<sup>th</sup> November 2019, detailing a proposed revised extent of traffic infrastructure works to be undertaken in association with the development of the East Village Precinct.
- Site visit, Wednesday 13th November 2019.

## **2.4 Limit of Review**

- 2.4.1 My assessment of the proposed Amendment and, in particularly the extent of external road and access works required to facilitate development of the East Village Precinct as proposed, has been undertaken through review of the documents and analysis as supplied in my brief.
- 2.4.2 In particular I have relied upon the modelling and analysis undertaken by GTA Consultants, together with my assessment of the existing road infrastructure in the vicinity of the site to inform my opinions on the appropriateness of the package of roadwork improvements as proposed in the DCP, and alternative works recommended by Traffix Group.
- 2.4.3 As such, I have not collected additional traffic survey data or undertaken independent SIDRA analysis of relevant intersections. For the purposes of this report, I accept the analysis undertaken by GTA as it relates to existing traffic conditions, future traffic generation resulting from development of the site, and generally the extent of mitigation achieved by the intersection works as proposed in the DCP.

## 3 Amendment C155

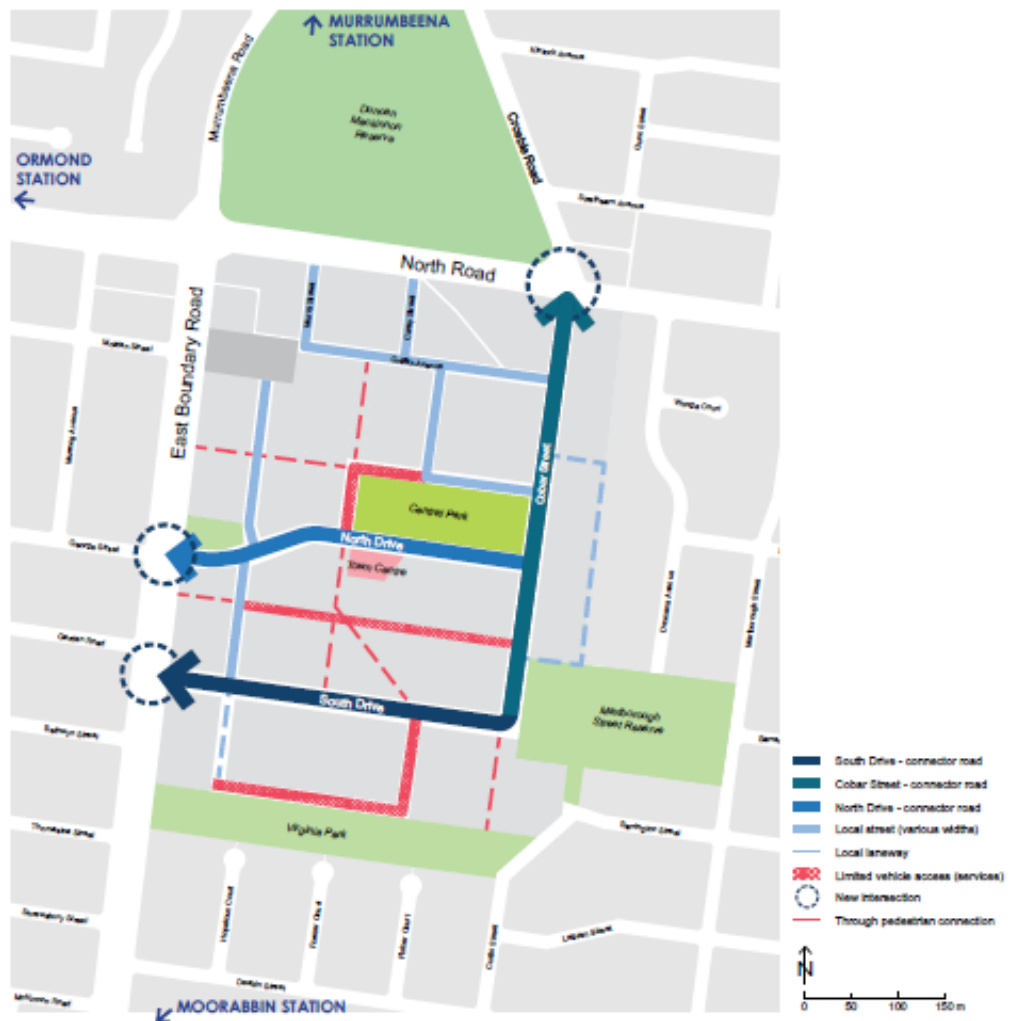
### 3.1 Overview

- 3.1.1 Amendment C155 to the Glen Eira Planning Scheme proposes to incorporate the *East Village Comprehensive Development Plan*, October 2018 and the *East Village Development Contributions Plan*, October 2018 into the Planning Scheme.
- 3.1.2 The Amendment also proposes to rezone land in the East Village Precinct to the Comprehensive Development Zone, together with introducing a new Schedule 2 to Clause 37.02 (CDZ2).
- 3.1.3 The Amendment was exhibited and a total of 158 submissions were received, including a submission which was prepared by Planning & Property Partners on behalf of Griffiths Avenue Pty Ltd.
- 3.1.4 Council resolved at its meeting on the 23<sup>rd</sup> October 2019 to request the Minister for Planning to appoint an independent panel to consider submissions related to the Amendment.

### 3.2 East Village Structure Plan 2018 - 2031

- 3.2.1 *The East Village Structure Plan (Structure Plan)* was adopted by Council in July 2017, designed to guide urban development within the East Village Precinct, including future land use, buildings, public spaces, parking and movement.
- 3.2.2 The plan essentially provides the background documentation which subsequently informed the preparation of the *East Village Comprehensive Development Plan* and is specified as a reference document to the CDP.
- 3.2.3 With the adoption of the CDP, the Structure Plan is of limited value.
- 3.2.4 Figure 20.0 of the Structure Plan, shown in Figure 3.1 nevertheless illustrates the proposed Vehicle Movement and Street Design.

**Figure 3.1 – East Village Structure Plan – Vehicle Movement and Street Design**



- 3.2.5 In effect, vehicular access to the site is proposed to be facilitated by signalling the intersections of North Drive and South Drive with East Boundary Road and North Road with Cobar Street supported by existing left in / left out intersections to North Road at Murra Street and Carey Street.
- 3.2.6 Plan 21.0 of the Structure Plan shows the proposed public transport access to the site, which identifies a potential new bus route running through the site along South Drive and Cobar Street, linking to the south to Moorabbin Station via East Boundary Road and to the north via Crosbie Road to Murrumbeena Station.

### 3.3 East Village Comprehensive Development Plan

#### Overview and Development Levels

- 3.3.1 The *East Village Comprehensive Development Plan (CDP)* provides a long-term plan to facilitate development of the East Village Precinct to provide a sustainable mixed-use precinct with a focus on employment and education opportunities, and a diverse range of housing and retail.
- 3.3.2 The CDP does not specify development levels, however Table 1 to proposed CDZ2, (Schedule 2 to Clause 37.02 Comprehensive Development Zone) specifies, under “accommodation” that there must not be more than 3,000 dwellings in the CDP area.

- 3.3.3 Based on assumptions contained in the Access and Movement Report prepared by GTA, (and Table 2 of the DCP) the following assumed development levels are contemplated in the precinct.

**Table 3-1 East Village - Land Use Estimates Adopted for Traffic Analysis**

Land Use	Maximum Development
Residential Dwellings	3000 units
Commercial (Office)	80,000 sqm
Retail	12,000 sqm
School (Secondary)	800 students

- 3.3.4 Plan 1 of the exhibited CDP shows the Future Urban Structure for the East Village Site, which includes:
- The proposed internal street network and access points to North Road and East Boundary Road.
  - Internal street hierarchy and nominated reservation widths.
  - Land uses contemplated within the site within nominated precincts.
  - The location of open space, community facilities and the proposed town square.
  - The location of trees to be retained.
- 3.3.5 The Future Urban Structure Plan as exhibited is shown in Figure 3.1

**Figure 3.2 – Exhibited Future Urban Structure Plan (Plan 2)**



- 3.3.6 I am instructed that the Landowners are seeking a revision to the Future Urban Structure Plan which, amongst other things, proposes that the intersection of North Drive with East Boundary be relocated to the north of the area of open space with trees to be retained, such that the intersection is offset from the George Street intersection.
- 3.3.7 The traffic and transport implications of the proposed revised Future Urban Structure plan is discussed in Section 6.1.



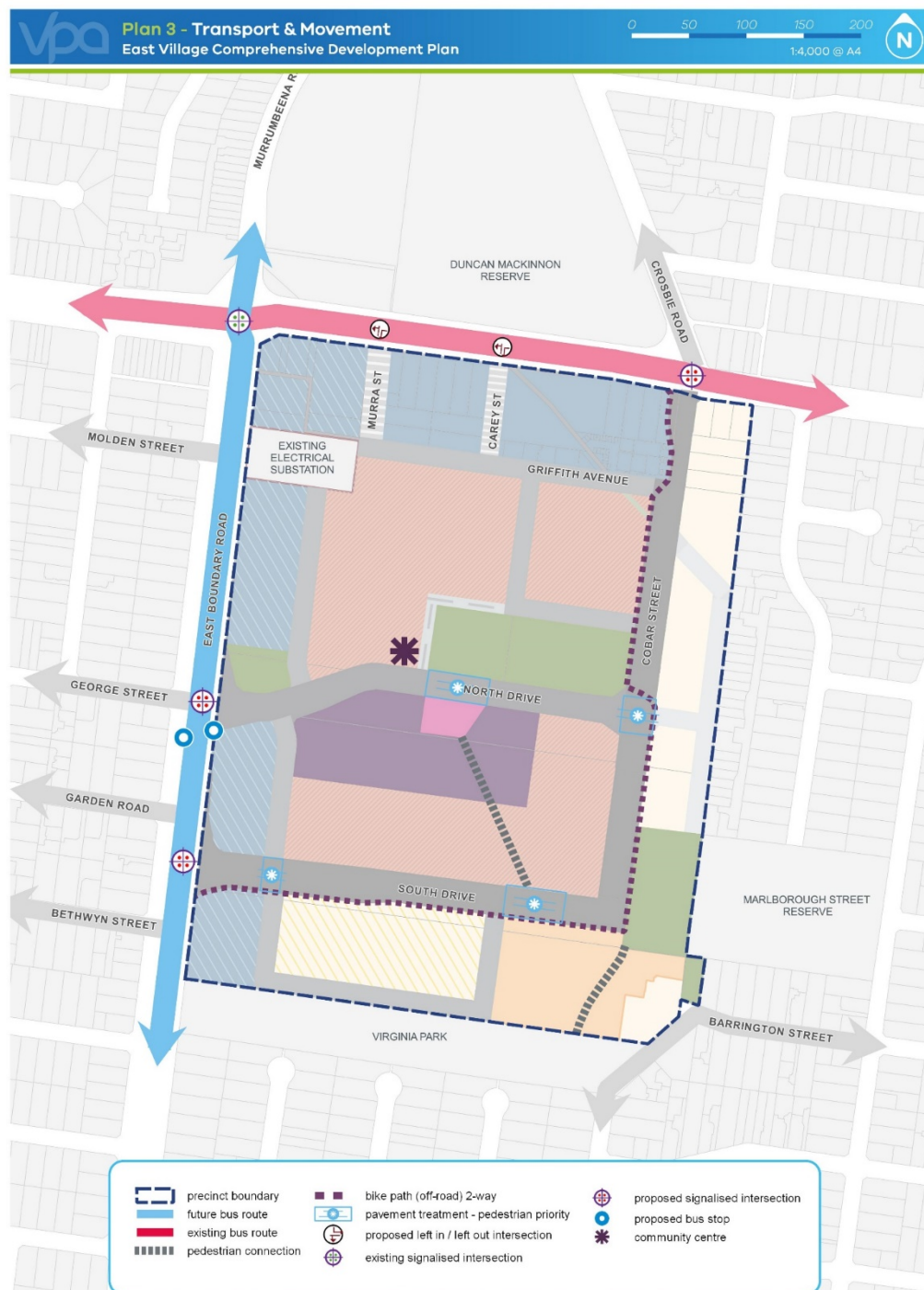
## Movement Network

3.3.8 Plan 3 of the CDP depicts the proposed movement network to serve the precinct, as shown in Figure 3.3.

3.3.9 The plan, as per the Vehicle Movement Plan in the Structure Plan contemplates a network of local streets within the site, accessed via three new signalised intersections at:

- North Road / Crosbie Road / Cobar Street
- East Boundary Road / North Drive
- East Boundary Road / South Drive

**Figure 3.3 CDP – Exhibited Transport and Movement Plan (Plan 3)**



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3.3.11 Proposed street cross-sections for internal streets are shown in Section 4 of the CDP providing specific cross-sections for the following street types:

- Bus capable Connector Streets (27.0m)
- North Drive (23.0m)
- Local Access Street (16.0m or 17.0m)
- Access Lane (9.0m)

3.3.12 Section 2.3.1 of the CDP provides for the following *Requirements* and *Guidelines* for the Transport Network:

REQUIREMENTS	
<b>R8</b>	Bus stop facilities on East Boundary Road must be located in proximity to North Drive and on the same side of the street as the town square.
<b>R9</b>	Street blocks exceeding 100m in length must provide a minimum of one pedestrian through connection.
<b>R10</b>	Street blocks exceeding 200m in length must provide a minimum of two pedestrian through connections.
<b>R11</b>	A connection from the south of the precinct to Cobar Street must not be made until the Cobar Street / North Road / Crosbie Road signalised intersection is constructed.
<b>R12</b>	Roads within the precinct must be constructed in accordance with the street cross-sections in Section 4 of this CDP. Where a variation to the cross-section is sought, it must be demonstrated that the variation is required for a technical reason (e.g. location of services) and that the alternative cross-section achieves the outcomes sought by the original cross-section in terms of pedestrian, cycle and vehicle movement, street-tree plantings and urban amenity, to the satisfaction of the responsible authority.
<b>R13</b>	The signalisation of the Cobar Street / North Road / Crosbie Road intersection must occur prior to the traffic movements generated by the precinct exceeding 2,000 vehicle movements in the PM peak hour, unless it can be demonstrated that the local traffic network can continue to operate effectively, including the East Boundary Road / North Road / Murrumbidgee Road intersection, to the satisfaction of VicRoads and the responsible authority.

GUIDELINES	
<b>G43</b>	Vehicular connections directly onto North Road or East Boundary Road should be avoided other than those shown in the CDP. Interim access arrangements may be provided, to the satisfaction of VicRoads.
<b>G44</b>	Street networks within subdivisions should be designed to maximise the direct views to parks and key public spaces.
<b>G45</b>	Maximise on-street parking and tree planting on nature strips by minimising individual direct property access for vehicles through use of rear or side loaded lots and common parking areas.
<b>G46</b>	No direct vehicle access should be provided to connector streets and North Drive. Prioritise vehicle parking and access from local access streets (16.0m and 17.0m).
<b>G47</b>	Student pick-up / drop-off to the future government school should be accommodated to occur from within the precinct.

3.3.13 The following is noted in relation to areas I have been requested to review:

- R12 nominates that streets must be constructed in accordance with the cross-sections shown in Section 4, with variation only permitted if required for a technical reason such as location of services.
- R13 requires that the signalisation of Cobar Street / North Road / Crosbie Road must occur prior to traffic movements generated in the precinct exceeding 2,000 vehicle movements on the PM peak hour, unless it can be demonstrated that the local traffic network can continue to operate efficiently, *including the intersection of East Boundary Road / North Road / East Boundary Road*.

#### Precinct Infrastructure Plan

3.3.14 The Precinct Infrastructure Plan in the CDP sets out the infrastructure items which are required to be provided to serve the precinct, including works required to be delivered through the DCP.

3.3.15 Intersection and road projects specified in Table 3 of the CDP are summarized in Table 3-2

**Table 3-2 - Precinct Infrastructure Plan Road and Intersection Projects**

Project	DCP Project No	Description	Indicative Timing
Cobar St Connector Road – between Griffith Ave and North Rd	RD-01	Land and full construction of carriageway and road reserve	M-L
North Rd / East Boundary Rd/ Murrumbeena Rd	IN-01	Construction of interim configuration of 4-way intersection	S
Crosbie Rd/Murrumbeena Rd/Leila Rd	IN-02	Construction of 4-way signalized intersection	M-L
Cobar St / Crosbie Rd / North Rd	IN-03	Land and construction for 4 lane arterial to 2-lane connector signalized intersection (4-way intersection)	M-L
North Dr / East/Boundary Rd	IN-04	Land and construction for 6 lane arterial to 2-lane connector intersection (3 way intersection)	M
South Dr / East Boundary Rd	IN-05	Land and construction for 6 lane arterial to 2-lane connector intersection (3 way intersection)	S
Murra St / North Rd	IN-06	Land and construction of ultimate configuration	L
Carey St / North Rd	IN-07	Land and construction of ultimate configuration	L

- 3.3.16 The PIP as specified in Table 3 of the CDP is understood to contemplate development commencing at the southern end of the site, facilitated by the initial construction of East Boundary Road / South Drive intersection and upgrading works at North Road / Murrumbeena Road / East Boundary Road.
- 3.3.17 Subsequent development is expected to trigger construction of a second signalised access point at North Drive, with the third signalised access at Cobar Street, triggered by the site generation cap of 2,000 vehicles per hour specified in R13.
- 3.3.18 It is noted that all identified road and intersection works are projects which are proposed to be funded through the DCP.

#### **Schedule 2 to Clause 37.02 (CDZ2)**

- 3.3.19 Amendment C155 proposes rezoning the land to the Comprehensive Development Zone and introducing Schedule 2 to Clause 37.02 which will apply to the land.
- 3.3.20 Of relevance to the matters I have been asked to consider, the following controls are proposed to be implemented.
- A requirement for an application for a Land Use permit to include an assessment of the likely effects on the local and regional traffic network.
  - Decision guidelines to be considered in approving a land use application including assessment of the *effect on traffic to be generated on the capacity of the local and regional traffic network, particularly in relation to the ability of the Cobar Street / North Road / Crosbie Road intersection to function without signalization.*

- A requirement in conjunction with a Buildings and Work permit for a Section 173 Agreement to be entered into for the provision of items at the owner's cost, including connector roads and intersection delivery.
- Decision guidelines to be considered in approving a Building and Works Permit including *the effect on traffic to be generated by development on the capacity of the local and regional traffic network, particularly in relation to the ability of the Cobar Street / North Road / Crosbie Road intersection to function effectively without signalisation, with signalisation being required when development in the Precinct exceeds 2,000 vehicles entering the precinct in the PM peak.*

### 3.4 Development Contributions Plan

- 3.4.1 The DCP provides the funding mechanism for construction of road and intersection projects identified in the CDP, funded through two charge areas as shown in

**Table 3-3 - DCP Charge Areas**

Charge Area	Location	Development levels
MCA1	South of Griffiths	3,000 dwellings 70,000 sqm commercial 12,000 sqm retail
MCA2	North of Griffiths	10,000 sqm commercial

- 3.4.2 Roads and intersection projects are listed in Table 4 of the DCP including inductive provision triggers and charge areas contributing to each project.
- 3.4.3 The following is noted:
- Charge Area 2, being the land north of Griffiths Avenue is not required to contribute to the signalized intersections of East Boundary Road with North Drive and South Drive.
  - Upgrading works at North Rd / Murrumbeena Rd / East Boundary Rd are triggered "*once the precinct achieves a net increase in the existing traffic volumes it generates*".
  - Signalisation of the Murrumbeena Rd / Leila Rd intersection is required at the time of establishment of the North Rd / Cobar St / Crosbie Rd, triggered "*once traffic generated by the precinct exceeds 2,000 movements in the peak hour.*" This varies from the CDP, where the trigger is only related to the **PM peak** hour.
- 3.4.4 The intersection works specified in the DCP are informed by analysis undertaken by GTA Consultants on behalf of the VPA as documented in the *East Village Access and Movement Report (EVAMR)* which was exhibited as a background report to the Amendment.
- 3.4.5 Plans of the proposed road and intersection works are included in the DCP as Appendix 2, reproduced as Appendix 1 of this report.
- 3.4.6 The layouts are based on concept design layouts prepared by GTA in association with preparation of the EVAMR, and include the following works as listed in Table 3-4.

**Table 3-4 - East Village DCP Intersection Projects**

DCP Project No	Intersection	Works
IN-01	North Rd / East Boundary Rd/ Murrumbeena Rd	<ul style="list-style-type: none"> <li>• Double right on west approach</li> <li>• Continuation of the two departure lanes on the north approach</li> <li>• Continuation of the three departure lanes on the east and west approaches</li> <li>• Increase the right turn lane lengths on the south and east approaches.</li> </ul>
IN-02	Crosbie Rd/Murrumbeena Rd/Leila Rd	<ul style="list-style-type: none"> <li>• Convert to a signalized intersection</li> <li>• Extend the right turn lane on the north approach</li> </ul>
IN-03	Cobar St / Crosbie Rd / North Rd	<ul style="list-style-type: none"> <li>• Left turn lane and a through right lane on the south (Cobar St) approach</li> <li>• Left turn only lane on the north approach (no access to Cobar St from Crosbie Rd)</li> <li>• Left turn lane on the east approach</li> <li>• Extend the right turn lane on the west approach</li> <li>• Install traffic signals</li> </ul>
IN-04	North Dr / East/Boundary Rd / George Street	<ul style="list-style-type: none"> <li>• Right turn lane on the south approach</li> <li>• Double right turns on the east (North Drive) approach</li> <li>• Left turn slip lane on the north and east approaches</li> <li>• Additional short through lane on the north approach</li> <li>• Additional combined left / through lane on south approach</li> <li>• George St west approach converted to left in / left out only</li> </ul>
IN-05	South Dr / East Boundary Rd	<ul style="list-style-type: none"> <li>• Double right turn lanes on the south and east approaches</li> <li>• Left turn slip lanes on the east and north approaches</li> <li>• Additional through lane in each direction on north approach</li> <li>• Additional shorth through lanes on the south approach</li> </ul>
IN-06	Murra St / North Rd	<ul style="list-style-type: none"> <li>• Provision of an additional left turn lane on the east approach</li> </ul>
IN-07	Carey St / North Rd	<ul style="list-style-type: none"> <li>• Provision of an additional left turn lane on the east approach</li> </ul>

## 4 Traffic Modelling

### 4.1 East Village Access and Movement Report

- 4.1.1 In order to inform the preparation of the East Village Structure Plan, the VPA commissioned GTA Consultants to assess the transport impacts of redevelopment of the site as contemplated in the Structure Plan and provide advice with respect to the design and management of the transport infrastructure expected to be required and to inform the preparation of the CDP and the DCP.
- 4.1.2 The analysis undertaken included assessment of the following:
- Assessment of existing traffic volumes on the road network, including peak hour turning movement surveys at surrounding intersections and identification of traffic movements generated into and out of existing land use on the site.
  - SIDRA modelling of existing intersection operating conditions for the AM and PM peak periods.
  - Establishing “base” traffic conditions by subtracting existing site generated traffic from the road network.
  - Assessment of future peak hour traffic movements expected to be generated by the site at full development, assuming development levels as shown in Table 3-1.
  - Adoption of the following rates for external traffic movements, assuming 20% of trips remain internal to the site:
    - Commercial – 1.08 peak hour movements per 100sqm of floor area,
    - Retail – 6.4 peak hour movements in the PM peak, with zero traffic in the AM peak,
    - Residential - 0.38 movements per dwelling in both peaks,
    - School – 0.72 movements per student on the AM peak, with zero traffic in the PM peak.
  - Development of a traffic distribution model for assignment of generated traffic based on assessment of data extracted from the Victorian Integrated Transport (VITM) model.
  - Derivation of post development design volumes by superimposition of development traffic onto the derived “base” volumes.
  - Testing of road network upgrade requirements based on SIDRA analysis of the future design volumes through surrounding intersections and access points to the site.
  - Recommendations of a suite of “mitigating” treatments, including the design of the access points with recommended functional layouts provided.
  - Testing of the adequacy of the proposed mitigating works allowing for growth on the surrounding road network for the 10 year + scenario.
- 4.1.3 It is noted that the intersection works identified in the *East Village Access and Movement Report* are the basis of the intersection works required under the DCP.
- 4.1.4 In addition to the traffic impact assessment component, the GTA report also provides a review and recommendations with respect to:
- Staging of development and associated road and intersection works,
  - integrated transport including walking, cycling and public transport,
  - travel demand management,
  - car parking provision, and
  - the internal street hierarchy and required reservation and street widths with respect to the requirements of Clause 56 of the Planning Scheme.

## **4.2 Review of GTA Analysis**

- 4.2.1 I have been instructed to undertake a high-level review of the GTA report, including an assessment of the methodology adopted in undertaking the traffic impact analysis and on the basis of the published analysis, provide my opinion with respect to the extent of roadworks identified in the report and the adequacy of the works to mitigate the traffic impacts of development of the site as envisaged.
- 4.2.2 I have reviewed the assumptions and methodology adopted by GTA against current practice and I consider that the future design volumes derived for analysis purposes are sufficiently robust to enable subsequent capacity analysis to appropriately identify the extent of mitigation works required.
- 4.2.3 On this basis, I accept the GTA SIDRA analysis as “fit for purpose” to inform my opinions with respect the adequacy of mitigating works proposed in the DCP.

## 5 Revised Infrastructure Works

### 5.1 Traffic Group Advice

- 5.1.1 Traffic Group have been commissioned by Griffiths Avenue Pty Ltd to provide ongoing advice with respect transport infrastructure requirements of development of the East Village Precinct.
- 5.1.2 I understand that work undertaken by Traffix has included a detailed assessment of analysis undertaken by GTA and a review of the extent of transport infrastructure works required to support development of the precinct as proposed in the Development Contributions Plan as exhibited.
- 5.1.3 I have been provided with a copy of a memorandum prepared by Traffix Group dated 1<sup>st</sup> November 2019, entitled "*WITHOUT PREJUDICE-East Village-Development Contributions Plan- Proposed Extent of Infrastructure Works*" (Ref G24360M-06). The memo was prepared following meetings between the land-owners' representatives, Council and the Department of Transport in order to provide additional information with respect to alternate traffic works proposed.
- 5.1.4 The memo provided revised concept layout plans, contemplating a reduced scope of works than that contemplated in the DCP.
- 5.1.5 Following a meeting with Council, Department of Transport and GTA on the 8<sup>th</sup> November a further memo was prepared by Traffix Group (Ref G24360M-07B) dated the 18<sup>th</sup> November 2019 which responded to issues raised at that meeting.
- 5.1.6 Attached to the memo of the 18<sup>th</sup> November are a revised set of plans which are understood to represent the extent of works sought to be funded by the DCP
- 5.1.7 The revised plans as prepared by Traffix Group are attached in Appendix 2.
- 5.1.8 Variations in the works proposed between the DCP as exhibited (shown in Appendix 1) and the revised works package is summarized in Table 5-1.

**Table 5-1 Traffic Group – Proposed Modified Scope of DCP Works**

DCP Project	Intersection	DCP Works	Modified Scope	Traffic Justification / Reason
IN-1	North Rd / East Boundary Rd / Murrumbena Rd	<p>Double right on west approach</p> <p>Continuation of the two departure lanes on the north approach</p> <p>Continuation of the three departure lanes on the east and west approaches</p> <p>Increase the right turn lane lengths on the south and east approaches.</p>	<p>Double right on west approach extended in length by 70m (and 200m on second lane) to cater for additional demands</p> <p>Right turn lane from the east extended.</p> <p>Three lane treatment on western departure leg for an extended 500m towards Koornang Road deleted</p>	<p>Extension of right lanes on west and eastern approaches and improve the performance of the intersection</p> <p>Eastern leg right turn lane extension responds to restriction of north bound traffic from Cobar into Crosbie and deletion of signals at Murrumbena Leila</p>
IN-2	Crosbie Rd / Murrumbena Rd / Leila Rd	<p>Convert to signalised intersection</p> <p>Extend the right turn lane on the north approach</p>	No works	<p>Nexus for upgrade works considered low</p> <p>Traffic diverted from Crosbie can be accommodated</p>
IN-3	Cobar St / North Rd / Crosbie Rd	<p>Left turn lane and a through right lane on the south (Cobar St) approach</p> <p>Left turn only lane on the north approach (no access to Cobar St from Crosbie Rd)</p> <p>Left turn lane on the east approach</p> <p>Extend the right turn lane on the west approach</p> <p>Install traffic signals</p>	<p>Modification to southern leg to preclude movements from Cobar north into Crosbie</p> <p>Removal of central median on North Road approaches</p> <p>Deletion of short left turn lane on eastern North Road approach</p> <p>Left turn slip lane from Cobar Street into North Road.</p>	<p>Restriction of movements between Cobar and Crosbie consistent with deletion of upgrade works at Crosbie / Leila / Murrumbena</p> <p>Central median removal and deletion of left turn lane on east approach reduces widening to the south which requires land outside of the CDP area and impacts on services behind southern kerb</p> <p>Left turn slip lane from south improves capacity and assists in restriction of northbound movements into Crosbie</p>



DCP Project	Intersection	DCP Works	Modified Scope	Traffic Justification / Reason
IN-4	North Drive / East Boundary Rd / George St	<p>Right turn lane on the south approach</p> <p>Double right turns on the east (North Drive) approach</p> <p>Left turn slip lane on the north and east approaches</p> <p>Additional short through lane on the north approach</p> <p>Additional combined left / through lane on south approach</p> <p>George St west approach converted to left in / left out only</p>	<p>Signalised intersection shifted north with George Street removed from signalised intersection</p> <p>Deletion of left turn slip lane from East Boundary Road into North Drive and replacement with a short left turn auxiliary lane on north approach</p> <p>Deletion of left turn slip lane from North Drive into East Boundary Road and replacement with short left turn auxiliary lane on east approach</p>	<p>Relocation of intersection to the north and realignment of North Drive allows significant trees to be retained and avoids potential delay to intersection delivery due to land for DCP intersection not being available</p> <p>Relocation increases separation between South Drive and North Drive intersections</p>
IN-5	South Drive / East Boundary Rd	<p>Double right turn lanes on the south and east approaches</p> <p>Left turn slip lanes on the east and north approaches</p> <p>Additional through lane in each direction on north approach</p> <p>Additional short through lanes on the south approach</p>	Deletion of the additional through lane on north and south approaches	<p>Retention of two through lanes in each direction reduces widening required into the median and disruption of services</p> <p>Sufficient capacity is achieved with retention of two through lanes in each direction</p>
IN-6	North Rd / Murra St	Provision of an additional left turn lane on the east approach	No Works	Left turn lane not warranted given low design volumes
IN-7	North Rd / Carey St	Provision of an additional left turn lane on the east approach	No Works	Left turn lane not warranted given low design volumes

## 5.2 North Road / East Boundary Road / Murrumbeena Road (IN-1)

### Adequacy of Proposed Works

- 5.2.1 The intersection of North Road / East Boundary Road currently caters for high volumes of arterial traffic on all legs and operates at close to theoretical capacity at peak times.
- 5.2.2 Modelling of existing conditions undertaken by GTA detailed in the *Access and Movement Report* indicates that it is the key intersection along the North Road corridor. Existing capacity issues relate to limited capacity to accommodate right turn movements due to only single right turn lanes being available on the North Road and Murrumbeena Road approaches, and the truncated length of the double right lanes on the East Boundary Road approach as shown in Figure 5.1.
- 5.2.3 In order to increase capacity at the intersection to accommodate additional volumes generated by the East Village precinct, the DCP proposes to fund upgrading of intersection works which:
- Duplicates the right turn lane on the west approach,
  - Increase the length of right turn lanes on the east and southern approaches,
  - Extended the length of auxiliary through lanes on the south, east and west departures.
- 5.2.4 It is understood that Traffix Group, in reviewing the proposed upgrade works, have identified that, through “tweaks” in the design, additional capacity improvements can be achieved allowing:
- Extension in the length of the right turn lanes on the west approach,
  - Further extension of the length of the right turn lane on the east approach, achievable due to the proposed deletion of the right turn lane into Carey Street from North Road.
- 5.2.5 In part, the additional improvements are understood to be to provide additional capacity to allow for additional site traffic to be accommodated through the intersection in conjunction with proposed modifications to the North Road / Cobar Street / Crosbie Road intersection to prevent northbound traffic using Crosbie Road.
- 5.2.6 A summary of the modelled operation of the intersection in the AM and PM peak design periods for the following scenarios is shown in Table 5-2 and Table 5-3.
- Existing conditions
  - Full development of East Village Precinct without upgrading works
  - Full development with works as proposed in the DCP
  - Full development with additional works as proposed by Traffix Group.
- 5.2.7 The Traffix Group analysis shows that the proposed DCP works appropriately mitigate the impacts of additional traffic generated by the development of East Village, with improved operation resulting when compared with existing conditions.
- 5.2.8 The additional works proposed by Traffix result in further improvements to the intersection operation, such that the deviation of additional traffic through the east approach resulting from revised treatment at Cobar Street / North Road can be accommodated, with a net improvement to existing operating conditions continuing to be achieved.



**Figure 5.1 – Existing North Road / East Boundary Road / Murrumbeena Road intersection**



**Table 5-2 North Road / Murrumbeena Road – AM Peak Comparative Sidra DoS**

<b>Leg</b>	<b>Movement</b>	<b>Existing (GTA)</b>	<b>Post Development No Works (GTA)</b>	<b>DCP (GTA)</b>	<b>Revised (Trafix)*</b>
<b>East Boundary (S)</b>	<b>Left</b>	<b>0.557</b>	<b>0.595</b>	<b>0.664</b>	<b>0.679</b>
	<b>Through</b>	<b>0.914</b>	<b>1.092</b>	<b>0.666</b>	<b>0.867</b>
	<b>Right</b>	<b>0.996</b>	<b>1.067</b>	<b>0.860</b>	<b>0.86</b>
<b>North (E)</b>	<b>Left</b>	<b>0.510</b>	<b>0.590</b>	<b>0.752</b>	<b>0.487</b>
	<b>Through</b>	<b>0.979</b>	<b>1.113</b>	<b>0.866</b>	<b>0.878</b>
	<b>Right</b>	<b>0.597</b>	<b>0.663</b>	<b>0.302</b>	<b>0.397</b>
<b>Murrumbeena (N)</b>	<b>Left</b>	<b>0.982</b>	<b>1.093</b>	<b>0.838</b>	<b>0.876</b>
	<b>Through</b>	<b>0.982</b>	<b>1.093</b>	<b>0.838</b>	<b>0.876</b>
	<b>Right</b>	<b>0.860</b>	<b>0.918</b>	<b>0.694</b>	<b>0.833</b>
<b>North (W)</b>	<b>Left</b>	<b>0.602</b>	<b>0.886</b>	<b>0.839</b>	<b>0.685</b>
	<b>Through</b>	<b>0.602</b>	<b>0.886</b>	<b>0.839</b>	<b>0.685</b>
	<b>Right</b>	<b>0.965</b>	<b>1.111</b>	<b>0.803</b>	<b>0.876</b>
<b>Intersection</b>		<b>0.996</b>	<b>1.133</b>	<b>0.866</b>	<b>0.876</b>

**Table 5-3 North Road / Murrumbeena Road – PM Peak Comparative Sidra DoS**

<b>Leg</b>	<b>Movement</b>	<b>Existing (GTA)</b>	<b>Post Development No Works (GTA)</b>	<b>DCP (GTA)</b>	<b>Revised (Traffix)*</b>
<b>East Boundary (S)</b>	<b>Left</b>	<b>0.423</b>	<b>0.385</b>	<b>0.548</b>	<b>0.599</b>
	<b>Through</b>	<b>0.990</b>	<b>1.084</b>	<b>0.935</b>	<b>0.974</b>
	<b>Right</b>	<b>0.982</b>	<b>1.087</b>	<b>0.916</b>	<b>0.879</b>
<b>North (E)</b>	<b>Left</b>	<b>0.626</b>	<b>0.736</b>	<b>0.804</b>	<b>0.545</b>
	<b>Through</b>	<b>0.974</b>	<b>1.145</b>	<b>0.926</b>	<b>0.983</b>
	<b>Right</b>	<b>0.798</b>	<b>0.835</b>	<b>0.734</b>	<b>0.850</b>
<b>Murrumbeena (N)</b>	<b>Left</b>	<b>0.627</b>	<b>0.812</b>	<b>0.915</b>	<b>0.886</b>
	<b>Through</b>	<b>0.895</b>	<b>1.160</b>	<b>0.915</b>	<b>0.886</b>
	<b>Right</b>	<b>0.942</b>	<b>0.900</b>	<b>0.876</b>	<b>0.888</b>
<b>North (W)</b>	<b>Left</b>	<b>0.117</b>	<b>0.127</b>	<b>0.642</b>	<b>0.611</b>
	<b>Through</b>	<b>0.783</b>	<b>0.848</b>	<b>0.642</b>	<b>0.611</b>
	<b>Right</b>	<b>0.992</b>	<b>1.180</b>	<b>0.953</b>	<b>0.950</b>
<b>Intersection</b>		<b>0.992</b>	<b>1.180</b>	<b>0.953</b>	<b>0.974</b>

- 5.2.9 Based on my review of the analysis undertaken by GTA and Traffix Group, I am satisfied the intersection works as now proposed in Traffix Plans G244360-B03, G244360-B04 and G244360-B05 represents an appropriate extent of works for inclusion in the DCP, providing sufficient capacity to mitigate the impacts of development of the East Village Precinct.

#### **Upgrade Trigger**

- 5.2.10 The Precinct Infrastructure Plan identifies the upgrade of the North Road / Murrumbeena Road , East Boundary Road intersection as a “short term” project, in association with signalisation of the East Boundary Road / South Drive intersection, facilitating initial development of the precinct from the southern end of the site.
- 5.2.11 Table 4 of the DCP proposes that the upgrade of the intersection be undertaken “once the precinct achieves a net increase in the existing traffic volumes it generates”.
- 5.2.12 I am comfortable with the intent of this requirement, which recognizes that the existing intersection operates at levels close to capacity. It is considered however that, while upgrading of the intersection is desirable in association with early development of the site, the trigger within the DCP should provide some flexibility, to allow for initial



development which, while generating additional traffic, does not result in a significant or unacceptable deterioration in the operation of the intersection.

- 5.2.13 As such, I recommend that the indicative provision trigger in Table 4 should be reworded as follows:

*“Once additional traffic generated by the precinct through the intersection, results in unsatisfactory operation during peak periods, to the satisfaction of the Responsible Authority and Department of Transport.”*

#### **Impact of Initial Development of School Site**

- 5.2.14 I am instructed that, redevelopment within the precinct is proposed to commence with the development of the school site on the south side of South Drive, which will be a partial relocation and expansion of the existing McKinnon Secondary College campus located in McKinnon Road approximately 2 kilometers to the south east of the subject site.
- 5.2.15 The upgrading and signalisation of the East Boundary Road / South Drive intersection will be undertaken in association with the development of the school site.
- 5.2.16 The school campus is proposed to open at the start of 2022, with initial enrollments of 650 students. Years 8 and 9 of the current campus are proposed to move to the site, together with new enrollments from an expanded school zone.
- 5.2.17 The existing site of the intended school campus is occupied by commercial office tenancies with a combined floor area of 7,362 sqm. A total of 159 onsite car spaces are provided with parking available in the immediate vicinity for additional demands which may currently be generated.
- 5.2.18 Assuming that the existing tenancies generate total parking demands of up to 3.0 spaces per 100sqm of floor area or 221 spaces in total, the projected increases in traffic movements which can be expected as a consequence of initial development of the school site are summarized in Table 5-4.

**Table 5-4 – Indicative Traffic Increases – Initial School Development**

Land Use	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
<b>Existing Commercial</b>	<b>133</b>	<b>13</b>	<b>146</b>	<b>11</b>	<b>110</b>	<b>121</b>
<b>Proposed School</b>	<b>232</b>	<b>190</b>	<b>422</b>	<b>10</b>	<b>15</b>	<b>25</b>
<b>Traffic Increases</b>	<b>99 vph</b>	<b>177 vph</b>	<b>276 vph</b>	<b>-1 vph</b>	<b>-95 vph</b>	<b>-96 vph</b>

- 5.2.19 As can be seen, it is likely that initial development of the school will result in a net increase in generated traffic during the AM peak period but a decrease in the PM peak, noting that the peak period for school generation in the afternoon occurs prior to the design commuter peak period.
- 5.2.20 Having regard to the fact that the existing capacity issues at the existing intersection are predominantly in the PM peak, I consider that detailed analysis will be able to demonstrate that additional traffic generated by initial development of the school, can be absorbed without a requirement for upgrading works to be implemented in the first instance.

- 5.2.21 Further development within the CDP area which results in increases in traffic in the PM peak can be expected to trigger a need for upgrading the North Road / Murrumbeena Road / East Boundary Road intersection.

### **5.3 Crosbie Road / Murrumbeena Road / Leila Road (IN-2)**

- 5.3.1 The DCP proposes signalisation of the intersection of Murrumbeena Road / Leila Road / Crosbie Road in association with the development of the East Village precinct, identified as required to facilitate northbound exit movements from the site via the Cobar Street / Crosbie Road / North Road intersection.
- 5.3.2 Analysis undertaken by Traffix Group has demonstrated that exiting traffic can be rediverted away from Crosbie Road by modifications to the future signaled intersection of North Road / Cobar Street to limit exiting traffic to left or right turn movements only.
- 5.3.3 As such, upgrade works at Murrumbeena Road / Leila Road / Crosbie Road are not required.
- 5.3.4 I endorse the deletion of Intersection IN-2 from the DCP for the following reasons:
1. There is little or no nexus between the development of East Village and upgrading at this intersection, even if the small amount of northbound traffic uses Crosbie Road as modelled.
  2. Reliance on access via the local street network along Crosbie Road and Leila Road is unnecessary and inappropriate.
  3. Additional works at the intersection of North Road / Murrumbeena Road / East Boundary Road, as now proposed, accommodate redirected traffic movements.

### **5.4 Cobar Street / Crosbie Road North Road (IN-3)**

#### **Adequacy of Proposed Works**

- 5.4.1 The revised plan prepared by Traffix Group (G24360-B-02) provides for signalisation of the intersection to provide direct access to the precinct via North Road, but modified to:
- Allow for the construction of the intersection without reliance on land acquisition not within the CDP area (ie a splay on the south east corner to facilitate a left turn lane on the eastern approach which has been deleted from the Traffix proposal)
  - Modify the southern approach to preclude through movements to Crosbie Road and provide a left turn slip lane into North Road.
- 5.4.2 In my opinion, the revised plan, considered in conjunction with additional works at IN-1 and deletion of IN-2, are appropriate and provide for an improved traffic outcome.
- 5.4.3 I support the deletion of the proposed short left turn lane on the east approach as it would provide minimal improvements to the operation of the intersection and would require acquisition of land outside of the CDP area, requiring a public acquisition overlay to be implemented and potentially delaying the timely implantation of the upgrade works.
- 5.4.4 I understand that DoT continue to seek the inclusion of the left turn lane at Cobar Road on the basis of safety and efficiency of the intersection.
- 5.4.5 It is noted that there are 16 intersections on the south side of North Road between Warrigal Road and East Boundary Road which do not have left turn auxiliary lanes, including signalised the intersections at Poath Road and East Boundary Road. In addition, the upgrading of IN-1 does not include a left turn lane on the east approach.
- 5.4.6 In this context, the inclusion of left turn lanes at Cobar Road, or at Carey Street and Murra Street as proposed in the ICP is unnecessary and unwarranted.

### **Upgrade Trigger**

- 5.4.7 The Precinct Infrastructure Plan in the CDP identifies the upgrade of the North Road / Cobar Street / Crosbie Road intersection as a “medium to long term” project.
- 5.4.8 In addition Requirement 13 of the CDP specifies that the signalisation of the intersection must occur prior to the traffic movements generated by the precinct exceeding 2,000 vehicles per hour, unless it can be demonstrated that the local traffic network can continue to operate efficiently, including East Boundary Road / Murrumbeena Road.
- 5.4.9 Schedule 2 to the CDZ2 also includes similar assessment criteria for consideration of the delivery of the intersection, referenced as a decision guideline to be considered in association with an application for a land use permit or a permit for building and works when the PM peak 2,000 vph trigger is reached.
- 5.4.10 As noted in 3.4.3 above, the DCP also specifies a trigger based on the 2,000 vph criteria, applying to the peak hour.
- 5.4.11 In my opinion, the staged implementation of high capacity access points to the precinct from East Boundary Road, together with significant upgrade works at North Road / Murrumbeena Road will provide comfortably for development of the precinct and allow the delivery of signalised access to North Road to be delayed until the final stages of the development of the Precinct as a whole. This is reflected in the “trigger” of 2,000 vph in the PM peak, which is equivalent to approximately 90 percent of redevelopment being implemented.
- 5.4.12 As such, I am comfortable with the trigger as proposed.
- 5.4.13 In my opinion, the 2,000 vph trigger in the DCP should be defined as follow:
  - When the average of the additional traffic generated by development in the precinct during the AM and PM peak hours exceeds 2,000 vph.
- 5.4.14 References to this trigger in the CDP, which specifies the PM peak only, should be similarly modified.

### **Staged Implementation**

- 5.4.15 The existing North Road / Cobar Street / Crosbie Road is a fully directional intersection, with staged right turns in and out of Cobar Street, as well as “kamikaze” through movements legally available across North Road between Cobar Street and Crosbie Road and vice versa.
- 5.4.16 At present, Cobar Street carries very low traffic volumes, providing access to a limited area north of Griffiths Avenue.
- 5.4.17 Traffic increases at the intersection are only likely to occur with respect to the development of the East Village Precinct if either Cobar Street is connected to the south, through the construction of RD-1 in the DCP, and /or redevelopment commencement in the Griffiths Avenue precinct.
- 5.4.18 If either of these scenarios occur in the short to medium term, it is most unlikely that signalisation of IN-3 will be required at that time, particularly if alternate access is available via North Drive to East Boundary Road. From a safety and traffic management perspective, interim treatment at the intersection should be considered at this time, potentially converting the intersection to a left in / left out arrangement.
- 5.4.19 I recommend that consideration be given to modifying the CDP and the DCP to provide for the staged implementation of IN-3, with an initial treatment of the intersection as a left in left out intersection be required triggered by the initial construction of RD-1 or development in the Griffiths Avenue Precinct.
- 5.4.20 Consideration of the ultimate upgrade to a signalised intersection as shown in the Traffix Group proposed layout, would be subsequently be triggered when average generated additional movements during peak periods exceeds 2,000 vph as discussed above.



## **5.5 East Boundary Road / North Drive (IN-4)**

### **Adequacy of Proposed Works**

- 5.5.1 The DCP proposes signalisation of the intersection of North Drive and East Boundary Road, at the location of the current intersection, with George Street forming part of the signalised intersection, but with movements restricted to signal controlled left in and left out only.
- 5.5.2 Upgrading of the North Drive approach is proposed, to provide for dual right turn lanes into East Boundary Road, with left turn slip lanes into and out of North Drive. A third through lane in East Boundary Road is also proposed in each direction, running from the intersection.
- 5.5.3 The revised proposal prepared by Traffix Group (Plan G24360-B-06) proposes to relocate the intersection to the north, to a location approximately 60 metres north of the George Street intersection, with George Street removed from the signals and reverted to a left in / left out intersection to East Boundary Road.
- 5.5.4 In addition, in order to reduce pedestrian crossing distances through the intersection it is proposed to delete the left turn slip lanes, providing for left turn lanes through the signals on the north and eastern approach.
- 5.5.5 The proposed additional third through lane in East Boundary Road through the North Drive intersection is retained in the Traffix proposal.
- 5.5.6 I have reviewed the revised proposal and accompanying analysis undertaken by Traffix Group as documented in the memo of the 18<sup>th</sup> November 2019 and I support the modifications as proposed.
- 5.5.7 The relocation of the intersection, while changing the alignment of North Drive on the approach to East Boundary Road does not otherwise impact on the proposed movement network in the CDP and will not impact on the operation of the access point to the site.
- 5.5.8 Relocation of the intersection to the north also increases the spacing between the North and South Drive intersections, allowing for greater queueing to be accommodated if required between intersections and potentially improved signal coordination along East Boundary Road. Removing George Street from the signalised intersection also simplifies signal phasing and improves overall intersection efficiency.
- 5.5.9 I have reviewed the analysis of the intersection prepared by Traffix Group contained in the memo of the 18<sup>th</sup> November and I am satisfied that the intersection as proposed, with the deletion of the slip lanes, will operate efficiently supporting the higher order access proposed at South Drive.

### **Upgrade Trigger**

- 5.5.10 The Precinct Infrastructure Plan identifies the intersection of East Boundary Road / North Drive as a medium term project, envisaging that the upgrading of the intersection will occur following delivery of the South Drive intersection as development staging occurs and additional capacity is required.
- 5.5.11 Table 4 of the DCP proposes that the upgrade of the intersection be triggered “at the time of subdivision”.
- 5.5.12 In my opinion, given the substantial initial capacity of provision of the East Boundary Road / South Drive intersection, the need to upgrade the North Drive intersection will be triggered by the development of sites with direct frontage to North Drive, rather than as a consequence of interim capacity limitations at South Drive.
- 5.5.13 As such, I am comfortable with the intent of the indicative trigger in DCP, on the basis that it implies subdivision (and development) of sites which will take access from North Drive.
- 5.5.14 I recommend that the indicative provision trigger in Table 4 be reworded as follows:

*“At the time of development of sites taking access to North Drive, subject to a traffic report identifying that additional traffic generated through the intersection warrants the upgrade, to the satisfaction of the Responsible Authority and Department of Transport.”*

## 5.6 East Boundary Road / South Drive (IN-5)

### Adequacy of Proposed Works

- 5.6.1 The DCP proposes signalisation of the intersection of South Drive and East Boundary Road, at the location of the current intersection, incorporating double right turn lanes on the south approach from East Boundary Road and double right turn lanes from South Drive into East Boundary Road. Left turn slip lanes are also proposed into and out of South Drive.
- 5.6.2 The plan also proposes widening to provide a third through along East Boundary Road through the intersection, extending to the north through the North Drive intersection as discussed in 5.5.5 above.
- 5.6.3 Upgrading of the South Drive approach is proposed, to provide for dual right turn lanes into East Boundary Road, with left turn slip lanes into and out of South Drive.
- 5.6.4 The revised proposal prepared by Traffix Group (Plan G24360-B-07) proposes to retention of two through lanes in East Boundary Road through the intersection of South Drive.
- 5.6.5 I have reviewed the revised proposal and accompanying analysis undertaken by Traffix Group as documented in the memo of the 18<sup>th</sup> November 2019 and am satisfied that the deletion of the third lane as proposed will significantly impact on the operation of the intersection as the predominate access point to East Village, or the overall operation of East Boundary Road past the site.
- 5.6.6 The relative performance of the intersection with and without the third lane, as analysis by GTA and Traffix is summarized in

**Table 5-5 - East Boundary Road / South Drive Intersection – Sidra Analysis Summary**

#### AM Peak

Leg	Turn	DoS		Av Delay (sec)		95%ile queue (m)	
		GTA	Traffix	GTA	Traffix	GTA	Traffix
East Boundary (S)	Through	0.503	0.563	10.8	9.7	126.0	163.9
	Right	0.646	0.742	53.3	59.1	115.1	123.0
	U turn	0.646	0.742	55.6	61.7	97.8	105.4
South (E)	Left	0.329	0.380	13.9	12.5	44.9	42.5
	Right	0.614	0.739	63.5	70.2	63.1	67.6
East Boundary (N)	Left	0.198	0.195	8.4	7.4	25.5	14.2
	Through	0.640	0.755	17.0	8.8	146.7	113.1
	U turn	0.037	0.033	76.8	75.9	1.0	1.0
Overall		0.646	0.755	21.6	N/A	146.7	N/A

### PM Peak

Leg	Turn	DoS		Av Delay (sec)		95%ile queue (m)	
		GTA	Traffic	GTA	Traffic	GTA	Traffic
East Boundary (S)	Through	0.380	0.528	9.6	9.3	91.9	147.6
	Right	0.613	0.792	52.8	64.0	108.2	122.5
	U turn	0.613	0.792	55.3	67.2	87.3	100.0
South (E)	Left	0.513	0.702	14.5	29.7	77.8	136.8
	Right	0.600	0.768	63.9	71.2	64.1	71.1
East Boundary (N)	Left	0.166	0.174	7.0	10.2	10.4	22.2
	Through	0.631	0.806	9.7	11.0	104.9	223.6
	U turn	0.337	0.327	79.6	79.0	10.1	10.0
Overall		0.631	0.806	18.6	N/A	108.2	N/A

- 5.6.7 The analysis shows that, while improved performance of the intersection results as a consequence of the additional through lane in each direction, that the improvement is marginal.
- 5.6.8 Overall I consider that the DCP intersection as proposed, represents an over design in terms of the provision of access capacity to the site and the level of service achieved for traffic movements along East Boundary Road, in comparison to downstream delays which will continue to occur at other intersections along the route.
- 5.6.9 The Traffic proposal will deliver an intersection which will provide very good operating conditions during both peaks and, in my opinion, appropriately accommodates traffic requirements of the CDP area.

### Upgrade Trigger

- 5.6.10 Precinct Infrastructure Plan identifies the delivery of the East Boundary Road / South Drive intersection as a short-term project, corresponding to expected initial development of the southern portion of the site.
- 5.6.11 Table 4 of the DCP proposes that the upgrade of the intersection be triggered “at the time of subdivision”.
- 5.6.12 It is understood that it is proposed to deliver the upgrade of the South Drive intersection in association with the development of the school site, effectively providing the upgrade “upfront” to establish initial safe and efficient access.
- 5.6.13 It is accordingly recommended that the indicative trigger in Table 4 of the DCP be amended to:

*“At the time of the development of the school site”.*

## **5.7 North Road / Murra Street and North Road / Carey Street (IN-7 and IN-8)**

### **Adequacy of Proposed Works**

- 5.7.1 The DCP as exhibited proposed retention of the existing intersections of North Road with Murra Street and North Road with Carey Street, with each intersection proposing to continue to provide local access via left in left out movements at North Road.
- 5.7.2 Existing right turn access at Carey Street is proposed to be removed in association with extending the right turn lane from East Boundary Road into Murrumbidgee Road at IN-1, forming a back to back turn lane with the right turn into Cobar Street at IN-3.
- 5.7.3 The DCP proposed widening of North Road on the approaches to both Carey Street and Murra Street to provide for short left turn lanes clear of the westbound through lanes.
- 5.7.4 The revised proposal seeks to delete the left turn lanes, due to the very high cost service relocation required to facilitate the design.
- 5.7.5 I consider the retention of the existing layouts of the intersections to be appropriate, with left turns being undertaken from the kerbside through lane in an identical manner at all of the intersections along this section of North Road, including at the East Boundary Road intersection.
- 5.7.6 As such, I endorse the proposed deletion of these intersections from the DCP.

## 6 Other Matters

### 6.1 Revised Urban Structure Plan

- 6.1.1 I am advised that the Landowners Group are seeking amendment to the future Urban Structure Plan in the CDP, with the proposed amended Plan 1 shown in

**Figure 6.1 – Proposed Revised Urban Structure Plan**



- 6.1.2 In access and movement terms, the main differences proposed within the revised plan are as follows:

- North Drive intersection with East Boundary Road is moved to the north as discussed in 5.5 Section, with a consequent realigned of the western portion of North Drive,
- Revised reservation widths for the connector street network, to a standard 23m reservation,

- A minor variation in the configuration of the access street network, deleting the east west access street running along the southern boundary of the site adjacent to Virginia Park.

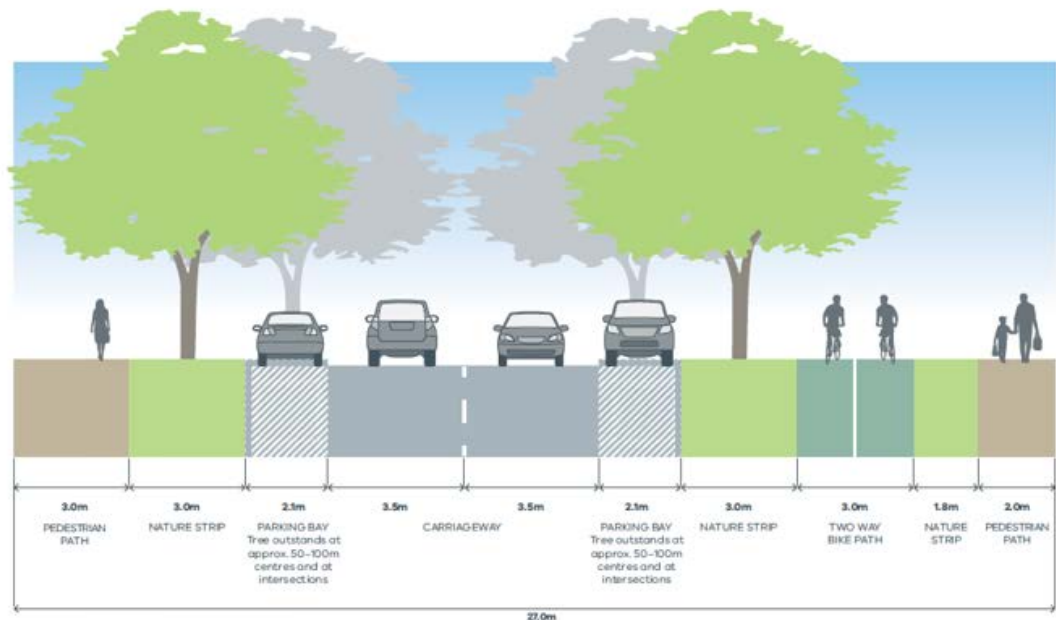
6.1.3 Overall, I consider that, with reference to my comments on the relocation of the North Drive intersection and a review of the proposed revised cross-section in the following section, the revised plan is satisfactory from a movement and access perspective.

## 6.2 Revised Cross Sections

### Bus Capable Connector Streets

6.2.1 The CDP nominates Crosbie Road and South Drive as a potential bus route running through the site, with the Future Urban Structure Plan nominating a 27m reservation for the “bus capable” streets configured as shown in

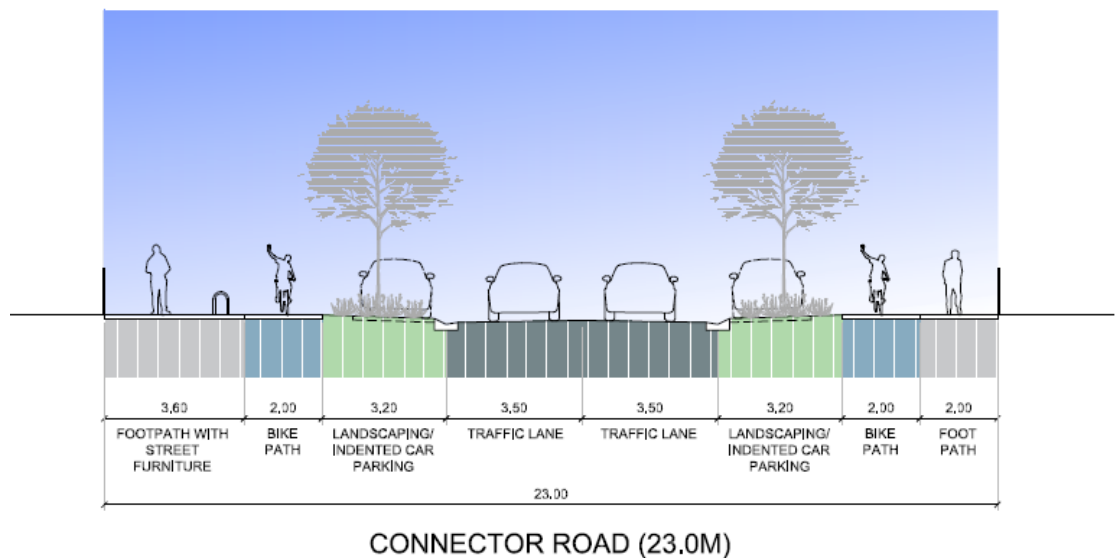
**Figure 6.2 – Bus Capable Connector Street – Exhibited CDP**



- 6.2.2 The plan proposes a 27.0m wide reservation, providing a 7.0m wide carriageway with 2.3 m parking lanes on each side, together with a 3.0m pedestrian path on one side , a 3.0m wide bike path and a separate 2.0m pedestrian path on the other.
- 6.2.3 The revised connector cross-section, which is proposed to apply to all connector streets including bus routes, proposes a 23.0m reservation as shown in Figure 3.1.
- 6.2.4 The revised cross-section retains the 7.0m carriageway required for buses, providing landscaping within a widened parking landscaping verge on each side. Footpaths of 3.6m are provided on one side, allowing street furniture and 2.0m on the other, together with separate 2.0m wide (one way) bike paths on each side.
- 6.2.5 In movement and functional terms, the revised cross-section is appropriate, to allow for the connector streets to operate as bus routes and, as such I am comfortable with the reduced reservation width as proposed.
- 6.2.6 In my opinion, one way off road bike paths on each side of the carriageway, requiring a cyclist to cross the road to make a return journey are not practical, and I recommend that, if adopted, that the revised cross-section provided for a single 3.0 wide two way path on one side of the road only.

6.2.7 This can comfortably be accommodated in the proposed 23m reservation.

**Figure 6.3 – Proposed Revised Connector Road Cross-section**



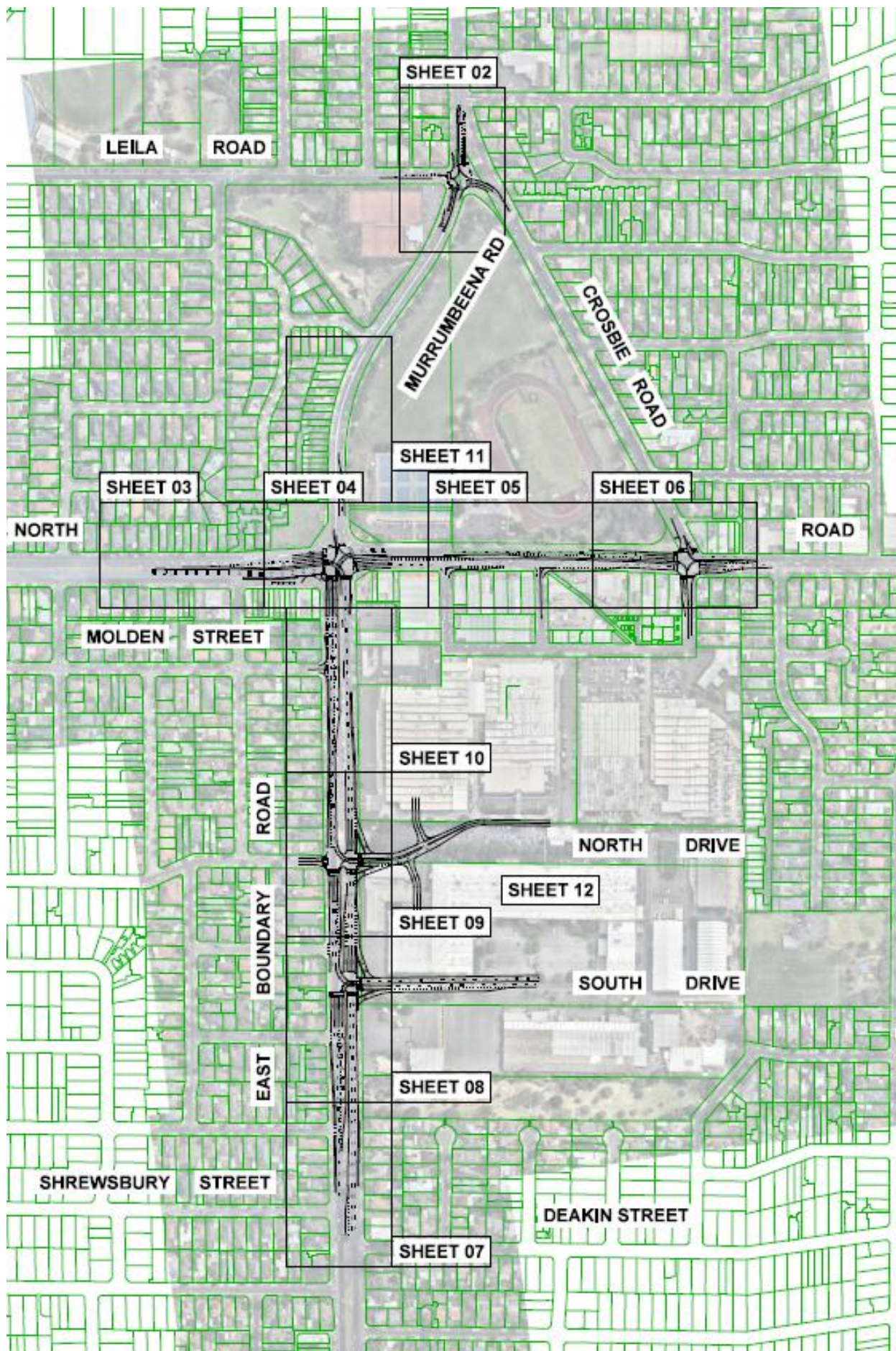
### Local Access Streets

- 6.2.8 The CDP proposes variations to the cross-sections of local access streets, which effectively seeks to marginally narrow the reservation through reduced nature strip widths.
- 6.2.9 The revised cross-sections retain a 7.3m wide carriageway accommodating on carriageway kerbside parking, together with a 2.0m wide pedestrian path on either side.
- 6.2.10 Accordingly, the reduced reservation does not result in any change to the movement function of the access street.
- 6.2.11 I am also comfortable with the revised lower access street cross-section applicable to a street on the eastern boundary which accommodates a 5.5m carriageway within a 14.5m reservation.

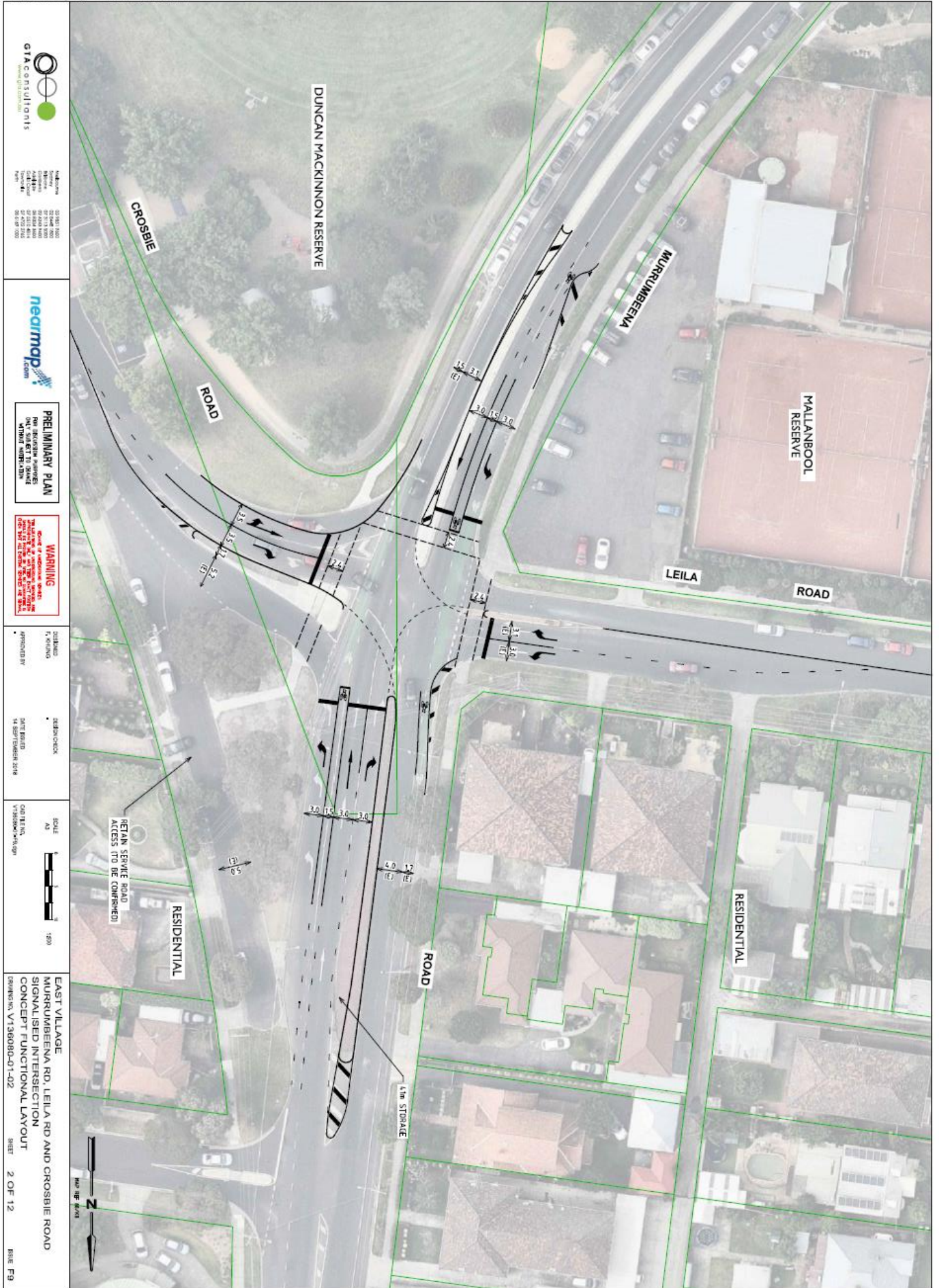


## Appendix A Exhibited DCP Intersection Works:





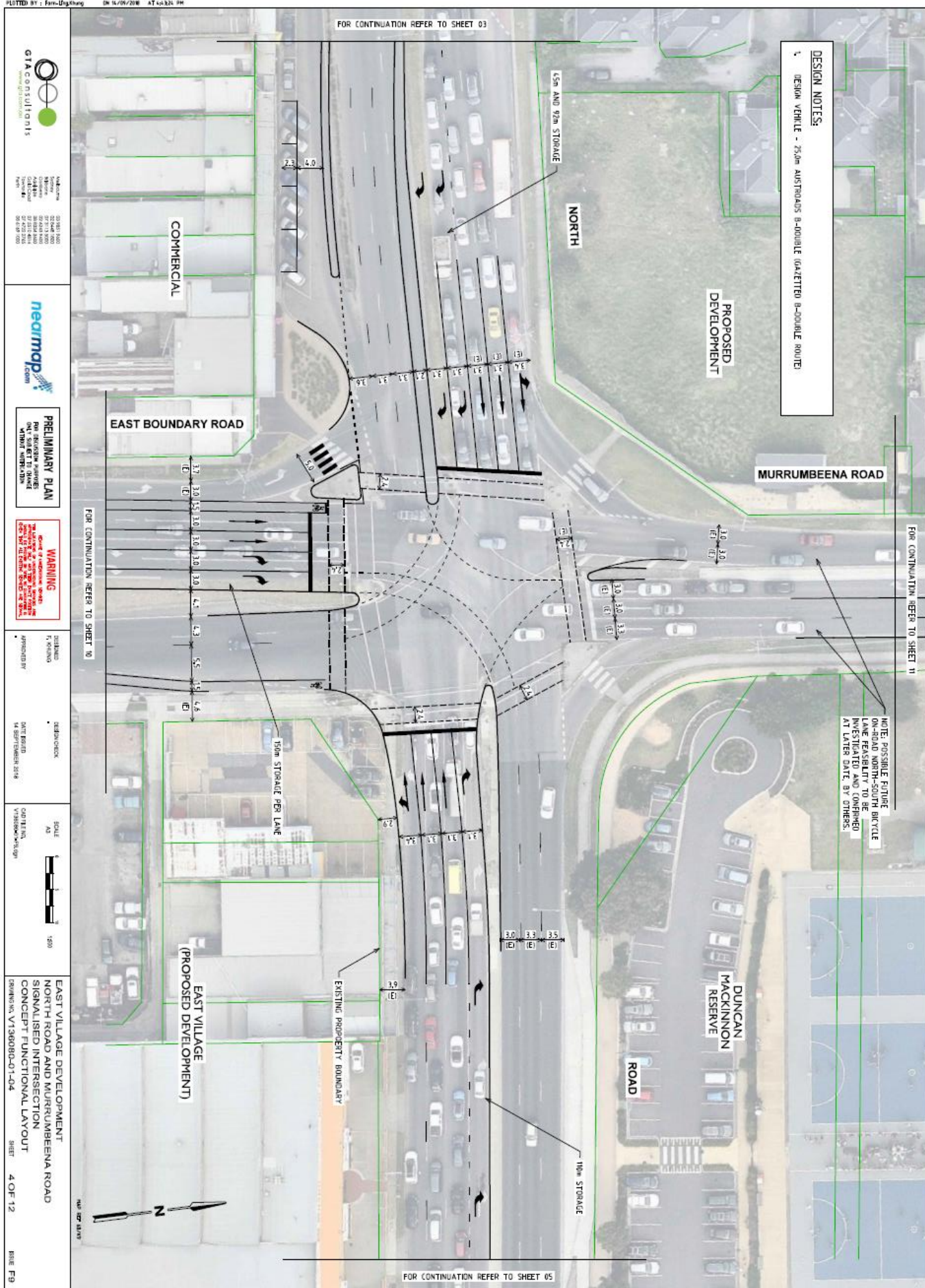






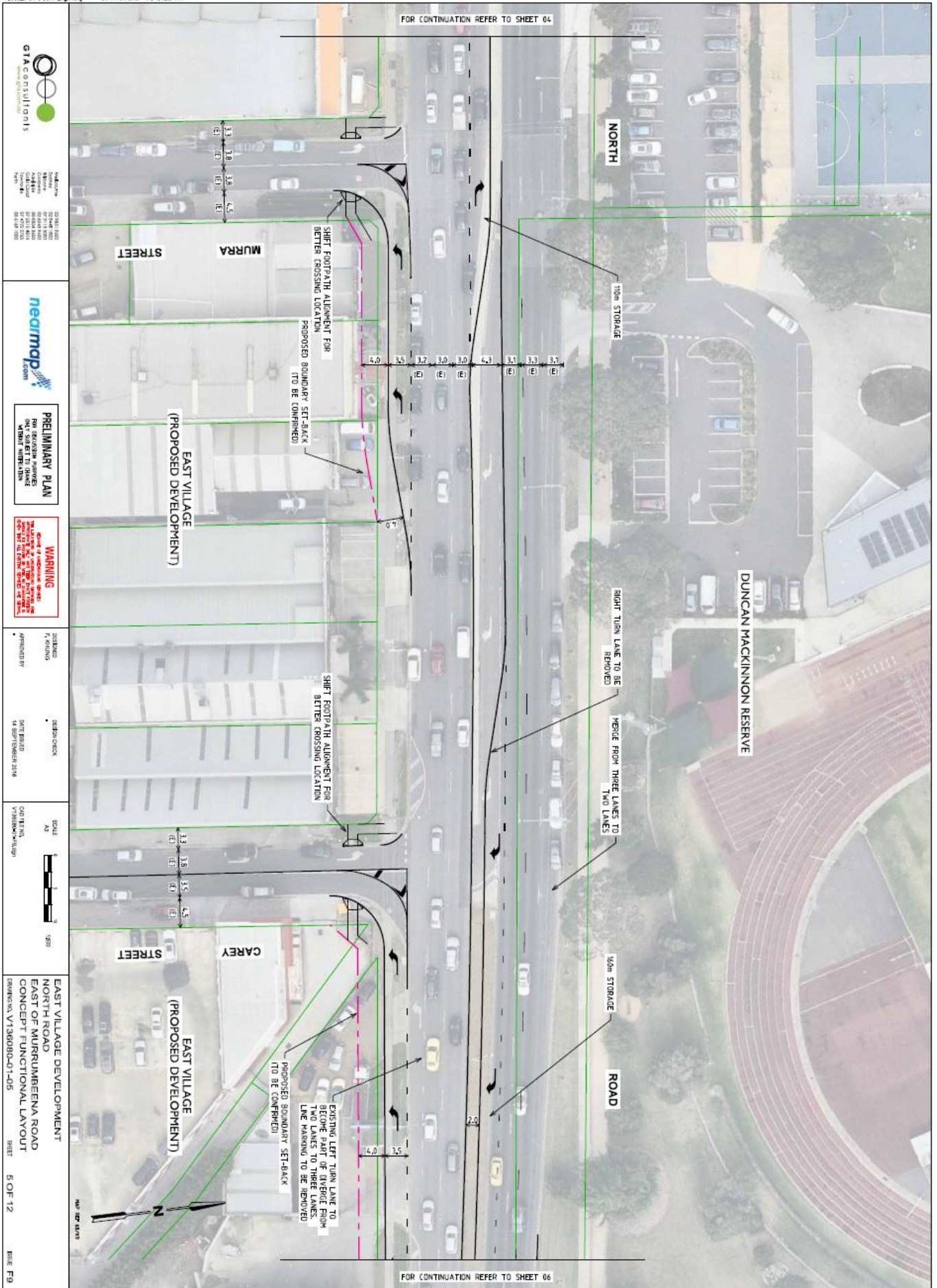




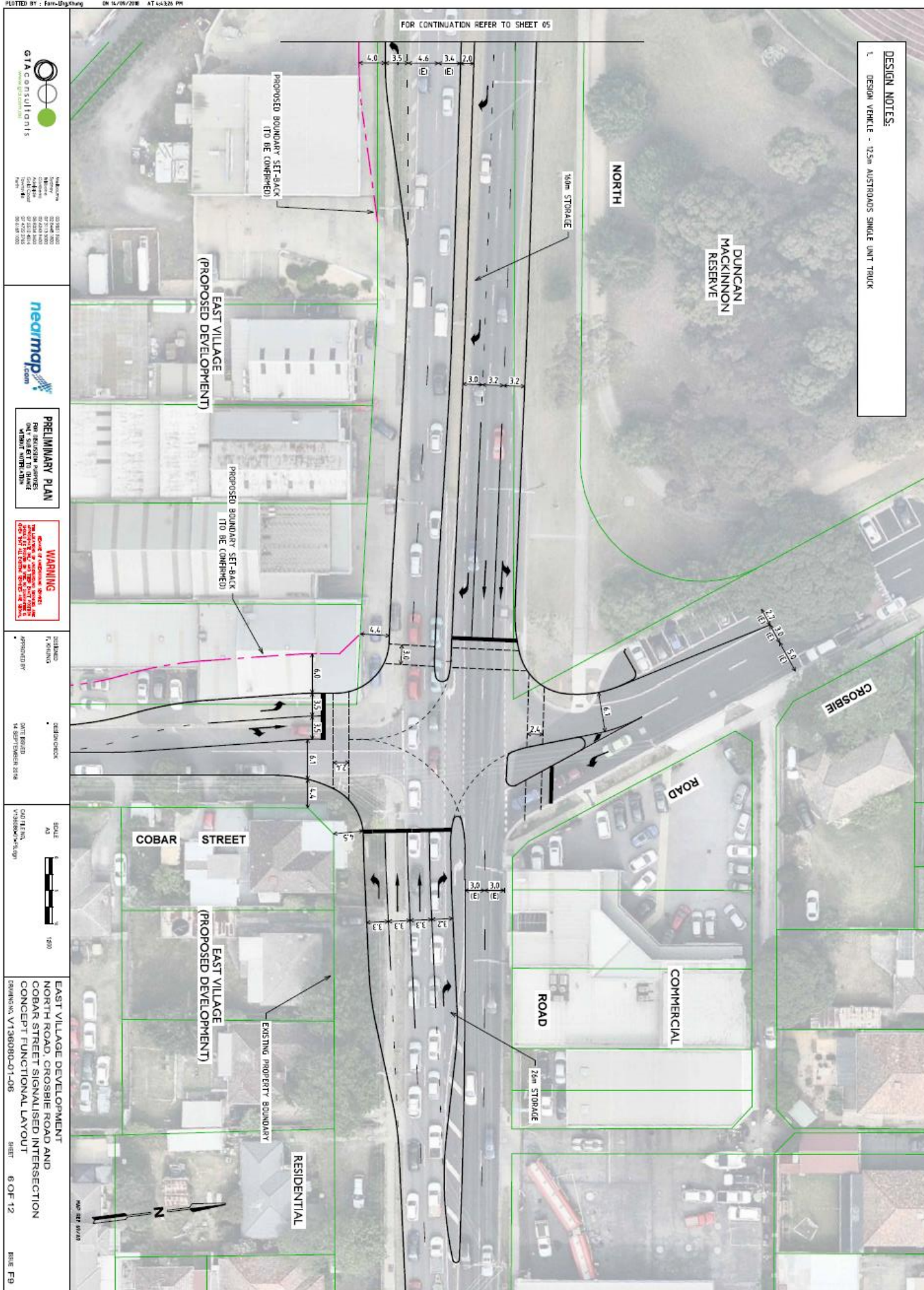




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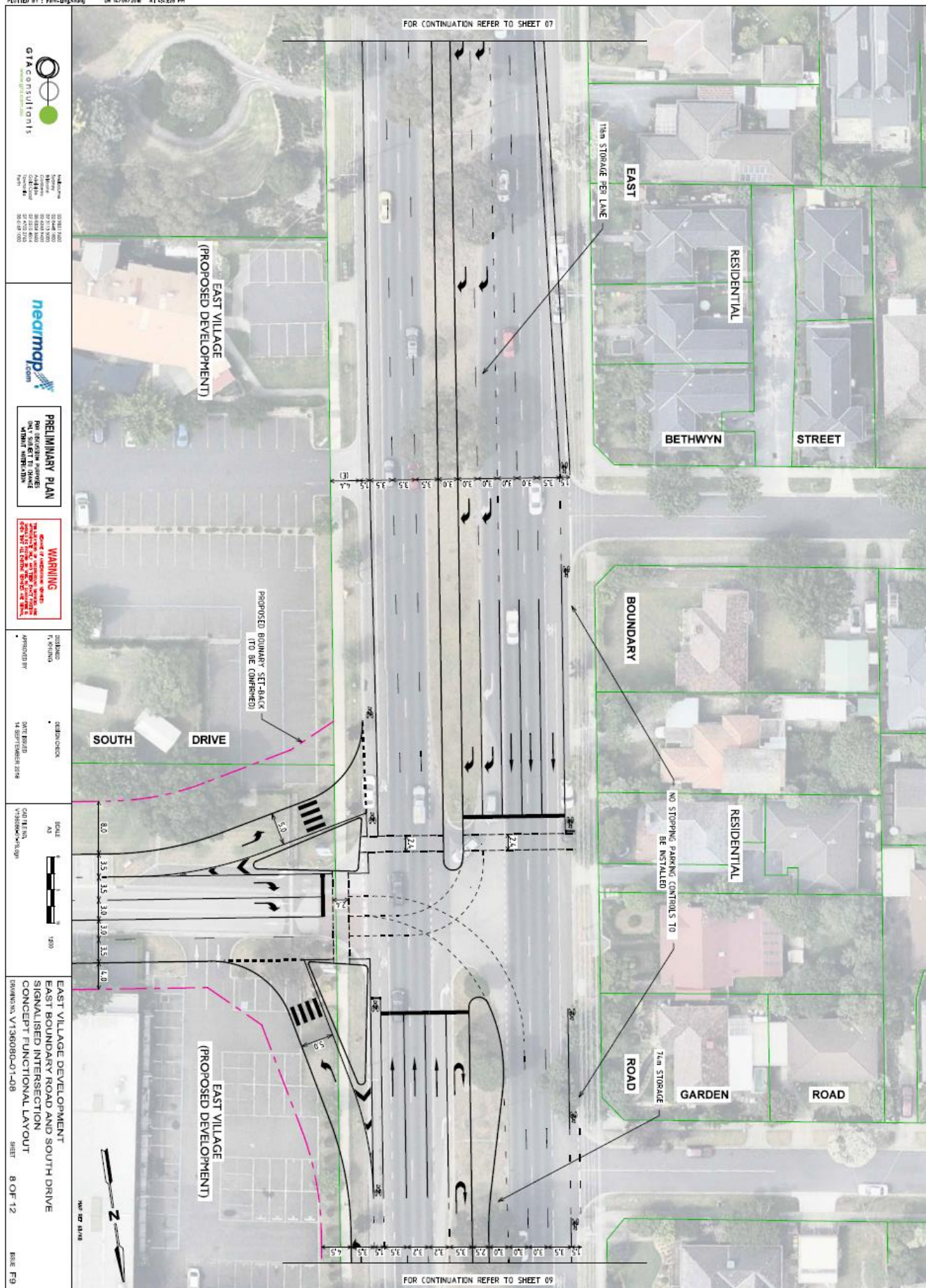












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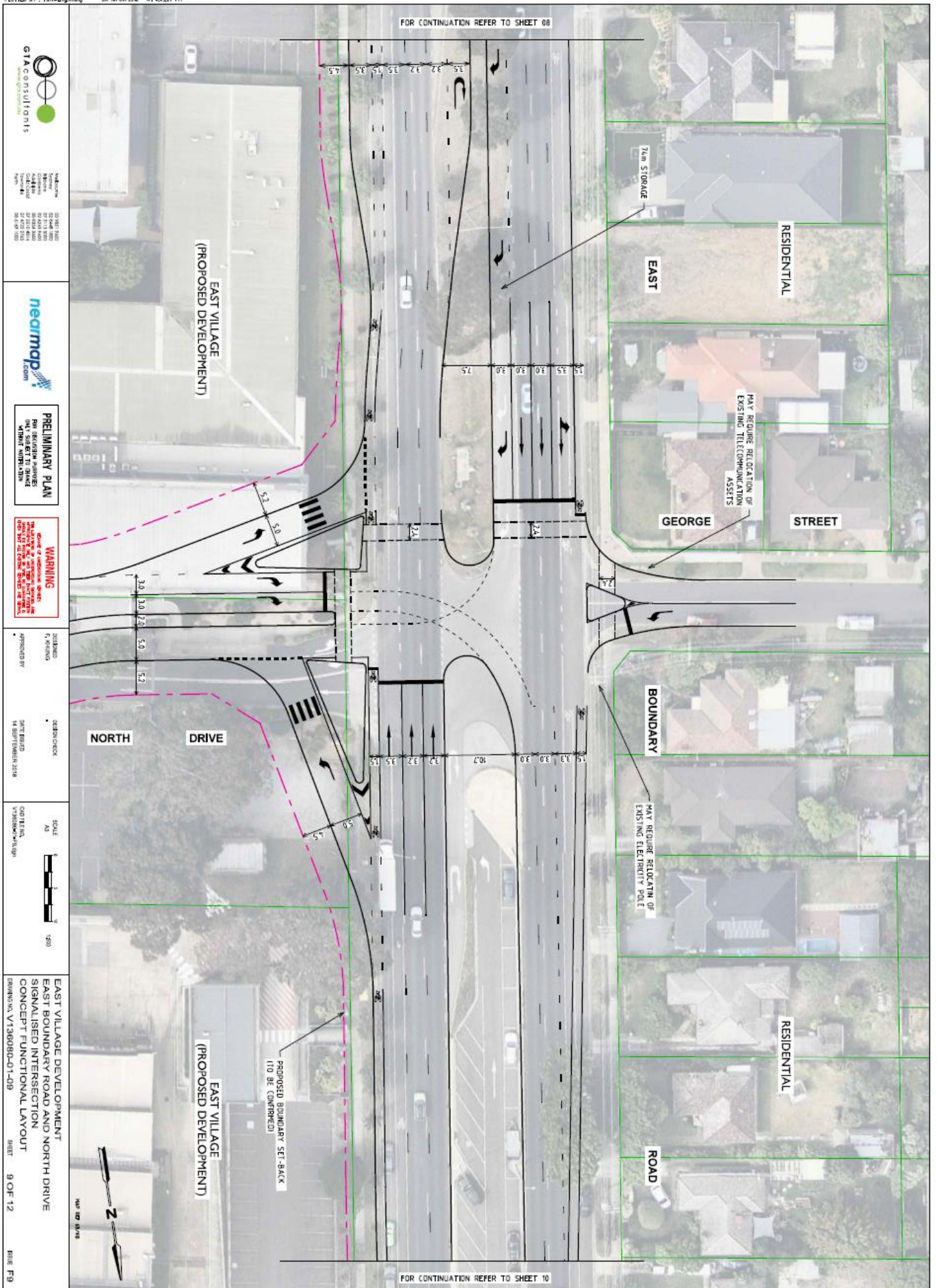
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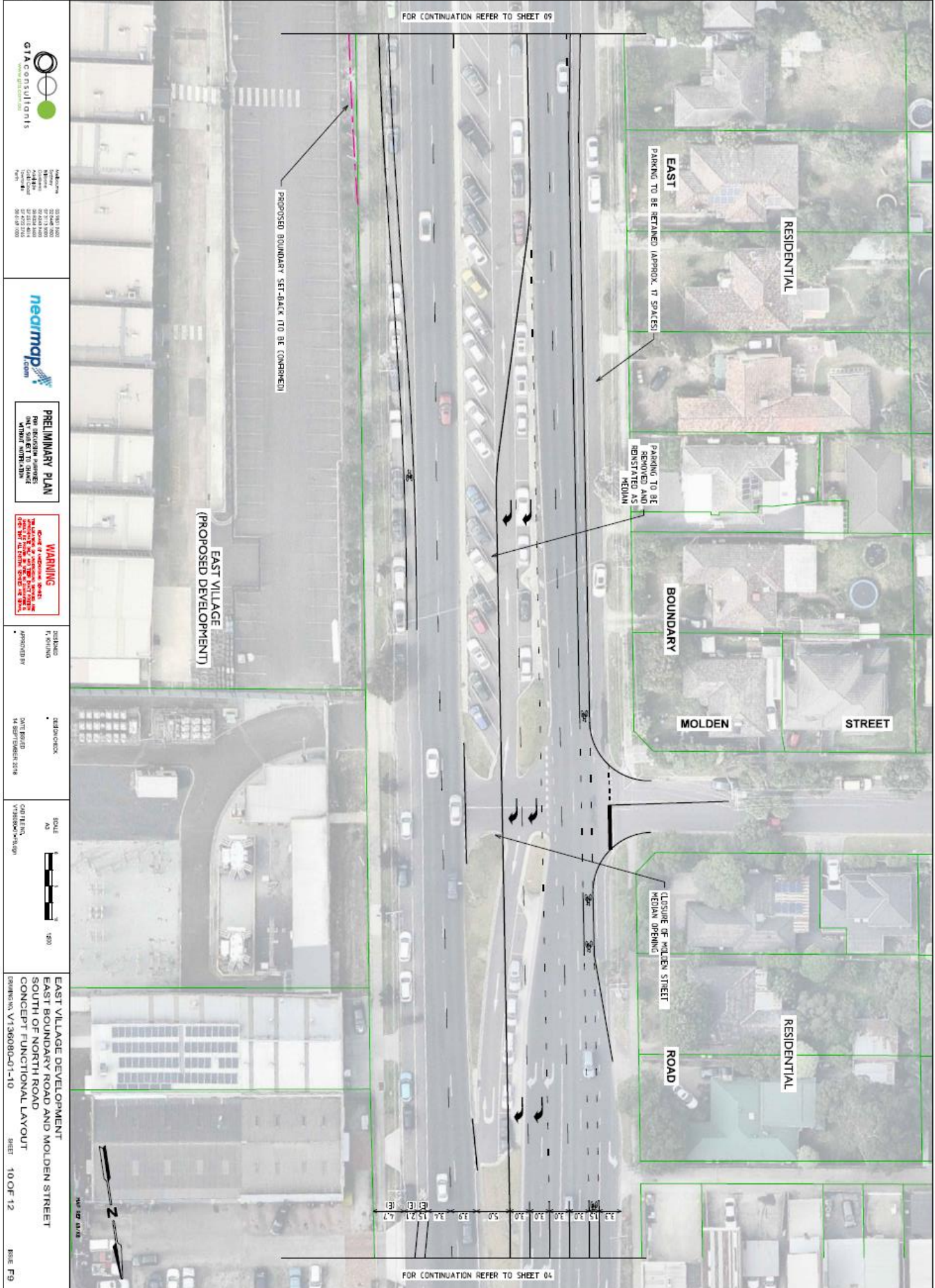
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CONCEPT FUNCTIONAL LAYOUT**  
DRAWING NO: V1306080-01-08  
SHEET: 8 OF 12  
FILE: F9

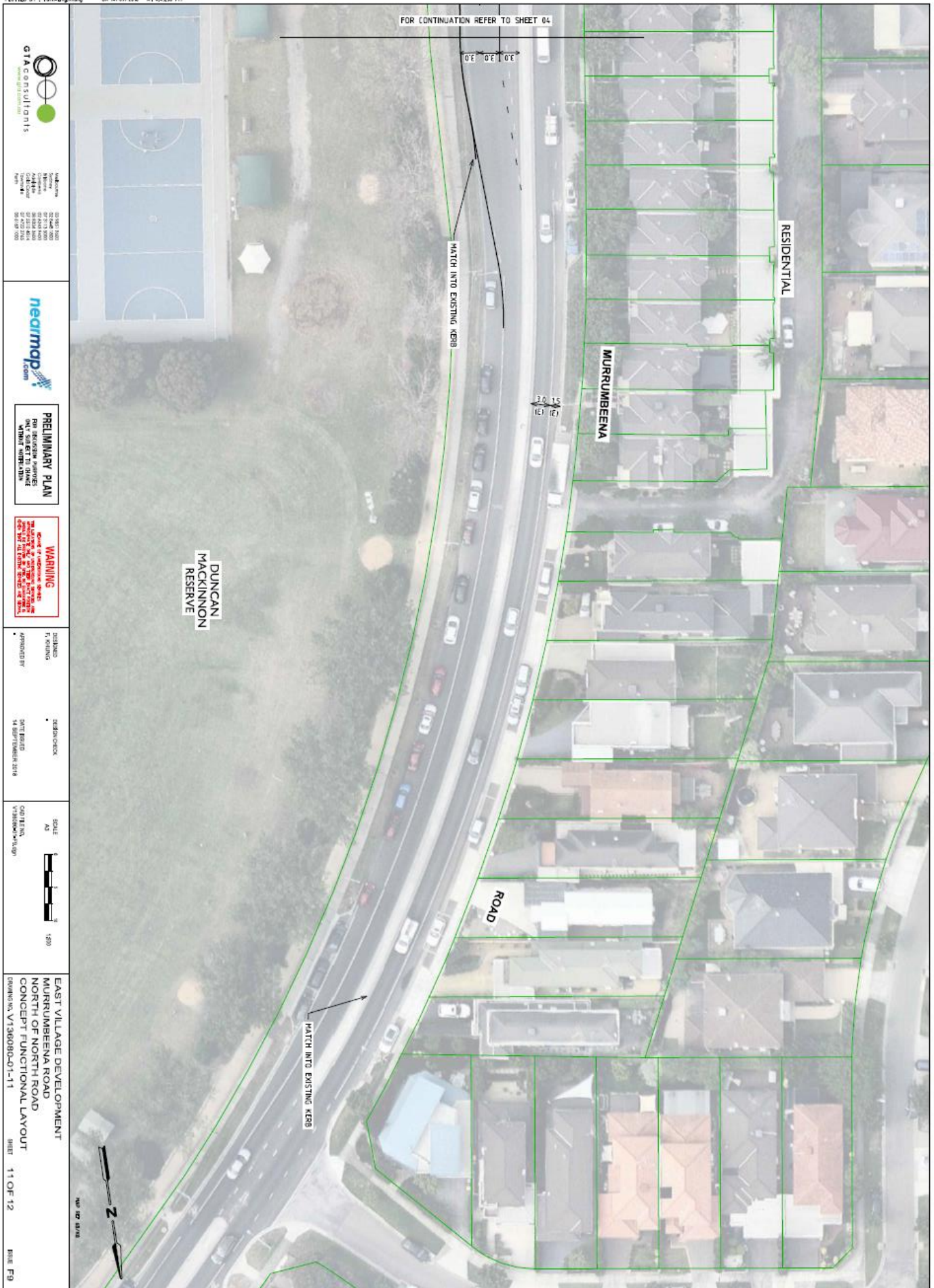




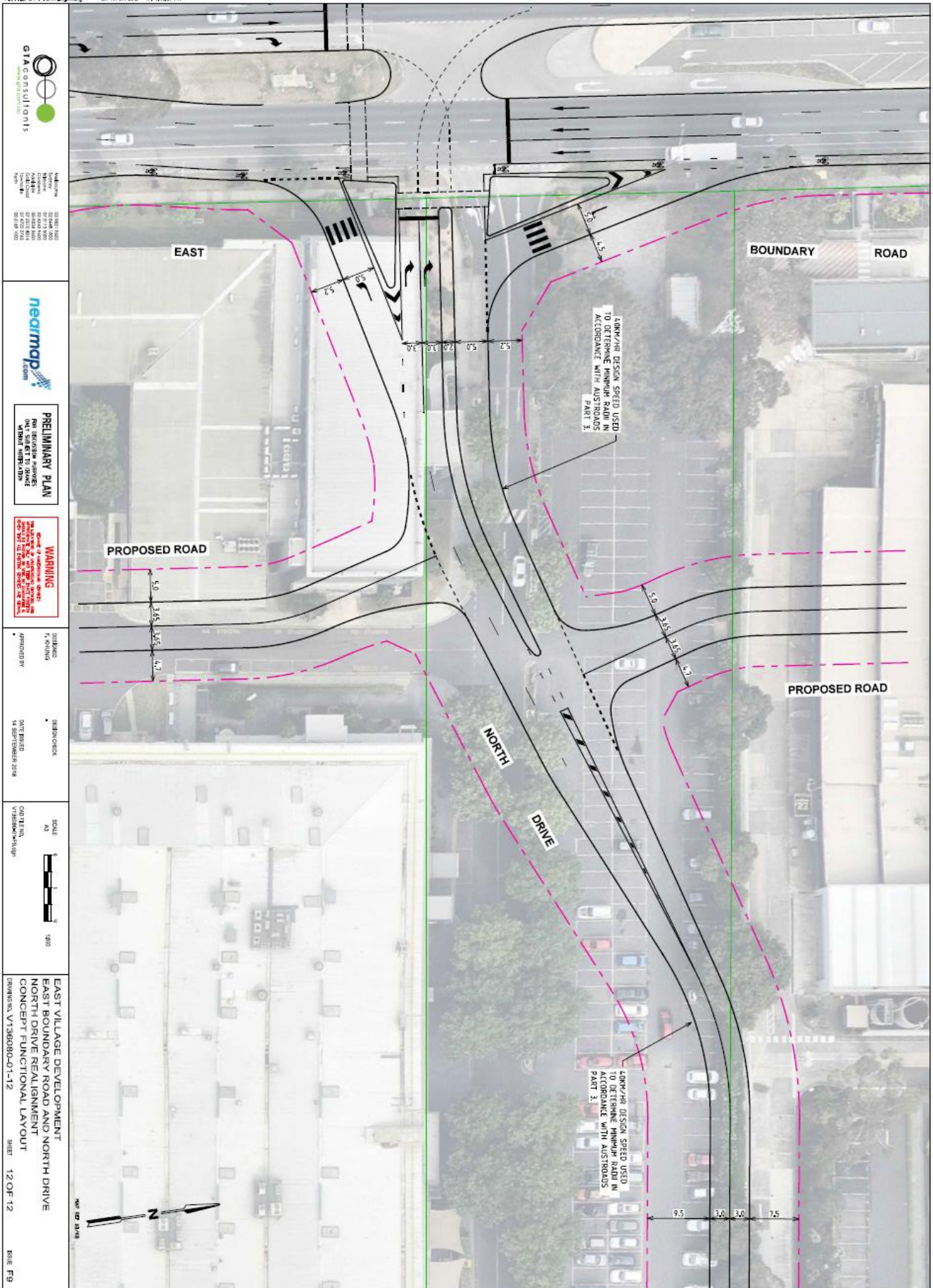












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DESIGN CHECK: J. BOHNING  
DATE REVISION: 14 SEPTEMBER 2018

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DATE: 14 SEPTEMBER 2018

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NORTH DRIVE REALIGNMENT  
CONCEPT FUNCTIONAL LAYOUT  
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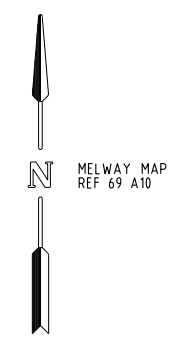
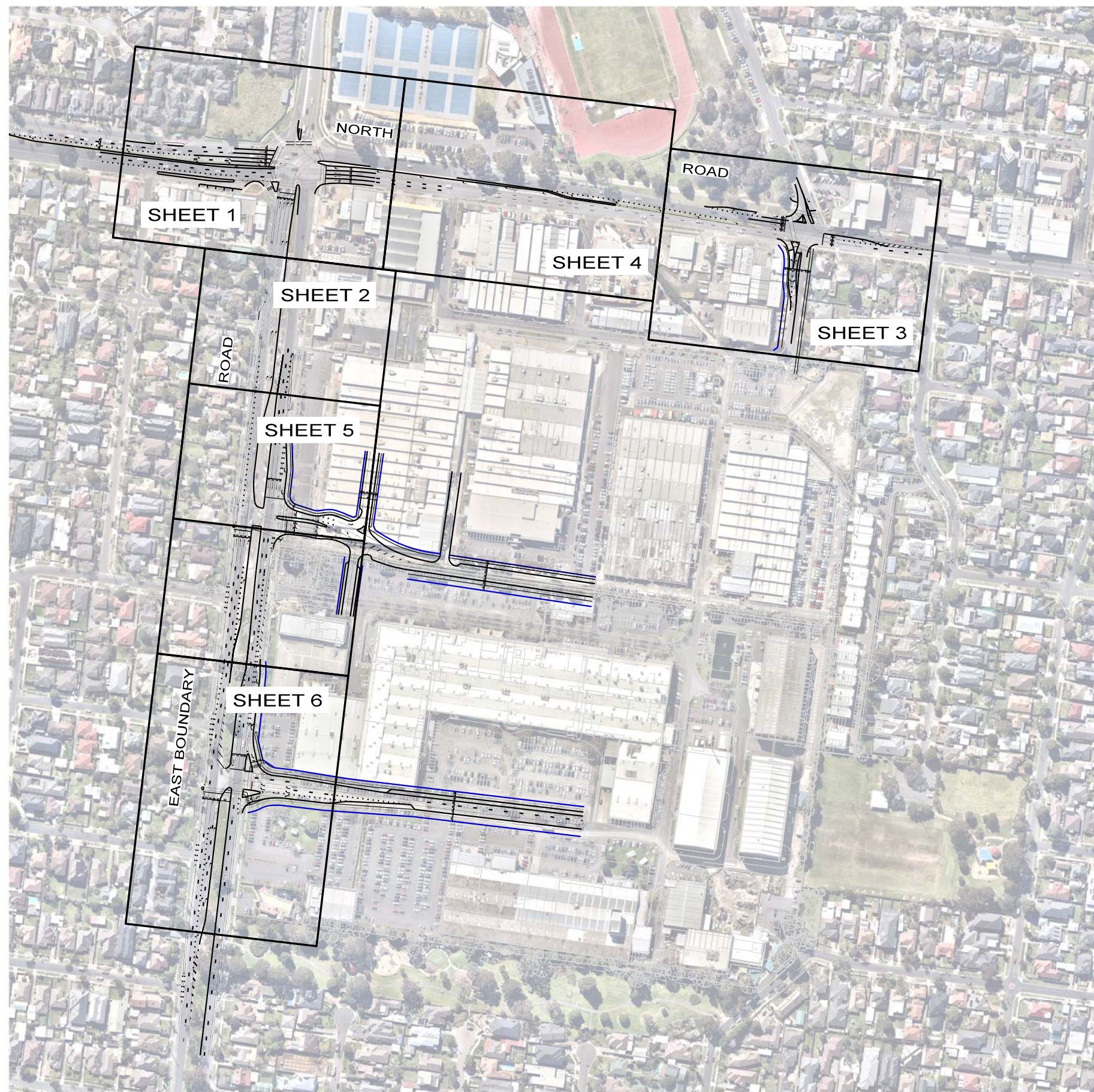
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## Appendix B Revised Intersection Works:





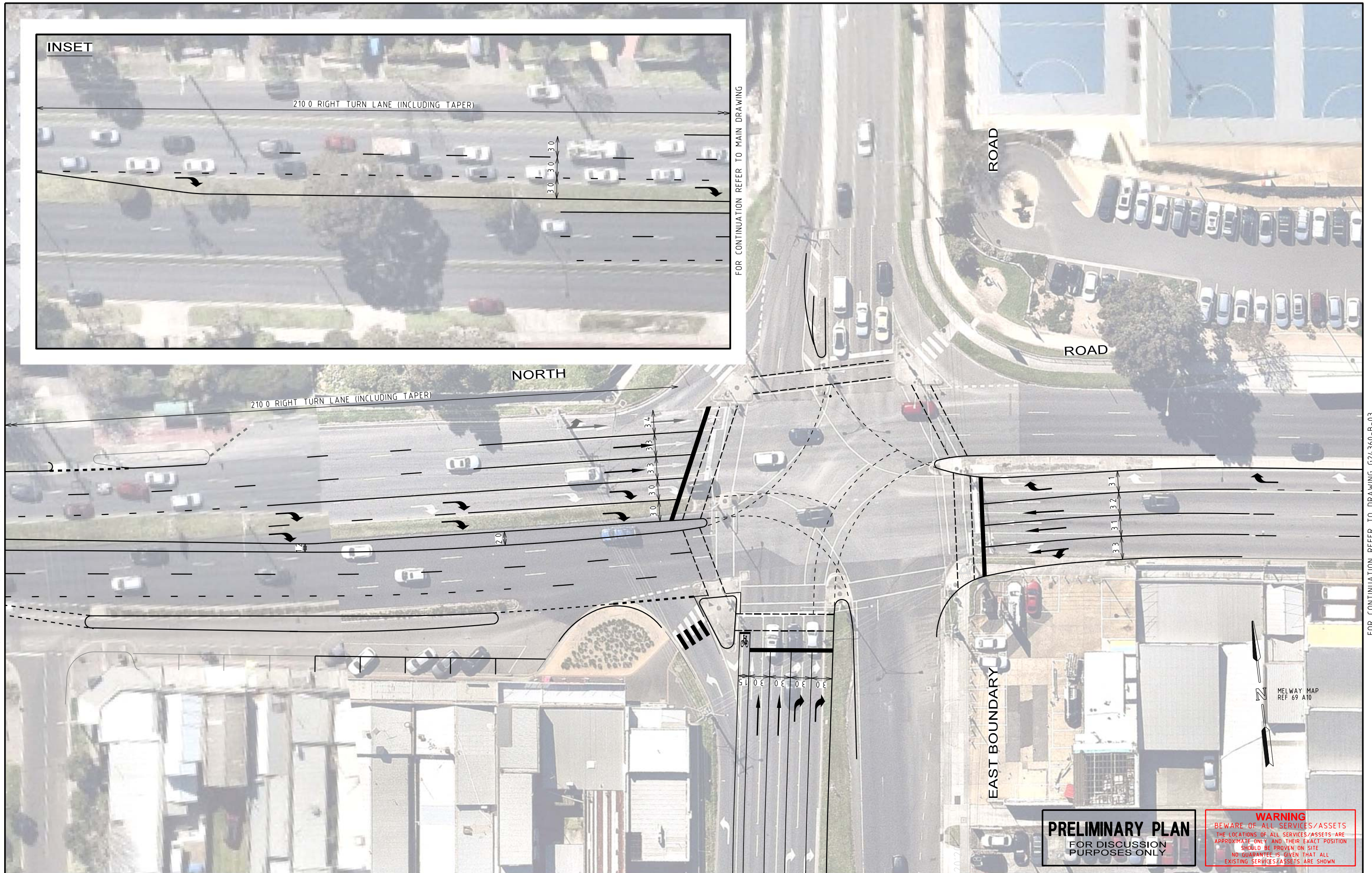
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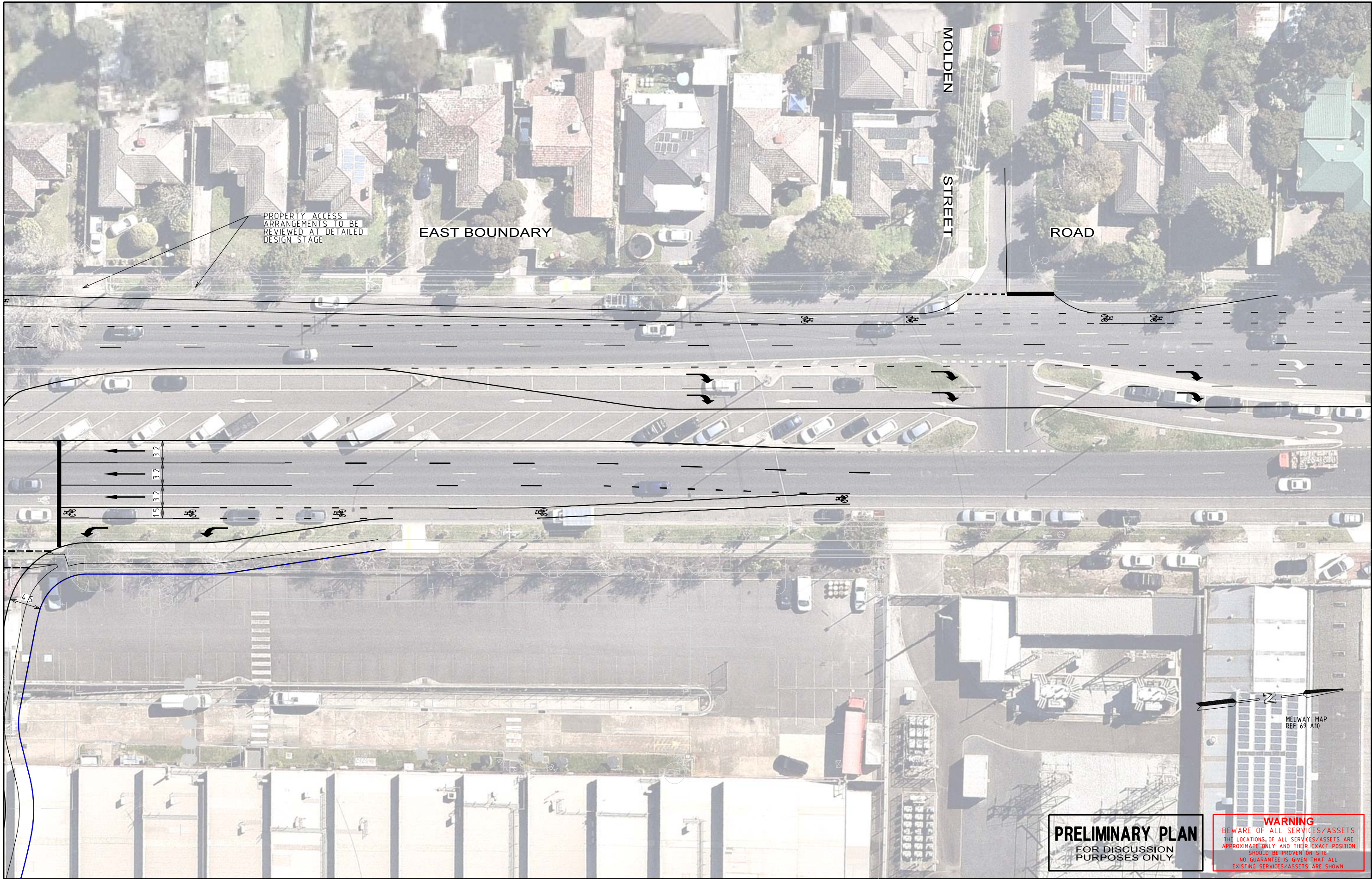
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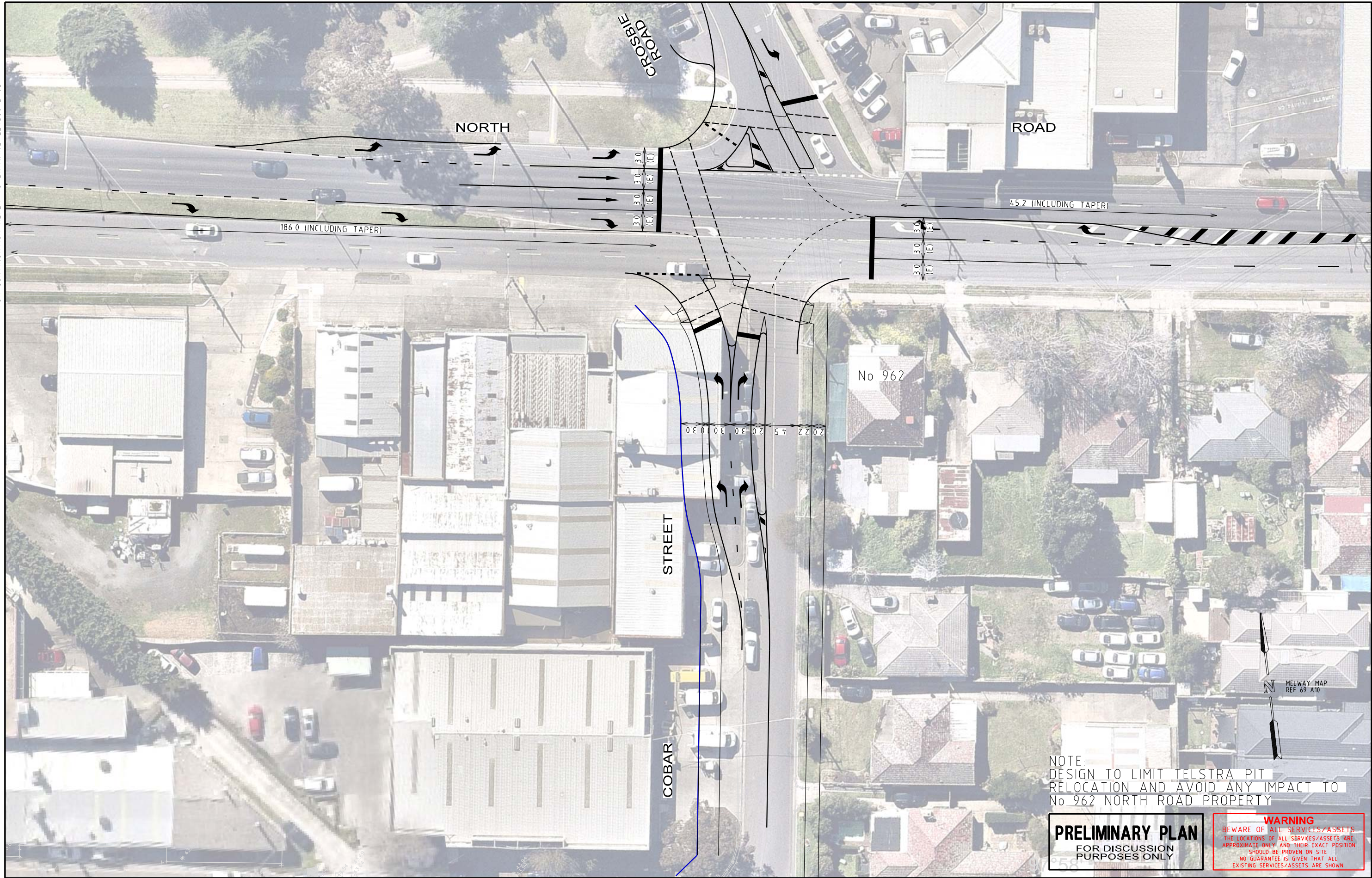
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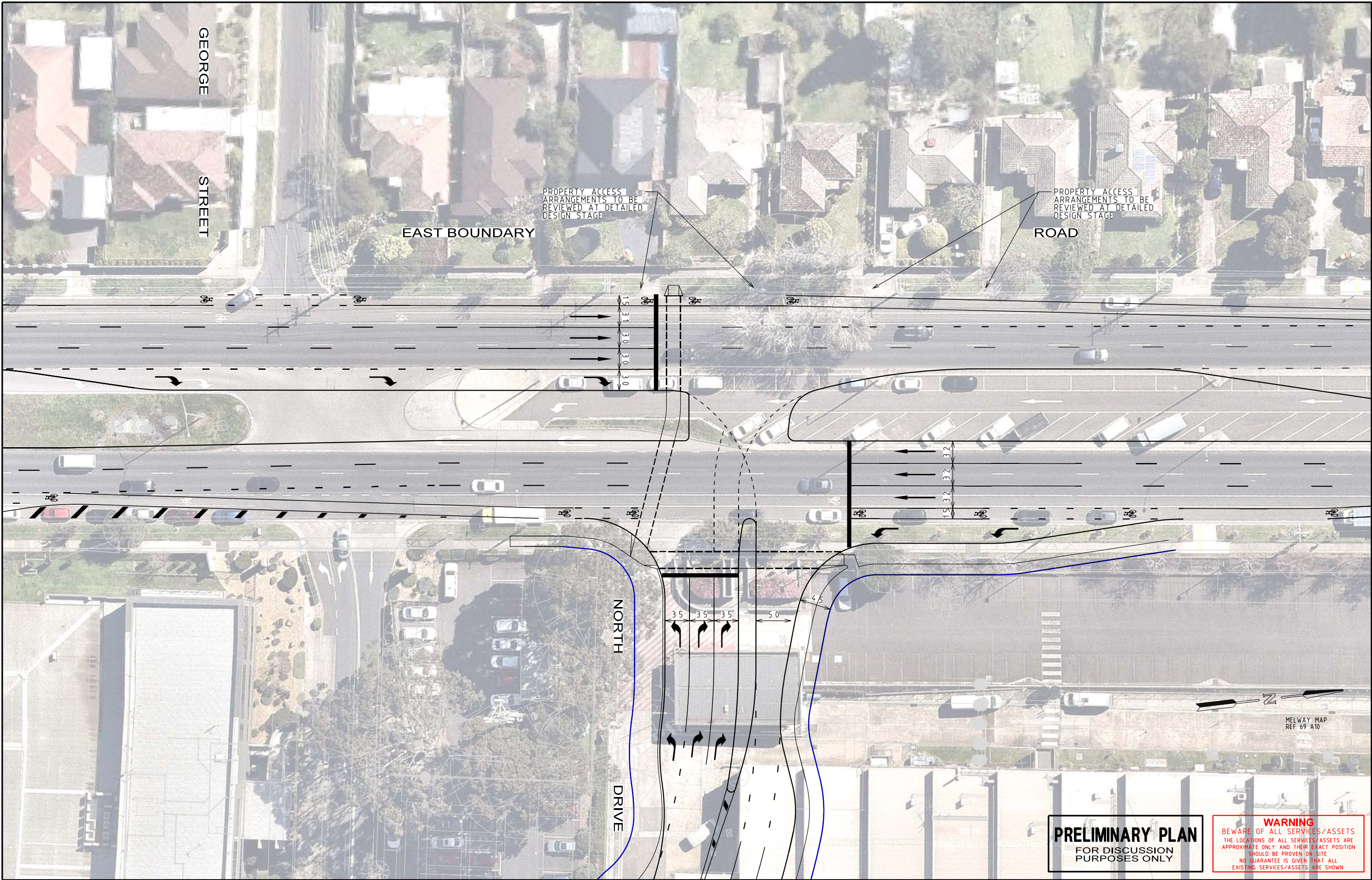
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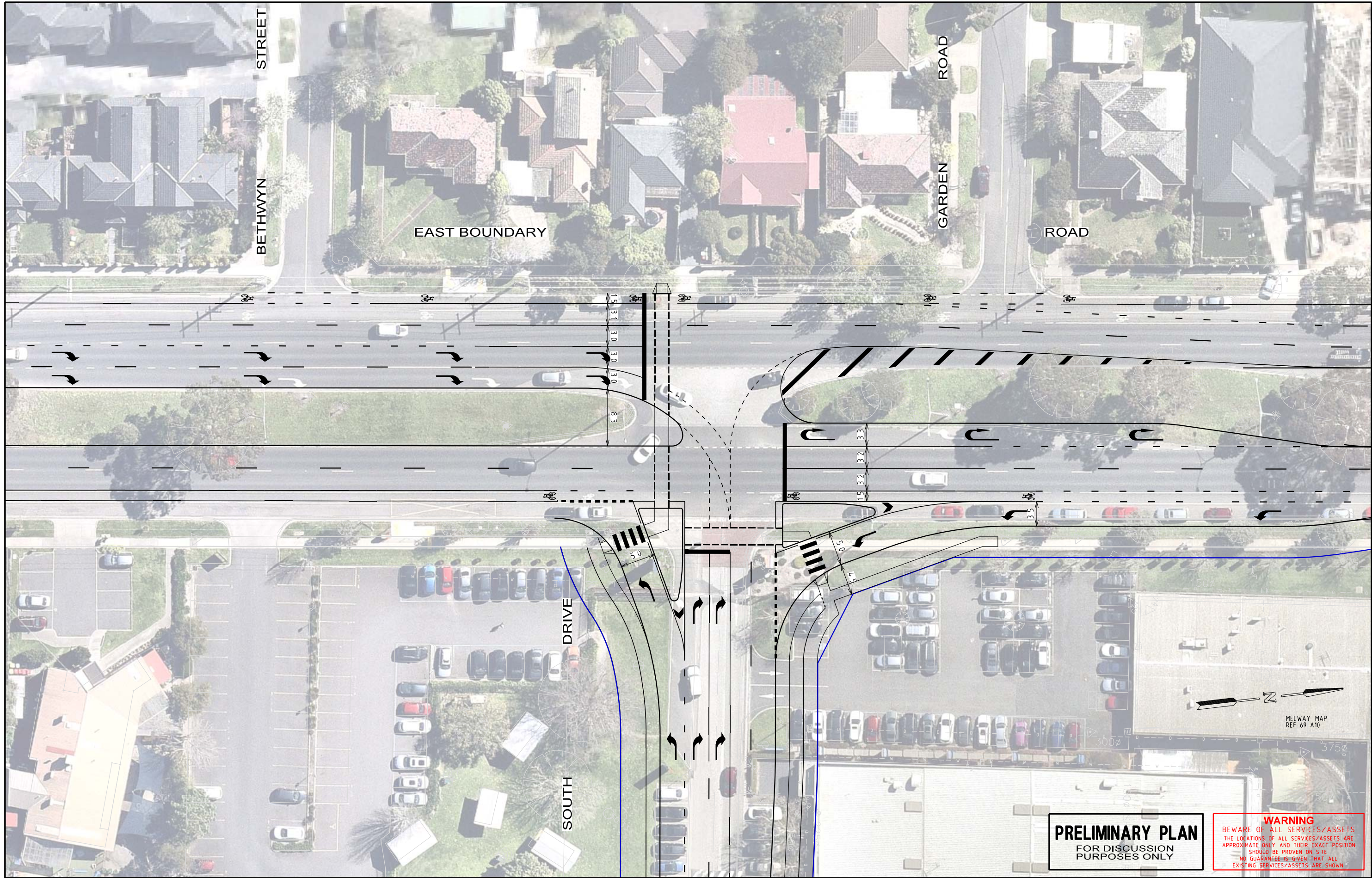
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EAST VILLAGE MIXED USE DEVELOPMENT  
PROPOSED INTERSECTION AND ROADWORKS (IN-05)

GLEN EIRA CITY COUNCIL  
**FUNCTIONAL LAYOUT PLAN**

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