

## 7.1.8 SUBURBAN RAIL LOOP PROJECT UPDATE - COLEMAN PARADE CLOSURE REVIEW AND CARINISH ROAD CLOSURE DECISION

<b>Responsible Manager:</b>	Matthew Veale, Senior Project Manager
<b>Responsible Director:</b>	Peter Panagakos, Director City Development

### RECOMMENDATION

That Council

1. Notes that Council's longstanding position, including through the Environment Effects Statement (EES) process, is for Coleman Parade to remain open. Following the Minister's Decision that a review of the closure should be undertaken, further notes that Council officers have participated in the Coleman Parade closure review process with SRLA since early 2023;
2. Notes that the SRLA has undertaken a review of the Coleman Parade closure following the Ministers Decision on the Suburban Rail Loop (SRL) East Environment Effects Statement (EES) which included:
  - a) Investigation of eight options, which included an option that Council requested added to the process. These were shortlisted to four options, which were the subject of a Multi Criteria Analysis. The SRLA ultimately decided on retaining the Project Baseline Option of Coleman Parade Closed as their preference.
  - b) Modelling and data collection (when Coleman Parade was closed for utility works) demonstrate that, with Coleman Parade closed, there are increases in traffic on Kingsway, Montclair Avenue, Bogong Avenue and Myrtle Street. Traffic volumes on Coleman Parade (west) and Sneddon Drive reduced;
3. Notes that the amenity, useability and pedestrianisation of Kingsway will likely be compromised by the additional traffic caused by the closure of Coleman Parade, without providing an alternative route for vehicles or if appropriate mitigation is not undertaken on Kingsway to improve the amenity and pedestrian environment, whilst maintaining access. This mitigation should be agreed with Council and funded by the SRL East Project;
4. Resolves to write to the Chief Executive Officer of the SRLA stating:
  - a) Council maintains its position that Coleman Parade should remain open and outlining and reiterating the concerns raised during the EES process.
  - b) Council maintains its position that lowering the Glen Waverley MMRN Station and provision of a Ring Road are essential to the revitalisation and overcoming of key constraints in the activity centre. This is required even more urgently as a result of the SRL East Project, which will create additional traffic movement and redistribute traffic onto Kingsway.
  - c) Requests that if SRLA does proceed with its preferred option of closing Coleman Parade that discussion should commence as soon as possible on appropriate improvements to Kingsway, funded by SRLA, to mitigate the additional traffic, improve the amenity and pedestrian environment, whilst maintaining access.
5. Notes the Ministerial approval of the Amendments to the Surface and Tunnel Plans and Urban Design Strategy includes the closure of Carinish Road on a permanent basis.

## INTRODUCTION

The purpose of this report is to outline the outcome of the review of the road closure of Coleman Parade by the Suburban Rail Loop Authority (SRLA), required by the Minister's Decision on the Environmental Effects Statement (EES) for the Suburban Rail Loop (SRL) Project.

It also provides an update on the Minister's Decision to approve the permanent closure of Carinish Road, which went through a similar review process to that outlined for Coleman Parade by way of an amendment to the endorsed Surface and Tunnel Plans and SRL East Urban Design Strategy.

## COUNCIL PLAN STRATEGIC OBJECTIVES

### Sustainable City

Prioritise sustainable transport options, including walking/ cycling paths and public transport.

### Enhanced Places

Improve public spaces and local employment by revitalising our employment hubs, activity centers and neighbourhood shops.

Prioritisation of pedestrians and active transport over vehicles.

Explore and facilitate major projects to transform Monash.

## BACKGROUND

Council has considered a number of reports on the SRLA project since its inception. The most recent relevant report regarding the Carinish Road closure review, Council noted on 29 August 2023 as follows:

*That Council:*

1. *Notes that Council acknowledged through the Environment Effects Statement (EES) process that whilst maintaining a preference for Carinish Road to remain open, there are potential public realm benefits to the closure of Carinish Road, however that this should not cause unacceptable local traffic impacts. Following the Minister's Decision that a review of the closure should be undertaken, Council Officers have participated in the Carinish Road closure review process with SRLA since late 2022.*
2. *Notes that the SRLA has undertaken a review of the Carinish Road closure following the Ministers Decision on the Suburban Rail Loop (SRL) East Environment Effects Statement (EES) which included:*
  - *Investigation of 10 options, which included an option added to the process by Council. These were shortlisted to three options, which were the subject of a Multi Criteria Analysis. The SRLA ultimately decided on a preferred option of Carinish Road being closed and a right turn being introduced at Shandeanu Avenue onto Clayton Road (Option 2).*
  - *Modelling and data collection (when Carinish Road was closed for Initial Works) that demonstrated that with the Carinish Road closure was in place and the proposed modifications to Shandeanu Avenue, all local streets will operate within their theoretical environmental capacity. A significant benefit of Option 2, if it is confirmed as part of the Surface and Tunnel Plan amendment process that it is understood is being undertaken imminently by SRLA, is that*



*it could be implemented before Main Works construction starts, which will see Carinish Road closed for approximately six years regardless of what option is pursued.*

- Modelling that shows, with the Carinish Road closure, there are increases in traffic along Madeleine Road, Shandeanu Avenue, Thompson Street (eastbound) and Flora Road. Subsequently, there are decreases in traffic along Clayton Road, Carinish Road and Colonel Street. In both the AM and PM peak periods, Prince Charles Street (south of Faulkiner Street) and Faulkiner Street experience increases in traffic travelling away from Clayton Station. The modelling shows that the volumes will remain within the theoretical estimated environmental capacity according to the Planning Scheme.*
- An agreed outcome that SRLA would fund a Local Area Traffic Management study, including necessary mitigation works and also pedestrian connectivity and safety improvements to Haughton Road.*
- A request from Council that when Carinish Road is closed for the Main Works construction period of approximately six years, there is an expectation that continued monitoring of the local street network, including Madeleine Road, Shandeanu Avenue and Prince Charles Street, will be required and Council has requested that any agreed traffic management and parking mitigation would be addressed by the SRL project.*
- The preferred option (Option 2) of Carinish Road being closed and a right turn being introduced at Shandeanu Avenue, which may require the introduction of restricted parking (i.e. no stopping during peak periods) or potential relocation of 2P parking into a No Stopping area. This is expected to have minimal impact on parking supply.*
- An SLRA assessment of the location of PuDo (Pick up and Drop off) parking to identify if additional locations at Clayton would better serve passengers and enable access from all locations. Two additional locations were recommended on Carinish Road east (northern verge) and Mary St. These were not supported due to impact on parking for businesses and traffic impacts. Analysis that the proposed closure of Carinish Road, west of Clayton Road, allows for improved public realm and a high level of pedestrian safety by removing vehicles from directly outside of the proposed SRL Clayton Station entrance. The introduction of the right turn at Shandeanu Avenue mitigates the impact of the closure by providing the right turn for use by residents with no significant impact to the local street network. All other movements can be undertaken within the local street network.*

*3. Resolves to write to the CEO of the SRLA stating:*

- Council maintains its position that Carinish Road should remain open with Haughton Road being preferably closed and outlining and reiterating the concerns raised during the EES process. Further advising that if SRLA pursues Carinish Road being closed and a right turn being introduced at Shandeanu Avenue onto Clayton Road (Option 2) despite Council's concerns, Council will maintain its opposition, but expects that its negotiated outcomes with SRLA, including a Local Area Traffic Management study, necessary mitigation works and also pedestrian connectivity and safety improvements to Haughton Road are honoured.*
- Council maintains its position that relocating the entrance/exit to the station further south along with the closure of Haughton Road will lead to superior and improved outcomes including but not limited to traffic movements, PuDO, and pedestrian connectivity to the Activity centre, particularly in negating the need for a pedestrian to have to almost immediately cross a road to access the Activity Centre.*
- Accepts that the issue should be resolved as soon as possible and if SRLA determines that they will pursue Option 2 as an outcome, this must be undertaken by the SRLA, rather than the future Main Works contractor, at a later time, and SRLA should commence and undertake the Surface and Tunnel Plan amendment process. This should ensure that amendments to Shandeanu Avenue,*

*if agreed, can be implemented before Carinish Road is closed for construction for approximately six years. This should also ensure negotiated outcomes with SRLA, including the post implementation Local Area Traffic Management (LATM) study and treatments, and proposed pedestrian improvements to Haughton Road, are realised, and minimise disruption in and around the Clayton Activity Centre and surrounding residential area.*

- *Requests that if SRLA's position on the preferred option changes then discussions should recommence as soon as possible on the alternative option, including the timing and implementation, and any mitigation during construction should be discussed and resolved.*
- 4. *Notes that there will be increased traffic and impact on some residential streets to the north and southwest of the station as a result of the SRLA preferred option.*
- 5. *Resolves to maintain its objections and opposition to two additional proposed PuDo locations on Carinish Road east (northern verge) and Mary St due to the impact on parking for businesses and traffic impacts.*

The Council report on 27 September 2022, regarding the Ministers Decision on the Suburban Rail Loop (SRL) East Environment Effects Statement (EES), that required a review of the Coleman Parade and Carinish Road closures noted:

*That Council:*

1. *Notes the update on Minister's Assessment on the Suburban Rail Loop (SRL) East Environment Effects Statement (EES).*
  - *The Minister's Assessment on the SRL East EES supports the project, finding the effects on the environment will be acceptable, subject to various recommendations.*
  - *Reviews are required on the proposed road closures at Coleman Parade and Carinish Road, the Pick up Drop off (PuDo) parking at all stations, the location of the bus interchange at Monash, and the replacement car parking location at Glen Waverley.*
  - *Council representation on the Urban Design Advisory Panel (UDAP) and Public Open Space Advisory Panel (POSAP) is supported, as is a voluntary purchase scheme, further business and employee assistance, noise, air quality and arboriculture improvements.*
  - *The lowering of Glen Waverley Station to enable superior interchange between stations and the extension of Myrtle Street as part of a ring road; or even that a direct 'paid area connection' is provided between the existing Glen Waverley MMRN station and proposed SRL station were not recommended by the Minister to be delivered by the project.*
  - *The Minister expects the future lowering of Glen Waverley MMRN Station will be considered as part of the Precinct Planning component of SRL East and notes that DoT advised that it intends to deliver a 'paid area connection' between the two stations in due course, subject to funding and approvals.*
2. *Notes and endorses the Council position and officers comments in response to the Inquiry and Advisory Committee recommendation and Ministers assessment at Appendix 2 of this report.*

The Minister for Environment and Climate Action (as Minister jointly administering the Environment Effects Act) released her decision on 10 August 2022 regarding the environmental effects of the SRL East project. The report from the Independent Advisory Committee (IAC) was released by the Minister at the same time.

The IAC report and Minister's Assessment can be accessed via the following link:

<https://www.planning.vic.gov.au/environment-assessment/browse-projects/projects/suburban-rail-loop-east>

The Minister supports the project, finding the effects on the environment will be acceptable, subject to various recommendations. These include reviewing the proposed road closure at Coleman Parade.

Monash City Council's position on the closure of Coleman Parade in its submissions to the EES IAC was that:

*Closure of Coleman Parade*

272. *The creation of the proposed SRL station will affect the local road network. The closure of Coleman Parade during construction and operation imposes too much of the impact on Kingsway. The Project has not got the balancing of impacts right.*
273. *Kingsway, south of Coleman Parade, is the premier public street within the GWAC. It has a high level of pedestrian activity. The Structure Plan recognises its important role and seeks to protect it by improving the pedestrian amenity and reducing traffic. Coleman Parade is also earmarked for improved pedestrian amenity, but not at the expense of Kingsway.*

***In relation to the lowering of the existing Glen Waverley Melbourne Metropolitan Rail Network (MMRN) Station and provision of a Ring Road around the Glen Waverley Activity Centre (GWAC), Council's submissions to the EES IAC further outlined that:***

80. *In Council's submission, the GWAC Structure Plan, the Masterplan, and the Sustainable Transport Plan demonstrate a clear, comprehensive and detailed rationale for the importance of the Ring Road, and the associated lowering of the Metro line, to the future of the activity centre. Council refers to:*
- (a) the dependence of a key part of the vision for the centre – the revitalisation of Kingsway – on delivery of the Ring Road;*
  - (b) the extensive analysis that supports the proposal for the Ring Road; and*
  - (c) the dependence of the Ring Road on the existing station being redeveloped: the final link of the Ring Road must cross the railway.*

The IAC report concluded in relation to the closure of Coleman Parade that:

*The IAC finds:*

- Coleman Parade should not be permanently closed as part of the Project.*
- Construction should seek to minimise the duration of the closure of Coleman Parade and*
- maintain at least some traffic flow whenever possible.*

Regarding the lowering of the Glen Waverley MMRN Station/provision of a ring road the IAC report discussed that:

*The IAC acknowledges the Metro rail line forms a significant barrier to north-south movement at the western edge of the Activity Centre. Coleman Parade provides a key traffic route for patrons from the southwest of the centre to travel to the northern side of the centre.*

*Future precinct planning will need to consider the whole of the Activity Centre and determine how best to manage vehicle and pedestrian demands to ensure a safe and accessible pedestrian environment for traders and users.*

The Minister's Assessment provides the following statutory assessment and decision on the project in relation to the permanent closure of Coleman Parade:

*In regard to the operations phase, the IAC found that Coleman Parade should not be permanently closed as part of the project. It considered that pedestrian connection across Coleman Parade could be facilitated both at-grade or underground without permanently closing the road and these options should be further investigated prior to a commitment to close Coleman Parade to vehicle traffic. It also considered that future precinct planning will need to consider the whole of the activity centre and determine how best to manage vehicle and pedestrian demands to ensure a safe and accessible pedestrian environment for traders and users. In my assessment, the optimum means to deliver the urban design and pedestrian connectivity vision for the Glen Waverley SRL Station whilst minimising traffic impacts on Kingsway, is still to be determined. I note that the operational phase of SRL is some way off. I consider that the detailed design phase is the appropriate time to examine pedestrian connection and fine tune mitigation measures that could be implemented to address local transport effects. I therefore recommend that the surface and tunnel plan for the Glen Waverley SRL station be amended to show that the closure of Coleman Parade is indicative only, and for further consideration at the time of the preparation of the UDLP. When the UDLP for Glen Waverley is submitted for the Minister for Planning's approval under the SCO14 Incorporated Document, I expect that it will either propose that Coleman Parade remain open in some form, and/or it will be accompanied by additional transport assessment which further examines the implications of closing Coleman Parade and proposes traffic mitigation measures for Kingsway.*

Regarding the lowering of the Glen Waverley MMRN Station/provision of a ring road the Minister's Assessment noted that:

*The project allows for a future underground connection to the existing Glen Waverley Station, but this is not proposed as part of the project, nor is undergrounding or lowering the existing station and its associated rail lines. Monash City Council submitted that lowering the existing rail line and station has been a long-held policy of council to facilitate the construction of a 'ring road' by extending Myrtle Street northwards across the existing rail line. I do not consider that it has been demonstrated that the lowering of the existing rail line and station is needed to achieve the transport objectives of the project at this time and I note that the project is suitably 'future proofed' to not preclude it from being delivered in the future.*

*I fully expect that as precinct planning occurs, some ideas raised in submissions for this EES will be considered and potentially even adopted if they are found to have merit. This includes things like the extension of the Gardiners Creek naturalisation works southwards, complementary pedestrian and cycle paths, commuter parking at the Burwood SRL station site, and the lowering of the existing Glen Waverley rail line and station.*

## DISCUSSION

### CARINISH ROAD PERMANENT CLOSURE – MINISTERS DECISION

Council was notified by way of letter from the Planning Minister on 28 April 2024 that she had approved the permanent closure of Carinish Road adjacent to the proposed Clayton SRL Station, immediately west of Clayton Road.

This was done by way of an amendment to the endorsed Surface and Tunnel Plans and Suburban Rail Loop (SRL) East Urban Design Strategy in accordance with Clauses 4.3.3 and 4.6.5 respectively of the Suburban Rail Loop East Incorporated Document 2022.

Specifically, the amendment removes the legend item shown on the relevant Surface and Tunnel Plan as “Carinish Road closure is indicative and subject to traffic modelling, detailed design and consultation with relevant stakeholders and will be located on the UDLF” and associated orange shading as the further investigation has been undertaken, including traffic modelling, detailed design and consultation.

As outlined earlier in this report the SRLA wished to pursue the permanent closure of Carinish Road, with the introduction of a right turn facility being introduced from Shandean Avenue onto Clayton Road to improve local accessibility, which was presented to Council along with Council’s objection to this at the 29 August 2023 Council Meeting.

An agreed outcome of the assessment process undertaken by the SRLA was that they would fund a Local Area Traffic Management study, including necessary mitigation works and also pedestrian connectivity and safety improvements to Haughton Road.

It should also be noted that Carinish Road is also required to be closed for the construction of the Clayton SRL Station, commencing in 2025.

An excerpt from the approved Surface and Tunnel Plans for Clayton SRL Station is provided below:

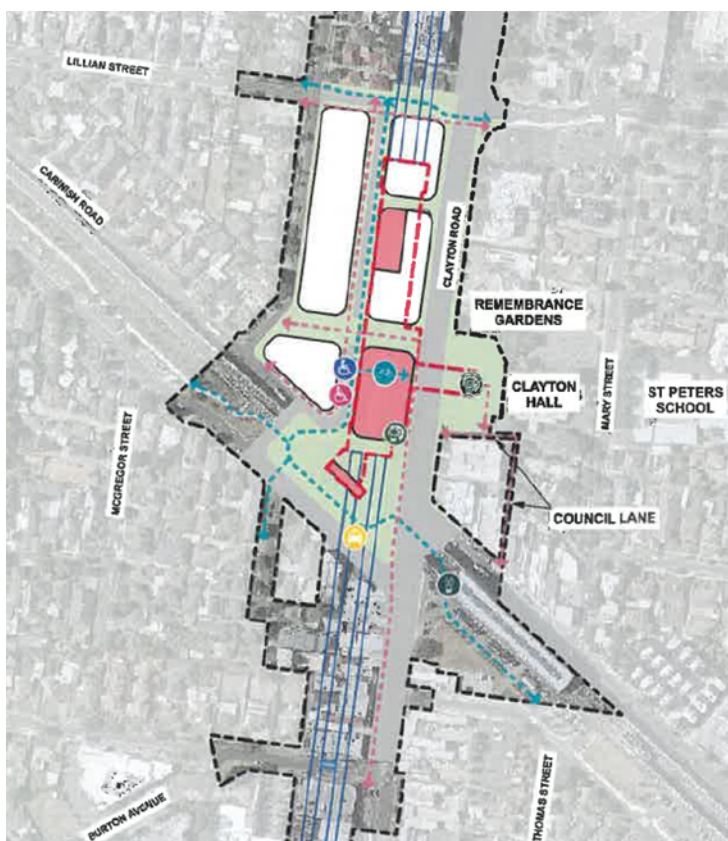


Figure 1 - Updated Surface and Tunnel Plan for Clayton SRL Station

## COLEMAN PARADE CLOSURE REVIEW

The Coleman Parade closure review process was undertaken by SRLA generally as follows:



- Initial Options Development
- Shortlisting Workshop
- Further Development of shortlisted options
- Multicriteria Analysis (MCA) Workshop
- Preferred Option Selection

SRLA has convened two workshops with Council Officers. These were held on the following dates:

- 23 March 2023
- 24 March 2024

### Options

The following long list of eight options were identified:

Baseline	Coleman Parade closed (this is the SRL Project baseline that was assessed as part of the EES)
1	Coleman Parade closed with Kingsway modifications
2	Coleman Parade open with bi-directional traffic
3	Coleman Parade open with bi-directional shared zone
4a	Coleman Parade open one-way (eastbound) with Pedestrian Operated Signals (POS) crossing
4b	Coleman Parade open one-way (eastbound) with zebra crossing
5	Coleman Parade open one-way (westbound) with POS crossing
6	MMRN Station lowering and Ring Road

### Baseline – Coleman Parade closed

This option is what was proposed by the Project for the EES. Coleman Parade is closed between the IKON building ramp and Kingsway. A cul-de-sac is included at the end of an extended IKON building ramp to enable vehicles to turn around that would use the short stay, pick up and drop off (PUDO) parking on the truncated Coleman Parade. This is shown in Figure 2 that follows.





Figure 2 – Coleman Parade closed (Project Baseline)

Key advantages/opportunities include:

- Contiguous and integrated public realm with the station surrounds and future precinct.
- Minimises barriers and improves wayfinding for pedestrian movement between the two stations (SRL and MMRN) and bus interchange.
- Compliance with the SRL East Urban Design Strategy.

Key constraints/issues include:

- Limited car parking spaces on Coleman Parade in close proximity to the two stations and bus interchange.
- Redistribution of local traffic and increased flows on some local residential streets, including Kingsway (200-300 vehicles per hour (two-way) in the AM and PM peak periods).

#### Option 1 – Coleman Parade closed with Kingsway modifications

This option retains the full closure of Coleman Parade with a road closure on Kingsway immediately north of the Kingsway/Montclair Avenue intersection. This is shown in Figure 3. The intent is to remove the through traffic function of Kingsway north of Montclair Avenue, thereby reducing traffic on Kingsway and Montclair Avenue.

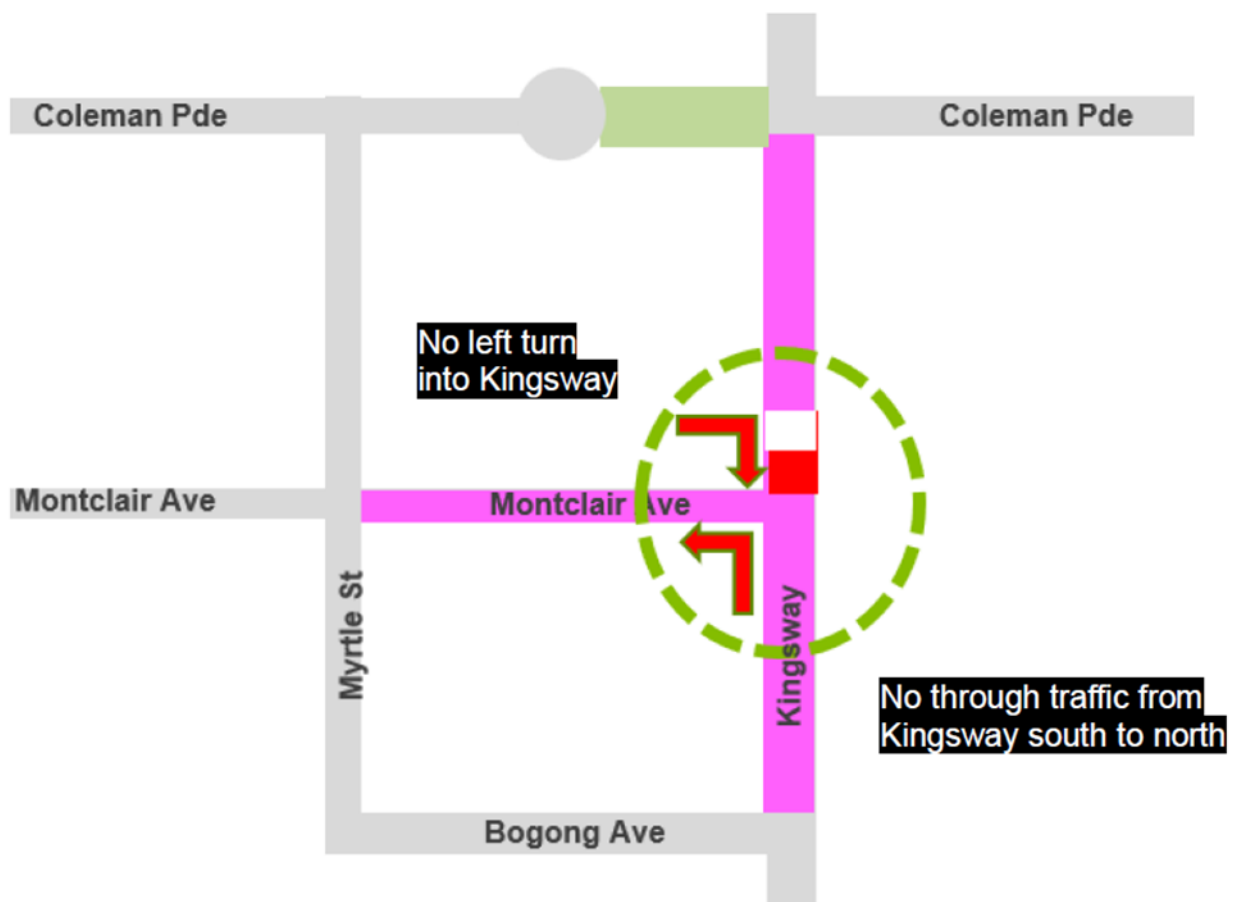


Figure 3 – Coleman Parade closed with Kingsway modifications

Key advantages/opportunities include:

- Public realm and compliance with SRL East Urban Design Strategy are the same as the Baseline.
- Improved pedestrian and cyclist safety.

Key constraints/issues include:

- Traffic modelling undertaken indicates that intersections are expected to operate at unacceptable levels.
- Redistribution of local traffic and increased flows on some local residential streets and Springvale Road.

#### Option 2 – Coleman Parade open with bi-directional traffic

This proposes to maintain a configuration similar to the existing condition on Coleman Parade, however when taking into account the Glen Waverley MMRN Station compliance upgrade works that are a Project requirement the cross section does not physically fit. This is shown in Figure 4 that follows.

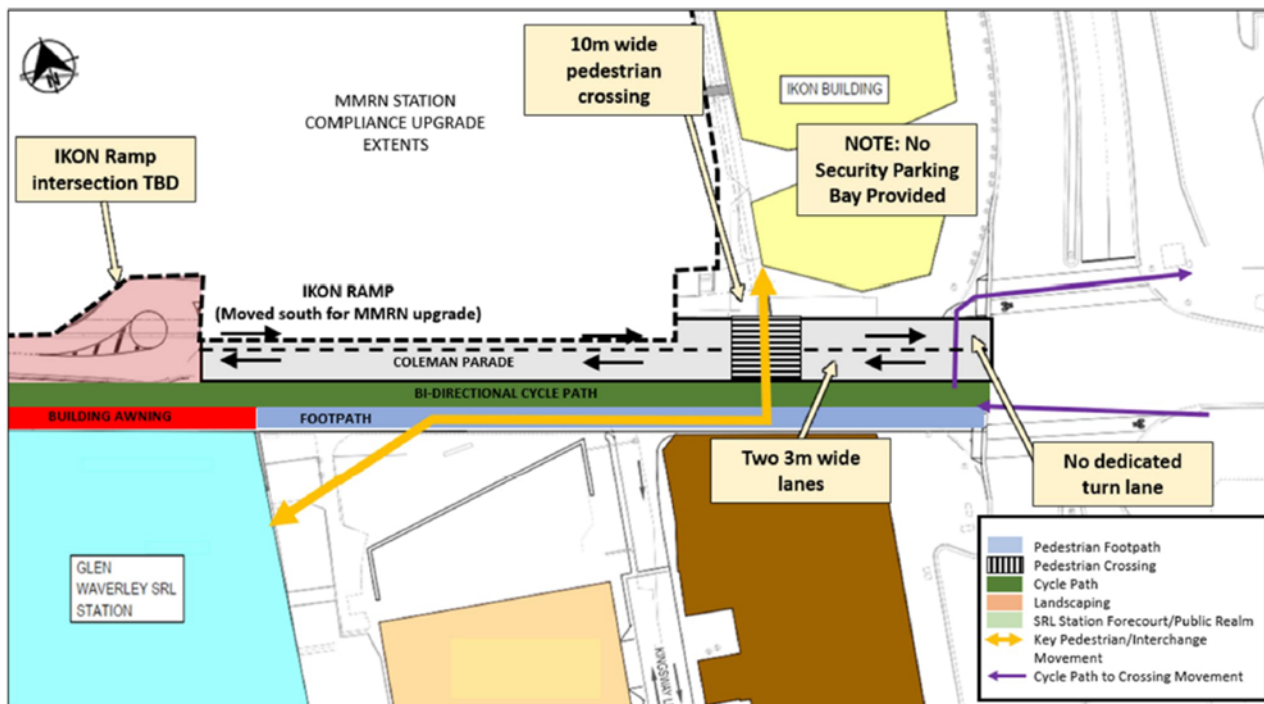


Figure 4 – Coleman Parade open with bi-directional traffic

Key advantages/opportunities include:

- Similar layout to existing at Coleman Parade for traffic.
- More route choice for general traffic.

Key constraints/issues include:

- Full cross section does not fit with extent of Glen Waverley MMRN station upgrade requirements.
- High pedestrian volumes crossing Coleman Parade will lead to traffic queuing and delays.
- Reduction in pedestrian interchange performance at ground level.
- No dedicated turning lane onto Kingsway.
- Informal PUDO creating vehicle delays.

#### Option 3 – Coleman Parade open with bi-directional shared zone

This option would retain bi-directional movement on Coleman Parade via shared zone between the IKON building ramp and Kingsway. This is shown in Figure 5 that follows.

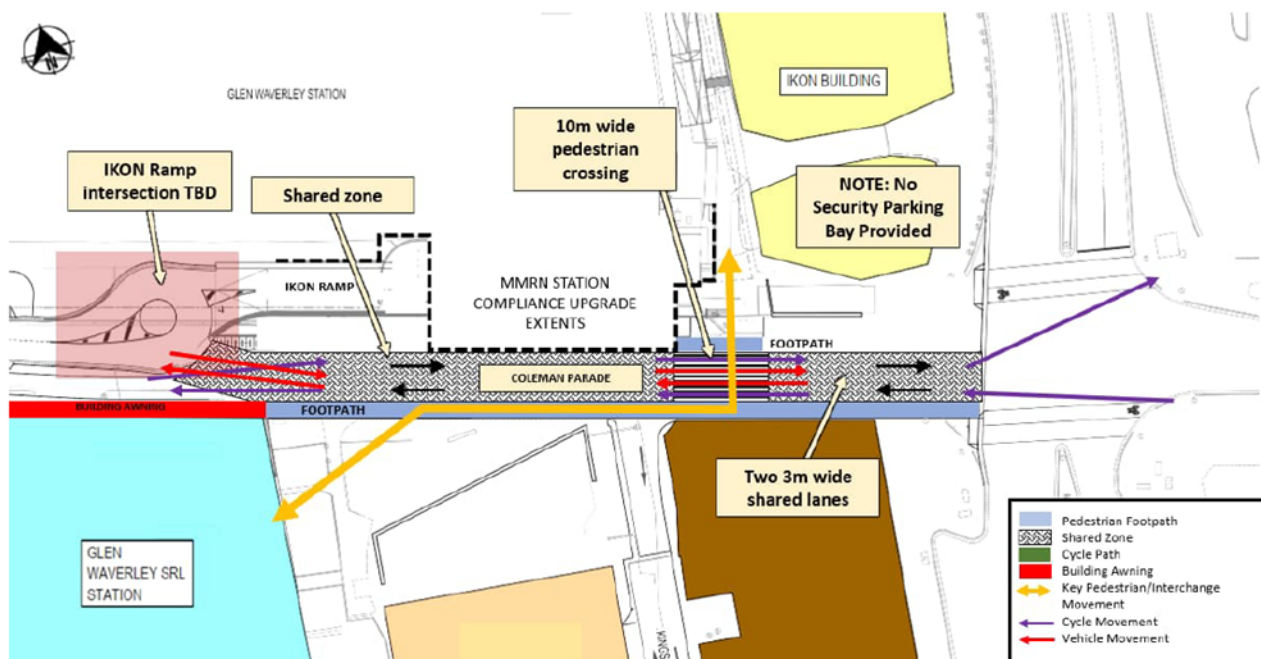


Figure 5: Coleman Parade open with bi-directional shared zone

Key advantages/opportunities include:

- Maintains bi-directional traffic flow on Coleman Parade.
- More route choice for general traffic.

Key constraints/issues include:

- Does not provide adequate pedestrian safety or a dedicated cycling connection.
- Reduction in pedestrian interchange performance at ground level.
- No dedicated turning lane onto Kingsway.
- High pedestrian volumes across Coleman Parade will cause vehicle queuing.
- High risk of pedestrian/cyclist/vehicle conflicts.
- Informal PUDO creating vehicle delays.
- Vehicle movement from IKON building ramp to Coleman Parade eastbound unlikely to be achievable and multiple conflict points likely at this intersection.

#### Option 4a – Coleman Parade open one-way (eastbound) with POS crossing

A one-way eastbound traffic lane would be retained on Coleman Parade, between the IKON building ramp and Kingsway. Pedestrians would be able to cross Coleman Parade via a 10 metre wide Pedestrian Operated Signals (POS). This is shown in Figure 6 that follows.

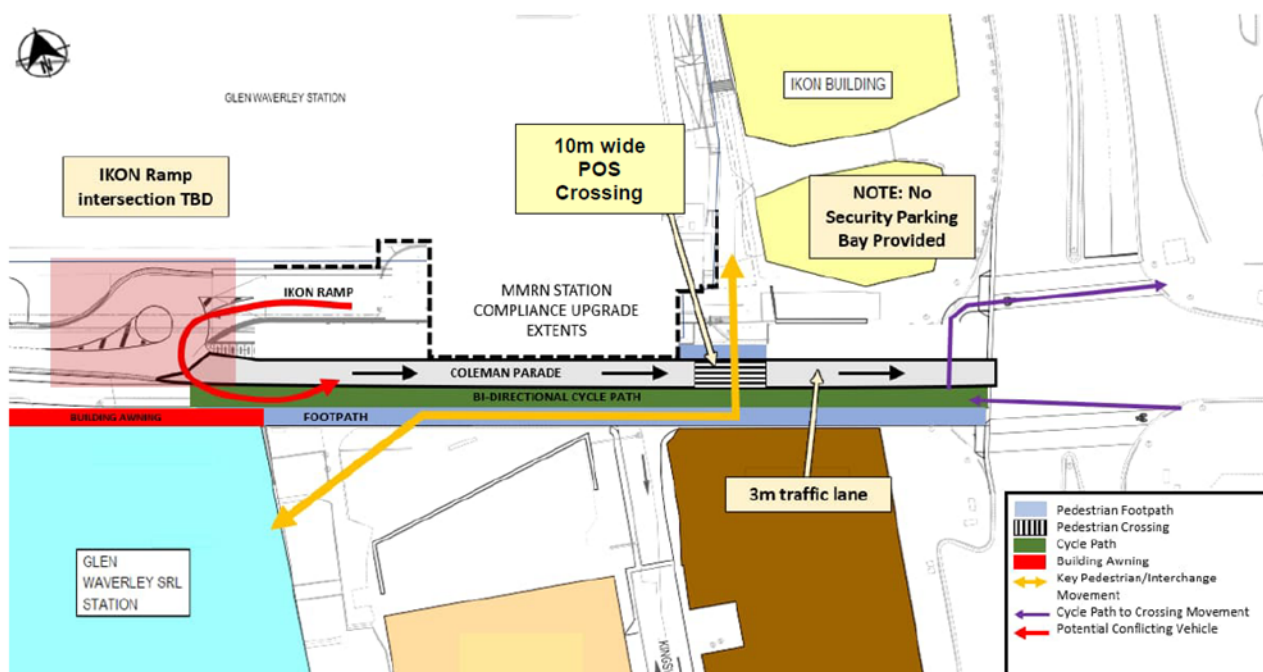


Figure 6 – Coleman Parade open one-way (eastbound) with POS crossing

Key advantages/opportunities include:

- Maintains through traffic in an eastbound direction.
- Separates vehicles and cyclists.

Key constraints/issues include:

- No dedicated turning lane onto Kingsway.
- Reduced pedestrian footpath width/refuge.
- Vehicle movement from IKON ramp to Coleman Parade eastbound unlikely to be achievable and creates a conflict point.
- Cross section does not have room for trees and other streetscape features.
- High likelihood of pedestrians queuing at crossing and blocking pedestrian and cycle paths.
- Informal PUDO could create delays.

#### Option 4b – Coleman Parade open one-way (eastbound) with zebra crossing

This option also retains a one-way eastbound traffic lane on Coleman Parade, between the IKON building ramp and Kingsway. Pedestrians would be able to cross Coleman Parade via a 10 metre wide Pedestrian Zebra Crossing. This is shown in Figure 7 that follows.



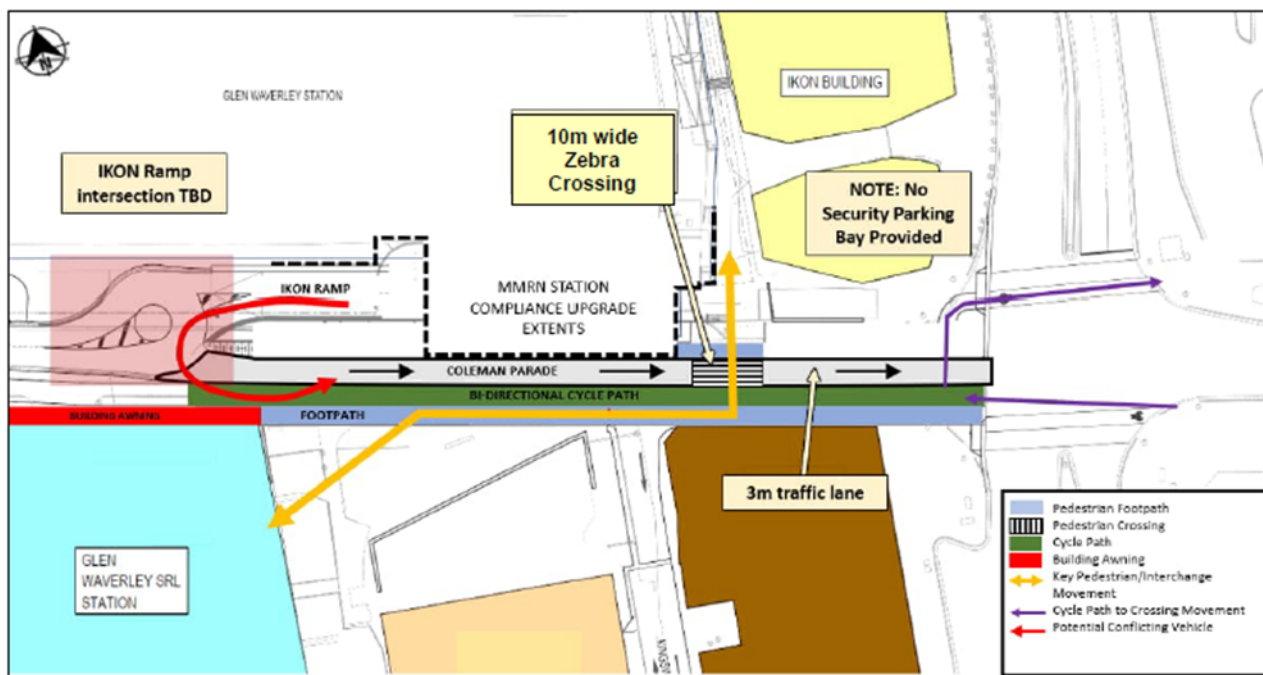


Figure 7 – Coleman Parade open one-way (eastbound) with Pedestrian Zebra Crossing

Key advantages/opportunities include:

- Maintains through traffic in an eastbound direction.
- Separates vehicles and cyclists.
- Low pedestrian delay when crossing Coleman Parade

Key constraints/issues include:

- No dedicated turning lane onto Kingsway.
- Reduced pedestrian footpath width/refuge.
- Vehicle movement from IKON ramp to Coleman Parade eastbound unlikely to be achievable and creates a conflict point.
- Cross section does not have room for trees and other streetscape features.
- High likelihood of vehicles queuing on Coleman Parade at crossing.
- Informal PUDO could create delays.

#### Option 5 – Coleman Parade open one-way (westbound) with POS crossing

One-way westbound traffic on Coleman Parade would be maintained, between the IKON building ramp and Kingsway. Pedestrians would be able to cross Coleman Parade via a 10 metre wide Pedestrian Operated Signals (POS). This is shown in Figure 8 that follows.



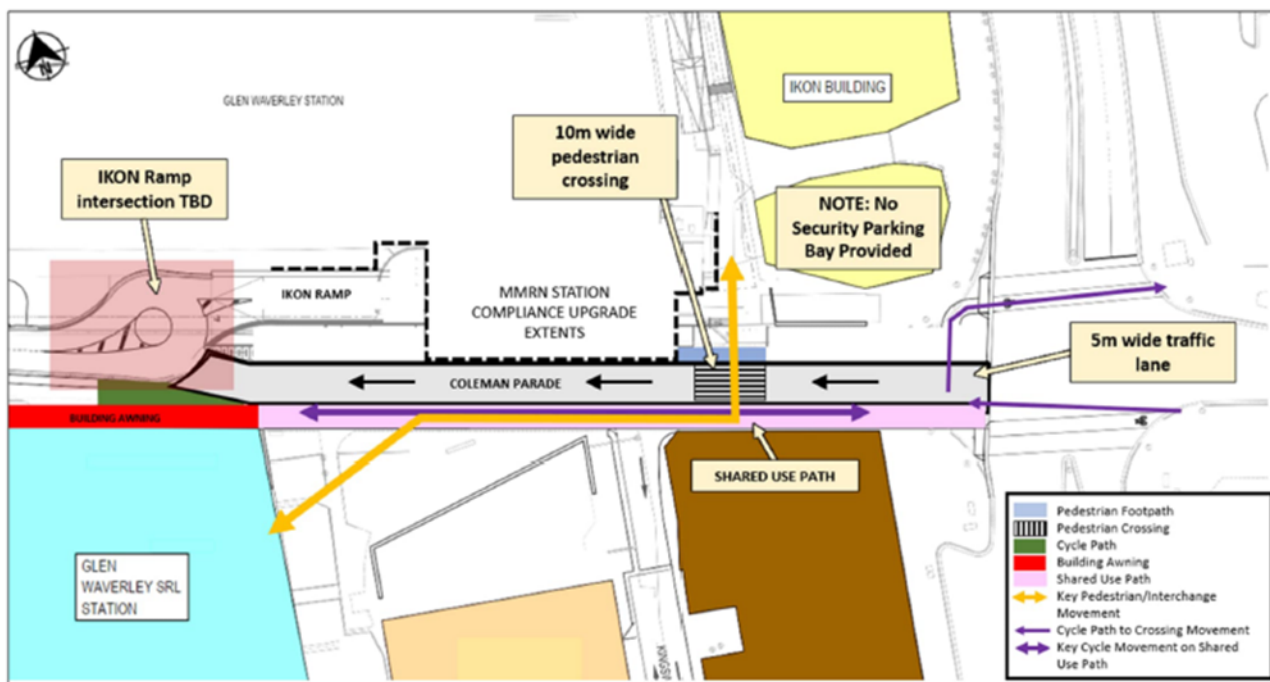


Figure 8 – Coleman Parade open one-way (westbound) with POS crossing

Key advantages/opportunities include:

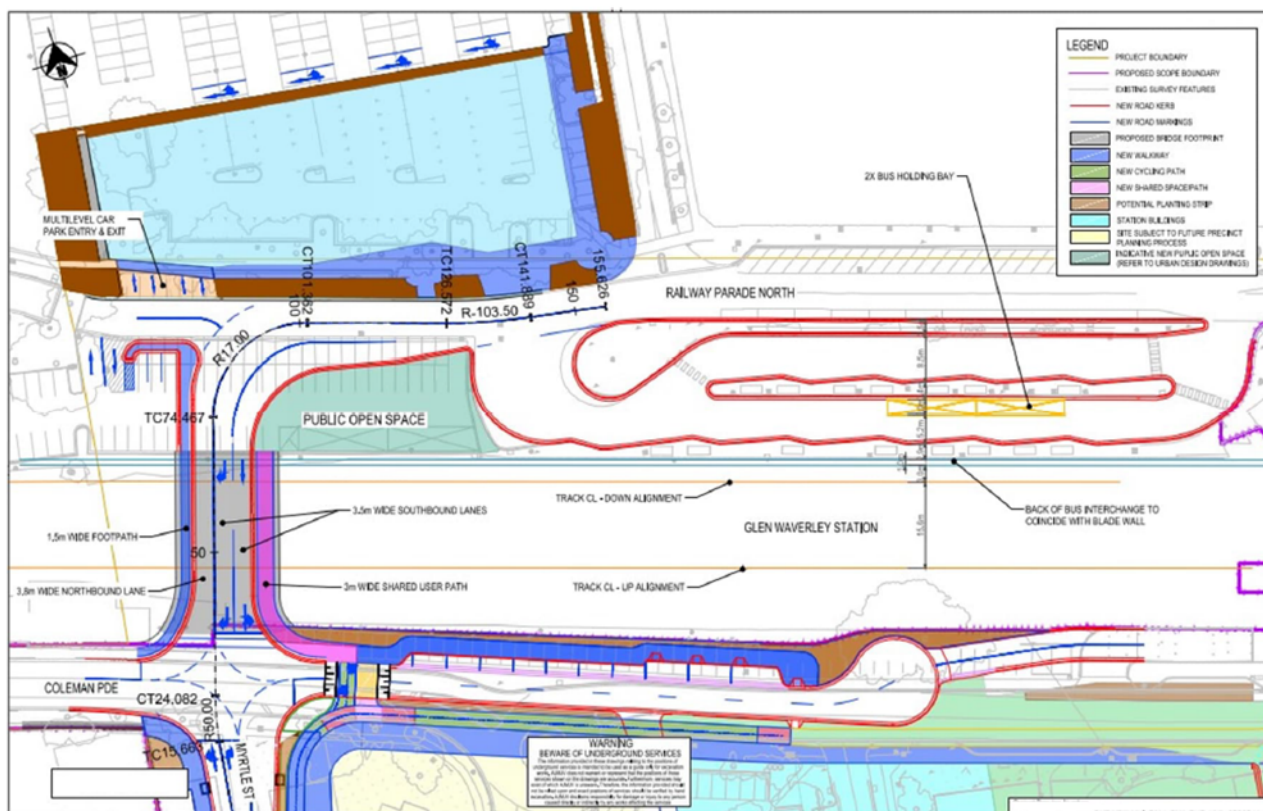
- Maintains through traffic in a westbound direction.

Key constraints/issues include:

- Reduced pedestrian and cycle priority due to shared path.
- Vehicle movement from IKON ramp to Coleman Parade westbound likely conflict point.
- Cross section does not have room for trees and other streetscape features.
- High likelihood of vehicles queuing on Coleman Parade and impacting Coleman Parade/Kingsway intersection.
- Informal PUDO could create delays.

#### Option 6 – Glen Waverley MMRN Station Lowering (Ring Road)

This option includes the lowering of the Glen Waverley MMRN station to enable construction of a Ring Road over the MMRN corridor, connecting Myrtle Street at Coleman Parade to Railway Parade North. This option would require works along the MMRN rail corridor from Glen Waverley Station to the west of Lawrence Road. This is shown in the following Figure 9.



*Figure 9 – Ring Road over lowered MMRN station*

Key advantages/opportunities include:

- Aligns with the Ring Road in the Glen Waverley Activity Centre Structure Plan (Updated 2016) that aimed to remove traffic from the core of the activity centre.
- Provides an alternative vehicle route with the closure of Coleman Parade.

Key constraints/issues include:

- Requires significant works to lower the MMRN station and corridor that extends west of Lawrence Road including:
  - Permanent works:
    - Lowering of MMRN station and stabling.
    - Bridge structures for the Ring Road, for the bus interchange to be located above the stabling, active transport link at Rose Avenue and reconstruction of the Lawrence Road overpass to accommodate temporary stabling.
    - Bus interchange reinstated in same location on a deck above stabling.
  - Temporary works:
    - Closure of rail operations to Glen Waverley during construction. Rail replacement bus required from Syndal to Glen Waverley.
    - Temporary stabling required to accommodate termination of rail services at Syndal Station.
    - Temporary bus interchange required during construction. At the time of assessment in May 2024, via the Multi Criteria Assessment, SRLA indicate that the only feasible location for this would be the Central Car Park.
- Likely increase in traffic volumes around Glen Waverley Secondary College.

- Existing MMRN commuter parking impacted.
- Significant estimated delivery cost.

The summary of the Multi Criteria Analysis of the long list eight options undertaken by SRLA is included in Figure 10 that follows. The report, Coleman Parade Multi-Criteria Assessment 10 May 2024, attached as Appendix 1, also includes further detail on the assessment of the long list of options.

Option	Connectivity				Liveability			Cost	Discussion / Status
	Network Level Performance	Ped & Cycle Access & Safety	Coleman Pde Pedestrian Movement Performance	Coleman Pde Vehicle Movement Performance	Public Open Space	Station Wayfinding	Urban Design Strategy		
Baseline: Coleman Pde Closed	—	✓	✓	✗	✓	✓	✓	—	Short listed for MCA
1: Coleman Pde Closed with modification	✓	✓	✓	✗	✓	✓	✓	—	Short listed for MCA – further consultation with MCC to understand plans for Kingsway upgrades / traffic modifications (UDS GWY1 1H)
2: Coleman Pde Open with bi-directional traffic (POS crossing)	✗	✗	✗	✓	✗	—	✗	—	Dismiss – insufficient cross section to fit pedestrians, cyclists and bi-directional vehicles
3: Coleman Pde Open with bi-directional traffic shared zone (POS crossing)	—	—	—	✗	—	—	✗	—	Dismissed – Compromised safety concerns
4A: Coleman Pde Open one-way eastbound (POS crossing)	—	—	—	—	—	—	✗	—	Short listed for MCA, preferred to zebra crossing
4B: Coleman Pde Open one-way eastbound (zebra crossing)	—	—	✓	—	—	—	✗	—	Dismissed on queuing grounds
5: Coleman Pde Open one-way westbound (POS crossing)	✗	✗	—	✗	—	—	✗	—	Dismiss – Compromised Station Precinct & Ped Safety. Compromised traffic function in particular traffic queuing to Kingsway
6: MMRN Station Lowering (Ring Road)	—	✗	—	—	✓	—	—	✗	Dismiss – Extensive works and disruption required to rail corridor, bus network and property acquisitions. Compromised traffic and active transport function

  Short listed options

Figure 10 – Multi Criteria Assessment of Long List of Options

The three SRLA shortlisted options Baseline (Coleman Parade Closed), Option 1 (Coleman Parade Closed with Kingsway Modifications) & Option 4a (Coleman Parade Open one-way eastbound with POS) circled in red and also Option 6 (Ring Road) that was suggested should be included by Council following the first workshop, were all assessed further by SRLA through transport modelling and assessment. The full Glen Waverley Traffic Modelling Options Report can be found at Appendix B of the report attached. A summary is also provided following.

The Glen Waverley MMRN Station Lowering (Ring Road) Option 6 is Council's preferred option, in accordance with the Glen Waverley Activity Centre Structure Plan (Updated 2016) and outlined by Council through the EES process. The Ring Road and the lowering of the existing Glen Waverley MMRN station and the connectivity and development opportunities this would provide are essential to the revitalisation and of overcoming key constraints of the activity centre. This is required even more urgently as a result of the SRL East Project, which will create additional traffic movement and redistribute traffic onto Kingsway.

## Transport Modelling

Two transport models were used to assess the impact on the transport network and detailed network operation, including queuing and delays at intersections and along corridors. The following table summarises this assessment.

Option	Network Impacts	Traffic and Bus Performance	Pedestrian and Cyclist
Coleman Pde Closed (Project Baseline)	Network operating statistics are similar to those for Coleman Pde eastbound open (Option 4a). Non-local traffic is diverted to the arterial road network, rather than rat-running through the activity centre.	All intersections operate within acceptable levels of service in AM and PM peaks. Average delays are similar to Coleman Pde Closed (Baseline) for buses and traffic.	Pedestrian and cyclist performance in the vicinity of the stations will be significantly better with Coleman Pde closed compared to Coleman Pde eastbound open (Option 4a).
Coleman Parade Closed with Kingsway Modifications (Option 1)	Reroutes traffic from Kingsway to Springvale Road. Travel from north of Railway Parade North to Coleman Parade west, detours through High Street Road and Blackburn Road. Overall ability of the network within Glen Waverley to operate at a reasonable level of service is impacted by queuing and a lack of alternative routes for traffic exiting the centre.	Significantly higher average road traffic delays (approx. 1 minute) and bus delays (up to 5 minutes). The greatest impact is on Railway Parade North at the Springvale Road intersection with queues back to Kingsway. Creates queuing on Springvale Road with the right turn into Kingsway extending back into the through traffic lane. Results in extensive queuing and low speeds on Springvale Road.	Closure of Kingsway to through traffic would result in improvements to pedestrian movements across Kingsway at the point of closure, reducing delay and conflict with traffic at this location.
Coleman Pde Eastbound Open (Option 4a)	Localised impacts with traffic rerouting from Kingsway and Montclair Ave. Slow speed and pedestrian signals on Coleman Parade means there is unlikely to be rat running traffic from the wider strategic network.	Average delays are similar to Coleman Pde Closed (Baseline) for buses and traffic.	Pedestrian delay at the pedestrian operated signals. Pedestrians crossing Coleman Parade will block the footpath, increasing risk that pedestrians will queue on the cycle path. Eastbound cyclists will travel with vehicles, increasing risk of conflict between car and cycle traffic.
Ring Road (Option 6)	Approx 500 vehicles per hour use the new Ring Road in the peak hours. Modelling indicates that it is likely attracting traffic	Average delays are similar to Coleman Pde Closed (Baseline) for buses and traffic but intersection performance deteriorates	Extra traffic (approx. 130 vehicles in peak hour) on O'Sullivan Rd around Glen Waverley Secondary College and passing the



	travelling through rather than to the precinct. Large proportional increase in traffic on Euneva Ave and O'Sullivan Rd past the Glen Waverley Secondary College and bus interchange.	at some intersections with an increase in delays experienced.	bus interchange increases risk of conflicts between traffic and pedestrians.
--	--	---	--

# Traffic Surveys with Coleman Parade Closure

To enable further verification of the transport modelling that was undertaken for the closure of Coleman Parade, SRLA commissioned traffic surveys before, during and after Coleman Parade was temporarily closed between Myrtle Street and Kingsway for utility relocation works from 9 May 2023 to 12 May 2023. This closure is shown in Figure 11.

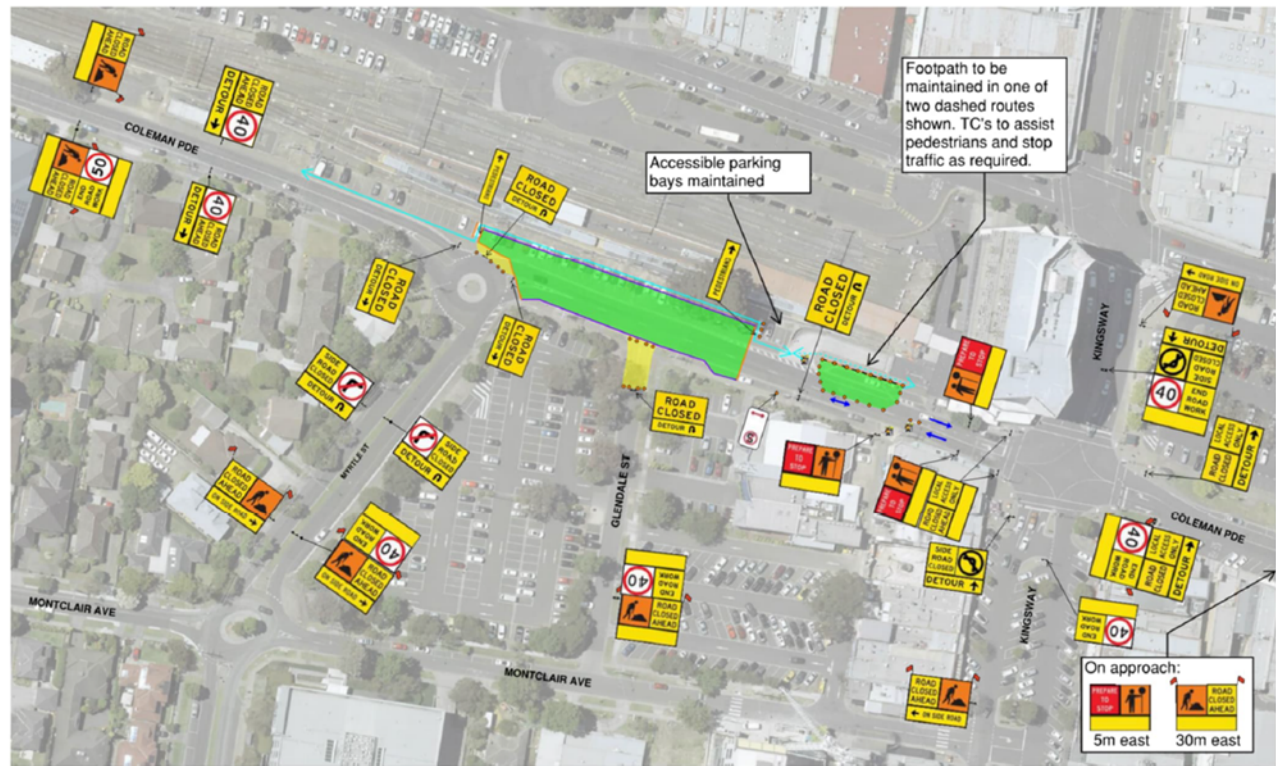


Figure 11 – Coleman Parade Closure Temporary Traffic Management

Figure 12 shows the locations of the surveys and summarises the traffic volumes captured with and without the closure of Coleman Parade.

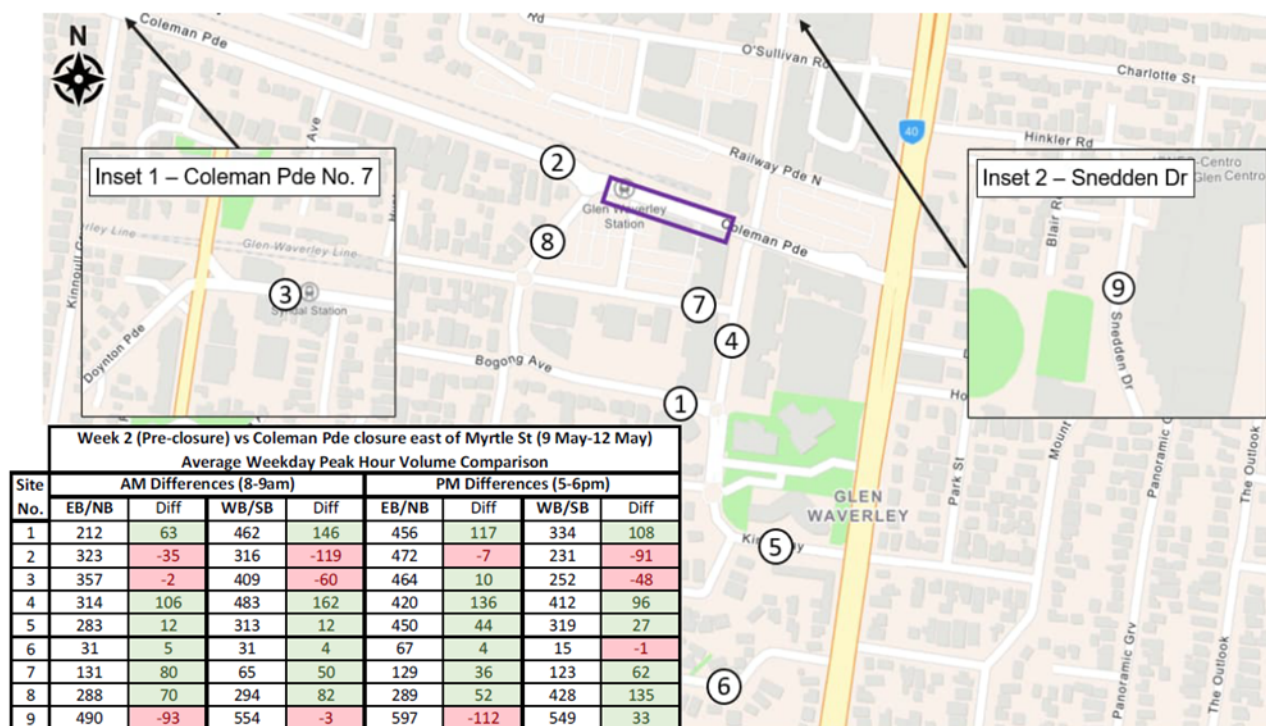


Figure 12 – Traffic Survey Locations and Volume Comparison

In summary, the results show that:

- Bogong Avenue (Site 1), Kingsway (Site 4), Montclair Avenue (Site 7) and Myrtle Street (Site 8) all showed increases in traffic in both AM and PM peak hour.
- Traffic volumes on Coleman Parade west (Site 2) and Sneddon Drive are lower, indicating that non-local traffic detoured via the broader network and arterial roads.
- The traffic increase on Kingsway equates to 4 vehicles/minute (two-way), which is within typical peak period fluctuations. Further detail on the increase is shown in Figure 13.



**TABLE 4-2 CHANGE IN TRAFFIC VOLUMES ON KINGSWAY – AM PEAK**

Detail	Flow direction		
	Northbound	Southbound	Two-way
Prior to Coleman Parade closure (veh/hr)	208	321	529
During Coleman Parade closure (veh/hr)	314	483	797
Change (veh/hr)	106	162	268
Change (veh/min)	2	3	4

**TABLE 4-3 CHANGE IN TRAFFIC VOLUMES ON KINGSWAY – PM PEAK**

Detail	Flow direction		
	Northbound	Southbound	Two-way
Prior to Coleman Parade closure (veh/hr)	284	316	600
During Coleman Parade closure (veh/hr)	420	412	832
Change (veh/hr)	136	96	232
Change (veh/min)	2	2	4

*Figure 13 – Change in Traffic Volumes on Kingsway***SRLA's Preferred Option – Coleman Parade Closed (Baseline)**

Following the MCA, SRLA have advised that they will be pursuing the Coleman Parade Closed Option (Baseline) as the permanent arrangement in Glen Waverley. Coleman Parade would maintain the same configuration as detailed in the Glen Waverley Surface and Tunnel Plan shown at Figure 14.

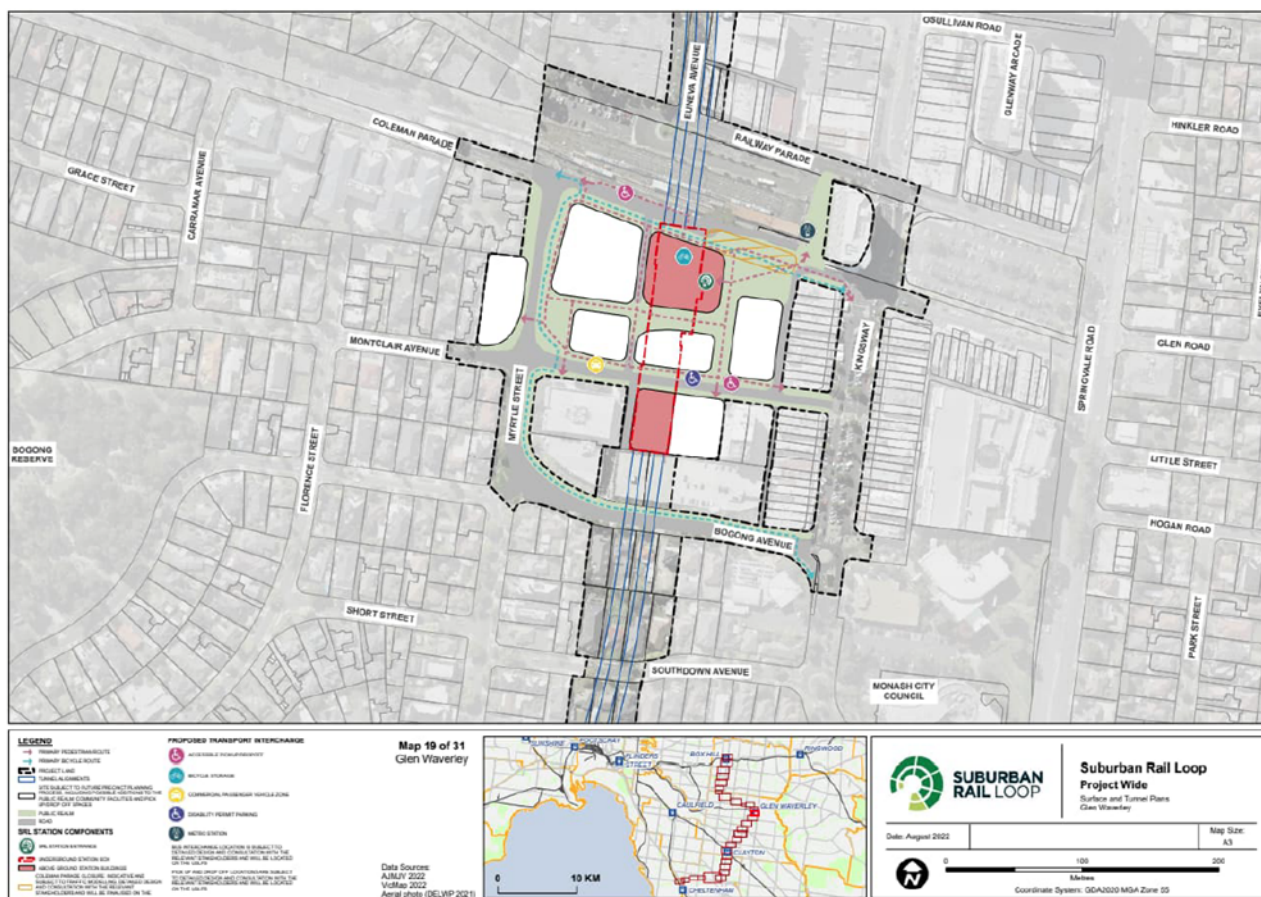


Figure 14 – Glen Waverly Surface and Tunnel Plan

The reasoning SRLA have provided for pursuing the Baseline option is:

- Provides improved connectivity with:
  - Increased transport and precinct integration.
  - Safe and intuitive wayfinding.
  - Increased pedestrian connectivity between the SRL Station, existing MMRN Station, bus interchange and the precinct.
- Improved liveability with the creation of a station plaza and public open space.
- Provides improved productivity as the solution contributes to the readiness of the precinct for future population growth with reduced congestion.
- Improved safety for pedestrians and cyclists by minimising road crossings and interfaces with vehicles.
- Has negligible street network performance implications compared against the other short listed options including keeping Coleman Parade open.

Noting the reasoning above from SRLA, it is still considered by Council that the impact on Kingsway is significant if Coleman Parade is closed, without providing an alternative route for vehicles. The increase in traffic on Kingsway outlined in Figure 13 is up to 4 vehicles/minute (two-way), which equates to 268 vehicles/hour in the AM peak (50% increase) and 232 vehicles/hour in the PM peak (39% increase).

As was noted earlier in the report, it was Monash City Council's position throughout the EES process, and still is that additional traffic will be directed along the "heart of the activity centre", the critical fine-grained retail and food and beverage strip that is Kingsway, which is directly inconsistent with the specific existing policy for the activity centre.

Council is concerned that the amenity, useability and pedestrianisation of Kingsway will likely be compromised by the additional traffic caused by the closure of Coleman Parade, without providing an alternative route for vehicles, if appropriate mitigation is not undertaken on Kingsway to improve the amenity and pedestrian environment whilst maintaining access. This mitigation should be agreed with Council and funded by the SRL East Project due to the Project's detrimental impact on Kingsway.

## NEXT STEPS

Following the process undertaken so far by SRLA, which has been outlined earlier in this report and was also pursued for the Carinish Road closure, it is understood the next step would be an application to then Minister for Planning by SRLA for approval of an amendment to the Surface and Tunnel Plans by SRLA. This process requires a 28-day consultation period.

The use and development of the Project Land for the purposes of the Project must be undertaken generally in accordance with the approved Surface and Tunnel Plans that were approved by the Minister for Environment and Climate Action in October 2022 as part of the SRL East Incorporated Document. They may be amended with the approval of the Minister for Planning. The approved Glen Waverley Surface and Tunnel Plan shown at Figure 14, includes an indicative closure of Coleman Parade and notes:

*Coleman Parade Closure: Indicative and subject to traffic modelling, detailed design and consultation with the relevant stakeholders and will be finalised on the UDLP.*

The traffic modelling and consultation component of this is outlined in the report Coleman Parade Multi-Criteria Assessment 10 May 2024, which is attached as Appendix 1.

An application for approval of an amendment to the Surface and Tunnel Plans must be accompanied by a schedule explaining the proposed amendments and a written statement from SRLA explaining and supporting the proposed amendment, including:

- a) A description of the form and extent of any consultation undertaken with relevant councils, relevant government agencies and other stakeholders concerning the proposed amendment; and
- b) a written response to comments from relevant councils, relevant government agencies and other stakeholders.

The application would also need to take into the Environmental Management Framework (EMF) requirement that relates to the closure of Coleman Parade, Environmental Performance Requirement (EPR) T6-2 Road transport design and operation:

*Develop and implement street network designs for each affected street within the Project Land in consultation with the relevant road management authorities that includes:*

- c) *Assessment of the potential closure of Carinish Road, Clayton and Coleman Parade, Glen Waverley. The designs ultimately adopted at each location must consider pedestrian safety and traffic movements in the surrounding street network.*

The SRL East Urban Design Strategy, which was approved by the Minister for Environment and Climate Action in October 2022 includes place specific requirements for Coleman Parade, that any application would need to align with and are outlined as follows:

*2a Provide an attractive and well-designed space around the SRL Station entrance that is integrated with Coleman Parade that:*

- i. Creates a positive arrival experience into the station environs*
- ii. Contributes to addressing the open space needs of the community*
- iii. Minimises barriers to pedestrian movement between the SRL Station, bus interchange and existing Glen Waverley railway station forecourt.*

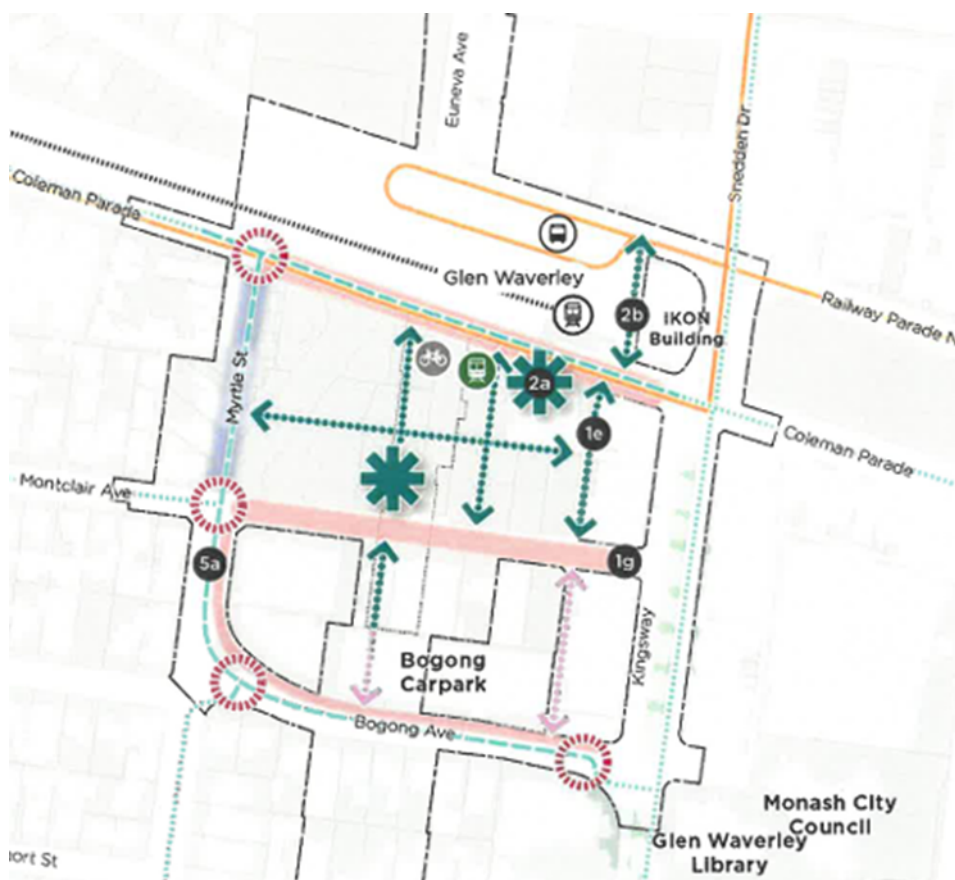


Figure 15 – Excerpt from UDS showing place specific requirements for Coleman Parade

## FINANCIAL IMPLICATIONS

There are no financial implications to this report.

## POLICY IMPLICATIONS

The SRL East project and the social, economic and environmental benefits that will come from the anticipated level of investment is consistent with Council and State Government Policies.

## Consistency with Council Strategies and Policies

### Monash 2021: A Thriving Community (2010)

This long-term strategy states (as relevant) that our community values convenience (we are in walking distance to all we need); a balance between residential, commercial and industrial development; good connections to bus and train services, and easy access by train/freeway; we have a friendly, community-based atmosphere in shopping strips; and a safe place to live and bring up a family.

### Other relevant Strategies

- Clayton Activity Centre Precinct Plan
- Monash Integrated Transport Strategy
- Monash Economic Development Strategy

### Monash Planning Scheme

Clauses from the Monash Planning Scheme that are relevant to Clayton include:

- Clause 11.06 – Metropolitan Melbourne
- Clause 17 – Economic Development
- Clause 21.05 (MSS) – Economic Development
- Clause 21.06 (MSS) – Activity Centres
- Clause 22.03 – Industry and Business Development and Character Policy

## State Government Policy Context

### Plan Melbourne

There are numerous references and policy directions throughout Plan Melbourne that highlight the importance of the MNEIC, specifically.

*“Direction 1.1 Create a city structure that strengthens Melbourne’s competitiveness for jobs and investment”*

*“Policy 1.1.4 Support the significant employment and servicing role of Health and Education Precincts across Melbourne”*

*“Policy 1.17 Plan for adequate commercial land across Melbourne”*

*“Direction 2.2 Deliver more housing closer to jobs and public transport”*

*“Direction 2.4 Facilitate decision-making processes for housing in the right locations”*

*“Direction 3.1 Transform Melbourne’s transport system to support a productive city”*

*“Policy 3.1.2 Provide high quality public transport access to job rich areas”*

## **CONSULTATION**

Community consultation was not required.

## **SOCIAL IMPLICATIONS**

There are no social implications to this report.

## **HUMAN RIGHTS CONSIDERATIONS**

There are no human rights implications to this report.

## **GENDER IMPACT ASSESSMENT**

A GIA was not completed because this agenda item is not a 'policy', 'program' or 'service'.

## **CONCLUSION**

The SRLA has developed a number of options for consideration and identified its preferred option of Coleman Parade being closed permanently. This is not Council's preferred option and it is believed that a superior outcome for the project is needed. That being said, if SRLA are to pursue their preferred option, it is imperative that Kingsway is not compromised through mitigation being funded by the SRL East Project that improves the amenity and pedestrian environment whilst maintaining access. This mitigation should be discussed and agreed with Council as soon as possible.

## **ATTACHMENT LIST**

1. Coleman Parade Multi- Criteria Assessment Summary Report - 10 May 2024 [7.1.8.1 - 86 pages]



# Suburban Rail Loop

SUBURBAN RAIL LOOP AUTHORITY

**SRL-TAV-AJM-TSRE-REP-PTS-GWY-005130**  
**COLEMAN PARADE MULTI-CRITERIA**  
**ASSESSMENT SUMMARY REPORT**

10 MAY 2024  
REVISION C



## Document Control Record



222 Exhibition Street  
Melbourne VIC 3000  
PO Box 23061 Docklands VIC 8012 Australia

DOCUMENT CONTROL						
Document Title	Coleman Parade Multi-Criteria Assessment Summary Report					
Document ID		Contract no.				
File Path						
Client		Client contact				
Rev	Date	Revision details/status	Prepared by	Author	Verifier	Approver
A						
B						
C	10/05/2024					
Current revision	C					

APPROVAL	
Author Signature	Approver Signature
Name	Name

© Copyright 2024 AJM Joint Venture. The concepts, data and information contained in this document are the property of AJM Joint Venture. No part of this document may be reproduced, used, copied, published or adapted for use except in accordance with the provisions of the Copyright Act 1968 or with the consent of AJM Joint Venture.

This document has been prepared on behalf of, and for the exclusive use of Suburban Rail Loop Authority ("SRLA"), and is subject to, and issued in accordance with, the provisions of the contract between AJM Joint Venture and SRLA. AJM Joint Venture makes no representations and undertakes no duty to any third party who may use or rely upon this document, and accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this document by any third party. Any third party using and/or relying upon this document accepts sole responsibility and all risk for using and/or relying on this document for any purpose.

This document has been produced from information sourced from SRLA and/or from other sources, relating to the dates and periods referred to in this document. Except as otherwise stated in the document, AJM Joint Venture has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this document may change. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and reevaluation of the data, findings, observations and conclusions expressed in this document.

This document should be read in full and no excerpts are to be taken as representative of the findings.

## Contents

1.	Executive Summary	1
2.	Introduction	4
2.1	SRL East Planning Approval	4
3.	Station Reference Design	7
3.1	Transport Impact Summary	7
4.	Background and Existing Conditions	9
4.1	Existing Road Networks	9
4.2	Existing Traffic Volumes	10
4.3	Traffic Surveys with Coleman Parade Closure	12
5.	Stakeholder consultation	15
6.	Coleman Parade Option Assessment Summary	16
6.1	Process	16
6.2	Key Constraints and Considerations	16
6.3	Options Development – Long List of Options	19
6.4	Options Development – Short List of Options	27
6.5	Traffic Modelling – Short List Options	27
6.6	Multi-Criteria Assessment (MCA) of Options	28
7.	Recommendation and Conclusion	30

## Appendices

- Appendix A Coleman Parade Multi-Criteria Assessment (MCA)
- Appendix B Glen Waverley Traffic Modelling Options Report

# 1. Executive Summary

## Introduction

Suburban Rail Loop Authority (SRLA) has engaged Aurecon Jacobs Mott MacDonald Joint Venture (AJM-JV) to undertake assessment of alternative options to the full closure of Coleman Parade (at Kingsway) and the impacts on traffic, buses, pedestrians, cyclists and liveability. This is in direct response to the Environmental Performance Requirement EPR T6-2 Road transport design and operation that states:

2. Develop and implement street network designs for each affected street within the Project Land in consultation with the relevant road management authorities that includes:

c): Assessment of the potential closure of Carinish Road, Clayton and Coleman Parade, Glen Waverley. The designs ultimately adopted at each location must consider pedestrian safety and traffic movements in the surrounding street network.

This report summarises the outcome of the Coleman Parade, Glen Waverley Multi-Criteria Assessment (MCA) and recommendation of the preferred option, including network and microsimulation traffic modelling to detail the benefits and impacts of the solution.

Figure 1-1 shows the approved Glen Waverley Surface and Tunnel Plan, including an indicative closure of Coleman Parade.

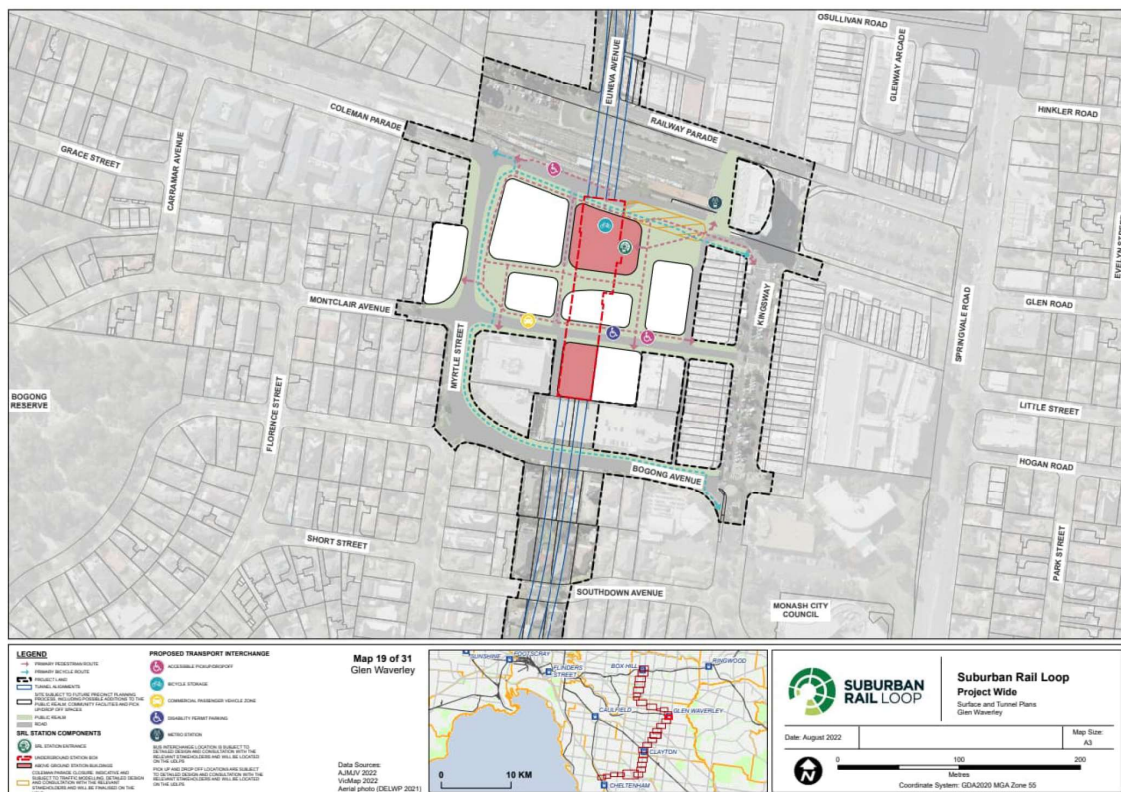


FIGURE 1-1 GLEN WAVERLEY SURFACE AND TUNNEL PLAN



### Coleman Parade Option Assessment

Eight potential options for changes to Coleman Parade in addition to the Baseline, which envisaged a closure of a section of road to provide public realm, were identified during the initial option development. An initial assessment was undertaken to determine three short list options to take to a final MCA to identify the preferred solution for walking and cycling and managing traffic impacts within the surrounding street network.

The assessment of the short list of options considered closing Coleman Parade (Baseline), closing Coleman Parade with Kingsway modifications (Option 1), and Coleman Parade remaining open one-way to eastbound traffic with a Pedestrian Operated Signal (POS) crossing (Option 4A).

The MCA identified the closure of Coleman Parade (Baseline) as the preferred option relative to the other options as shown in Table 1-1. A key benefit with the closure of Coleman Parade is increased Public Realm, providing greater pedestrian and cyclist priority as well as having the least impact to traffic on the surrounding street network.

**TABLE 1-1 MCA SUMMARY**

	Option 1 - Coleman Parade Closed with Kingsway Traffic Modifications	Option 4A - Coleman Parade Open East-bound only
Connectivity		
Productivity		
Liveability		
Deliverability		
Cost		
Total Score		

Key		Better than Baseline		Same/equal to Baseline		Worse than Baseline
-----	--	----------------------	--	------------------------	--	---------------------

### Traffic Modelling Assessment

Table 1-2 displays a high-level assessment of the options based on network and intersection modelling tests. Modelling performance summary for the Baseline option can be found in Section 3.1 and the full detail on traffic modelling completed can be found in Appendix B.

**TABLE 1-2 TRAFFIC MODELLING SUMMARY**

Option	Network Impacts	Bus and Traffic Performance	Pedestrian and Cyclist
<b>Option 1 Coleman Parade Closed with Kingsway Modifications</b>	Reroutes traffic from Kingsway to Springvale Road for travel to/from the north and west. Travel from north of Railway Parade North to Coleman Parade West, detours through High Street Road and Blackburn Road. Overall ability of the network within Glen Waverley to operate at a reasonable level of service is impacted with queuing and a lack of alternative routes for traffic exiting the centre. Additional mitigations have also been tested which reduces the impact but highlights that wider travel demand and parking management is required.	Significantly higher average road traffic and bus delays, greatest impact on Railway Parade North at the Springvale Road intersection with queues back to Kingsway. Creates queuing on Springvale Road with the right turn into Bogong Ave extending back into the through traffic lane. Results in extensive queuing and low speeds on Springvale Road. Changes in signal phasing and an additional right turn at the Springvale / Bogong intersection (from the north) reduces but does not fully mitigate the overall queuing and delays.	Closure of Kingsway to through traffic would result in improvements to pedestrian movements across Kingsway at the point of closure, reducing delay and conflict with traffic at this location. Proposes a staggered pedestrian crossing and changes to cycle phasing at the Springvale Road / Coleman Parade / Railway Parade North intersection. Pedestrians will see an increase in crossing delays due to staged crossings if this mitigation were to be introduced.
<b>Option 4A Coleman Parade Eastbound Open:</b>	Localised impacts with traffic rerouting from Kingsway and Montclair Ave. Slow speed and POS on Coleman Parade means there is unlikely to be rat running traffic from the wider strategic network.	Average delays are similar to Baseline for buses and traffic but intersection performance deteriorates from No SRL and Baseline scenarios. Whilst the number of unsatisfactory performing intersections is minimal, there	Significant impact on pedestrians and cyclists, crossing delays and conflict with traffic on Coleman Parade. Pedestrian delay at the POS below M&P target level of service. Pedestrians crossing Coleman Parade will block the footpath,



Option	Network Impacts	Bus and Traffic Performance	Pedestrian and Cyclist
		would be an increase in delays experienced for all traffic.	increased risk that pedestrians will queue on the cycle path. Eastbound cyclists will travel with vehicles, increasing risk of conflict between car and cycle traffic.

### Recommendation

The Baseline option was recommended as the preferred option following the MCA. Coleman Parade would maintain the same configuration as detailed in the Glen Waverley Surface and Tunnel Plan.

The Baseline option:

- Provides improved connectivity with:
  - » Increased transport and precinct integration.
  - » Safe and intuitive wayfinding.
  - » Increased pedestrian connectivity between the SRL Station, existing Melbourne Metropolitan Rail Network (MMRN) Station, bus interchange and the precinct.
- Provides improved liveability with the creation of a station plaza and public open space.
- Provides improved productivity as the solution contributes to the readiness of the precinct for future population growth with reduced congestion.
- Provides improved safety for pedestrian and cyclists by minimising road crossings and interfaces with vehicles.
- Has negligible street network performance implications compared against the other short listed options including keeping Coleman Parade open.

## 2. Introduction

Suburban Rail Loop Authority (SRLA) has engaged Aurecon Jacobs Mott MacDonald Joint Venture (AJM-JV) to undertake an assessment of the potential closure of Coleman Parade (at Kingsway) and impacts on traffic, buses, pedestrians, cyclists and liveability. This is in direct response to the Environmental Performance Requirement EPR T6-2 Road transport design and operation that states:

2. Develop and implement street network designs for each affected street within the Project Land in consultation with the relevant road management authorities that includes:

c); Assessment of the potential closure of Carinish Road, Clayton and Coleman Parade, Glen Waverley. The designs ultimately adopted at each location must consider pedestrian safety and traffic movements in the surrounding street network.

This report summarises the outcome of the Coleman Parade, Glen Waverley Multi-Criteria Assessment (MCA) and recommendation of the preferred option, including network and microsimulation traffic modelling to detail the benefits and impacts of the solution.

### 2.1 SRL East Planning Approval

#### 2.1.1 SRL EAST PLANNING SCHEME AMENDMENT AND INCORPORATED DOCUMENT

Planning Scheme Amendment GC197 was approved by the Minister for Environment and Climate Action in September 2022. The amendment applies to land in the municipalities of Bayside, Kingston, Monash and Whitehorse, which will be used for the development of the Suburban Rail Loop East (the Project). The SRL East Incorporated Document authorises and regulates the construction and operation of the Project generally in accordance with the SRL East Surface and Tunnel Plans (refer to additional information in Section 2.1.2).

#### 2.1.2 SURFACE AND TUNNEL PLANS

The use and development of the Project Land for the purposes of the Project must be undertaken generally in accordance with the approved Surface and Tunnel Plans that were approved by the Minister for Environment and Climate Action in October 2022 as part of the SRL East Incorporated Document. The Surface and Tunnel Plans provide certainty to decision-makers and the community on the general configuration of the stations and location of tunnel portals, and may be amended with the approval of the Minister for Planning.

An application for approval of an amendment to the Surface and Tunnel Plans must be accompanied by a schedule explaining the proposed amendments and a written statement from SRLA explaining and supporting the proposed amendment, including:

- a description of the form and extent of any consultation undertaken with relevant councils, relevant government agencies and other stakeholders concerning the proposed amendment.
- any written comments from relevant councils, relevant government agencies and other stakeholders
- a written response to comments from relevant councils, relevant government agencies and other stakeholders.

Figure 2-1 shows the Glen Waverley Surface and Tunnel Plan approved in September 2022, including an indicative closure of Coleman Parade, Glen Waverley, subject to traffic modelling that has been undertaken as part of this report.

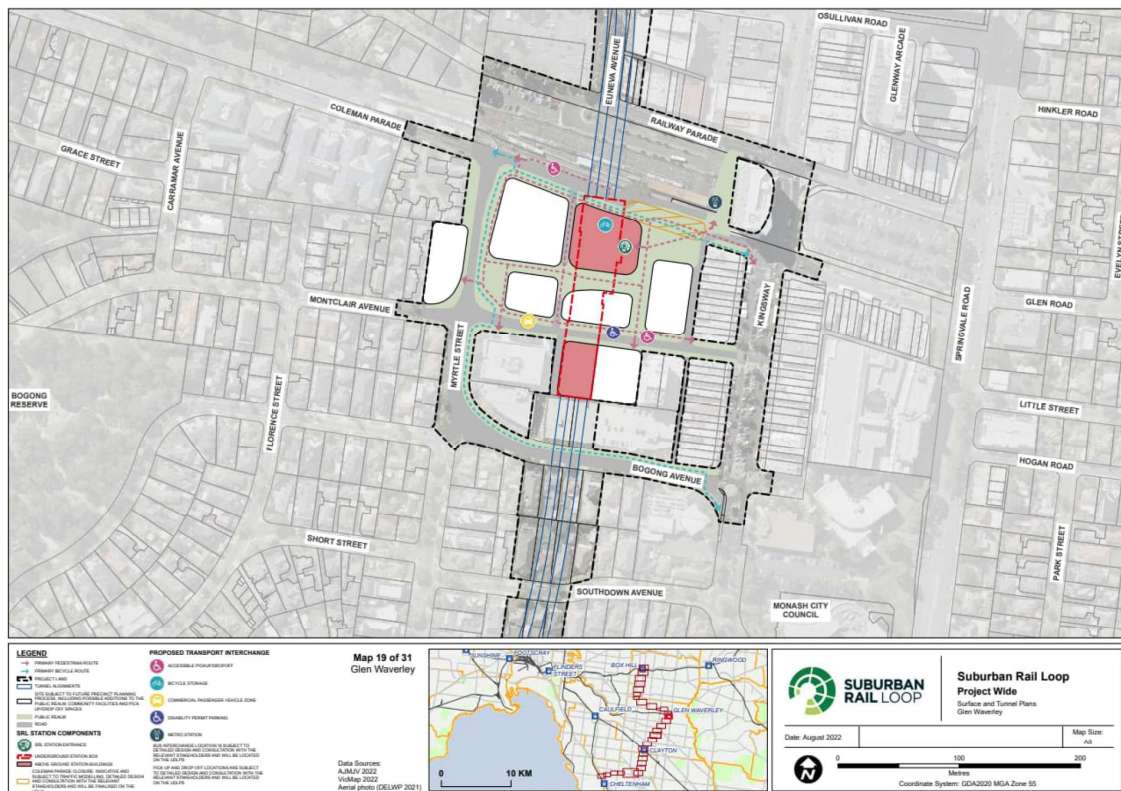


FIGURE 2-1 GLEN WAVERLEY SURFACE AND TUNNEL PLAN

### 2.1.3 ENVIRONMENTAL MANAGEMENT FRAMEWORK

The Environmental Management Framework (EMF), prepared as required by the Incorporated Document, was approved by the Minister for Environment and Climate Action in October 2022 following approval of the SRL East planning scheme amendment.

The EMF includes a set of Environmental Performance Requirements (EPRs) defining the environmental outcomes that must be achieved during the design, construction and operation of the Project (regardless of the design solutions adopted). The EPRs are intended to minimise impacts and the risk of harm to human health and environment to within reasonable limits having regard to contextual factors and the practical delivery of the Project. The Project must be delivered generally in accordance with the approved EMF (and EPRs).

The relevant EPR that is the basis of this Coleman Parade, Glen Waverley traffic assessment is EPR T6-2 Road transport design and operation:

2. Develop and implement street network designs for each affected street within the Project Land in consultation with the relevant road management authorities that includes:

c): Assessment of the potential closure of Carinish Road, Clayton and Coleman Parade, Glen Waverley. The designs ultimately adopted at each location must consider pedestrian safety and traffic movements in the surrounding street network.

### 2.1.4 URBAN DESIGN STRATEGY

The SRL East Urban Design Strategy (UDS) was approved by Minister for Environment and Climate Action in October 2022 following approval of the SRL East planning scheme amendment. The UDS includes an urban design vision, urban design principles and objectives and place specific requirements, including for Coleman Parade. The UDS contains the following ambition for Glen Waverley:



The SRL station environs will contribute to creating an active, engaging and walkable centre that supports day and night-time activities, with improved connections between the existing transport interchange and the surrounding walking and cycling infrastructure. Enhanced and new streets and laneways will reflect desire lines linking to the SRL station entrance, the existing Glen Waverley railway station and bus interchange. The new movement network and block structure will connect logically into the broader precinct and contribute to the commercial and retail activation of Kingsway.

The below excerpt highlights the applicable requirements for Coleman Parade, Glen Waverley.

- 2a – Provide an attractive and well-designed space around the SRL station entrance that is integrated with Coleman Parade that:
  - i. Creates a positive arrival experience into the station environs.
  - ii. Contributes to addressing the open space needs of the community.
  - iii. Minimises barriers to pedestrian movement between the SRL Station, bus interchange and existing Glen Waverley railway station forecourt.
- 3b – Provide a design for Coleman Parade that:
  - i. Creates vibrant public space with good amenity, that is welcoming and attractive to a broad range of users.
  - ii. Reconfigures the existing streetscape to place a high priority on pedestrians and cyclists while maintaining access to the IKON tower.
  - iii. Accommodates the safe and intuitive movement of pedestrians between SRL and existing Glen Waverley railway station entrances.
  - iv. Helps to create the visual identity of the station environs as a place for people.
  - v. Supports safe, slow speed environment at interfaces with pedestrian crossings.

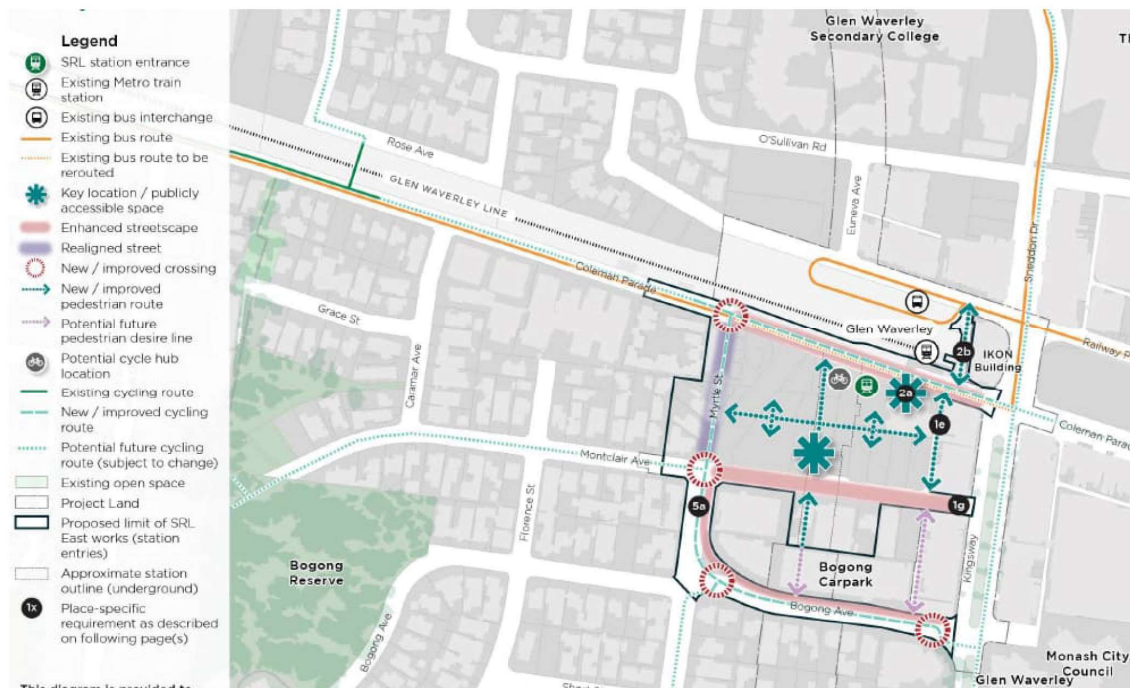


FIGURE 2-2 GLEN WAVERLEY PLACE SPECIFIC UDS REQUIREMENT RELEVANT TO COLEMAN PARADE

### 3. Station Reference Design

With delivery of the SRL station the number of pedestrians and cyclists moving through and across Coleman Parade will increase substantially, focussing on the section between the IKON Ramp and Kingsway. The Reference Design as presented to the SRL East Inquiry and Advisory Committee (IAC) was developed to provide a safe environment for pedestrians and cyclists, minimises potential conflicts with traffic and ensures a reasonable Level of Service (LOS) for traffic. The Baseline for assessment is therefore the Reference Design shown in Figure 3-1, and is what alternative options have been assessed against.

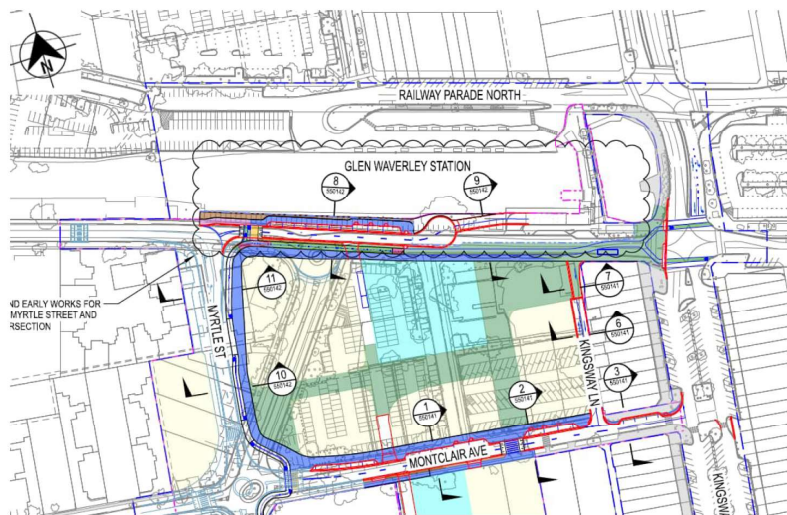


FIGURE 3-1 COLEMAN PARADE REFERENCE DESIGN LAYOUT

#### 3.1 Transport Impact Summary

##### 3.1.1 MODE SHARE

Coleman Parade is set to undergo major changes with SRL as it would be permanently closed to provide a new pedestrian plaza, public realm and open space that would facilitate a direct interchange between the SRL station, the existing Glen Waverley Melbourne Metropolitan Rail Network (MMRN) station and bus interchange.

Daily mode share forecasts determined in the Project's Traffic and Transport Impact Assessment (TTIA) suggest there would be changes to accessing the existing Glen Waverley MMRN station in the 2041 No Project and 2041 Project scenarios. In the 2041 Project scenario, there is a slight increase in the number of trips by private vehicle. However, the mode share of trip by car decreases from 25 per cent in 2018 to 15 per cent in 2041. The primary mode for boarding and alighting is walking with 47 per cent, followed by bus with 28 per cent. Fifteen per cent of trips would transfer between the two railway stations. The closure of Coleman Parade between Kingsway and Myrtle Street would support the transfer between modes as it would increase pedestrian movements along Coleman Parade.

##### 3.1.2 BUS ACCESS

While route 737 currently uses Coleman Parade, it is proposed to be rerouted via Kingsway, Bogong Avenue and Myrtle Street to avoid the proposed closure on Coleman Parade adjacent to Kingsway. The bus currently stops at the bus interchange to the north of the existing Glen Waverley MMRN station. Travel times for buses on key routes are displayed in Figure 3-2 for the AM peak (8 am to 9 am) and the PM peak (5:30 pm to 6:30 pm), respectively.





FIGURE 3-2 CHANGES TO THE GLEN WAVERLEY BUS NETWORK IN 2041 WITH THE PROJECT (SOURCE: GLEN WAVERLEY VISSIM (TTIA))

## 4. Background and Existing Conditions

### 4.1 Existing Road Networks

Trips by private motor vehicles and buses are prevalent on the road network within the Glen Waverley Study Area during weekday and weekend peak periods. Destinations include The Glen Shopping Centre, the Glen Waverley Major Activity Centre, several schools and the existing Glen Waverley MMRN station and bus interchange. Springvale Road and Blackburn Road are the main north-south routes. Waverley Road and High Street Road are the main east-west routes.

Coleman Parade is a collector road managed by the City of Monash (Council). Running adjacent and parallel to the Glen Waverley Railway line, it provides a link between Blackburn Road and the Glen Waverley Activity Centre.

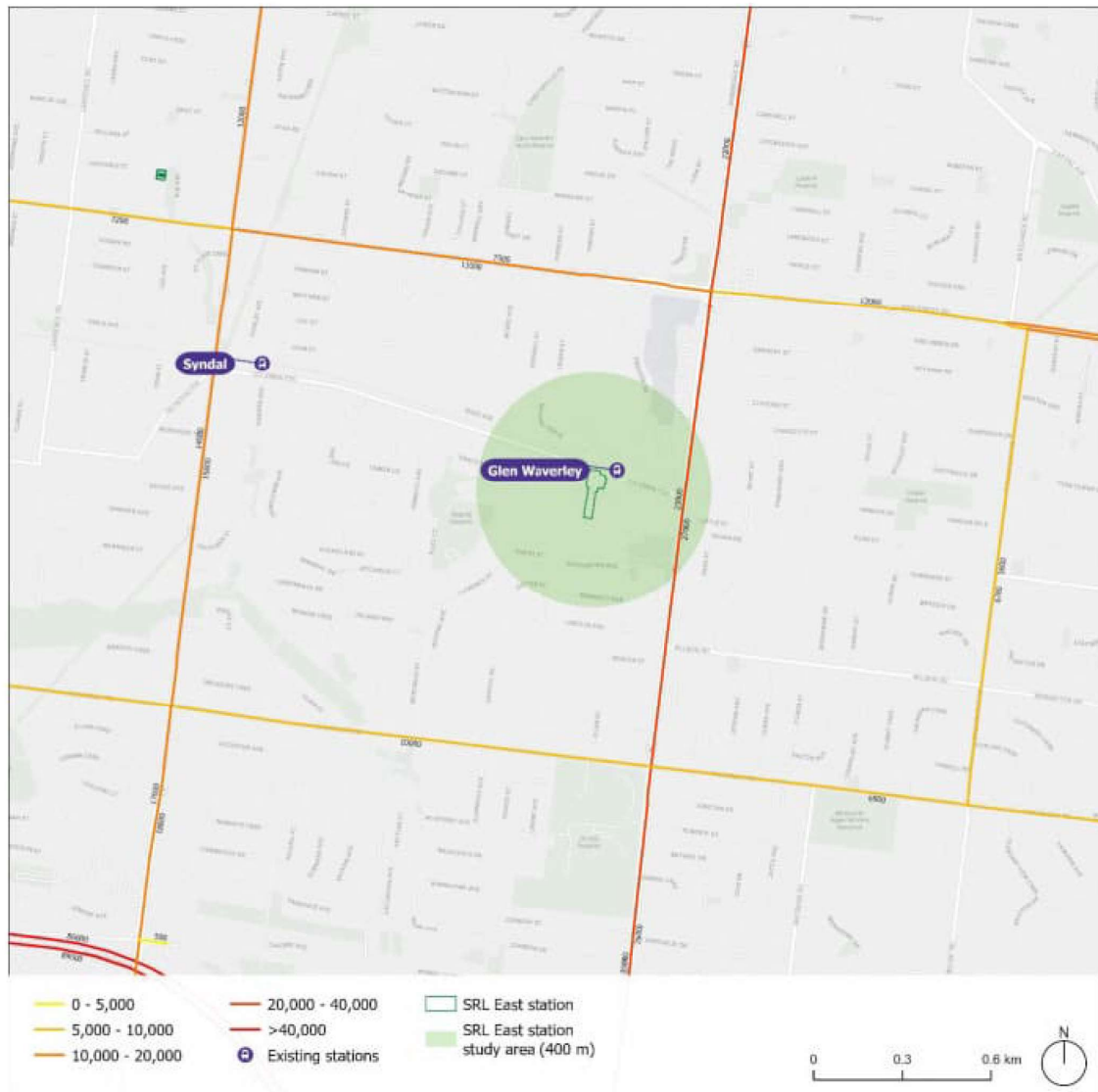
On-street parking restrictions in the SRL station are shown in Figure 4-1.



FIGURE 4-1 ON-STREET PARKING AND PARKING RESTRICTION – SRL STATION AT GLEN WAVERLEY

## 4.2 Existing Traffic Volumes

AADT traffic volumes on VicRoads controlled roads (sourced from VicRoads Open data) are shown in Figure 4-2.



**FIGURE 4-2 GLEN WAVERLEY – ANNUAL AVERAGE DAILY TRAFFIC VOLUMES (SOURCE: VICROADS OPEN DATA)**

The total peak hour through volume at Kingsway / Coleman Parade is approximately 1,200 vehicles per hour in the AM and PM peaks.

Figure 4-3 and Figure 4-4 provide a summary of the base traffic conditions on Coleman Parade in 2021 for the AM and PM peak hour.

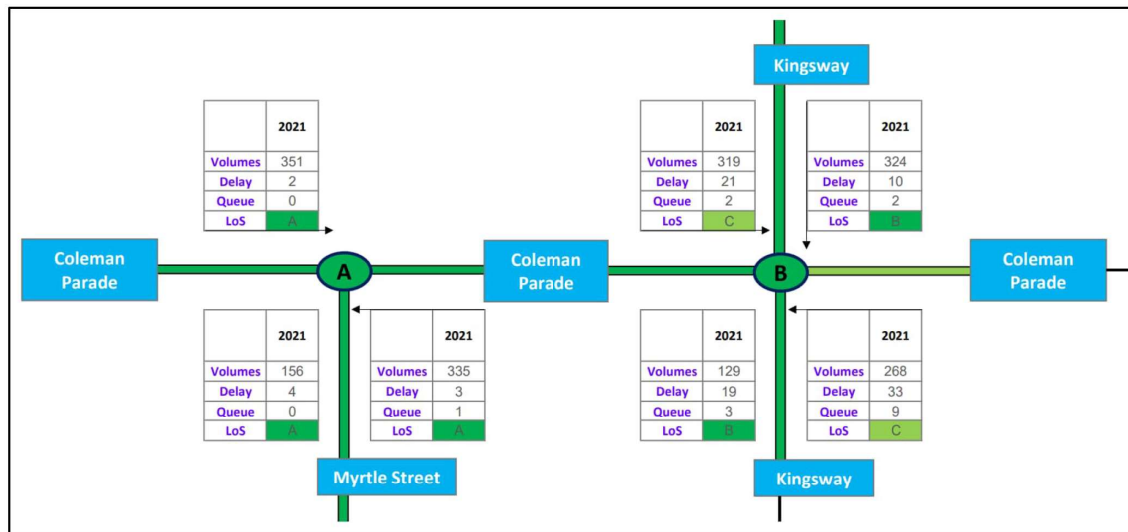


FIGURE 4-3 COLEMAN PARADE – 2021 PERFORMANCE – AM PEAK HOUR (SOURCE: GLEN WAVERLEY VISSIM(TTIA))

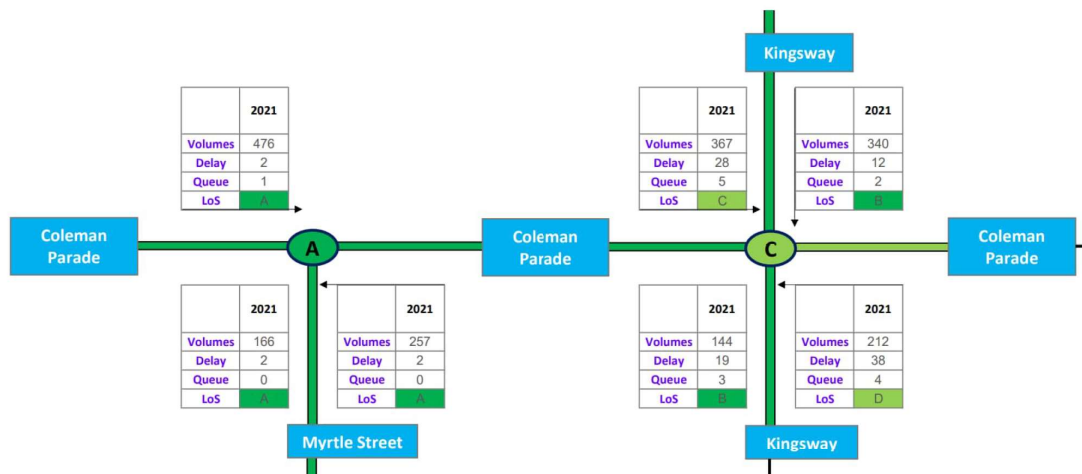


FIGURE 4-4 COLEMAN PARADE – 2021 PERFORMANCE – PM PEAK HOUR (SOURCE: GLEN WAVERLEY VISSIM(TTIA))

The performance of the key intersections for the 2021 Base year is detailed in Table 4-1. The results indicate that all intersections are performing satisfactorily with spare capacity available during both the AM and PM peak periods.

TABLE 4-1 KEY INTERSECTIONS - 2021 PERFORMANCE (SOURCE: GLEN WAVERLEY VISSIM (TTIA))

Intersection	Approach	AM peak (8 am to 9 am)	PM peak (5:30 pm to 6:30 pm)
Springvale Road/Kingsway/Ingram Avenue	South	A	B
	North	A	A
	West	D	E
Springvale Road/Coleman Pd/Glen Road	South	B	C
	East	F	E
	North	A	A
Springvale Road/Railway Parade North	South	A	A

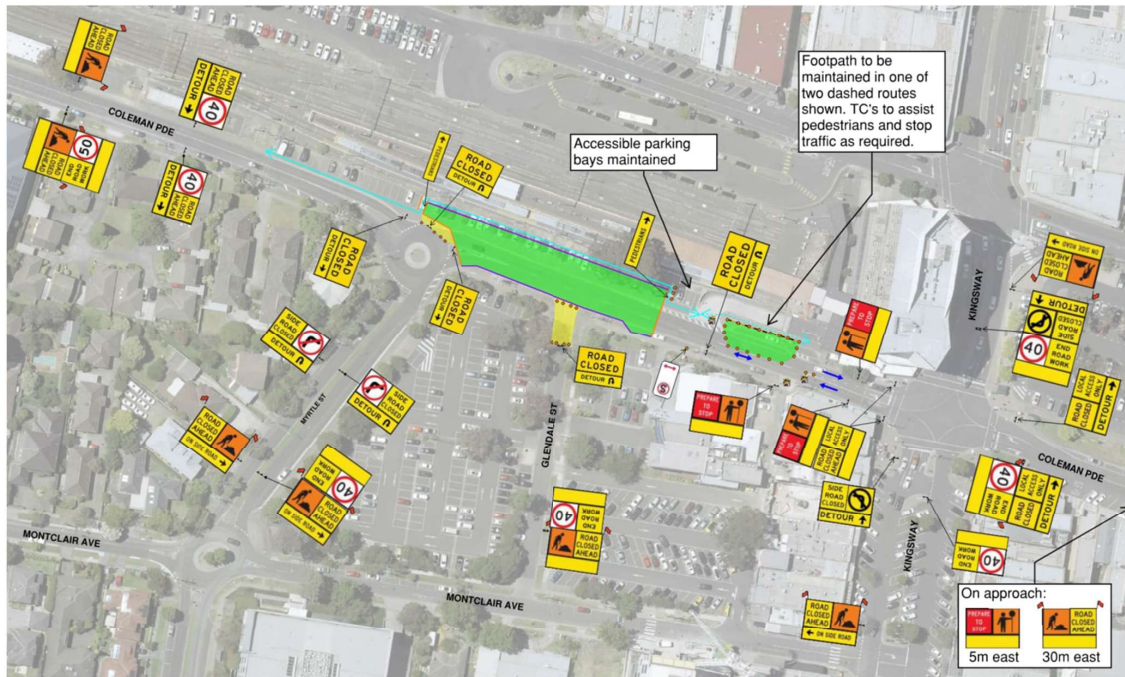
Intersection	Approach	AM peak (8 am to 9 am)	PM peak (5:30 pm to 6:30 pm)
	North	B	B
	West	C	C
Kingsway/Bogong Avenue	South	A	A
	North	A	A
	West	A	A
Myrtle Street/Montclair Avenue	South	A	A
	East	A	A
	North	A	A
	West	A	A
Myrtle Street/Coleman Parade	South	A	A
	East	A	A
	West	A	A
Kingsway/Coleman Parade	South	B	B
	East	C	D
	North	A	B
	West	C	C
Kingsway/Railway Parade North	South	B	B
	East	C	C
	North	B	B
	West	C	C
Kingsway/O'Sullivan Road/Snedden Drive	South	A	A
	North	A	A
	East	A	A

### 4.3 Traffic Surveys with Coleman Parade Closure

Coleman Parade was temporarily closed between Myrtle Street and Kingsway from 9 May 2023 to 12 May 2023 as shown in Figure 4-5. SRLA commissioned traffic surveys throughout Glen Waverley before, during and after these works including tube counts that were conducted in Glen Waverley from 3 May to 2023 to 12 May 2023. The surveys allowed the following analysis:

- A comparison of traffic volumes in Glen Waverley before and after the closure of Coleman Parade.
- Observations of how the local traffic network would operate without the Coleman Parade connection between Myrtle Street and Kingsway including the diversion of traffic away from the area any impacts on key roads in the area.
- Verification of the traffic modelling that was previously undertaken for the closure of Coleman Parade.





**FIGURE 4-5 TEMPORARY COLEMAN PARADE CLOSURE LAYOUT**

Figure 4-6 shows the locations of the surveys within the Glen Waverley Precinct and summarises the traffic volumes captured with and without the road closure. A summary of the results is provided below.

- Bogong Avenue (Site 1), Kingsway (Site 4), Montclair Avenue (Site 7) and Myrtle Street (Site 8) all showed a slight increase in traffic in both AM and PM peak hour. The increase is immaterial and could be associated to local access trips and/or access to/from the car park in the area.
- Traffic volumes on Coleman Parade (Site 2) mainly in the westbound direction are lower compared to pre-closure of Coleman Parade. The volume differences align with the temporary road closure and the proposed detour route via Carramar Avenue in the closure in June 2023 that also included the Myrtle Street roundabout.
- The slight increase in the Myrtle Street (Site 8) southbound direction may be due to motorists adjusting to the temporary closure of Coleman Parade (east of the Myrtle Street roundabout), with motorists required to complete this manoeuvre more often than before the temporary closure.
- There is neither a noticeable overall increase nor reduction in average weekday AM and PM peak hour traffic volumes within the study area compared to the pre temporary closure of Coleman Parade, suggesting an immaterial impact on surrounding roads during the temporary closure of Coleman Parade (east of the Myrtle Street roundabout).

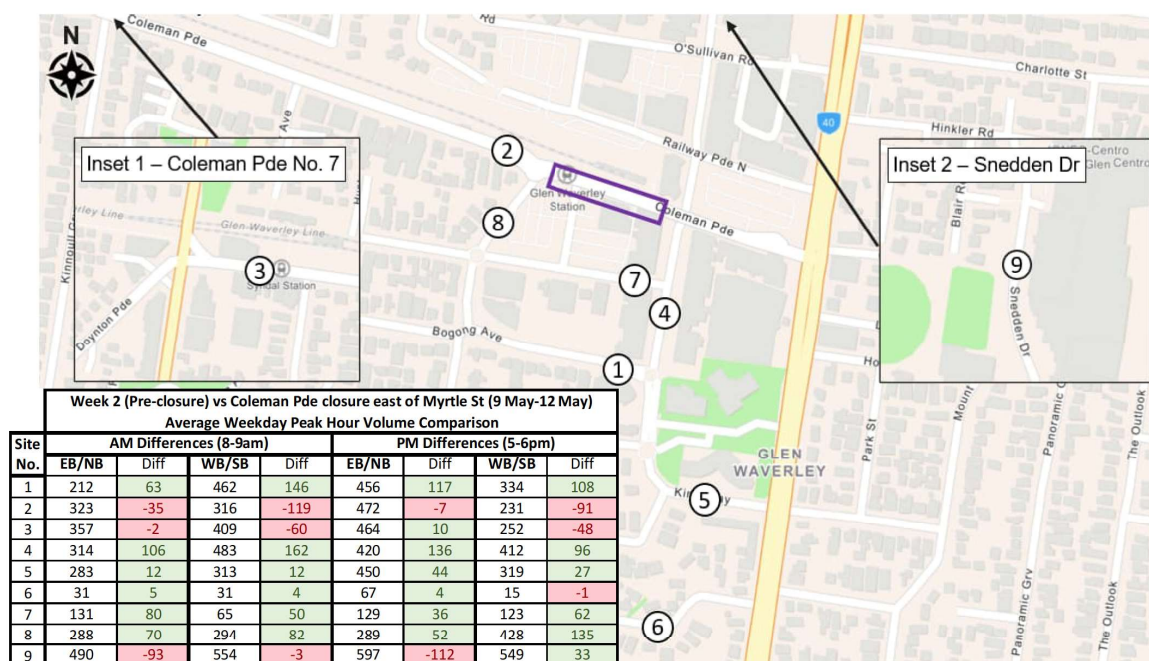


FIGURE 4-6 TRAFFIC SURVEY LOCATIONS AT KINGSWAY AND VOLUME COMPARISON

Table 4-2 and Table 4-3 provide greater detail on the change in traffic demand at Kingsway with the road closure in place. The increase in demand is of the magnitude of around 200-300 vehicles per hour (two-way) in the AM and PM peak periods.

SRLA staff observed Kingsway during the closure period and met onsite with Council staff during this time. The following notes were made during the site visit.

- Staff did not observe any traffic and pedestrian impacts on Kingsway due to the increases in traffic.
- On a human scale, staff did not perceive any increase in demand on Kingsway.

TABLE 4-2 CHANGE IN TRAFFIC VOLUMES ON KINGSWAY – AM PEAK

Detail	Flow direction		
	Northbound	Southbound	Two-way
Prior to Coleman Parade closure (veh/hr)	208	321	529
During Coleman Parade closure (veh/hr)	314	483	797
Change (veh/hr)	106	162	268
Change (veh/min)	2	3	4

TABLE 4-3 CHANGE IN TRAFFIC VOLUMES ON KINGSWAY – PM PEAK

Detail	Flow direction		
	Northbound	Southbound	Two-way
Prior to Coleman Parade closure (veh/hr)	284	316	600
During Coleman Parade closure (veh/hr)	420	412	832
Change (veh/hr)	136	96	232
Change (veh/min)	2	2	4

## 5. Stakeholder consultation

Throughout the development of the options for Coleman Parade, there have been multiple engagement opportunities held with key stakeholders including Council and SRLA's Urban Design Advisory Panel (UDAP). This is in accordance with the requirements of EPR T6-2 that states street network designs must be developed in consultation with the relevant road management authorities.

The Council meetings have been undertaken to ensure that Council are updated regularly on progress and ensure input and feedback at each stage.

The key dates and purpose of this consultation are detailed below:

- 23 March 2023 - Meeting with Council – to align on short listed options.
- 4 April 2023 – UDAP Meeting – to gain feedback regarding the short listed options.
- 24 April 2024 - Meeting with Council – to provide an update on the outcome of the MCA, preferred option and work to date including traffic modelling.

It is anticipated that stakeholder consultation regarding the requirements of EPR T6 (2) will be ongoing and additional meetings with Council and UDAP will be undertaken to discuss the results of this assessment.



## 6. Coleman Parade Option Assessment Summary

### 6.1 Process

Following the Minister's assessment and IAC findings from the Environment Effects Statement (EES) process, Council held a Council Meeting on 27 September 2022 which in Item 1.6 Attachment 2 outlined Council's position below:

*"No closure of Coleman Parade – The closure of Coleman Parade during construction and operation will have unacceptable traffic impacts on Kingsway."*

To address the findings and taking into consideration Council's position, AJM-JV and SRLA have undertaken the process shown in Figure 6-1.



FIGURE 6-1 DESIGN DEVELOPMENT PROCESS

### 6.2 Key Constraints and Considerations

Several key constraints and considerations had to be taken into account during the development and assessment of options. These included:

#### MMRN Station / Ikon Building and Cross Section Implications

Any design investigation for the Coleman Parade cross section needs to consider the spatial constraints imposed by the existing MMRN station and the IKON building on the northern side and as well as the space required to accommodate various transport modes including:

- The existing MMRN station has non-compliant platform widths that will require future upgrades to meet future demand and to facilitate an efficient interchange.
- There is a Project requirement to futureproof for platform widenings to meet future demand.
- Assessment completed by DTP specifies a minimum widening of 5.5m to the south which requires the IKON building ramp to be moved this distance south.

The SRL station building awning and MMRN station building awning (part of MMRN station compliance upgrade) are noted as key constraints that must be avoided (as detailed in Figure 6-2). Subsequently, the available cross section width on Coleman Parade is 11m.

To accommodate all modes of transport, the road cross section would require width for two-way traffic, cycle lanes and a minimum of 2.5m wide footpaths within segments of the corridor (as per Figure 6-3). The figure shows that a cross section of 16.5m is necessary, assuming indicative footpath widths of 3m and 3.5m respectively. It is noted that the assumed footpath width does not consider lighting, signage, street furniture or other obstructions and narrowing closer to Kingsway.

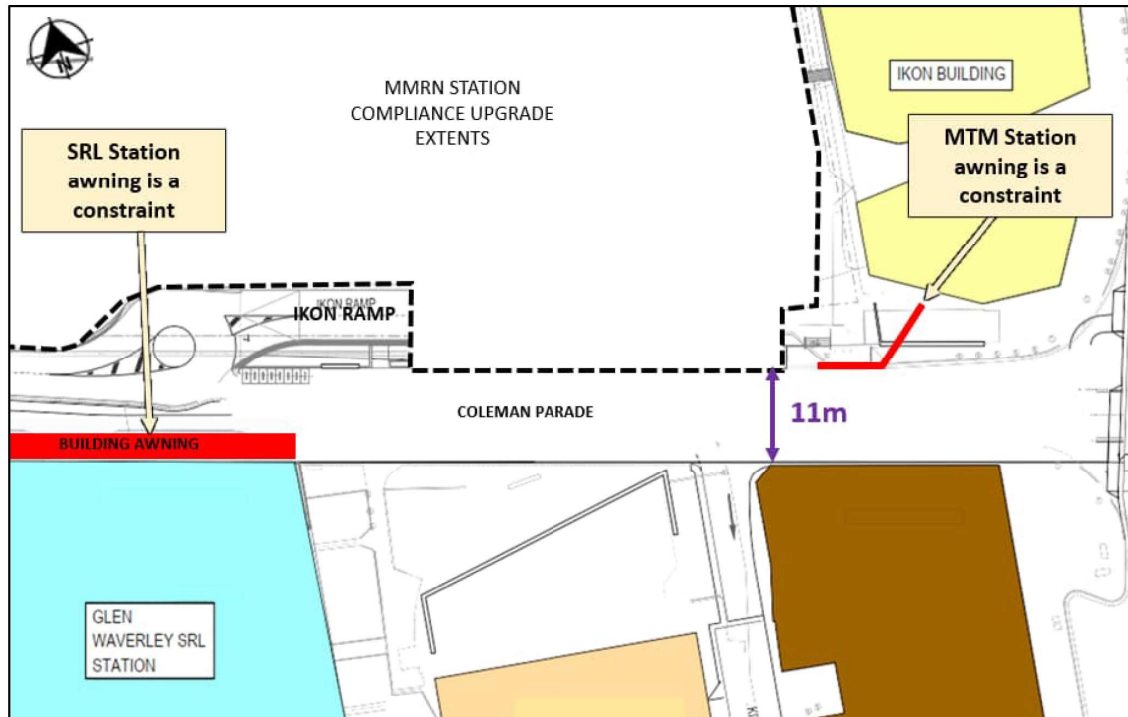


FIGURE 6-2 CROSS SECTION WIDTH CONSTRAINT DUE TO STATION BUILDING LOCATIONS

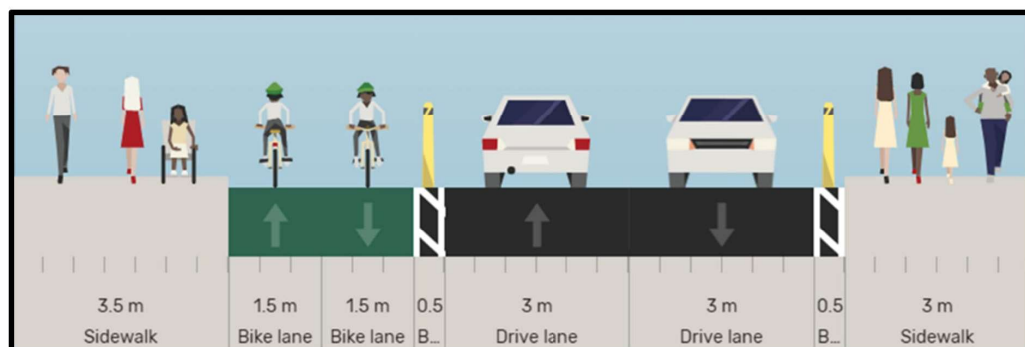


FIGURE 6-3 CROSS SECTION WIDTH TO ACCOMMODATE ALL MODES

#### Traffic and Pedestrian Movements

The following items have been considered in the option development process.

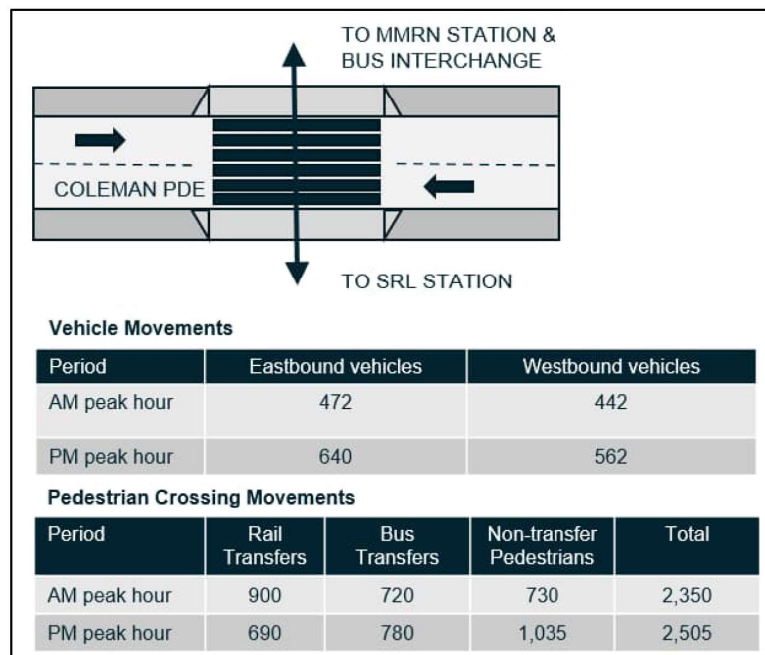
- Surrounding road network performance if Coleman Parade was closed (e.g. Kingsway increased traffic volumes).



- Accommodating bicycle and pedestrian paths within existing road corridors.
- Safe pedestrian interchange between SRL, MMRN and bus interchange (pedestrian massing).
- Re-routing of bus route 737.
- Emergency service access.
- MMRN security access.

Figure 6-4 details the expected pedestrian and traffic demand crossing Coleman Parade, with the SRL station in operation.

- Pedestrian crossing movements will be more than double the demand for vehicle movements on Coleman Parade.
- Pedestrian flows will exceed 1 pedestrian crossing Coleman Parade every 2 seconds (on average).



**FIGURE 6-4 PEAK PERIOD PEDESTRIAN AND VEHICLE DEMAND IN 2041 (SOURCE: VITM 2041 T4 PATRONAGE (CITYPLAN) (TTIA))**

To accommodate the pedestrian crossing movements and allow vehicular traffic to use the network, a shared zone, zebra crossing or Pedestrian Operated Signals (POS) would be required at Coleman Parade, along the pedestrian desire line between the SRL station and MMRN station.

The following high-level considerations have been used to facilitate the option development process for each type of crossing facility.

#### Shared Zone or Zebra Crossing:

- A shared zone or zebra crossing would allow high volumes of pedestrians to cross Coleman Parade, however the capacity for vehicles would be significantly reduced.
- Queues and delays for motorists would be extensive.

#### Pedestrian Operated Signals (POS):

- POS green time would need to match Kingsway signal phasing.
- Delays for pedestrians would be significant. Pedestrian queuing space and LOS would require review.
- Westbound vehicle queues at the pedestrian crossing, back towards Kingsway, would need assessment.
- Operation and capacity of the Kingsway intersection would require review.

## 6.3 Options Development – Long List of Options

Eight potential options in addition to the Baseline (full road closure) were identified during the initial option development.

- Baseline: Coleman Parade closed.
- Option 1: Coleman Parade closed with Kingsway modifications.
- Option 2: Coleman Parade open with bi-directional traffic.
- Option 3: Coleman Parade open with bi-directional shared-zone.
- Option 4A: Coleman Parade open one-way (eastbound) with POS crossing.
- Option 4B: Coleman Parade open one-way (eastbound) with Zebra crossing.
- Option 5: Coleman Parade open one-way (westbound) with POS crossing.
- Option 6: MMRN Station lowering.

### 6.3.1 BASELINE: COLEMAN PARADE CLOSED

The Baseline displayed in Figure 6-5 shows Coleman Parade closed to traffic between the IKON building ramp and Kingsway, with a cul-de-sac turn around area installed at the existing Coleman Parade/Glendale Street intersection. The assessment confirmed the following:

#### Key Advantages / Opportunities

- Contiguous and integrated public realm with the station surrounds and future precinct.
- Compliance with the Urban Design Strategy by minimising barriers to pedestrian movement between the SRL station, bus interchange and existing Glen Waverley MMRN station forecourt.
- Intuitive wayfinding between the SRL station, bus interchange, existing Glen Waverley MMRN station and key destinations.
- Increased pedestrian and cyclist safety.

#### Key Constraints / Issues

- Limited carpark spaces on Coleman Parade in close proximity to the SRL and MMRN stations.
- Redistribution of local traffic and increased flows on some local council roads.



FIGURE 6-5 BASELINE – COLEMAN PARADE CLOSED LAYOUT

### 6.3.2 OPTION 1: COLEMAN PARADE CLOSED WITH KINGSWAY MODIFICATIONS

Option 1 displayed in Figure 6-6 would maintain the proposed full road closure at Coleman Parade with additional turn restrictions in place at Kingsway / Montclair Avenue intersection (via a road closure on Kingsway / Montclair Avenue northern approach).

The intent of the Kingsway modifications is to remove the through traffic function of Kingsway between Montclair Ave and Coleman Parade. This aims to prevent traffic using Montclair Avenue as a rat-run from Coleman Parade west to Kingsway north. The assessment confirmed the following:

#### Key Advantages / Opportunities

- Public realm and compliance with Urban Design Strategy are the same as the Baseline.
- Improved pedestrian and cyclist safety.

#### Key Constraints / Issues

- Traffic modelling suggests intersections across the Glen Waverley precinct are expected to operate at unacceptable levels, with the highest average delays and travel times when compared to Options 1 and 4A. Further detail of this is provided in Section 6.5.
- Redistribution of local traffic and increased flows on Springvale Road and some local council roads.



FIGURE 6-6 COLEMAN PARADE CLOSED WITH KINGSWAY MODIFICATIONS

### 6.3.3 OPTION 2: COLEMAN PARADE OPEN WITH BI-DIRECTIONAL TRAFFIC

Option 2 displayed in Figure 6-7 would retain a configuration similar to existing conditions at Coleman Parade, with an eastbound and westbound lane provided between the IKON building ramp and Kingsway however is noted that the cross section constraints detailed in Section 6.2 does not allow this option to physically fit. The assessment confirmed the following:

#### Key Advantages / Opportunities

- The proposal maintains a similar layout to what is existing at Coleman Parade for traffic.
- More route choice for general traffic compared to other options being assessed.



#### Key Constraints / Issues

- This option cannot physically fit when considering the future Glen Waverley MMRN station compliance upgrade works extent and therefore not a viable option.
- Does not provide pedestrian priority along and across Coleman Parade.
- High volumes of pedestrians crossing Coleman Parade will compromise through traffic movement and lead to queuing and delays.
- Reduction in pedestrian performance for people interchanging between the SRL station and MMRN station at surface level.
- Cross section does not leave room for trees and other urban elements.
- High risk of pedestrian/cyclist/vehicle conflicts decreasing pedestrian and cyclist safety.
- No dedicated turning lane onto Kingsway.
- MMRN security parking requirement not met.
- High risk of informal PuDo creating vehicle delays.

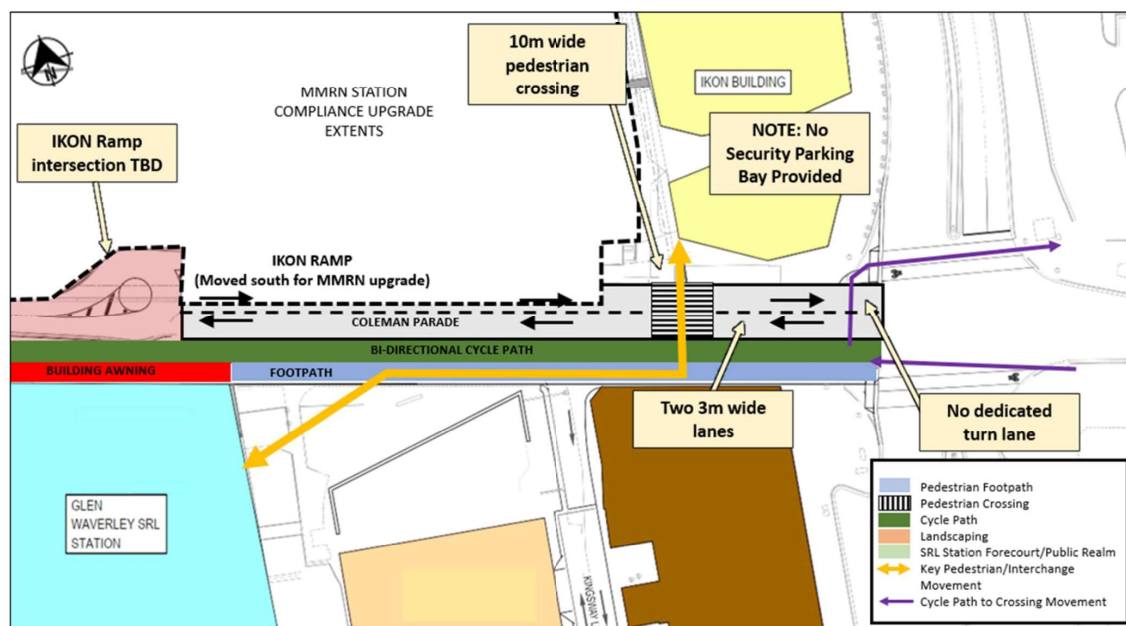


FIGURE 6-7 COLEMAN PARADE OPEN WITH BI-DIRECTIONAL TRAFFIC

#### 6.3.4 OPTION 3 - COLEMAN PARADE OPEN WITH BI-DIRECTIONAL SHARED-ZONE

Option 3 displayed in Figure 6-8 would retain bi-directional movement on Coleman Parade, via a shared zone provided between the IKON building ramp and Kingsway. The assessment confirmed the following:

#### Key Advantages / Opportunities

- The proposal maintains bi-directional traffic flow through Coleman Parade.
- More route choice for general traffic compared to other options being assessed.

#### Key Constraints / Issues

- Arrangement can fit two traffic lanes, but does not provide broad pedestrian priority, a high-quality cycling connection along Coleman Parade, or an appropriate footpath on the northern side.
- No dedicated turning lane onto Kingsway.
- High risk of vehicles queuing due to high pedestrian volumes across Coleman Parade.
- Reduction in pedestrian performance for people interchanging between the SRL station and MMRN station at surface level.

- Reduction in bicycle performance as cyclists would be navigating through mixed traffic conditions.
- Cross section does not leave room for trees and other urban elements.
- High risk of pedestrian/cyclist/vehicle conflicts decreasing pedestrian and cyclist safety.
- MMRN security parking requirement not met.
- High risk of informal PuDo creating vehicle delays.
- Vehicle movement from IKON building ramp to Coleman Parade eastbound unlikely to be achievable and creates conflict with exiting vehicles approaching parallel to westbound vehicles on Coleman Parade and facing head on into eastbound vehicles.

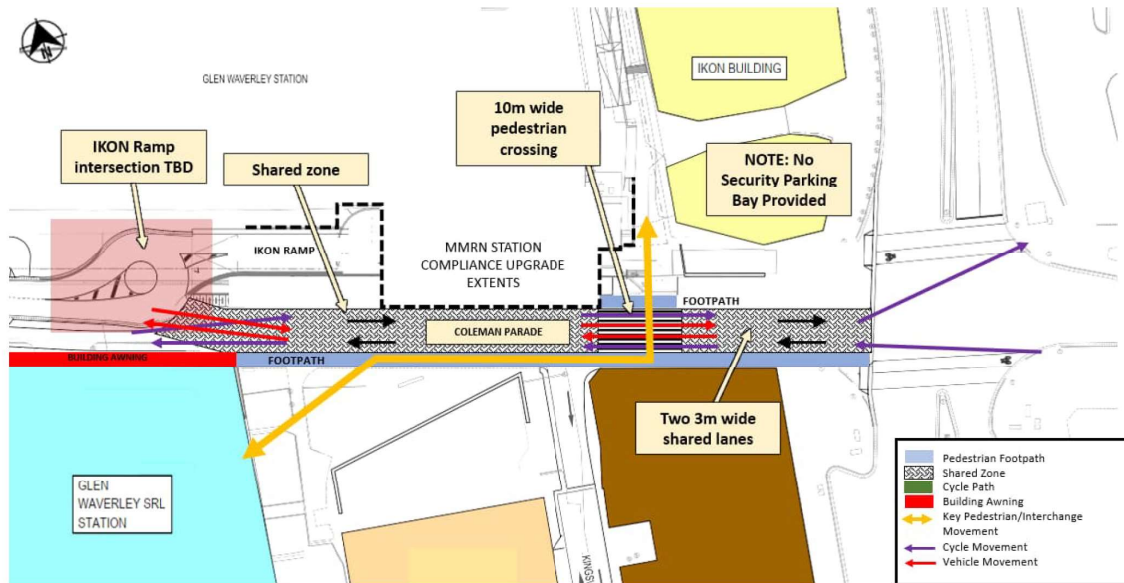


FIGURE 6-8 COLEMAN PARADE OPEN WITH BI-DIRECTIONAL SHARED-ZONE

### 6.3.5 OPTION 4A – COLEMAN PARADE OPEN ONE-WAY (EASTBOUND) WITH POS CROSSING

Option 4A displayed in Figure 6-9 would retain one eastbound traffic lane on Coleman Parade, between the IKON building ramp and Kingsway. Pedestrians would cross Coleman Parade via a 10m wide Pedestrian Operated Signals (POS). The assessment confirmed the following:

#### Key Advantages / Opportunities

- Maintains through traffic on Coleman Parade in the eastbound direction.
- Separates vehicle and cyclist movements.

#### Key Constraints / Issues

- No dedicated turning lane onto Kingsway.
- Reduced pedestrian priority / footpath width / refuge.
- Vehicle movement from IKON building ramp to Coleman Parade eastbound unlikely to be achievable (see red line in Figure 6-9) and creates conflict with exiting vehicles facing head on into eastbound vehicles.
- Cross section does not leave room for trees and other urban elements.
- High risk of pedestrian/cyclist/vehicle conflicts decreasing pedestrian and cyclist safety.
- High risk of pedestrians queuing at crossing and blocking pedestrian/cycle paths.
- MMRN security parking requirement not met.
- High risk of informal PuDo creating vehicle delays.



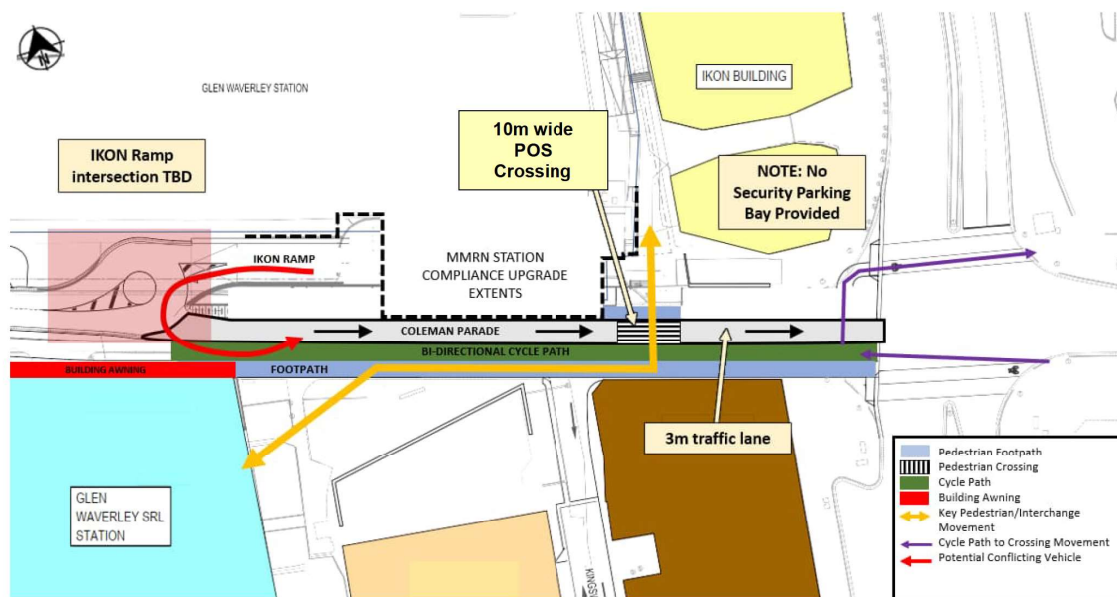


FIGURE 6-9 COLEMAN PARADE OPEN ONE-WAY (EASTBOUND) WITH POS CROSSING

### 6.3.6 OPTION 4B – COLEMAN PARADE OPEN ONE-WAY (EASTBOUND) WITH ZEBRA CROSSING

Option 4B displayed in Figure 6-10 would retain one eastbound traffic lane on Coleman Parade, between the IKON building ramp and Kingsway. Pedestrians would cross Coleman Parade via a 10m wide Pedestrian Zebra Crossing. The assessment confirmed the following:

#### Key Advantages / Opportunities

- Maintains through traffic on Coleman Parade in the eastbound direction.
- Separates vehicle and cyclist movements.
- Low pedestrian delay when crossing Coleman Parade.

#### Key Constraints / Issues

- No dedicated turning lane onto Kingsway.
- Reduced pedestrian priority / footpath width / refuge.
- Vehicle movement from IKON building ramp to Coleman Parade eastbound unlikely to be achievable (see red line in Figure 6-10) and creates conflict with exiting vehicles facing head on into eastbound vehicles.
- Cross section does not leave room for trees and other urban elements.
- High risk of pedestrian/cyclist/vehicle conflicts decreasing pedestrian and cyclist safety.
- High risk of vehicles queuing on Coleman Parade at crossing.
- MMRN security parking requirement not met.
- High risk of informal PuDo creating vehicle delays.

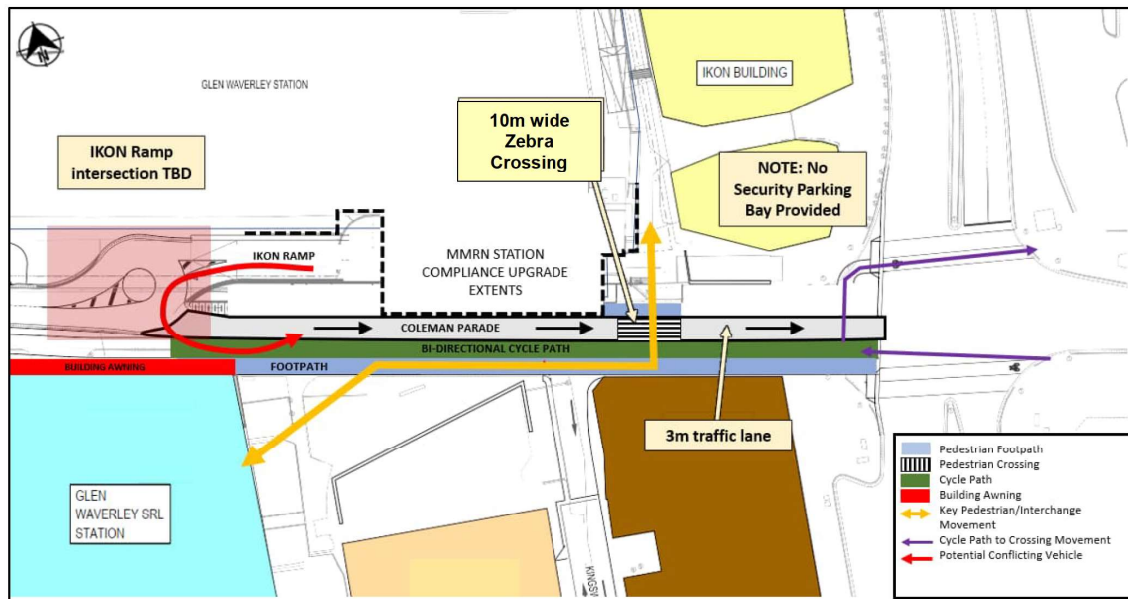


FIGURE 6-10 COLEMAN PARADE OPEN ONE-WAY (EASTBOUND) WITH ZEBRA CROSSING

### 6.3.7 OPTION 5 – COLEMAN PARADE OPEN ONE-WAY (WESTBOUND) WITH POS CROSSING

Option 5 displayed in Figure 6-11 would retain one westbound traffic lane on Coleman Parade, between the IKON building ramp and Kingsway. Pedestrians would cross Coleman Parade via a 10m wide Pedestrian Operated Signals (POS). The assessment confirmed the following:

#### Key Advantages / Opportunities

- Maintains through traffic on Coleman Parade in the westbound direction.

#### Key Constraints / Issues

- No dedicated turning lane onto Kingsway.
- Reduced pedestrian and cycle priority / footpath width / refuge. Shared use path rather than separated paths.
- Vehicle movement from IKON building ramp to Coleman Parade westbound may result in conflict/sightline issues.
- Cross section does not leave room for trees and other urban elements.
- High risk of pedestrian/cyclist/vehicle conflicts decreasing pedestrian and cyclist safety.
- High risk of vehicles queuing on Coleman Parade at crossing and blocking shared use path.
- MMRN security parking requirement not met.
- High risk of informal PuDo.

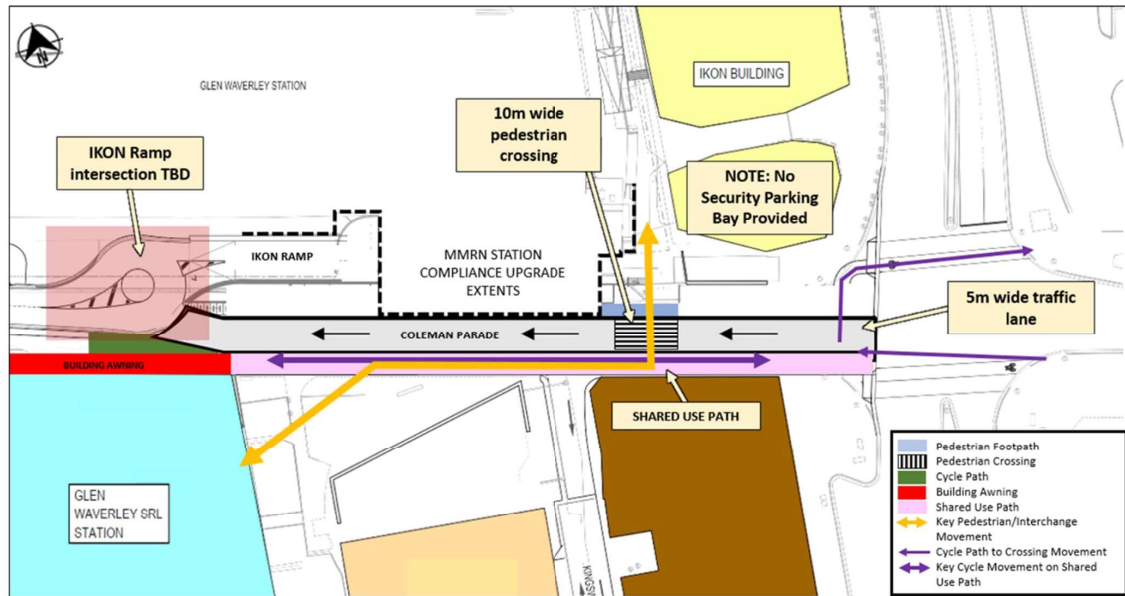


FIGURE 6-11 COLEMAN PARADE OPEN ONE-WAY (WESTBOUND) WITH POS CROSSING

### 6.3.8 OPTION 6 – MMRN STATION LOWERING

Option 6 displayed in Figure 6-12 requires the lowering of the Glen Waverley MMRN station to allow for the construction of a Ring Road over the MMRN rail corridor connecting Myrtle Street at Coleman Parade to Railway Parade N. It is noted that this option requires extensive works to the MMRN rail corridor that extend west beyond Lawrence Road. The assessment confirmed the following:

#### Key Advantages / Opportunities

- Aligns with City of Monash's Glen Waverley Activity Centre Structure Plan (i.e. Ring Road)..<sup>1</sup>
- Provides an alternate vehicle route with the closure of Coleman Parade via Railway Parade North.

#### Key Constraints / Issues

- Requires extensive works to lower the MMRN station and corridor that extends west of Lawrence Road including:
  - » Permanent works:
    - Lowering of MMRN Glen Waverley Station and stabling.
    - Bridge structures for the Ring Road connection, at the bus interchange to allow for the interchange to be reconstructed above the stabling, a new active transport bridge at Rose Avenue to maintain the existing active transport connection and reconstruction of the Lawrence Road overpass to accommodate the temporary stabling.
    - The permanent bus interchange is proposed to be reinstated in the location of the existing bus interchange as a "like-for-like" replacement within the available space over the stabling to avoid constructing a deck over the entire station.
  - » Temporary works:
    - Temporary closure of all rail operations to Glen Waverley during construction. Rail replacement buses would be required.
    - Temporary stabling required to accommodate the temporary termination of rail services at Syndal station.

<sup>1</sup> <https://www.monash.vic.gov.au/Planning-Development/Planning/Structure-Plans/Glen-Waverley-Activity-Centre>



- Temporary bus interchange required within the Council central car park bordered by Springvale Road, Railway Parade North, Coleman Parade and Kingsway. The current entry to the car park will be closed due to the temporary bus interchange and the existing Coleman Parade turnaround removed, to allow buses to travel eastbound towards Springvale Road. Access to the existing Council retail carparking in Coleman Parade would be removed.
- Introduction of a signalised intersection at Myrtle Street and Coleman Parade reduces pedestrian and cycle priority with additional crossings required.
- Potential to increase vehicle volumes towards Glen Waverley Secondary College.
- Existing MMRN car parking impacted at Glen Waverley.
- This option is estimated to have a very high cost to deliver.

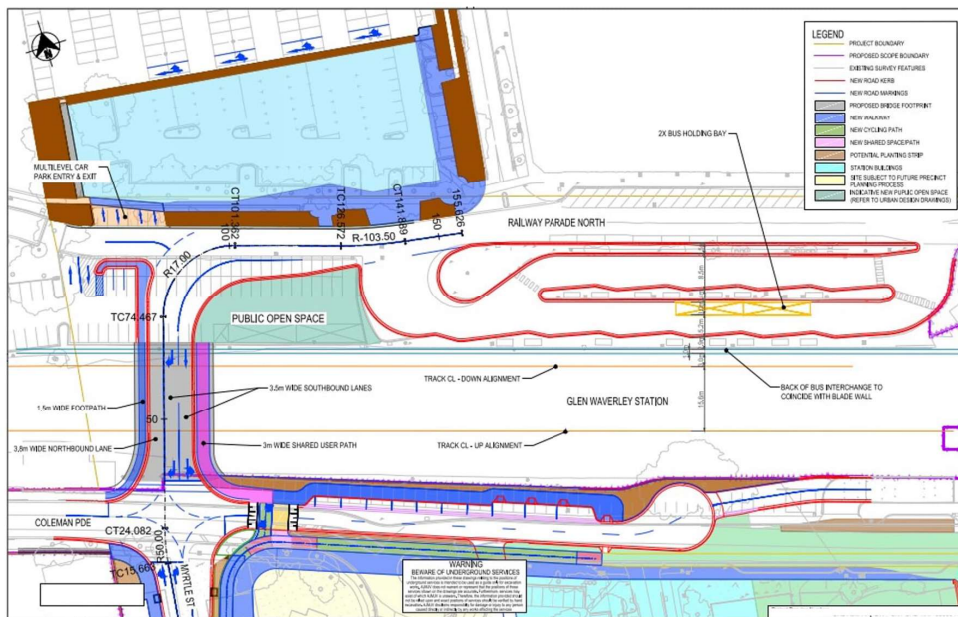


FIGURE 6-12 RING ROAD OVER LOWERED MMRN STATION

### 6.3.9 LONG LIST OF OPTIONS – OVERALL COMPARISON

Figure 6-13 details the initial rapid assessment for each of these options with a focus on connectivity, liveability and cost outcomes. Although productivity and deliverability are not highlighted within the assessment, these were considered as part of liveability and cost respectively at this stage of assessment. The Baseline option and Option1 were assessed to generally be improvements to connectivity and liveability with Option 4A identified as the open Coleman Parade option to be assessed as it provided for eastbound vehicle movements.

The assessment was presented to Council on 23 March 2023 to gain feedback and alignment between SRLA and Council with the short listed options confirmed as per Section 6.4.



Option	Connectivity				Liveability			Cost	Discussion / Status
	Network Level Performance	Ped & Cycle Access & Safety	Coleman Pde Pedestrian Movement Performance	Coleman Pde Vehicle Movement Performance	Public Open Space	Station Wayfinding	Urban Design Strategy		
Baseline: Coleman Pde Closed	—	✓	✓	✗	✓	✓	✓	—	Short listed for MCA
1: Coleman Pde Closed with modification	✓	✓	✓	✗	✓	✓	✓	—	Short listed for MCA – further consultation with MCC to understand plans for Kingsway upgrades / traffic modifications (UDS GWY1.1H)
2: Coleman Pde Open with bi-directional traffic (POS crossing)	✗	✗	✗	✓	✗	—	✗	—	Dismiss – Insufficient cross section to fit pedestrians, cyclists and bi-directional vehicles
3: Coleman Pde Open with bi-directional traffic shared zone (POS crossing)	—	—	—	✗	—	—	✗	—	Dismissed – Compromised safety concerns
4A: Coleman Pde Open one-way eastbound (POS crossing)	—	—	—	—	—	—	✗	—	Short listed for MCA, preferred to zebra crossing
4B: Coleman Pde Open one-way eastbound (zebra crossing)	—	—	✓	—	—	—	✗	—	Dismissed on queuing grounds
5: Coleman Pde Open one-way westbound (POS crossing)	✗	✗	—	✗	—	—	✗	—	Dismiss – Compromised Station Precinct & Ped Safety. Compromised traffic function in particular traffic queuing to Kingsway
6: MMRN Station Lowering (Ring Road)	—	✗	—	—	✓	—	—	✗	Dismiss – Extensive works and disruption required to rail corridor, bus network and property acquisitions. Compromised traffic and active transport function

  Short listed options

Note: Rapid assessment was undertaken in March 2023 prior to further assessment of the short listed options.

FIGURE 6-13 LONG LIST OF OPTIONS – INITIAL ASSESSMENT

## 6.4 Options Development – Short List of Options

Following the long list assessment, it was recommended and agreed with Council on 23 March 2023 that the following options be short listed:

- Baseline – Coleman Parade closed.
- Option 1 – Coleman Parade closed with Kingsway modifications.
- Option 4A – Coleman Parade open one-way eastbound with POS crossing.

## 6.5 Traffic Modelling – Short List Options

Table 6-1 displays a high-level assessment of the options based on the DOMINO and VISSIM modelling tests. Modelling performance summary for the Baseline option can be found in Section 3.1 and the full detail on traffic modelling completed can be found in Appendix B.

TABLE 6-1 TRAFFIC MODELLING SUMMARY

Option	Network Impacts	Bus and Traffic Performance	Pedestrian and Cyclist
<b>Option 1 Coleman Parade Closed with Kingsway Modifications</b>	Reroutes traffic from Kingsway to Springvale Road for travel to/from the north and west. Travel from north of Railway Parade North to Coleman Parade West, detours through High Street Road and Blackburn Road. Overall ability of the network within Glen Waverley to operate at a reasonable level of service is impacted with queuing and a lack of alternative routes for traffic exiting the centre. Additional mitigations have also been tested which reduces the impact but highlights that wider travel demand and parking management is required.	Significantly higher average road traffic and bus delays, greatest impact on Railway Parade North at the Springvale Road intersection with Queues back to Kingsway. Creates queuing on Springvale Road with the right turn into Bogong extending back into the through traffic lane. Results in extensive queuing and low speeds on Springvale Road. Changes in signal phasing and an additional right turn at the Springvale / Bogong intersection (from the north) reduces but does not fully mitigate the overall queuing and delays.	Closure of Kingsway to through traffic would result in improvements to pedestrian movements across Kingsway at the point of closure, reducing delay and conflict with traffic at this location. Proposes a staggered pedestrian crossing and changes to cycle phasing at the Springvale Road / Coleman Parade / Railway Parade North intersection. Pedestrians will see an increase in crossing delays due to staged crossings if this mitigation were to be introduced.
<b>Option 4A Coleman Parade Eastbound Open:</b>	Localised impacts with traffic rerouting from Kingsway and Montclair Ave. Slow speed and POS on Coleman Parade means there is unlikely to be rat running traffic from the wider strategic network.	Average delays are similar to the Baseline option for buses and traffic but intersection performance deteriorates from No SRL and Rail Day 1 scenarios. Whilst the number of unsatisfactorily performing intersections is minimal there would be an increase in delays experienced for all traffic.	Significant impact on pedestrians and cyclists, crossing delays and conflict with traffic on Coleman Parade. Pedestrian delay at the POS below M&P target level of service. Pedestrians crossing Coleman Parade will block the footpath, increased risk that pedestrians will queue on the cycle path. Eastbound cyclists will travel with vehicles, increasing risk of conflict between car and cycle traffic.

Overall, the **Baseline** option performs better than all other 2041 options for the Glen Waverley Precinct. In terms of traffic impact and performance it should be considered the preferred option.

**Option 1** is the worst performing of the short listed options. It yields the worst LOS performance at intersections and highest travel times along Springvale Road. This is ultimately due to the Kingsway closure diverting traffic onto Springvale Road, resulting in decreased traffic performance especially in comparison to the Baseline option in 2041. Mitigation measures were tested including additional right-turn lanes from Springvale Road onto Kingsway. Whilst the mitigations improved performance slightly it still performs worse than the Baseline and Option 4A and demonstrates significant traffic issues. The mitigations tested would also require Department of Transport and Planning (DTP) approval for the significant additional network changes to be implemented.

**Option 4A** impacts the customer experience for pedestrians due to Coleman Parade eastbound being open to traffic. Queuing of pedestrians will occur and might spill into the cycle path or block the footpath. There is also an increased jaywalking risk with an extra traffic signals. Additionally, the PuDo and CPV operation cannot function as intended with the turnaround at the end of the road as planned within the Baseline option. This means PuDo and CPV will be impeded by additional traffic and vehicles also needing to exit via Kingsway. Cyclists parking their bikes will also need to share Coleman Parade with additional vehicles, increasing potential conflicts between vehicular and cycle traffic.

## 6.6 Multi-Criteria Assessment (MCA) of Options

Option 1 and Option 4A were assessed against the Baseline as part of the MCA of the short list of options for Coleman Parade. A summary of the MCA is displayed in Table 6-2 which shows that on balance, both options perform worse than the Baseline option.

TABLE 6-2 MCA SUMMARY

	Option 1 - Coleman Parade Closed with Kingsway Traffic Modifications	Option 4A - Coleman Parade Open East-bound only
Connectivity		
Productivity		

	Option 1 - Coleman Parade Closed with Kingsway Traffic Modifications	Option 4A - Coleman Parade Open East-bound only
Liveability		
Deliverability		
Cost		
Total Score		

Key	Better than Baseline	Same/equal to Baseline	Worse than Baseline
-----	----------------------	------------------------	---------------------

**Key outcomes that lead to Option 1 performing worse than the Baseline include:**

- Intersections across the Glen Waverley precinct are expected to operate at unacceptable levels, with the highest average delays and travel times when compared to the Baseline and Option 4A.
  - » Closure of Kingsway decreases the LoS at signalised intersections along Springvale Road – with higher average delays and congestion experienced. Similarly, travel times are noticeably higher when compared to the Baseline and Option 4A. This is likely due to vehicular traffic being diverted from Kingsway onto Springvale Road.
- The traffic impacts determined that from a connectivity perspective that this option was worse than Baseline. This impacted the deliverability of the option, particularly due to the requirement to implement various traffic changes on Springvale Road to address traffic modelling.
- Increased safety risk as no passive surveillance available from vehicles after hours due to closure of Kingsway.
- There may be potential for concerns from traders and the broader community associated with this option due to increased traffic on local roads. Depending on location of modifications, traders may be concerned about impacts to vehicle access to Kingsway businesses and The Glen Shopping Centre etc, including any changes to car parking. Will take significant mitigation and management efforts.

**Key outcomes that lead to Option 4A performing worse than the Baseline include:**

- This option contributes negatively to the user experience by providing barriers to the pedestrian movement within the centre while providing negligible benefit to the Glen Waverley Activity Centre (GWAC) road network performance.
- Does not provide opportunity to enhance landscaping and public realm amenity of the station surrounds and wider precinct. Does not provide opportunity to improve the local environment and community interactions.
- Increased risk of conflicts between road users and pedestrians/cyclists.
- Public realm connection between the Glen Waverley MMRN station, the bus interchange and SRLA station is divided by a traffic lane and cycle path connection creating a barrier to people easily accessing these key destinations.
- Increased risk of pedestrians jaywalking and errant vehicles entering pedestrian areas.
- Pedestrians crossing the Coleman Parade corridor can only do so at a designated crossing point and only when vehicles are held at the signals creating congestion and a funnel effect at the crossing point.



## 7. Recommendation and Conclusion

The assessment of Coleman Parade, Glen Waverley options identified that the Baseline option (full closure of Coleman Parade – Figure 7-1) is the preferred option relative to the other options following the MCA as detailed in Section 6.6.

Option 1 performed worse in the three criteria of connectivity, deliverability and cost, equal in the liveability criteria, and better in the productivity criteria compared to the Baseline option.

Option 4A performed worse in the three criteria of connectivity, productivity and liveability providing a negative impact to the community and precinct when compared to the Baseline option.

The Baseline option:

- Provides improved connectivity with:
  - » Increased transport and precinct integration.
  - » Safe and intuitive wayfinding.
  - » Increased pedestrian connectivity between the SRL Station, existing MMRN Station, bus interchange and the precinct.
- Provides improved liveability with the creation of a station plaza and public open space.
- Provides improved productivity as the solution contributes to the readiness of the precinct for future population growth with reduced congestion.
- Provides improved safety for pedestrian and cyclists by minimising road crossings and interfaces with vehicles.
- Has negligible street network performance implications compared against the other short listed options including keeping Coleman Parade open.



FIGURE 7-1 PREFERRED LAYOUT AT COLEMAN PARADE

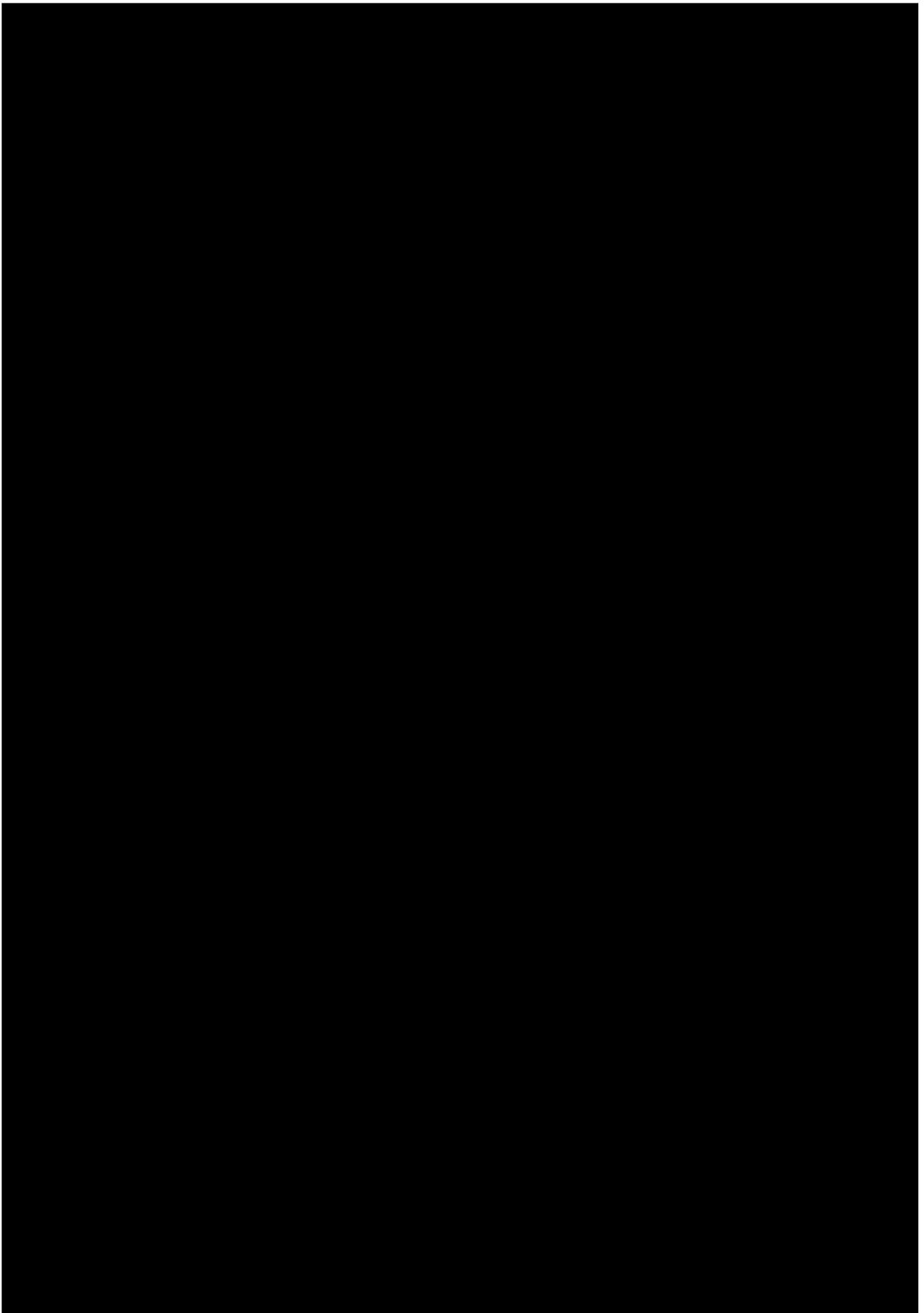


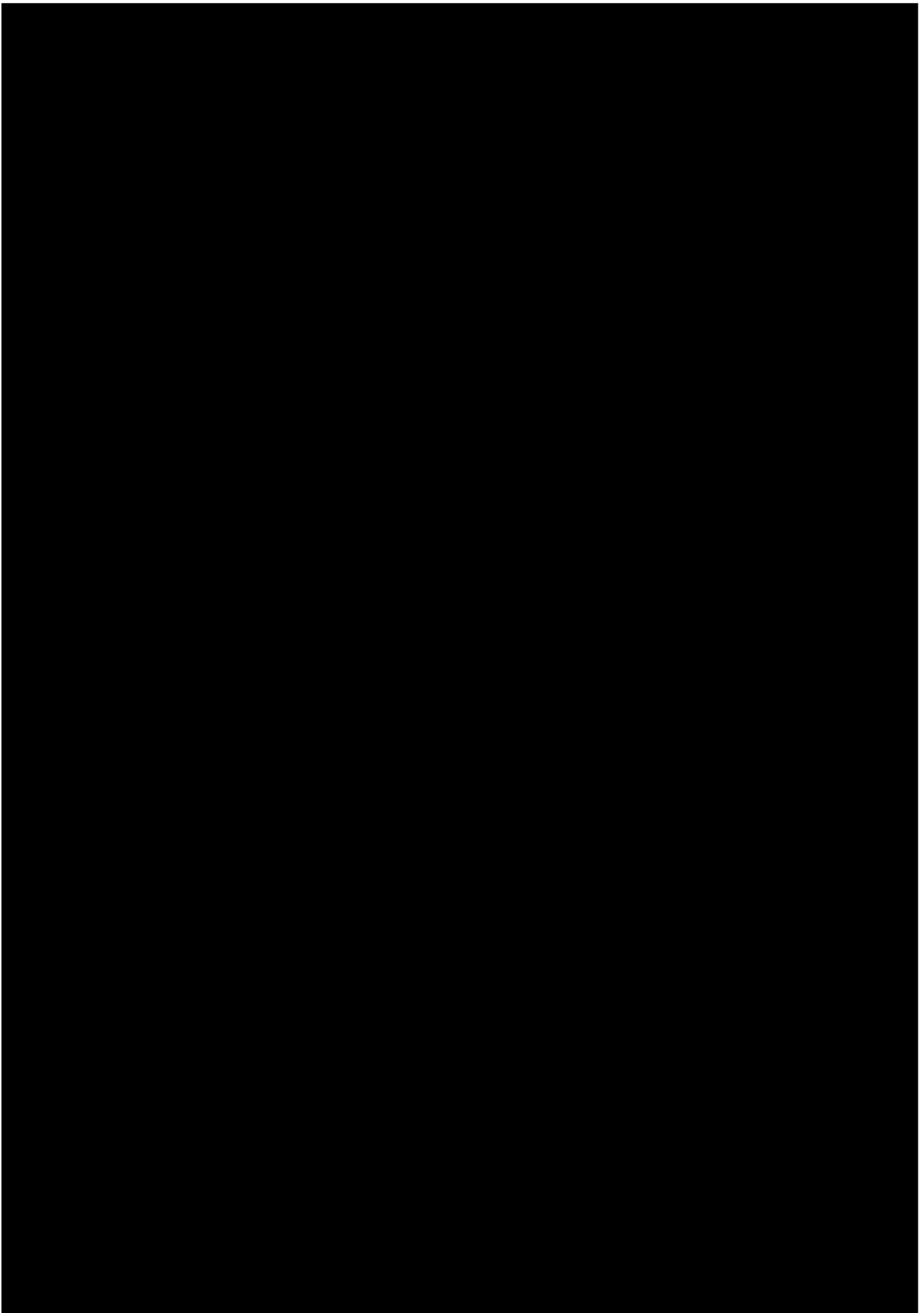


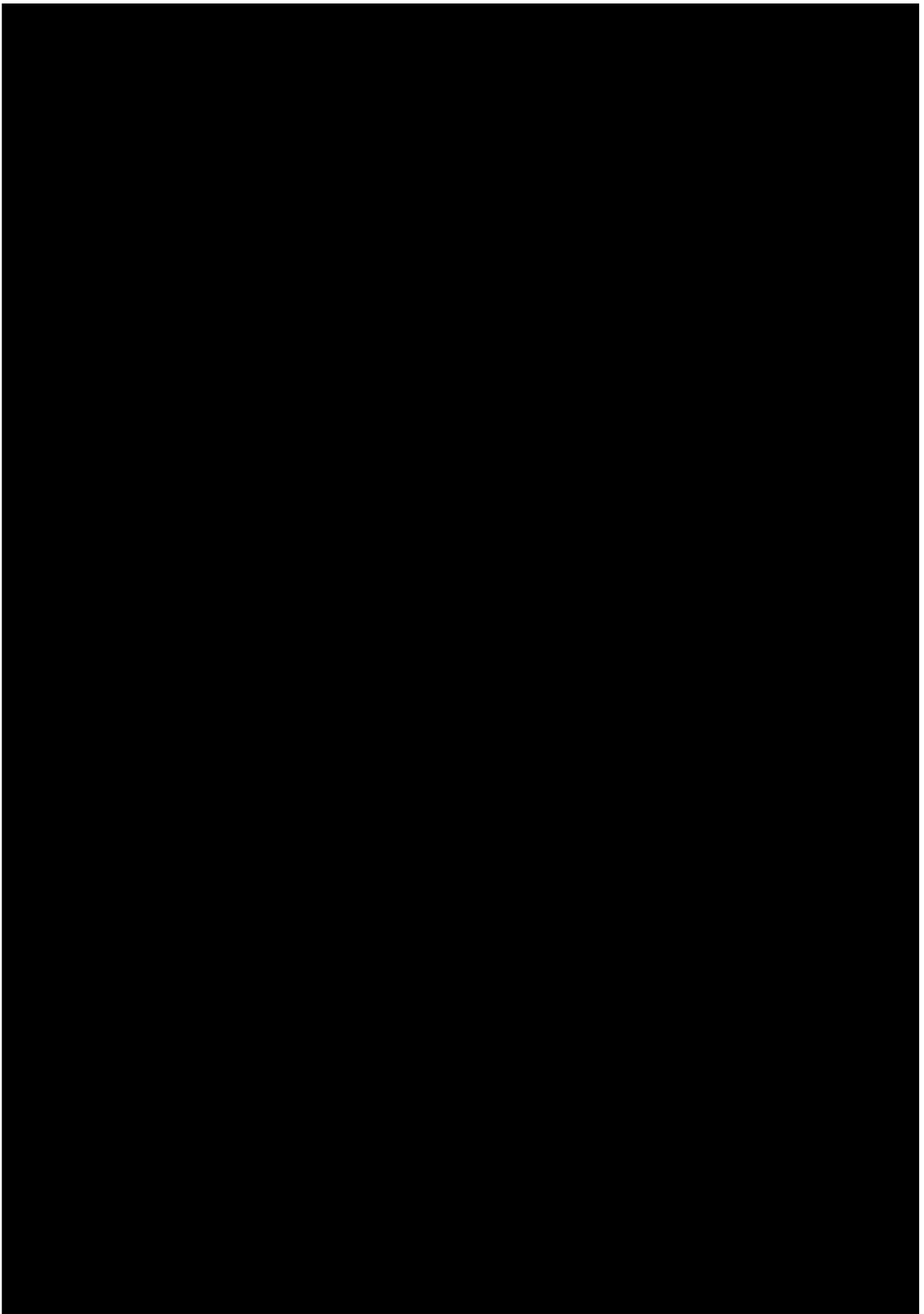
# Appendix A

## **Coleman Parade Multi-Criteria Assessment (MCA)**

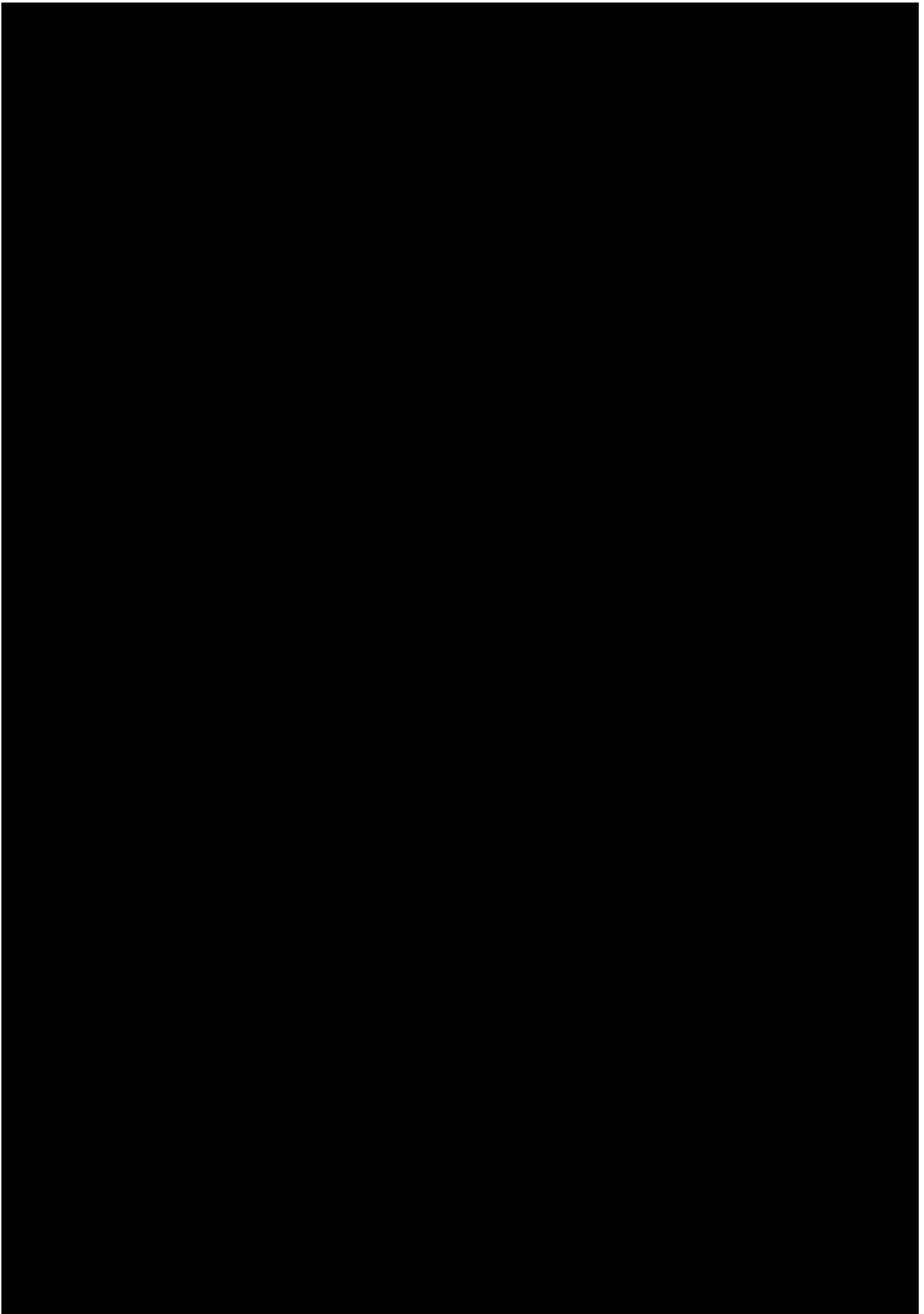


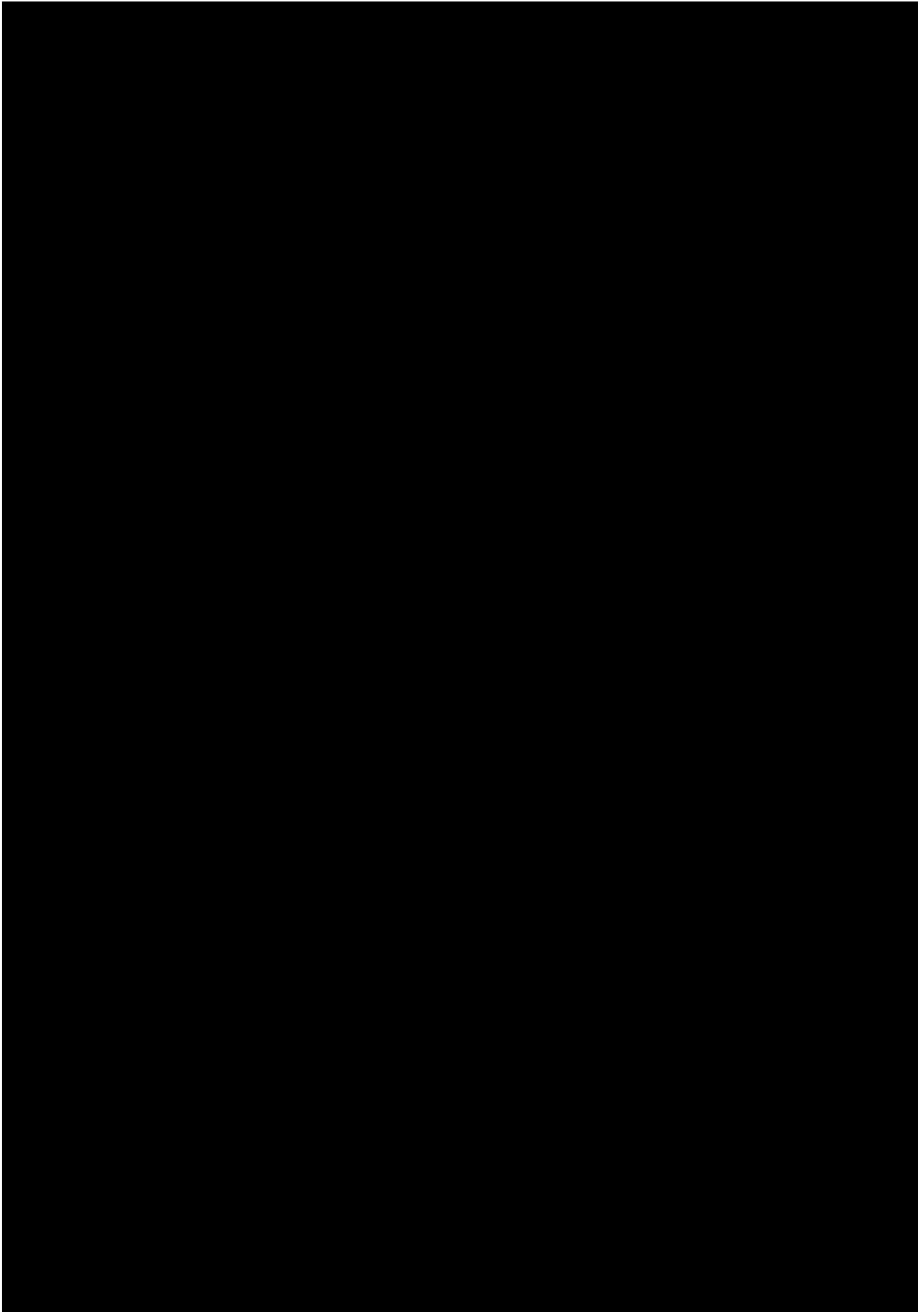


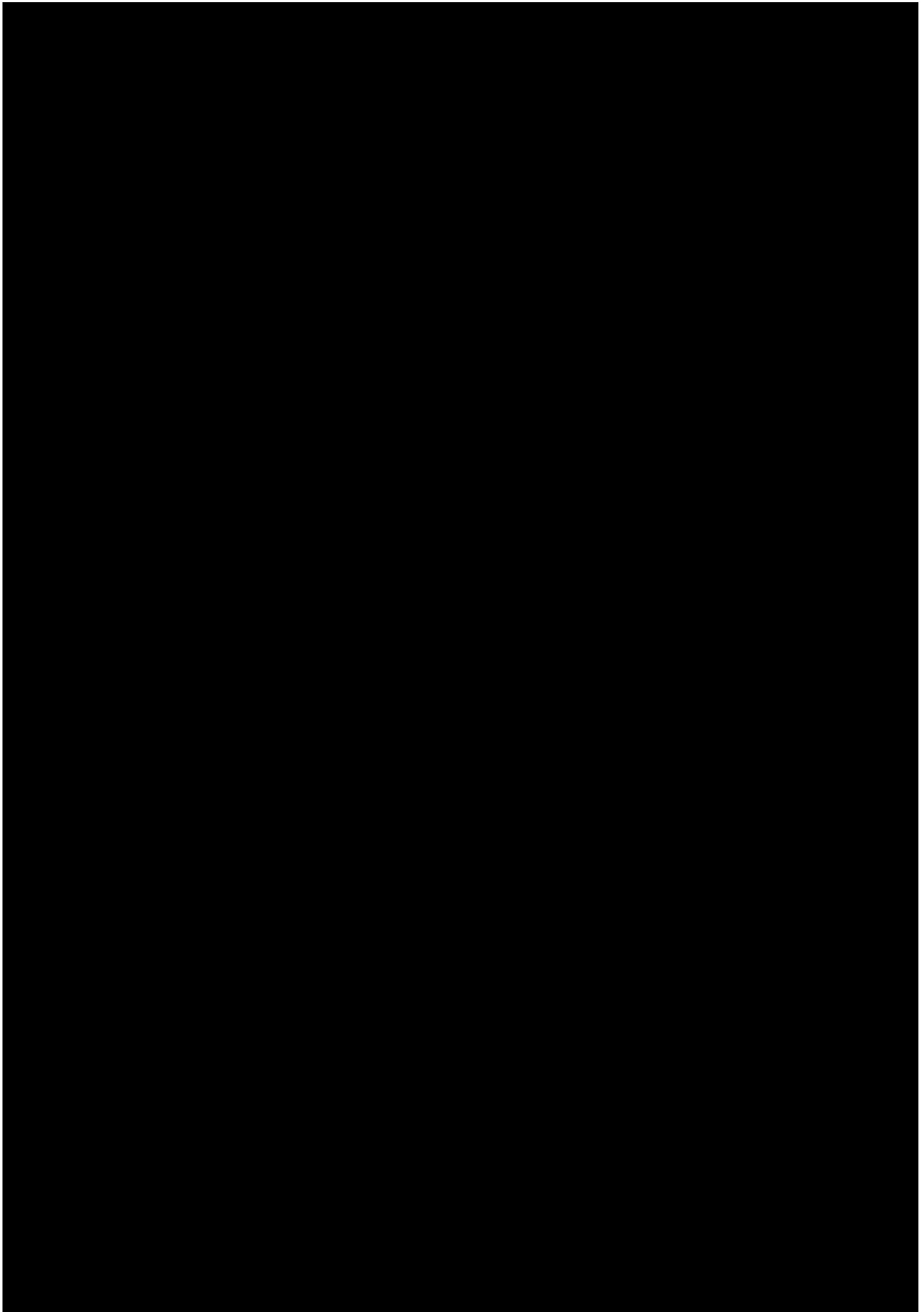


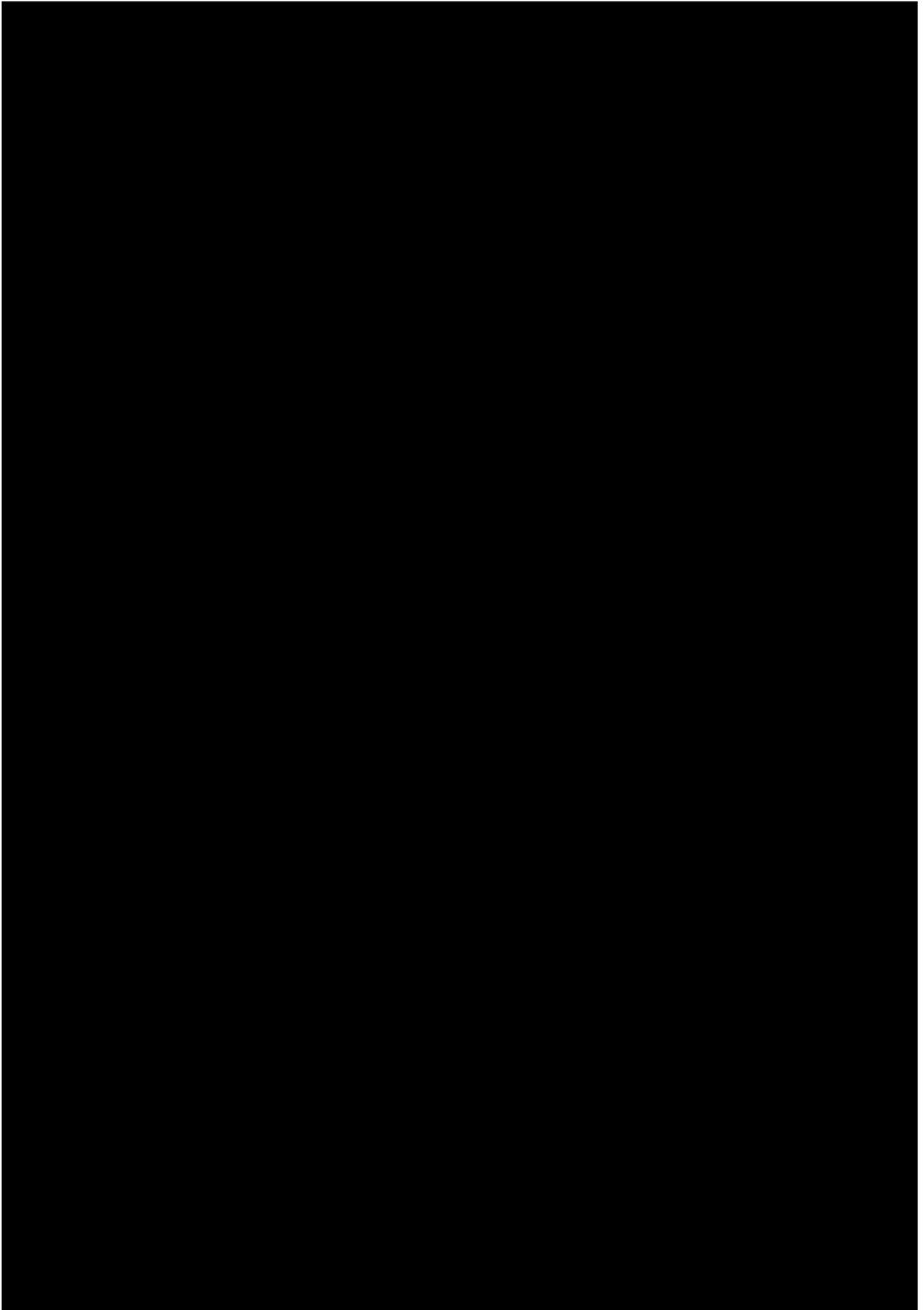




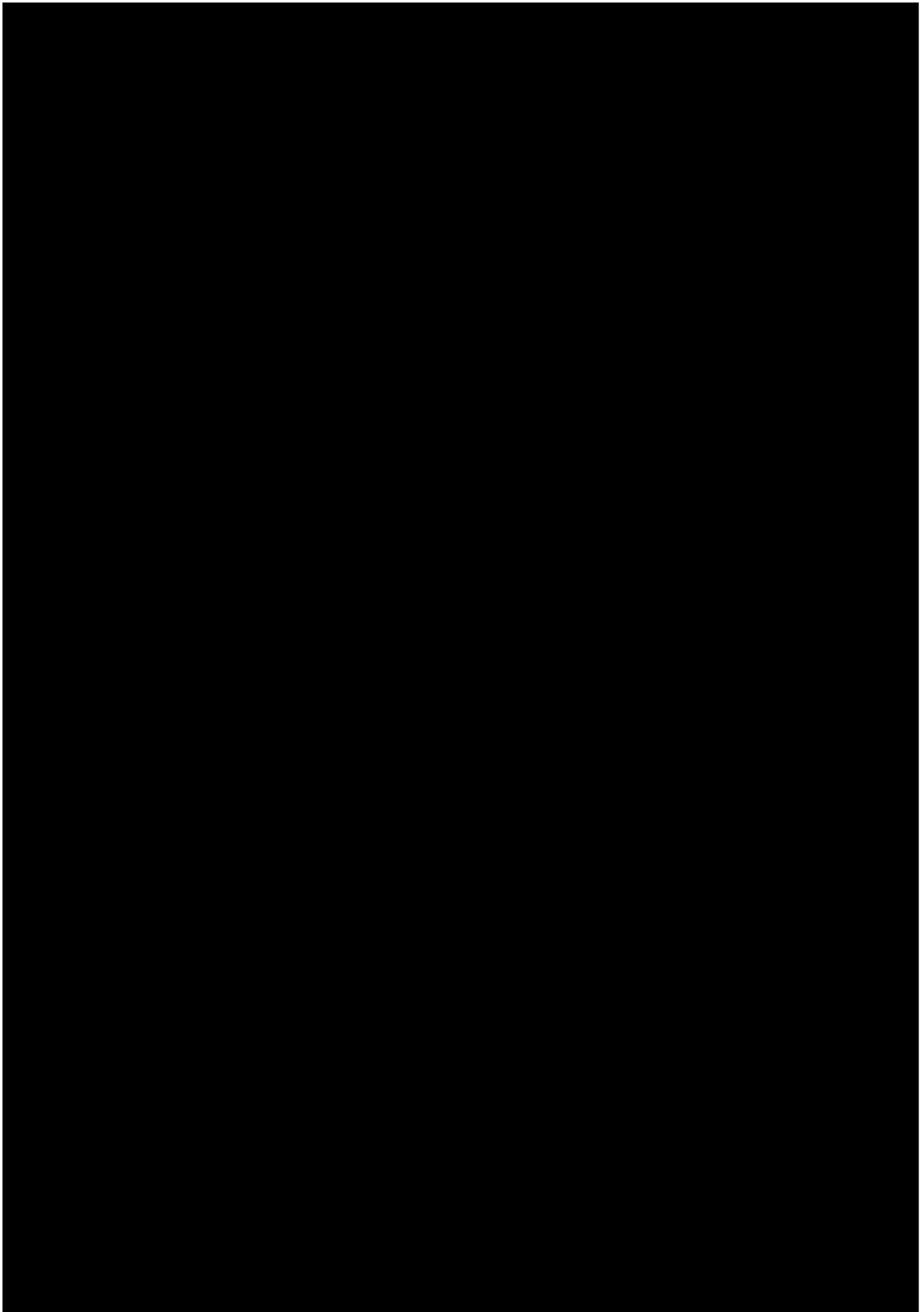


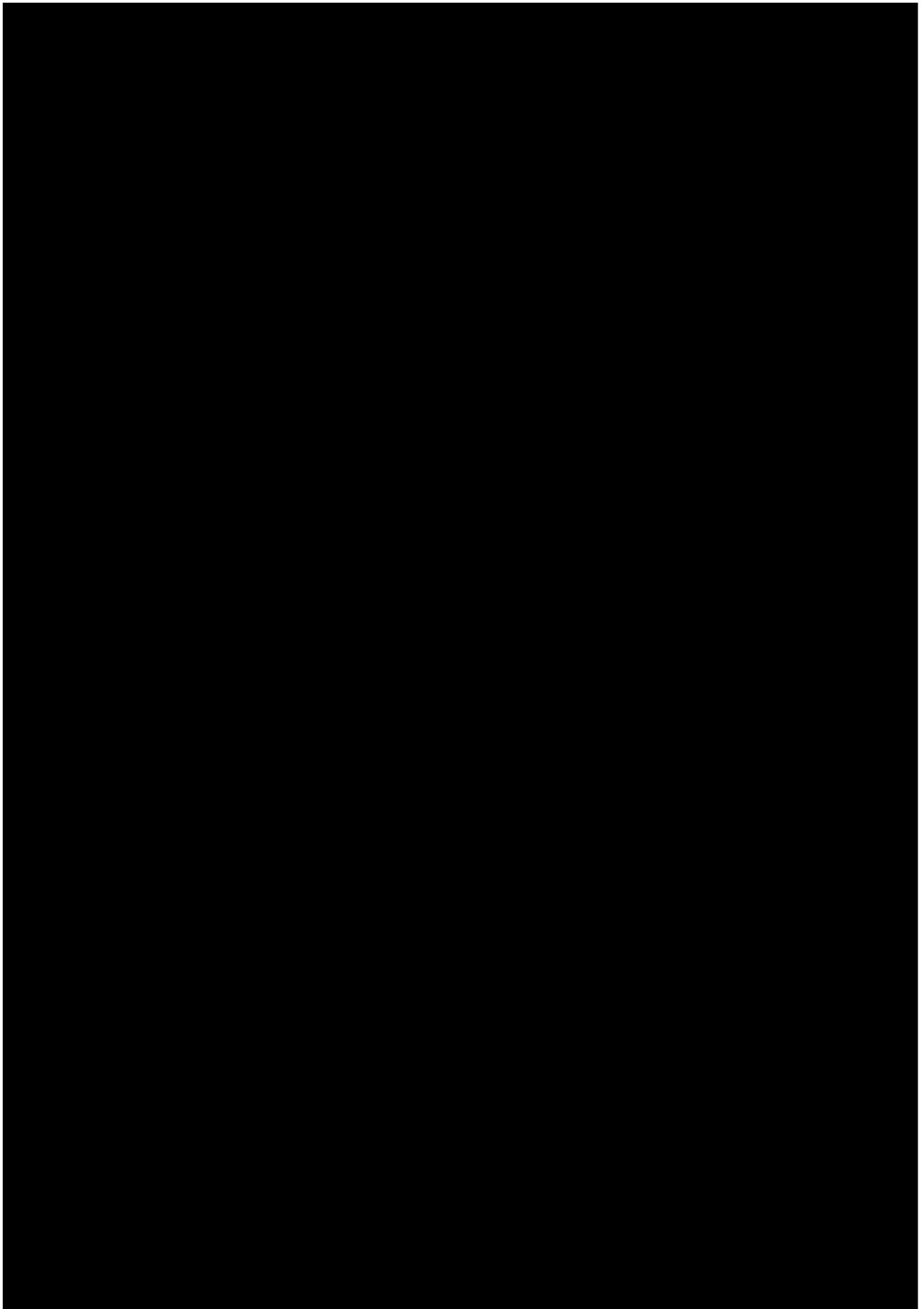












## Appendix B

# Glen Waverley Traffic Modelling Options Report





Project name	Suburban Rail Loop		Date	31 January 2024
Stream / Discipline	Technical	Transport Planning	Author	
Subject	Glen Waverley Traffic Modelling Options		Total pages	41
Document ID			Revision No.	A
Reviewer				

## 1 Executive Summary

### 1.1 Background

As part of the SRL East Project, Aurecon Jacobs Mott MacDonald Joint Venture (AJM-JV) was commissioned to test and assess the outcomes and performance of alternative options to mitigate the impacts of the closure of Coleman Parade. The outcome of this assessment will be used to support a Multi-Criteria Assessment (MCA) for Coleman Parade. Two transport models have been used in the assessment to understand wider traffic rerouting on the transport network (DOMINO) and detailed network operation, including queuing and delays at intersections and along corridors (VISSIM).

### 1.2 Options Assessed

Table 1.1 displays the options tested and the level of assessment completed. All options were assessed at a detailed level with network assessments (DOMINO) for those options where changes in the wider network were expected.

**Table 1.1 Scenarios modelled in DOMINO and VISSIM**

Option	DOMINO	VISSIM
<b>Do-minimum – Rail Day 1:</b> Coinciding with the commencement of SRL, the Rail Day 1 option involves a “business-as-usual” approach, with no distinct design interventions to address the impacts of the Coleman Parade Closure	✓	✓
<b>Option 1 – Ring Road:</b> 1: New Ring Road as an alternative road to Coleman Parade, connecting Railway Parade North with Myrtle Street with the intent of diverting traffic away from Kingsway	✓	✓
<b>Option 2 – Coleman Parade Eastbound Open:</b> Maintaining a single eastbound lane along Coleman Parade, to facilitate vehicular traffic flow through a slow speed environment, aiming to reduce traffic along Montclair Avenue and Kingsway	✗	✓
<b>Option 3 – Kingsway Closure:</b> Involves the truncation of Kingsway immediately north of Montclair Avenue, to reduce the level of traffic along Montclair Avenue, Bogong Avenue and Kingsway itself as a result of the Coleman Parade closure.	✓	✓
<b>Option 3.1 – Kingsway Closure with mitigations:</b> As per option 3, including additional measures that are detailed in Section 3.5.	✗	✓

### 1.3 Assessment of Options

Table 1.2 displays a high level assessment of the options based on the DOMINO and VISSIM modelling tests.

**Table 1.2 Assessment of Options**

Option	Network Impacts	Bus and Traffic Performance	Pedestrian and Cyclist
<b>Option 1 Ring Road:</b>	Attracts rat running traffic travelling through rather than to the precinct. Traffic which should use the strategic arterial road network.	Average delays are similar to Rail Day 1 for buses and traffic but intersection performance deteriorates from No SRL and Rail Day 1 scenarios. Whilst the	Not expected to result in any significant changes to pedestrian delay or queuing on Coleman Parade.



Option	Network Impacts	Bus and Traffic Performance	Pedestrian and Cyclist
	Less than 500 vehicles per hour use the new Ring Road in the peak hours, which is well below the expected design capacity of the road. This demonstrates that use of the new link is limited. However, there is a large proportional change on Euneva Ave and O'Sullivan Ave past the school and bus station.	number of unsatisfactorily performing intersections is minimal there would be an increase in delays experienced.	Extra traffic (~130 vehicles in peak hour) on O'Sullivan Road around the school and passing the bus station increases conflicts between traffic and pedestrians
<b>Option 2 Coleman Parade Eastbound Open:</b>	Localised impacts with traffic rerouting from Kingsway and Montclair Ave.  Slow speed and POS on Coleman Parade means there is unlikely to be rat running traffic from the wider strategic network.	Average delays are similar to Rail Day 1 for buses and traffic but intersection performance deteriorates from No SRL and Rail Day 1 scenarios.  Whilst the number of unsatisfactorily performing intersections is minimal there would be an increase in delays experienced for all traffic.	Significant impact on pedestrians and cyclists, crossing delays and conflict with traffic on Coleman Parade. Pedestrian delay at the POS below M&P target level of service.  Pedestrians crossing Coleman Parade will block the footpath, increased risk that pedestrians will queue on the cycle path.  Eastbound cyclists will travel with vehicles, increasing risk of conflict between car and cycle traffic.
<b>Option 3 Kingsway Closure</b>	Reroutes traffic from Kingsway to Springvale Road for travel to/from the north and west. Travel from north of Railway Parade North to Coleman Parade West, detours through High Street Road and Blackburn Road.	Significantly higher average road traffic delays (~1 minute) and bus delays (up to 5 minutes). The greatest impact is on Railway Parade North at the Springvale Road intersection with queues back to Kingsway.	Closure of Kingsway to through traffic would result in improvements to pedestrian movements across Kingsway at the point of closure, reducing delay and conflict with traffic at this location.
<b>Option 3.1 Kingsway Closure with mitigations:</b>	Overall ability of the network within Glen Waverley to operate at a reasonable level of service is impacted with queuing and a lack of alternative routes for traffic exiting the centre.  Option 3.1 infrastructure and operational changes reduce the impact but highlights that wider travel demand and parking management is required.	Creates queuing on Springvale Road with the right turn into Kingsway extending back into the through traffic lane. Results in extensive queuing and low speeds on Springvale Road.  Changes in signal phasing and an additional right turn at the Springvale / Kingsway intersection (from the north) reduces but does not fully mitigate the overall queuing and delays.	Proposes a staggered pedestrian crossing and changes to cycle phasing at the Springvale Road / Coleman Parade / Railway Parade North intersection. Pedestrians will see an increase in crossing delays due to staged crossings if this mitigation were to be introduced.

#### 1.4 Overall findings and implications

Option 1 (Ring Road) provides additional infrastructure and hence allows traffic to distribute throughout the network, however no significant improvements to network metrics materialise from the Ring Road. Some unintended consequences may also occur with additional traffic on O'Sullivan Road increasing traffic and queuing around Glen Waverley Secondary College. This could have safety implications associated with extra traffic using local routes and school zones. Furthermore, the Ring Road allows redistribution in the model especially at the Kingsway/Railway Parade North intersection, with there now being less right turn movements and this consequently improving bus interchange operation. Less than 500 vehicles per hour use the Ring Road in the peak hours, demonstrating that the use of the new link is limited.

Option 2 shows that the customer experience for pedestrians suffers due to Coleman Parade Eastbound being open to traffic. Queuing of pedestrians will occur and might spill into the cycle path or block the footpath, there is also an increased jaywalking risk with the extra traffic signals. Additionally, the PUDO and CPV operation cannot function as intended with the turnaround at the end of the road as planned

within the Rail Day 1 option. This means PUDO and CPV will be impeded by additional traffic and vehicles also need to exit via Kingsway. Cyclists parking their bikes will also need to share Coleman Parade with additional vehicles, increasing potential conflicts between vehicular and cycle traffic.

Option 3 performs worse than any other option. It yields the worst LoS performance at intersections and highest travel times along Springvale Road. This is ultimately due to the Kingsway Closure diverting traffic onto other segments along Springvale Road, resulting in decreased traffic performance especially in comparison to 2041 Rail Day 1. Mitigation measures were tested including additional right-turn lanes from Springvale Road onto Kingsway. Whilst this option performs better it still performs worse than other options and demonstrates significant traffic issues. The mitigations tested would also require Department of Transport and Planning (DTP) approval for the significant additional network changes to be implemented.

Overall, the Rail Day 1 option performs better than all other 2041 options for the Glen Waverley Precinct. This option has minimal wider network impacts, as well as negligible impacts on intersection performance, private and public transport travel times, pedestrian delays and queuing. Under this option, road users would avoid the Glen Waverley Precinct itself and instead use alternative strategic routes. In terms of traffic impact and performance Rail Day 1 should be considered the preferred option.

## 2 Introduction

### 2.1 Background

This TAN outlines the modelled outcomes and performance of alternative options for traffic arrangements in the Glen Waverley precinct. For the options that are proposed to mitigate the impacts of the closure of Coleman Parade, understanding of the traffic performance in the extended area of the precinct is crucial to assessing each option's viability. This TAN will be used to support a Multi-Criteria Assessment (MCA) for Coleman Parade.



### 2.2 Assessment Purpose

Given there have been concerns that the closure of Coleman Parade would lead to increased traffic along Kingsway, AJM-JV have developed an extended microsimulation model to assess local traffic impacts and operation of multiple road closure options. These models encompass the core area of the Glen Waverley SRL Precinct and is intended to assess the road user impacts within the area.

AJM-JV have also used the DTP DOMINO model to assess wider re-routing and traffic patterns in and around the Glen Waverley SRL East Precinct. The DOMINO model is a mesoscopic assignment model covering Greater Melbourne that was developed and is maintained by DTP. AJM-JV have produced a local sub-area of DOMINO with an enhanced zone system that matches the microsimulation model to test outcomes of the alternative options. The outcomes also inform wider re-routing assumptions within the VISSIM microsimulation model.

This TAN outlines the modelled outcomes from both the DOMINO and VISSIM models covering Glen Waverley to demonstrate the performance of the alternative options for traffic arrangements in the precinct.

### 2.3 Report Contents

The remainder of the technical note has been structured in the following manner:

- **Section 3:** Future Year Option Definitions
- **Section 4:** DOMINO Model Outcomes
- **Section 5:** VISSIM Model Outcomes
- **Section 6:** Conclusions, Findings and Implications

### 3 Future Year Option Definitions

The following sections detail the model scenarios assessed for the 2041 future year Base Case (Rail Day 1) and options developed for Coleman Parade.

#### 3.1 Do Minimum – Rail Day 1

Coinciding with the commencement of SRL, the Rail Day 1 option involves a Base Case as per the reference design, this includes the closure of Coleman Parade. Figure 3.1 shows the Rail Day 1 network.

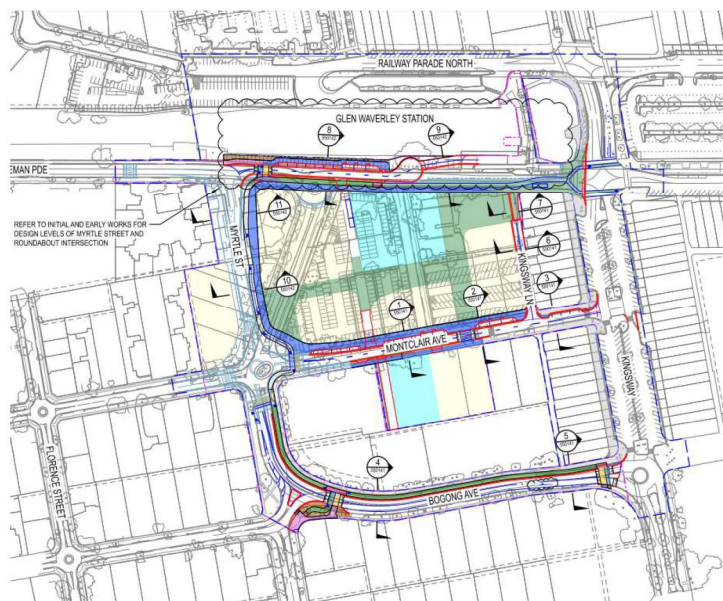


Figure 3.1 Do Minimum - Rail Day 1

#### 3.2 Option 1 – Ring Road

Option 1 proposes a new Ring Road, connecting Railway Parade North with Myrtle Street. Figure 3.2 shows the location of the proposed new Ring Road.



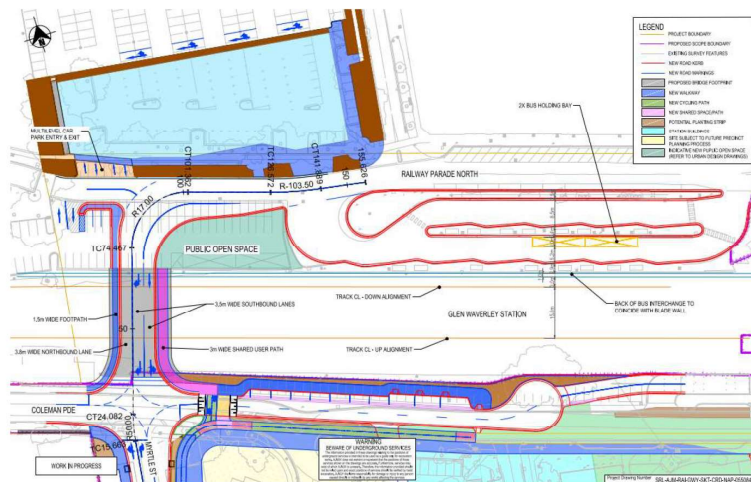


Figure 3.2 Option 1 – Ring Road

### 3.3 Option 2 – Coleman Parade Eastbound Open

Option 2 involves maintaining a single eastbound lane along Coleman Parade, to facilitate vehicular traffic flow through a slow speed environment to reduce traffic along Montclair Avenue and Kingsway. Signal phasing at crossings on Coleman Parade and at Coleman Parade/Kingsway aim to reduce pedestrian and cyclist crossing delays and queuing. Figure 3.3 shows the location of the proposed eastbound lane along Coleman Parade.

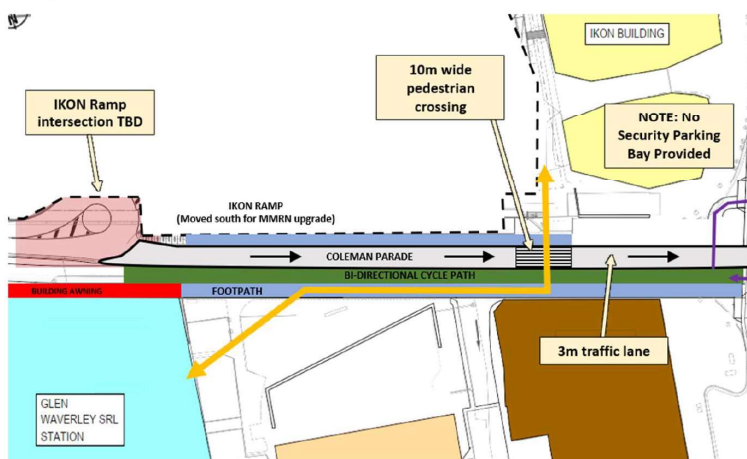


Figure 3.3 Option 2 – Coleman Parade Eastbound Open

### 3.4 Option 3 – Kingsway Closure

Option 3 involves the truncation of Kingsway immediately north of Montclair Avenue, to reduce the level of traffic along Montclair Avenue, Bogong Avenue and Kingsway itself as a result of the Coleman Parade closure. Figure 3.4 shows the location of this intersection and proposed nature of the closure changes.

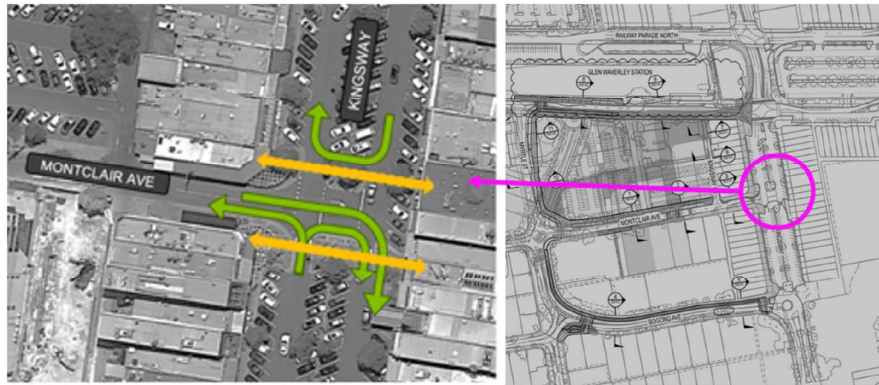


Figure 3.4 Option 3 – Kingsway Closure

### 3.5 Option 3.1 – Kingsway Closure (with mitigations)

Option 3.1 is the same as Option 3, with the inclusion of mitigation measures to improve traffic performance. It should be noted that these additional network assumptions would require DTP approval to be implemented. The additional measures (refer to Figure 3.5) for Option 3.1 are as follows:

- A double right turn at Springvale Road into Kingsway is introduced, effectively removing one lane for through traffic.
- A bus lane south of Kingsway in the southbound direction of Springvale Road is introduced.
- There is removal of on-street parking along Kingsway in the westbound direction for facilitating the double right turn.
- At the Springvale Road / Coleman Parade / Railway Parade North intersection, a staggered pedestrian crossing is introduced and changes to cycle phasing are made.

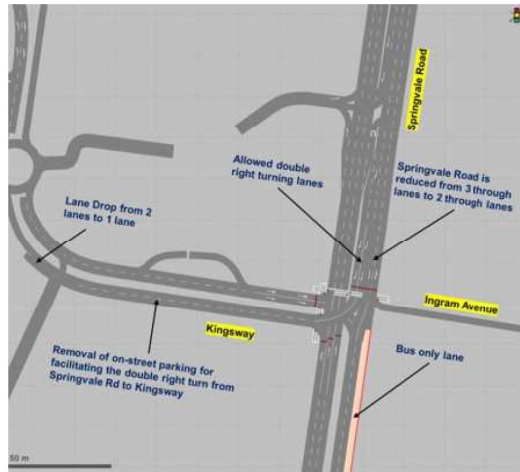


Figure 3.5 Option 3.1 – Kingsway Closure – Additional Assumptions

### 3.6 Modelling of options in DOMINO and VISSIM

AJM-JV have used the DOMINO model to assess wider re-routing and traffic patterns in and around the Glen Waverley SRL East Precinct. The DOMINO model is a mesoscopic assignment model covering Greater Melbourne that was developed and is maintained by DTP. The VISSIM model covers the Glen Waverley Precinct and is used to model the local road network in detail for assessment of the operational impacts of the 2041 options for Coleman Parade.

As shown in Table 3.1, the DOMINO and VISSIM models capture the respective 2041 future year options.

It should be noted that Option 2 was not modelled in DOMINO as there is no expectation that this network change would produce wider re-routing in comparison to rail day 1 option, any re-routing will be limited to local movements within the precinct. Option 3.1 has also not been modelled in DOMINO; this scenario is seen as less likely to eventuate than Option 3 due to the requirement for DTP approvals for the additional network measures.

Table 3.1 Scenarios modelled in DOMINO and VISSIM

Option	DOMINO	VISSIM
<b>Do Minimum</b> Rail Day 1	✓	✓
<b>Option 1</b> Ring Road	✓	✓
<b>Option 2</b> Coleman Parade Eastbound Open	✗	✓
<b>Option 3</b> Kingsway Closure	✓	✓
<b>Option 3.1</b> Kingsway Closure with mitigations	✗	✓

#### 4 DOMINO Model Outcomes

The DOMINO sub-area model created was used to test Rail Day 1, Option 1 and Option 3 scenarios to investigate wider traffic and re-routing impacts in the Glen Waverley precinct. Based on the DOMINO modelling carried out for Rail Day 1, Option 1 and Option 3 scenarios, difference plots have been extracted for the options against the Rail Day 1 and are provided in the sections below. Select link analysis is also provided for Option 1 to demonstrate the likely users of this proposed piece of infrastructure.

Difference plots show the amount traffic has increased or reduced for each link in the network between two alternative scenarios, they display the anticipated impact on traffic volumes throughout the network. Select link analysis selects a link to investigate (highlighted in purple in the plots) and demonstrates where users of the link have come from and are going to. This shows who uses a link and also routing through the network.

##### 4.1 Select Link Analysis – Option 1

Figure 4.1 to Figure 4.4 show the select link plots for Option 1. These plots detail the expected path of travel for vehicles through the Ring Road during the morning (AM) and evening (PM) peaks. It also demonstrates the likely users of this proposed new road.

The select links show that most traffic utilising the new link road are local trips travelling east-west (or vice versa) through the precinct.

During the AM peak, most vehicles are expected to travel northbound through the Ring Road mainly via Coleman Parade, Myrtle Street and Carramar Avenue. After crossing the Ring Road, most vehicles are expected to travel through to Springvale Road via Railway Parade North. In the southbound direction, most vehicles are expected to travel through the Ring Road via Kingsway, Euneva Avenue and Springvale Road.

Similarly, during the PM peak, most vehicles are expected to travel northbound through the Ring Road mainly via Coleman Parade. After crossing the Ring Road, most vehicles are expected to travel through to Euneva Avenue or Springvale Road via Railway Parade North. In the southbound direction, most vehicles are expected to travel through the Ring Road via Euneva Avenue and Kingsway.



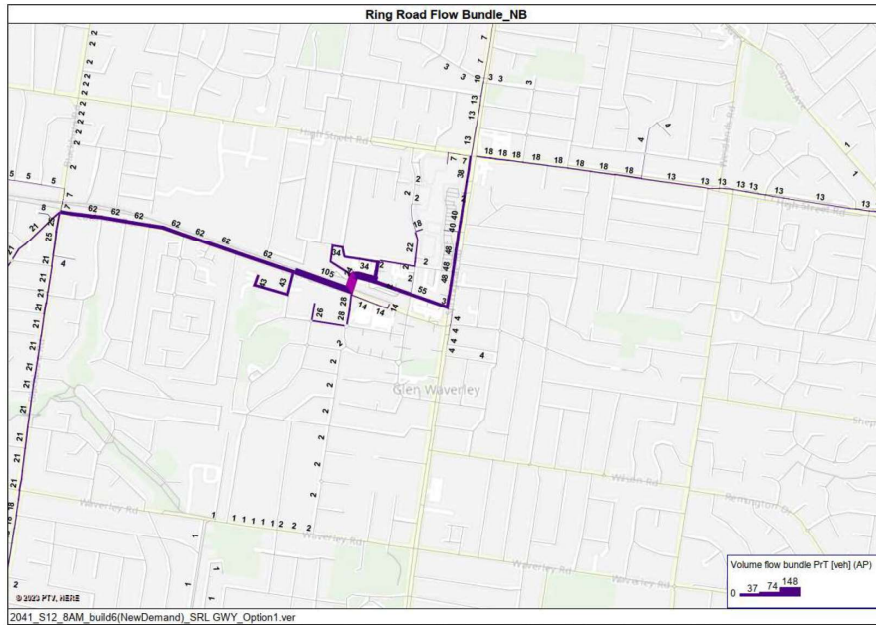


Figure 4.1 Option 1 link flow bundle plot NB – AM Peak

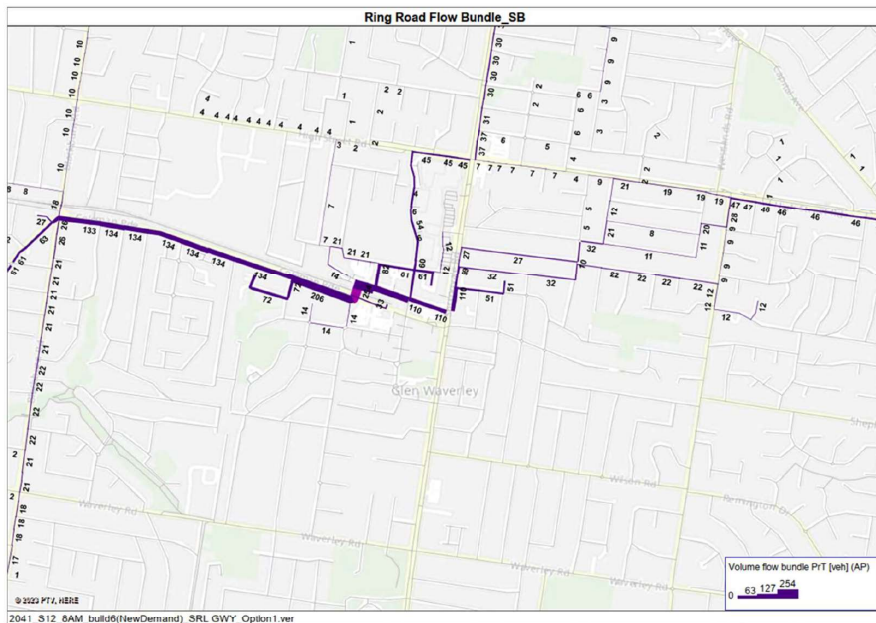


Figure 4.2 Option 1 link flow bundle plot SB – AM Peak

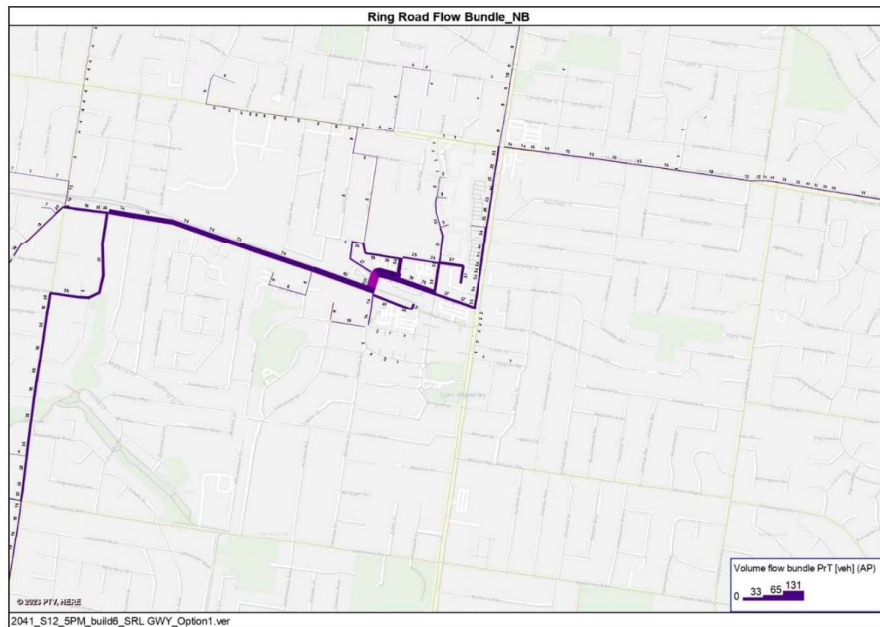


Figure 4.3 Option 1 link flow bundle plot NB – PM Peak

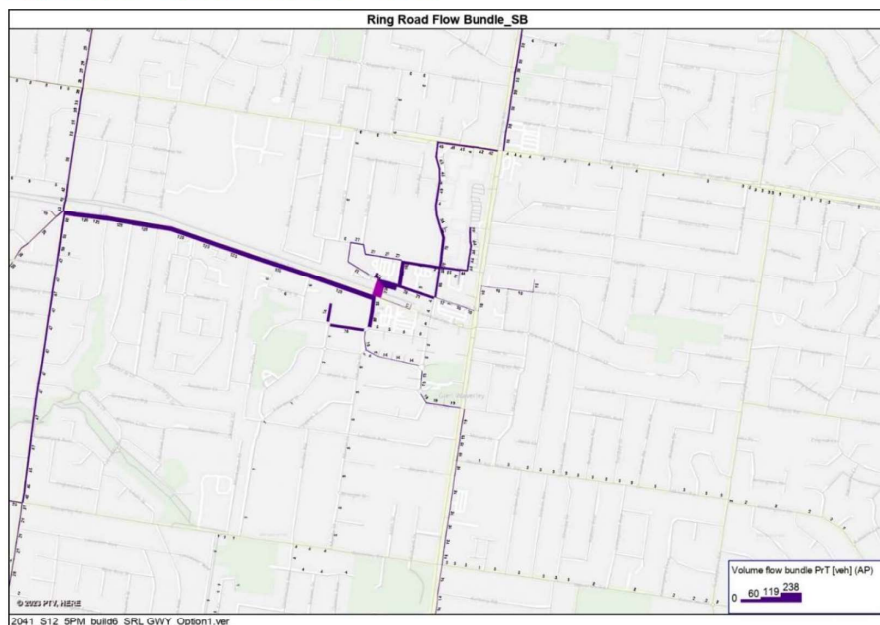


Figure 4.4 Option 1 link flow bundle plot SB – PM Peak

#### 4.2 Changes in traffic flows resulting from Option 1

Figure 4.5 and Figure 4.6 show the difference plots between Option 1 and Rail Day 1 for the AM and PM peak periods respectively.

During the AM peak, there is an expected decrease in traffic volumes along Kingsway (south of O'Sullivan Road), Montclair Avenue and Myrtle Street with the introduction of Option One (Ring Road). Vehicular traffic is diverted from the aforementioned roads to O'Sullivan Road, Euneva Avenue, Railway Parade North and through to the Ring Road. There are also small decreases on Blackburn Road and High Street Road.

During the PM peak, a similar pattern has been observed along Kingsway, Montclair Avenue and Myrtle Street (decrease in traffic volumes), with O'Sullivan Road, Euneva Avenue and Railway Parade North experiencing increased levels of traffic as they serve as connectors to the Ring Road.

Many of the Ring Road users are from outside of the Glen Waverley precinct itself and travel on the Ring Road as an alternative to the strategic road network. As such, the Ring Road may result in increased rat-running through the precinct and greater numbers of vehicles passing through the precinct, including past Glen Waverley Secondary College and the bus station.

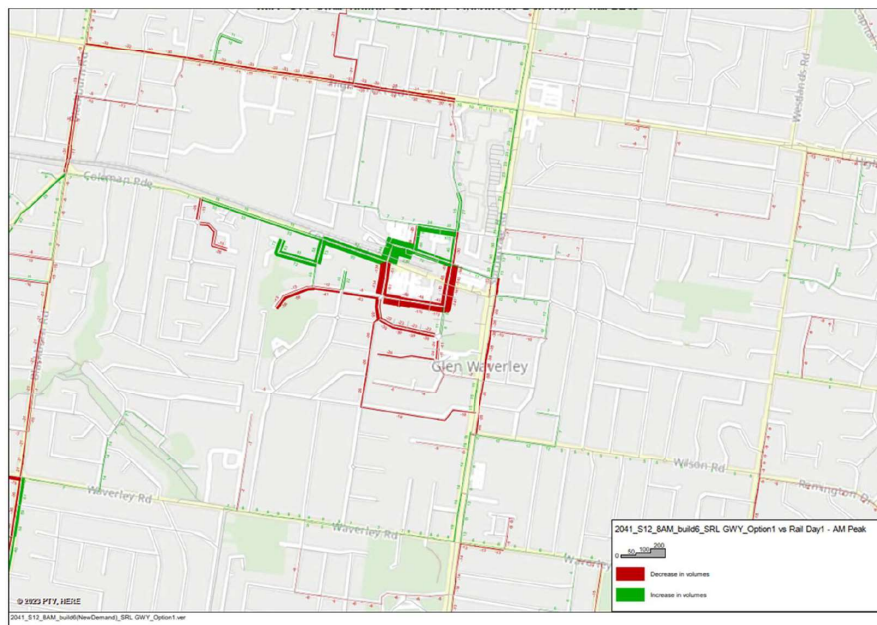


Figure 4.5 Traffic volume difference plot – Option 1 vs Rail Day 1 – AM Peak

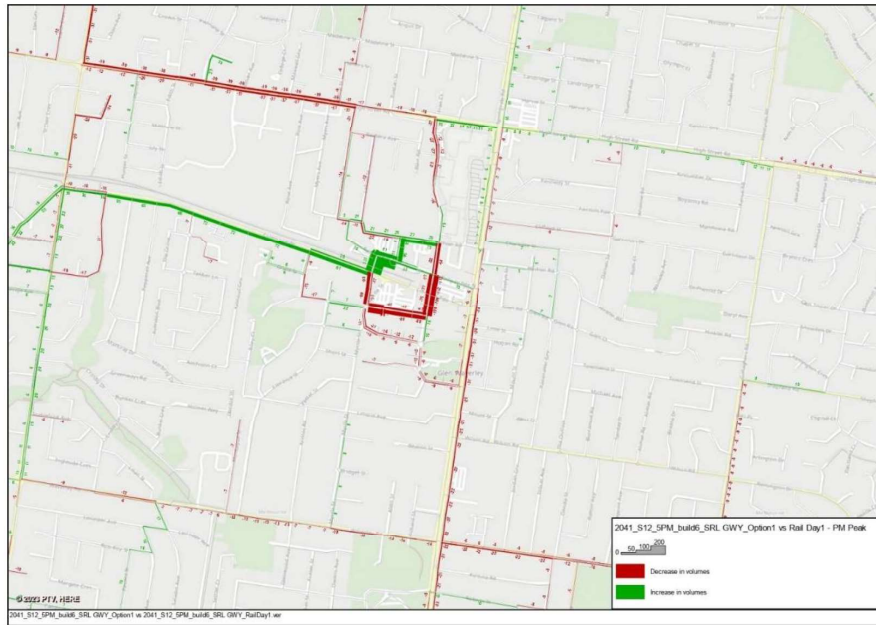


Figure 4.6 Traffic volume difference plot – Option 1 vs Rail Day 1 – PM Peak

#### 4.3 Traffic impacted by proposed Kingsway Closure

Figure 4.7 and Figure 4.10 show the select link plots for Rail Day 1 on Kingsway between Montclair Avenue and Coleman Parade. These plots detail the expected users of Kingsway during the AM and PM peaks.

The select links show that most vehicles using the link are trips travelling through the intersection from north to south or vice versa. Many of these users pass through the intersection, entering/exiting the area via Coleman Parade or entering/exiting the area via Snedden Drive.

In Option 3, it is proposed that some Kingsway movements are closed, effectively banning north-south movements through the intersection. The select links confirm that this will cause a considerable amount of traffic re-routing away from Kingsway. Details of expected traffic re-routing is discussed below in Section 4.4.



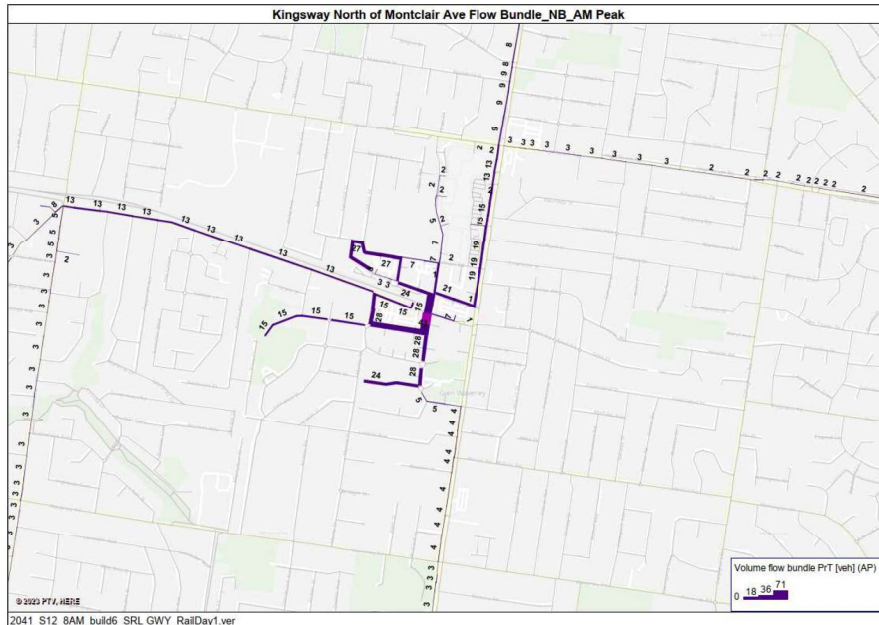


Figure 4.7 Rail Day 1 Kingsway link flow bundle plot NB – AM Peak

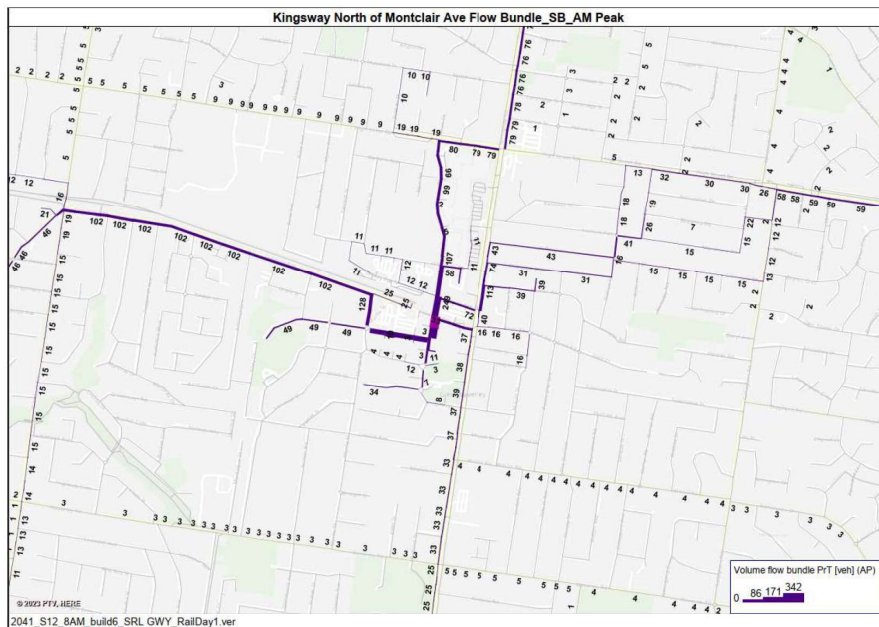


Figure 4.8 Rail Day 1 Kingsway link flow bundle plot SB – AM Peak

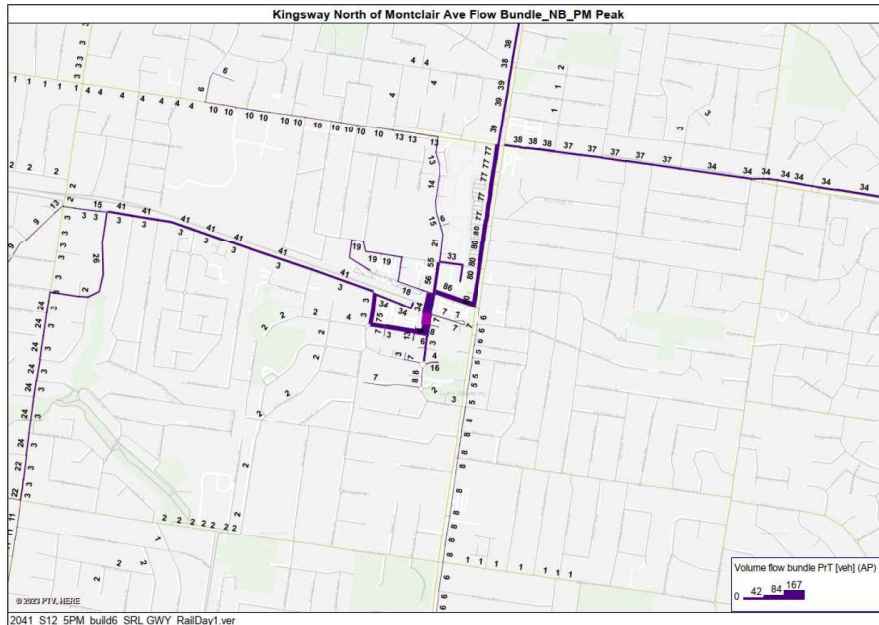


Figure 4.9 Rail Day 1 Kingsway link flow bundle plot NB – PM Peak

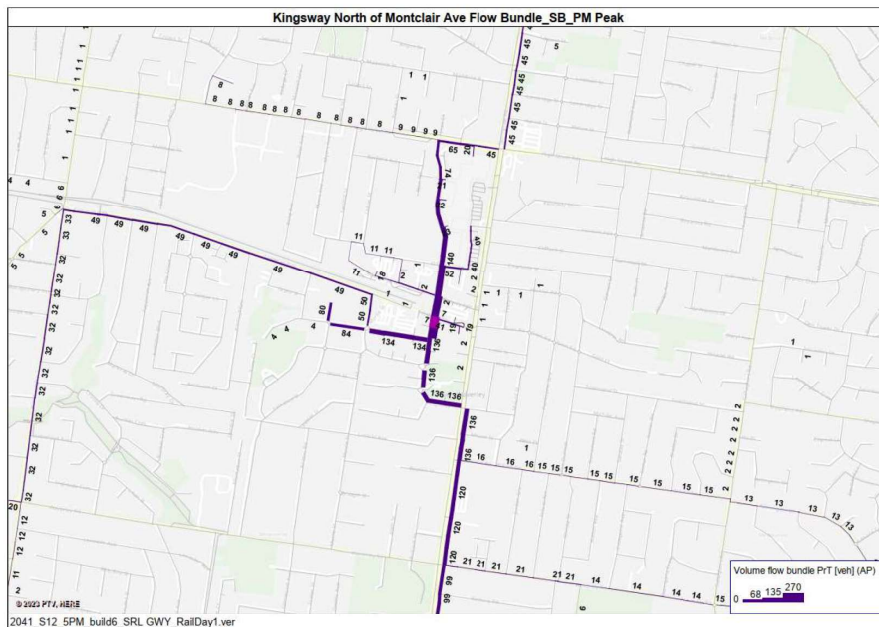


Figure 4.10 Rail Day 1 Kingsway link flow bundle plot SB – PM Peak

#### 4.4 Changes in traffic flows resulting from Option 3

Figure 4.11 and Figure 4.12 show the difference plots between Option 3 and Rail Day 1 for the AM and PM peak periods respectively.

During the AM peak, there is an expected decrease in traffic volumes along Kingsway, Montclair Avenue and Bogong Avenue (WB between Myrtle Street and Kingsway) with the implementation of Option 3 (Kingsway Closure). Vehicular traffic is diverted from the aforementioned roads to Springvale Road and Lincoln Avenue, and through to Myrtle Street. Vehicles travelling north of Railway Parade North to Coleman Parade West, detour through High Street Road and Blackburn Road.

During the PM peak, a similar pattern (decrease in traffic volumes) has been observed along Kingsway and Montclair Avenue. However, Springvale Road and Snedden Drive (NB between High Street Road and O'Sullivan Road) experience increased levels of traffic. These specific PM increases appear counterintuitive and the reasoning for them is not clear; consequently it is expected that PM traffic impacts would be more closely aligned to the AM patterns than is shown in Figure 4.12.

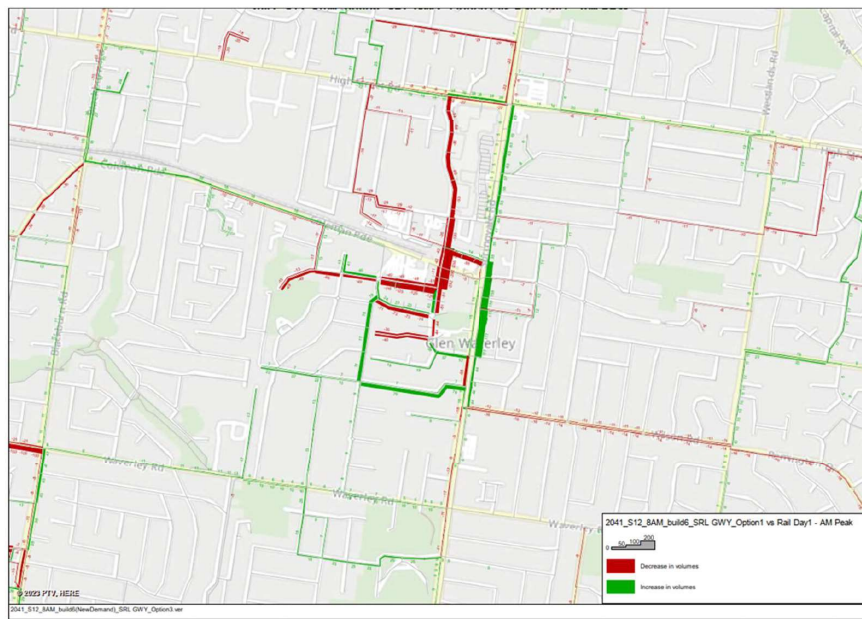


Figure 4.11 Traffic Volume Difference plot – Option 3 vs Rail Day 1 – AM Peak



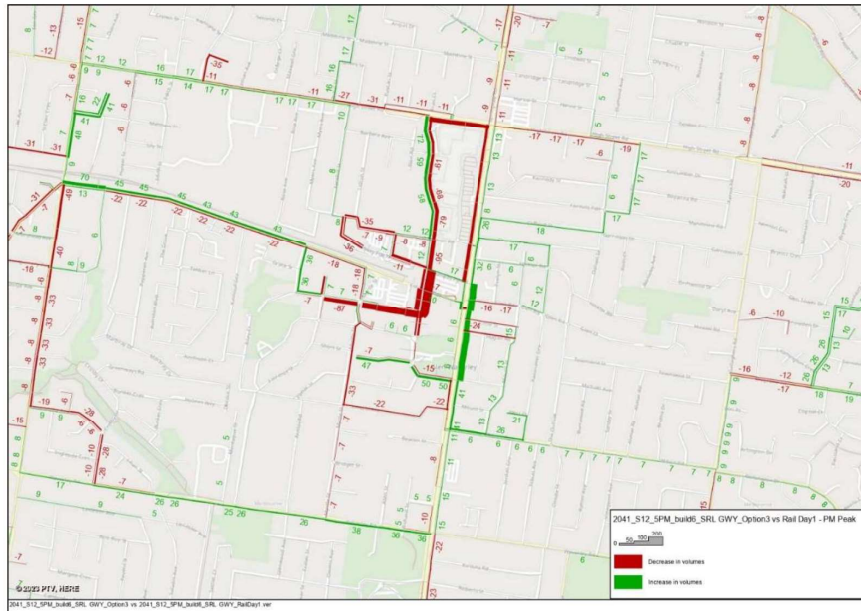


Figure 4.12 Traffic Volume Difference plot – Option 3 vs Rail Day 1 – PM Peak

#### 4.5 DOMINO Outcomes Summary – Wider traffic patterns and re-routing

The DOMINO modelling and outputs for Options 1 and 3 demonstrate the following:

- For Option 1, the select links show that many users utilising the new road are trips travelling east-west (or vice versa) through the precinct. Many of these are likely to be users coming from outside the precinct and rat-running through the area, without the Ring Road these users would use the surrounding arterial road network.
- The Ring Road also provides potential for minor rat-running of local trips, this is demonstrated in the Option 1 volume changes, where there is a small expected decrease in traffic volumes along Blackburn Road and High Street Road. These vehicles are diverted from the aforementioned roads to routes utilising the Ring Road.
- For Option 3 volume changes, there is an expected decrease in traffic volumes along Kingsway, Montclair Avenue and Bogong Avenue (WB between Myrtle Street and Kingsway) with the implementation of the Kingsway Closure. Vehicular traffic is diverted from the aforementioned roads to Springvale Road and Lincoln Avenue, and through to Myrtle Street. Vehicles travelling north of Railway Parade North to Coleman Parade West, detour through High Street Road and Blackburn Road.



## 5 VISSIM Model Outcomes

This section details the model performance across a range of metrics and considering each transport mode for the future option scenarios.

For general traffic, network statistics, intersection LOS and travel times are assessed. Appendix A contains average queue and average speed plots, which show the relative performance of the road network for each option for these aspects. Select link analysis on Coleman Parade is also provided for each option in Appendix B, this demonstrates the changes to routing for traffic on this road that occurs for each of the options. Appendix C contains volume differences for key locations with each scenario.

For buses, network statistics are assessed and there is commentary on expected bus travel times along Springvale Road, as well discussion of bus operations, particularly around Glen Waverley bus station.



### 5.1 Network Statistics for General Traffic and Buses

Table 5.1 compares the road traffic network parameters between all modelled scenarios for the 2041 AM and PM peak hours for general traffic. The table has been colour coded to highlight where options perform poorly for specific metrics; orange indicates a worse performance relative to other options whereas red indicates a considerably worse performance.

For the AM Peak:

- Average delays experienced in Options 1 and 2 are marginally higher than for Rail Day 1 (additional 5 seconds for Option 1 and 11 seconds for Option 2)
- Option 3 yields higher average delays (56 seconds) than Rail Day 1. Option 3.1 improves some metrics such as latent demand, it actually produces even higher average delays.

During the PM Peak:

- Average delays experienced for Option 1 and Option 2 are similar to Rail Day 1.
- Option 3 (Kingsway Closure) yields an additional 57 seconds over Rail Day 1 and Option 3.1 performs even worse.

Table 5.2 compares the bus network parameters between all modelled scenarios for the AM and PM peak hours. The table has been colour coded to highlight where options perform poorly for specific metrics; orange indicates a worse performance relative to other options whereas red indicates a considerably worse performance.

For the AM Peak, the average delays experienced across 2041 Rail Day 1, Options 1 and 2 are similar, with negligible differences. However, 2041 Option 3 (Kingsway Closure) yields significantly higher average delays (around 300 seconds) than the other 2041 options. Whilst Option 3.1 performs better for buses, average delays are still significantly higher than other 2041 options (by around 110 seconds).

During the PM Peak, the average delays experienced across 2041 Rail Day 1, Options 1 and 2 are similar. Similar to the AM, Option 3 (Kingsway Closure) yields an additional 70 seconds over the other 2041 options and Option 3.1 does not significantly improve performance relative to the other options.





Table 5.1 General traffic network statistics

PEAK	PARAMETER	2041 RAIL DAY 1	2041 OPTION 1 (RING ROAD)	2041 OPTION 2 (COLEMAN PDE EB OPEN)	2041 OPTION 3 (KINGSWAY CLOSURE)	2041 OPTION 3.1 (KINGSWAY CLOSURE WITH MITIGATIONS)
AM Peak (08:15 – 09:15)	Total vehicles	11,447	11,378	11,377	10,884	10,835
	VKT (km)	15,855	15,650	15,769	15,453	15,596
	VHT (hrs)	41,145	41,788	43,309	51,194	53,019
	Total delay (minutes)	21,645	22,594	23,935	32,426	34,038
	Average delay (sec)	108	113	119	164	173
	Average speed (km/h)	23	23	22	18	18
	Total stops	32,443	32,883	34,778	46,663	48,482
	Average stops	2.70	2.74	2.89	3.93	4.10
PM Peak (17:15 – 18:15)	Latent demand	0	0	0	183	198
	Total vehicles	12,281	12,275	12,205	11,839	12,079
	VKT (km)	16,161	15,987	16,038	15,871	16,168
	VHT (hrs)	39,580	39,131	39,860	46,549	48,568
	Total delay (minutes)	20,936	20,895	21,390	28,513	30,258
	Average delay (sec)	97	97	99	135	140
	Average speed (km/h)	25	25	24	21	20
	Total stops	31,249	31,004	31,988	40,042	44,643
	Average stops	2.40	2.39	2.47	3.15	3.44
	Latent demand	0	0	0	1231	378

Table 5.2 Bus network statistics

PEAK	PARAMETER	2041 RAIL DAY 1	2041 OPTION 1 (RING ROAD)	2041 OPTION 2 (COLEMAN PDE EB OPEN)	2041 OPTION 3 (KINGSWAY CLOSURE)	2041 OPTION 3.1 (KINGSWAY CLOSURE WITH MITIGATIONS)
AM Peak (08:15 – 09:15)	Total vehicles	63	64	62	47	65
	VKT (km)	178	178	176	154	176
	VHT (hrs)	915	919	908	1,255	1,063
	Total delay (minutes)	446	449	444	844	598
	Average delay (sec)	357	354	356	658	466
	Average speed (km/h)	12	12	12	7	10
	Total stops	581	591	550	983	848
PM Peak (17:15 – 18:15)	Average stops	7.75	7.78	7.47	12.77	11.01
	Total vehicles	66	65	64	70	59
	VKT (km)	180	178	178	186	173
	VHT (hrs)	910	907	899	1,125	982
	Total delay (minutes)	460	459	451	659	543
	Average delay (sec)	349	358	356	455	429
	Average speed (km/h)	12	12	12	10	11
	Total stops	553	581	594	807	744
	Average stops	7.00	7.55	7.82	9.28	9.79

## 5.2 Intersection Performance

Delay and Level of Service (LoS) values for key intersections have been extracted from the microsimulation model and are shown in Table 5.4 and Table 5.5. Level of service is a qualitative measure for ranking “operating conditions”, based on factors such as speed, travel time, freedom to manoeuvre, interruptions, comfort and convenience. Intersection LoS will be assessed in accordance with the level of service method as outlined in Table 5.3.

**Table 5.3 Intersection performance measures based on per person delay**

Level of Service	Average delay per person (seconds)	
	Signalised intersections	Signal controlled intersections
A	<10	<10
B	10 < 20	10 < 15
C	20 < 35	15 < 25
D	35 < 55	25 < 35
E	55 < 80	35 < 50
F	80 +	50 +

Source: Table 36 in DoT Transport Modelling Guidelines Volume 5: Intersection Modelling

All intersections in all SRL options perform worse than the 2041 No SRL scenario, except the Kingsway / O’Sullivan Road / Snedden Drive intersection. This intersection improves with the introduction of SRL, although the improvement is not deemed significant with it performing at an LoS A instead of an LoS B in both peak periods. A summary of the option scenario results is detailed below, with a focus on where material changes to performance are seen.

In the AM peak:

- All intersections yield acceptable LoS in all scenarios with only the High Street Road / Springvale Road intersection yielding LoS E for Options 2, 3 and 3.1.
- The following intersections have yielded materially worse LoS values when comparing 2041 Options to 2041 Rail Day 1:
  - Option 1 experiences a worsened LoS from A to C at Myrtle Street / Coleman Parade.
  - Options 2, 3 and 3.1 experience a worsened LoS from B to C at Springvale Road / Railway Parade North.
  - Options 2, 3 and 3.1 experience a worsened LoS from D to E at High Street Road / Springvale Road.
  - Additionally, Option 3 experiences a worsened LoS from C to E at Kingsway / Railway Parade North, with Option 3.1 going from LoS C to D.

In the PM Peak:

- The following intersections have yielded worse LoS values when comparing 2041 Options to 2041 Rail Day 1:
  - Option 1 experiences a worsened LoS from A to C at Myrtle Street / Coleman Parade.
  - Option 2 and 3.1 experience a worsened LoS from C to D at Kingsway / Railway Parade North, , with Option 3 performing even worse and going from LoS C to E.
  - Options 3 and 3.1 experience a worsened LoS from B to D at Springvale Road / Kingsway / Ingram Avenue.



- Option 3 generally experiences decreased intersection performance as the Kingsway Closure would divert traffic onto other segments along Springvale Road, resulting in deteriorating traffic performance especially in comparison to 2041 Rail Day 1. The closure of Kingsway does not significantly relieve any intersections and improve their performance, traffic diversion causes changes to routes, but no material decreases in traffic on key road sections. Even at Kingsway / Coleman Parade where traffic decreases due to the movement closures performance does not improve; this is due to the balancing of signal phasing which still has some conflicting movements and also gives significant time to pedestrian crossings.
- Option 3.1 performs slightly better as mitigations are added, however this option should be viewed as a less viable than Option 3 due to the DTP approvals that would be required for the significant additional network measures to be implemented.

It should be noted that due to software limitations in PTV VISSIM when calculating LoS some delays at intersections may appear more favourable than they would likely be in reality. This particularly affects the Springvale Road / Kingsway / Ingram Avenue intersection in Option 3 and Option 3.1, where the full effect of queuing is not captured within the delay and LoS classification. As such, the performance at this intersection in Option 3 and Option 3.1 is likely to be worse than is shown in the tables below.

Overall, there are only a small number of intersections performing at an unsatisfactory level (LoS E or F) across the options, with most of them falling in Options 3 and 3.1. Option 3 also suffers significant network breakdown as is shown in Appendix B; extensive queuing and low speeds on Springvale Road are particularly evident in this scenario. For Options 1 and 2, intersection performance deteriorates from the No SRL and Rail Day 1 scenarios, so whilst the number of unsatisfactorily performing intersections is minimal there would be some decrease in driver experience on the Glen Waverley network.



Table 5.4 Intersection Delay and LoS Summary – AM Peak

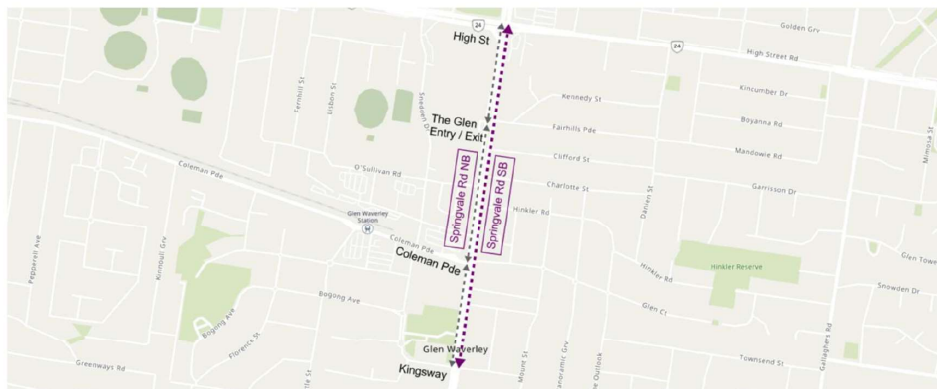
INTERSECTION NAME	2041 NO SRL			2041 RAIL DAY 1			2041 OPTION 1 (RING ROAD)			2041 OPTION 2 (COLEMAN PDE EB OPEN)			2041 OPTION 3 (KINGSWAY CLOSURE)			2041 OPTION 3.1 (KINGSWAY CLOSURE WITH MITIGATIONS)		
	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS
Springvale Rd / Kingsway / Ingram Ave	12.5	B	4,994	16.4	B	5,485	15.8	B	5,456	16.5	B	5,458	35.5	D	5,859	33.6	C	6,001
Springvale Rd / Coleman Pde / Glen Rd	18.2	B	5,367	27.9	C	5,599	28.1	C	5,458	32.5	C	5,556	33.4	C	5,991	31.5	C	6,088
Springvale Rd / Railway Parade North	13.6	B	5,388	19.3	B	5,376	19.2	B	5,216	25.2	C	5,240	28.4	C	5,434	29.0	C	5,531
Myrtle St / Coleman Pde	4.0	A	1,068	6.1	A	625	27.4	C	955	3.9	A	624	3.7	A	403	4.5	A	405
Kingsway / Coleman Pde	23.3	C	1,491	39.5	D	793	23.5	C	512	48.8	D	852	45.1	D	495	53.4	D	542
Kingsway / Railway Parade North	26.7	C	2,209	29.9	C	1,757	30.6	C	1,379	29.5	C	1,728	76.5	E	1,216	54.8	D	1,305
Kingsway / O'Sullivan Rd / Snedden Dr	11.4	B	1,853	6.9	A	1,512	8.0	A	1,531	7.4	A	1,582	9.9	A	1,209	7.5	A	1,189
High Street Rd / Snedden Dr				24.7	C	3,378	27.5	C	3,429	26.3	C	3,430	24.2	C	3,437	24.1	C	3,447
High Street Rd / Springvale Rd				54.8	D	7,329	54.7	D	7,299	56.1	E	7,288	60.2	E	7,196	59.1	E	7,205
The Glen Carpark Entry / Exits on Springvale Rd / Fairhills Parade				21.0	C	5,452	22.0	C	5,332	22.0	C	5,367	22.8	C	5,353	31.5	C	5,415
The Glen Level LG Parking Coles Entry / Exit on Snedden Dr				10.1	B	1,561	9.7	A	1,593	10.3	B	1,620	8.5	A	1,284	8.2	A	1,270
The Glen Level B1 Parking Woolwoths Entry / Exit on Snedden Dr				8.6	A	1,466	16.9	B	1,504	10.2	B	1,522	8.8	A	1,407	8.8	A	1,402

Table 5.5 Intersection Delay and LoS Summary – PM Peak

INTERSECTION NAME	2041 NO SRL			2041 RAIL DAY 1			2041 OPTION 1 (RING ROAD)			2041 OPTION 2 (COLEMAN PDE EB OPEN)			2041 OPTION 3 (KINGSWAY CLOSURE)			2041 OPTION 3.1 (KINGSWAY CLOSURE WITH MITIGATIONS)		
	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS	DELAY (SEC.)	LOS	TOTAL VEHS
Springvale Rd / Kingsway / Ingram Ave	19.2	B	5,228	18.1	B	5,588	15.8	B	5,545	16.5	B	5,458	42.9	D	5,915	39.3	D	6,088
Springvale Rd / Coleman Pde / Glen Rd	14.3	B	4,930	15.3	B	5,325	16.7	B	5,266	19.1	B	5,225	10.9	B	5,733	16.5	B	5,939
Springvale Rd / Railway Parade North	11.3	B	5,158	19.4	B	5,179	18.9	B	5,224	17.9	B	5,227	24.3	C	5,446	15.9	B	5,628
Myrtle St / Coleman Pde	6.0	A	1,083	5.7	A	664	29.6	C	990	3.8	A	666	3.7	A	438	3.6	A	433
Kingsway / Coleman Pde	30.7	C	1,704	33.9	C	826	26.5	C	502	32.0	C	743	25.4	C	364	27.1	C	385
Kingsway / Railway Parade North	26.9	C	2,262	27.3	C	1,815	29.2	C	1,362	36.1	D	1,836	60.7	E	1,160	38.1	D	1,230
Kingsway / O'Sullivan Rd / Snedden Dr	14.6	B	1,474	5.8	A	1,503	5.5	A	1,327	5.2	A	1,414	5.8	A	930	5.1	A	855
High Street Rd / Snedden Dr				32.2	C	3,417	31.3	C	3,349	32.2	C	3,389	33.0	C	3,500	31.5	C	3,453
High Street Rd / Springvale Rd				53.0	D	7,640	52.1	D	7,647	51.7	D	7,617	50.5	D	7,625	51.8	D	7,695
The Glen Carpark Entry / Exits on Springvale Rd / Fairhills Parade				24.9	C	5,356	26.1	C	5,436	25.2	C	5,379	26.8	C	5,544	32.5	C	5,714
The Glen Level LG Parking Coles Entry / Exit on Snedden Dr				12.8	B	1,798	12.3	B	1,699	12.3	B	1,735	10.1	B	1,313	10.2	B	1,255
The Glen Level B1 Parking Woolwoths Entry / Exit on Snedden Dr				18.6	B	1,835	16.2	B	1,761	15.5	B	1,776	15.4	B	1,813	15.0	B	1,762

### 5.3 Travel Time

Travel times are an important measure of performance along a corridor, they represent the average time taken for vehicles to traverse a specific section of road. By comparing the travel times for each option an assessment can be made as to which options provide travel time savings relative to others for road users. Travel times are only assessed along Springvale Road, which is a primary arterial road and the main corridor for through traffic in the area. The travel times on Springvale Road are shown in Figure 5.1.



**Figure 5.1 Springvale Road Travel Time Segments**

The following average travel time observations along Springvale Road were made across each of the peak hours (AM and PM) and directions (northbound and southbound), with travel time graphs shown from Figure 5.2 to Figure 5.5:

- Springvale Road Northbound – AM Peak
  - All 2041 scenarios have similar travel times with the exception of Option 3.1 which does not perform as well.
- Springvale Road Southbound – AM Peak
  - Average travel times across 2041 Rail Day 1 and Option 1 are similar with negligible differences.
  - Option 2 has slightly higher travel times and Option 3.1 has significantly higher travel times than all other options.
- Springvale Road Northbound – PM Peak
  - 2041 Options 1 and 2 yield slightly higher average travel times when compared to 2041 Rail Day 1.
  - Option 3.1 again yields the highest average travel time when compared to the other 2041 options.
- Springvale Road Southbound – PM Peak
  - Average travel times across 2041 Rail Day 1 and Options 1 and 2 have negligible differences.
  - Option 3.1 is also very similar to other options between High Street Road and Railway Parade North but yields a higher average travel time between Railway Parade North and Kingsway.

Travel times for Options 3 and 3.1 are similar along Springvale Road; the results presented are for Option 3.1. Travel times for Option 3.1 are significantly higher than other options, Option 3 travel times are slightly higher again and therefore it is the worse performing option.

Analysis for the SRL East EES (TA R.2 Transport IA – SRL East TTIA) showed that Springvale Road travel times would increase slightly (by 5-10%) with the introduction of the SRL. This suggests that “No Project” travel times would sit broadly in the same range as Rail Day 1, Option 1 and Option 2.

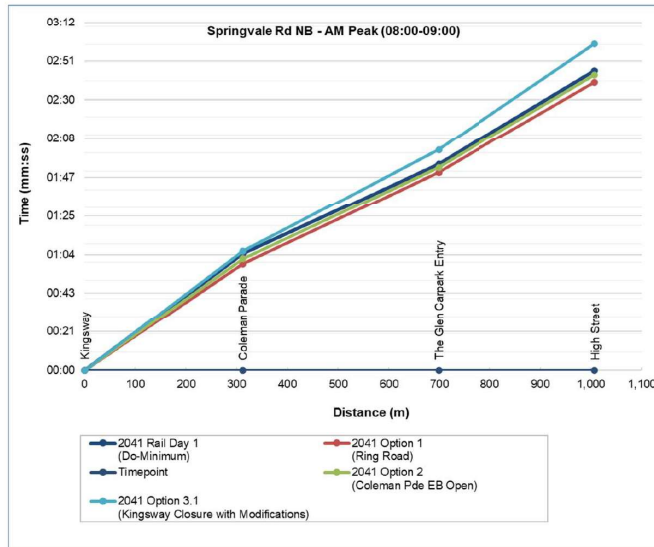


Figure 5.2 Springvale Road Northbound Travel Times – AM Peak

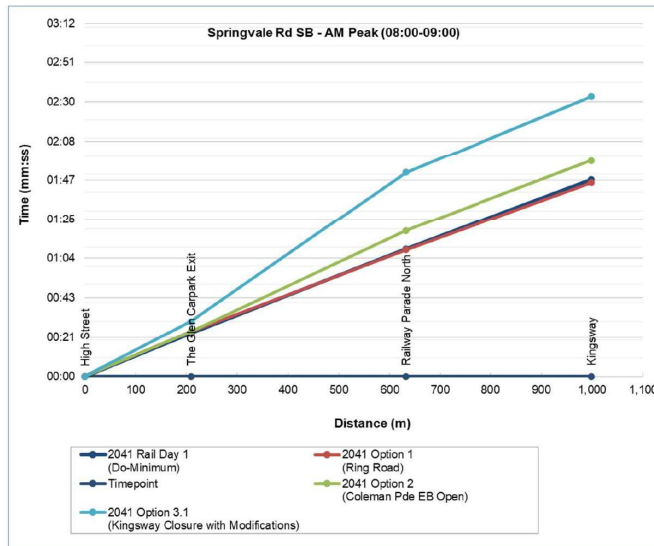


Figure 5.3 Springvale Road Southbound Travel Times – AM Peak



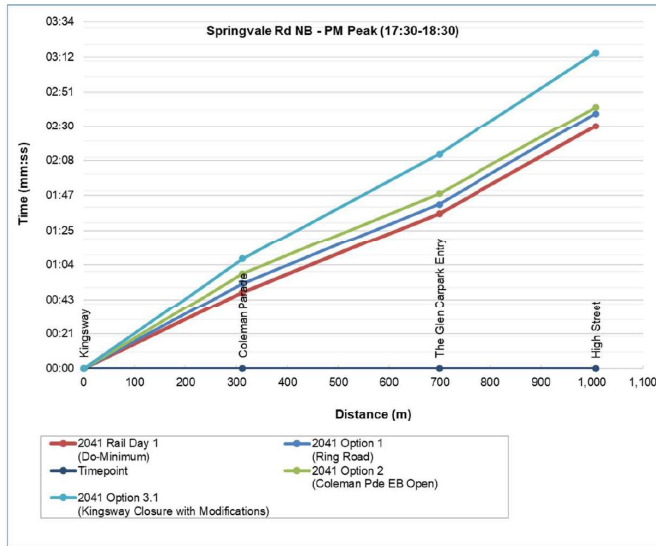


Figure 5.4 Springvale Road Northbound Travel Times – PM Peak

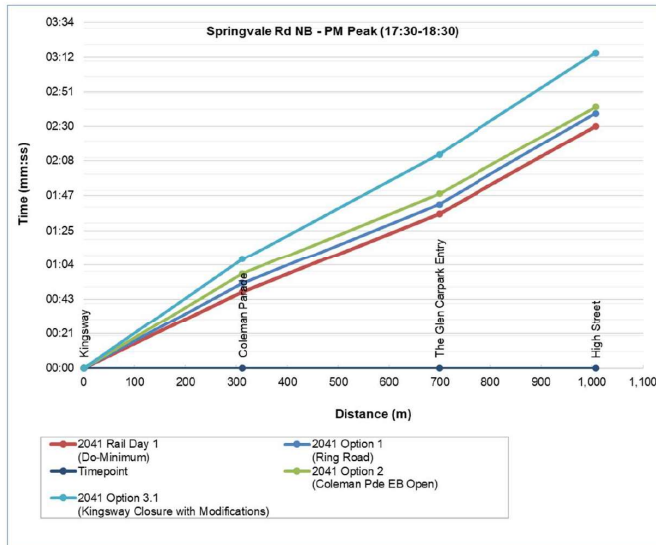


Figure 5.5 Springvale Road Southbound Travel Times – PM Peak

#### 5.4 Bus Performance and Operations

##### 5.4.1 Travel Times along Springvale Road

Travel times have been assessed for all traffic along Springvale Road in Section 5.3, which is the main arterial road passing through the precinct. Bus travel times along Springvale Road would mirror all traffic results as there is no bus priority infrastructure in place along this road, furthermore no such infrastructure is proposed as part of any of the main options.

The travel time analysis demonstrates that travel times for all traffic, including buses are likely to be similar between Rail Day 1, Option 1 and Option 2, whilst Option 3 would result in significantly higher travel times along Springvale Road.

##### 5.4.2 Bus Operations and the Bus Interchange

The closure of Coleman Parade between Myrtle Street and Kingsway has resulted in a change in the travel pattern for the traffic around the bus interchanges which has significantly impacted the performance of the bus operations in and around the bus interchange. The magnitude of the impact of each option is summarised in Table 5.6.

**Table 5.6 Bus performance summary**

Option	Impact on the bus performance
<b>Do Minimum</b> Rail Day 1	The closure of Coleman Parade re-routes traffic via Kingsway-Montclair-Myrtle Street. This change in the travel pattern has a significant impact on the operation of the Kingsway / Railway Parade North intersection. The slow-moving southbound traffic along Kingsway (due to the Kingsway on-street parking maneuvering) occasionally limits the right turning traffic discharge out from the Railway Parade North (west approach) at Kingsway. This frequently blocks back the eastbound left and through traffic, resulting in long queues for the approach, which can then block bus movements out from the bus interchange.
<b>Option 1</b> Ring Road	The Ring Road option facilitates slightly better bus operation around the bus interchange compared to Rail Day 1 option. Even though there is more traffic now travelling along Railway Parade between Kingsway and Coleman Parade which is expected to provide more impedance to the bus interchange. But with the ease down of the Railway Parade North (west approach) at Kingsway there are more frequent gaps for buses to pull out from the bus interchange.
<b>Option 2</b> Coleman Parade Eastbound Open	Bus performance in Option 2 is similar to the Rail Day 1 option. Coleman Parade is still closed in the westbound direction, resulting in similar issues as observed for the Rail Day 1.
<b>Option 3</b> Kingsway Closure	Option 3 is the worst among all the Coleman Parade options. The closure of Kingsway for general traffic re-routes the Kingsway traffic via Railway Parade North-Springvale Road-Kingsway. This change in travel patterns has a significant impact on the operation of the Springvale Road/ Railway Parade North intersection. With the increase in the eastbound traffic along Railway Parade North between Springvale Road and Kingsway, the Railway Parade North (west approach) at Springvale Road experiences significant delays, resulting in excessive queueing for the approach. This then impacts traffic coming out from the Railway Parade North (west approach) at Kingsway. These phenomena adversely impact bus performance in and around the bus interchange. In addition to this, the increased traffic flow along Springvale Road also results in significant delay and queueing along Springvale Road, which ultimately contributes to the additional delay for the buses.
<b>Option 3.1</b> Kingsway Closure with mitigations	Option 3.1 offers slightly improved bus operation than Option 3 but is still worse than other options. This option does propose a bus lane south of Kingsway; however this option is not considered as viable as the other options due to the DTP approvals that would be required for this mitigation and the other mitigations that form Option 3.1.

Overall, Rail Day 1 and Option 2 perform similarly with Option 1 being slightly better for bus performance. Options 3 and 3.1 perform significantly worst for bus performance when compared to the alternative tested options.

## 5.5 Pedestrian Delay and Queuing

For the options the following high-level statements can be made:

- Option 1: the introduction of the Ring Road is not expected to result in any significant changes to pedestrian delay or queuing on Coleman Parade relative to the Rail Day 1 option. More conflicts due to extra traffic around school and bus station.
- Option 3: The closure of Kingsway to through traffic would result in some improvements to pedestrian movements across Kingsway at the point of closure, likely reducing delay at this location.
- Option 3.1: there would be impacts from the introduction of a staggered pedestrian crossing and changes to cycle phasing at the Springvale Road / Coleman Parade / Railway Parade North intersection. Pedestrian may see an increase in crossing delays if this mitigation were to be introduced.

### 5.5.1 Pedestrian Delay Assessment – Option 2

Pedestrian delay and queuing have only been specifically assessed for Option 2 at Coleman Parade, where a pedestrian operated signal (POS) is proposed to facilitate entry to the station. This section outlines the findings of that assessment, which utilised a SIDRA model of the POS, co-ordinated with the Kingsway / Coleman Parade intersection.

Pedestrian demand at the POS was based on 2041 Rail Day 1 boardings and alightings extracted from VITM which provided the volume and geographic distribution. It is assumed that 25% of walk-in boardings/alightings (both SRL and MTM) would cross Coleman Parade. Figure 5.6 shows the location of the POS on Coleman Parade and Figure 5.7 shows crossing assumption information (without paid-to-paid connection).

If a paid-to-paid service connection between the SRL and MMRN station was adopted pedestrian demand at the crossing is expected to be around 1,350 in the AM peak hour and 1,540 in the PM peak hour. This scenario has also been tested for pedestrian performance / queuing.

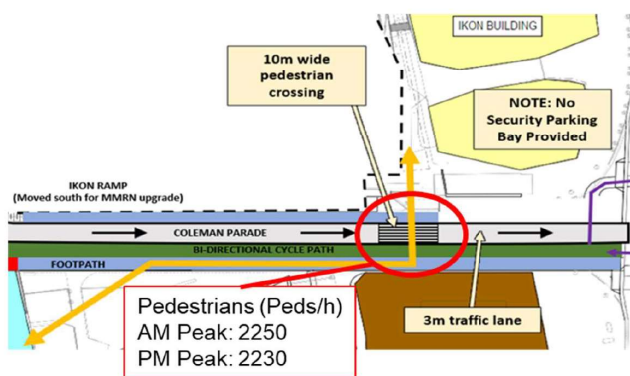


Figure 5.6 POS location and demand (no paid-to-paid connection)

DIRECTION CROSSING COLEMAN PDE		
Direction	AM	PM
NB (SRL Alighting)	36%	63%
SB (SRL Boarding)	64%	37%

TOTAL DEMAND CROSSING		
Direction	AM	PM
NB (SRL Alighting)	807	1396
SB (SRL Boarding)	1443	834

Peds/second – (50% PFF Uplifted)		
Direction	AM	PM
NB (SRL Alighting)	0.4	0.8
SB (SRL Boarding)	0.8	0.5

Figure 5.7 POS crossing assumptions

The signal phasing assumed for the POS and Kingsway / Coleman Parade intersection is shown in Figure 5.8. It should be noted that Phase C can vary at the Kingsway / Coleman Parade intersection, which is not detailed in this figure.

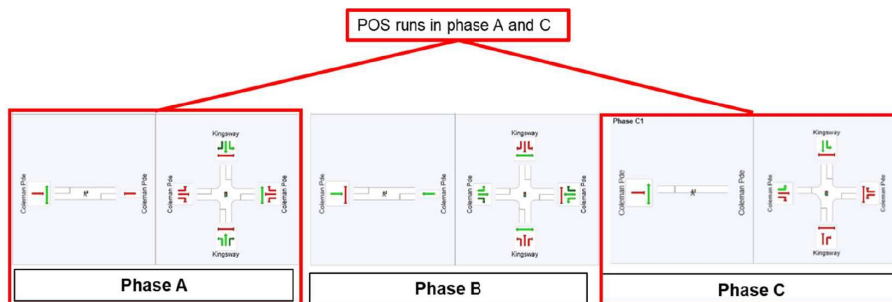


Figure 5.8 POS signal phasing

When tested, the pedestrian delay at the POS was determined to be 37 seconds in the AM peak and 40 seconds in the PM peak; this corresponds to an M&P LoS of C (with no paid-to-paid connection provided). The target LoS is B and equates to delay of less than 30 seconds, demonstrating that the POS is unable to meet this criterion.

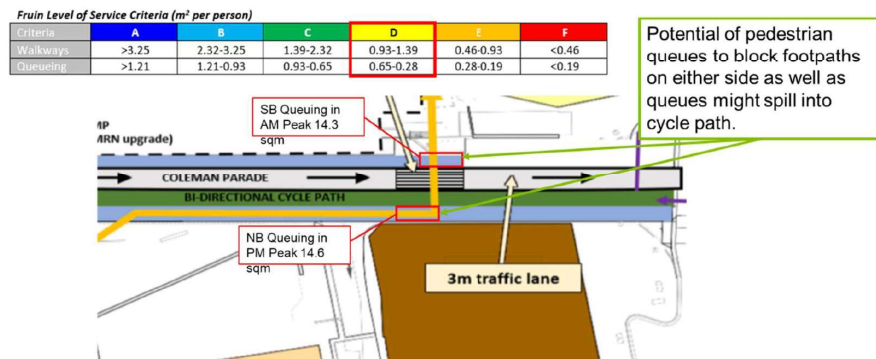
Table 5-7 provides a summary of pedestrian queuing at Coleman Parade with and without a paid-to-paid connection. If a paid-to-paid connection is provided, pedestrian demand at the crossing will be reduced and thereby result in reduced pedestrian queuing at this location, however pedestrian delay and performance against the target LoS would remain the same as this is a function of signal phase timings.

In terms of maximum pedestrian queuing, the worst approach produces queues of 30 pedestrians in the AM peak (in the southbound direction) and 32 pedestrians in the PM peak (in the northbound direction). Figure 5.9 shows the queuing anticipated without a paid-to-paid connection and how this would translate into queuing with the pavement area that is available. This shows that there is potential for customer experience for pedestrians to suffer due to Coleman Parade Eastbound being open to traffic. Queuing of pedestrians will occur and might spill into the cycle path or block the footpath, there is also an increased jaywalking risk with the extra traffic signals. Cyclists parking their bikes will also need to share Coleman Parade with additional vehicles, increasing potential conflicts between vehicular and cycle traffic.



**Table 5-7 Pedestrian Delay Summary**

Scenario	Peak Hour	Ped Delay (s)	Northbound		Southbound	
			Queue (people)	Queuing area (sqm)	Queue (people)	Queuing area (sqm)
Without Paid-to-Paid Connection	AM	37	17	7.9	30	14.0
	PM	40	32	14.6	18	8.7
With Paid-to-Paid Connection	AM	37	10	4.7	18	8.3
	PM	40	22	10.0	12	5.8



**Figure 5.9 Maximum queuing at the POS location (no paid-to-paid connection)**

#### 5.5.2 Vehicle Queuing in the vicinity of the POS

The modelled 95<sup>th</sup> percentile back of queue distance for vehicles at the pedestrian operated signals is 33m in the AM peak and 26m in the PM peak. This is not anticipated to impact on PuDo and CPV parking further to the west along Coleman Parade.

#### 5.6 Safety Implications and Modal Conflict

An assessment of safety implications and modal conflicts is not made for the options as a specific safety assessment would need to be carried out by specialists in this field. However, it is evident that some of the options will have implications for these aspects. In particular, Option 2 may increase modal conflicts on Coleman Parade significantly and may increase the risk of jaywalking due to higher pedestrian delays, as discussed in Section 5.5.1.

## 6 Conclusion, Findings and Implications

Future year (2041) options as described in Section 3 were tested and assessed with the below findings. Option 3.1 is only discussed where appropriate as it is considered a less viable option than Option 3, which is focused upon.

### 6.1 Wider traffic patterns and re-routing

The DOMINO outputs for Options 1 and 3 demonstrate the following:

- For Option 1, the select links show that many users utilising the new road are trips travelling east-west (or vice versa) through the precinct. Many of these are likely to be users coming from outside the precinct and rat-running through the area, without the Ring Road these users would use the surrounding arterial road network.
- The Ring Road also provides potential for minor rat-running of local trips, this is demonstrated in the Option 1 volume changes, where there is a small forecast decrease in traffic volumes along Blackburn Road and High Street Road. These vehicles are diverted from the aforementioned roads to routes utilising the Ring Road.
- For Option 3 volume changes, there is an expected decrease in traffic volumes along Kingsway, Montclair Avenue and Bogong Avenue (WB between Myrtle Street and Kingsway) with the implementation of the Kingsway Closure. Vehicular traffic is diverted from the aforementioned roads to Springvale Road and Lincoln Avenue, and through to Myrtle Street. Vehicles travelling north of Railway Parade North to Coleman Parade West, detour through High Street Road and Blackburn Road.

### 6.2 Average general traffic and bus delays

During both AM and PM peak hours, the average general traffic and bus delays generated are similar across the Rail Day 1, Option 1 (Ring Road) and Option 2 (Coleman Parade Eastbound Open) scenarios. Option 3 (Kingsway Closure) and Option 3.1 (Kingsway Closure with mitigations) yield significantly higher average road traffic and bus delays when compared to the alternative 2041 options.

### 6.3 Intersection performance

There are only a small number of intersections performing at an unsatisfactory level (LoS E or F) across the options, with most of them falling in Options 3 and 3.1. Option 3 also suffers significant network breakdown as is shown by extensive queuing and low speeds on Springvale Road. For Options 1 and 2, intersection performance deteriorates from the No SRL and Rail Day 1 scenarios, so whilst the number of unsatisfactorily performing intersections is minimal there would be some decrease in driver experience on the Glen Waverley network.

### 6.4 Travel Times

In the Springvale Road northbound and southbound directions during the AM peak hour, Options 3 and 3.1 (Kingsway Closure) yields the highest average travel times between High Street Road and Kingsway, with all other 2041 options yielding similar average travel times. For Springvale Road during the PM peak hour similar trends are observed as the AM peak hour.

### 6.5 Bus Performance and Operations

Travel times for all traffic, including buses are likely to be similar between Rail Day 1, Option 1 and Option 2, whilst Option 3 would result in significantly higher travel times along Springvale Road.

The closure of Coleman Parade between Myrtle Street and Kingsway has resulted in a change in the travel pattern for the traffic around the bus interchanges which has significantly impacted the performance of the bus operations in and around the bus interchange. With regard to bus performance, Rail Day 1 and Option 2 perform similarly with Option 1 being slightly better for bus performance. Options 3 and 3.1 perform significantly worst for bus performance when compared to the alternative tested options.

#### 6.6 Pedestrian Delay and Queuing

For the options the following high-level statements can be made:

- Option 1: the introduction of the Ring Road is not expected to result in any significant changes to pedestrian delay or queuing on Coleman Parade relative to the Rail Day 1 option. More conflicts due to extra traffic around school and bus station.
- Option 3: The closure of Kingsway to through traffic would result in some improvements to pedestrian movements across Kingsway at the point of closure, likely reducing delay at this location.
- Option 3.1: there would be impacts from the introduction of a staggered pedestrian crossing and changes to cycle phasing at the Springvale Road / Coleman Parade / Railway Parade North intersection. Pedestrian may see an increase in crossing delays if this mitigation were to be introduced.

Pedestrian delay and queuing has been specifically assessed for Option 2 at Coleman Parade, where a pedestrian operated signal (POS) is proposed to facilitate entry to the station. When tested, the pedestrian delay at the POS was determined to be 38 seconds in the AM peak and 41 seconds in the PM peak; this corresponds to an M&P LoS of C. The target LoS is B and equates to delay of less than 30 seconds, demonstrating that the POS is unable to meet this criterion.

In terms of maximum pedestrian queuing, the worst approach produces queues of 31 pedestrians in the AM peak (in the southbound direction) and 32 pedestrians in the PM peak (in the northbound direction). The queuing anticipated shows that there is potential for customer experience for pedestrians to suffer due to Coleman Parade Eastbound being open to traffic. Queuing of pedestrians will occur and might spill into the cycle path or block the footpath, there is also an increased jaywalking risk with the extra traffic signals. Cyclists parking their bikes will also need to share Coleman Parade with additional vehicles, increasing potential conflicts between vehicular and cycle traffic.

#### 6.7 Overall findings and implications

Option 1 (Ring Road) provides additional infrastructure and hence allows traffic to distribute throughout the network, however no significant improvements to network metrics materialise from the Ring Road. Some unintended consequences may occur such as additional traffic on O'Sullivan Road increasing traffic and queuing around Glen Waverley Secondary College. This could have safety implications associated with extra traffic using local routes and school zones. Furthermore, the Ring Road allows redistribution in the model especially at the Kingsway/Railway Parade North intersection, with there now being less right turn movements and this consequently improving bus interchange operation. Less than 500 vehicles per hour in both directions use the Ring Road in the peak hours, demonstrating that the use of the new link is limited.

Option 2 shows that the customer experience for pedestrians suffers due to Coleman Parade Eastbound being open to traffic. Queuing of pedestrians will occur and might spill into the cycle path or block the footpath, there is also an increased jaywalking risk with the extra traffic signals. Additionally, the PUDO and CPV operation cannot function as intended with the turnaround at the end of the road as planned within the Rail Day 1 option. This means PUDO and CPV will be impeded by additional traffic and vehicles also need to exit via Kingsway. Cyclists parking their bikes will also need to share Coleman Parade with additional vehicles, increasing potential conflicts between vehicular and cycle traffic.



Option 3 performs worse than any other option. It yields the worst LoS performance at intersections and highest travel times along Springvale Road. This is ultimately due to the Kingsway Closure diverting traffic onto other segments along Springvale Road, resulting in decreased traffic performance especially in comparison to 2041 Rail Day 1. In order, to simulate realistic traffic conditions for this option, network changes would be needed such as additional right-turn lanes from Springvale Road onto Kingsway. This indicates that Option 3 would need to be accompanied with other measures, such as parking plans or signage to alleviate some of the excessive queuing along Springvale Road.

An option including these additional measures has been tested as Option 3.1. Whilst this option performs better than Option 3 on most metrics it still performs worse than other options and demonstrates significant traffic issues. Option 3.1 should be viewed as a less viable option than Option 3 due to the DTP approvals that would be required for the significant additional network measures to be implemented.

With regards travel times along Springvale Road, Options 1 and 2 provide similar travel times to the Rail Day 1. Option 3 and Option 3.1 yield higher travel times, demonstrating that this option generates some travel time delays for buses and cars.

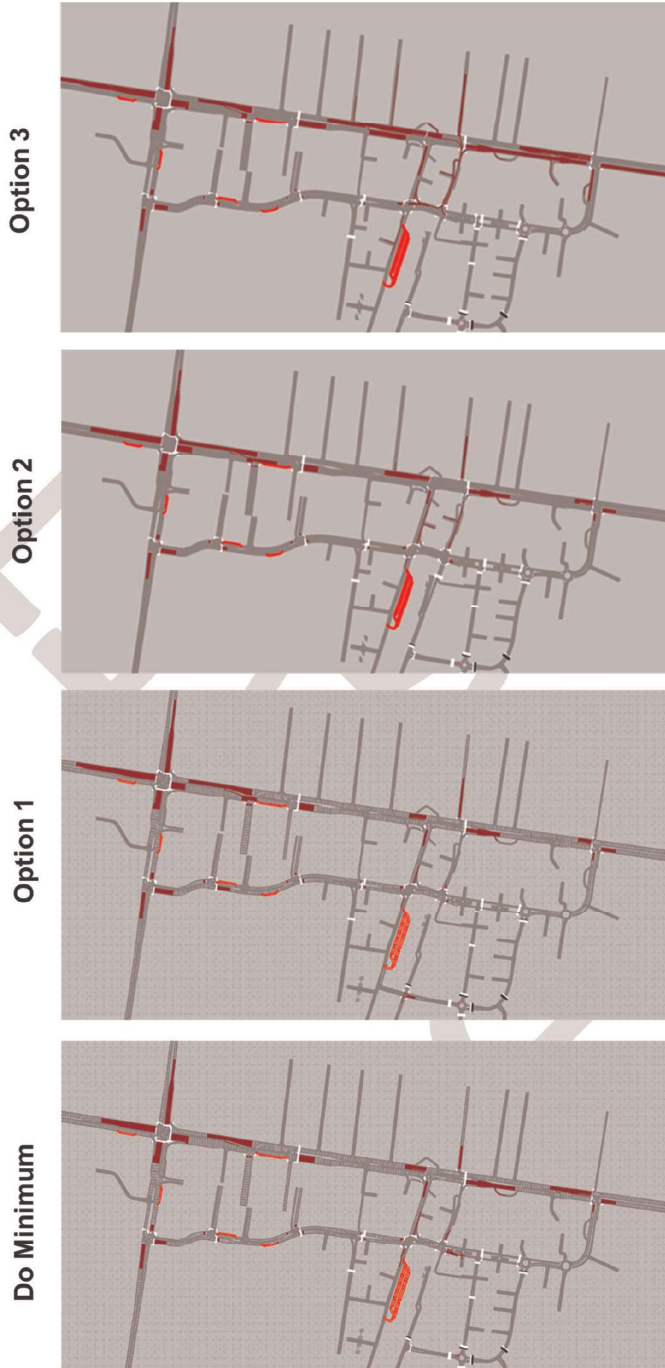
Overall, the Rail Day 1 option performs better than all other 2041 options for the Glen Waverley Precinct. In terms of traffic impact and performance it should be considered the preferred option.





**Appendices note:** Option 3.1 is not presented in the Appendices as results are similar to Option 3. Option 3 represents the worst case scenario, as this option contains no mitigations.

**Appendix A – Average Queue Plots and Average Speed Plots**



**Figure A-1 Average Queue Plots – AM Peak**

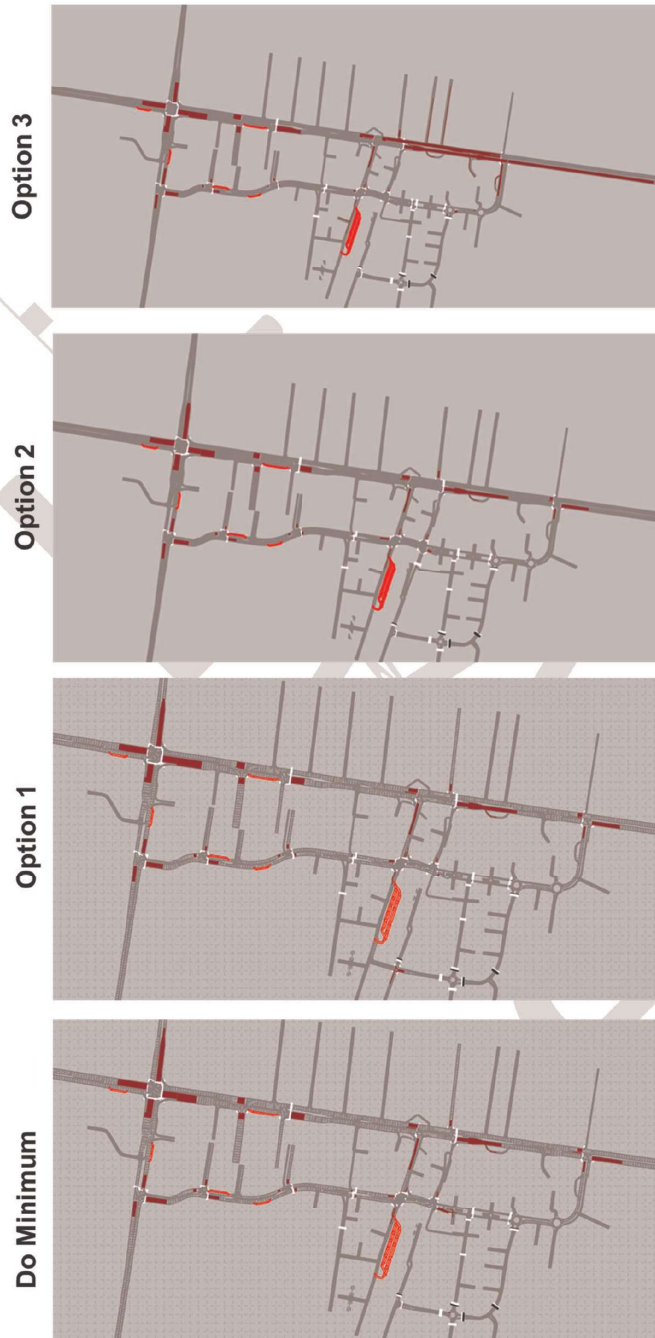
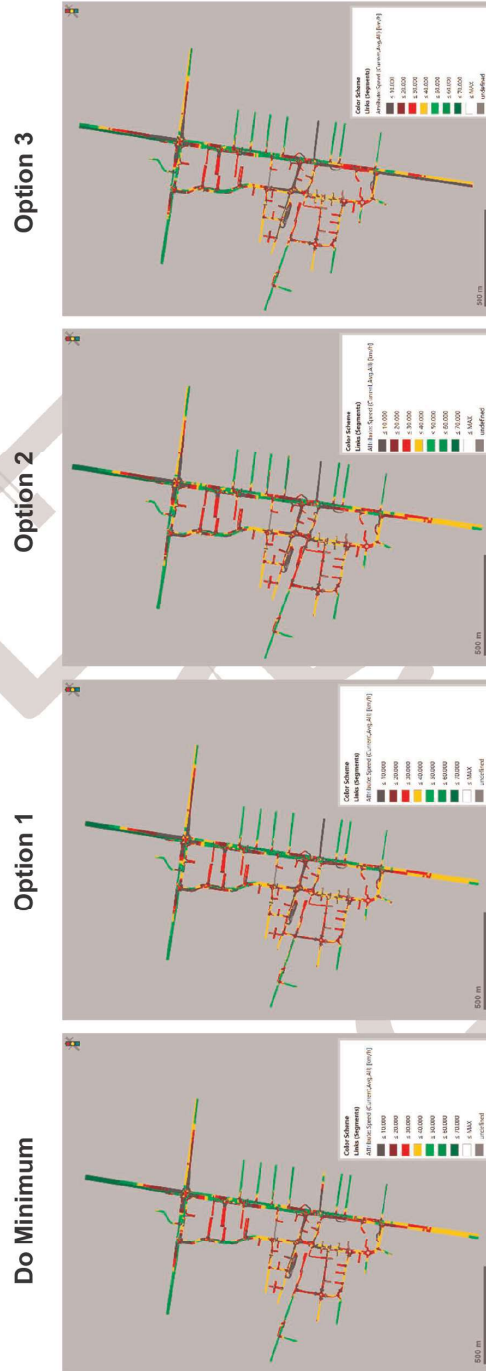


Figure A-2 Average Queue Plots – PM Peak



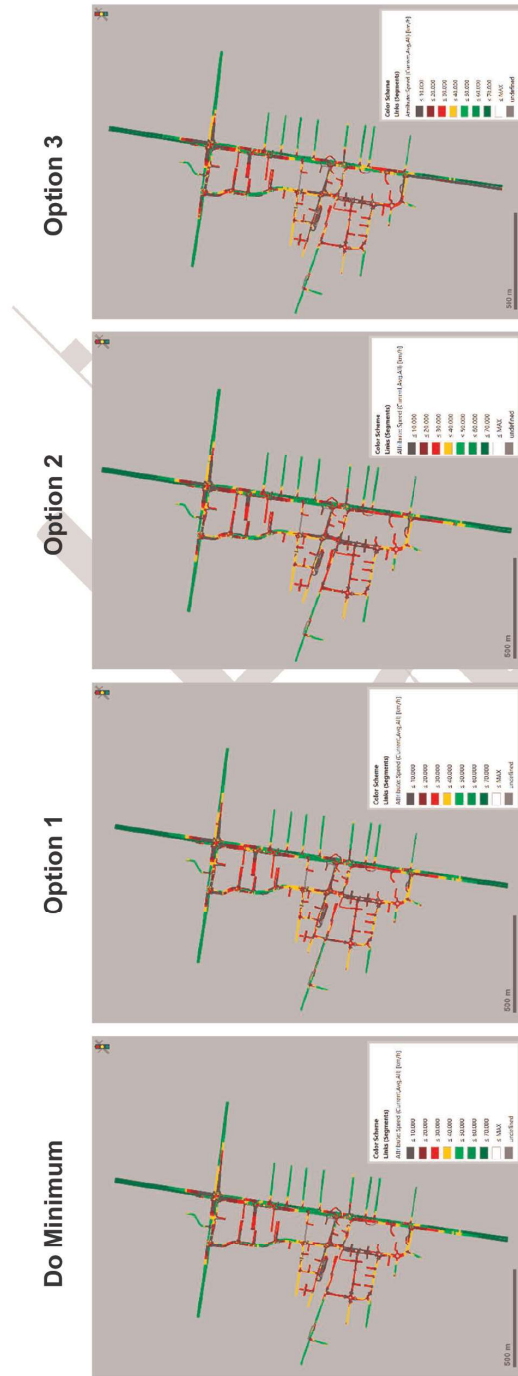


Figure A-4 Average Speed Plots – PM Peak





Appendix B – Coleman Parade Flow Bundle Plots



Figure C-5 Coleman Parade EB Flow Bundle Plots – AM Peak



Figure C-6 Coleman Parade WB Flow Bundle Plots – PM Peak

Appendix C – Volume Differences at Key Locations (two-way, peak hours)

S.No	Location	2041 Rail Day 1 (Do-Minimum)		2041 Option 1 (Ring Road)		2041 Option 2 (Coleman Pde EB)		2041 Option 3 (Kingsway Closure)	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Myrtle St	610	660	20	0	-160	-150	-220	-230
2	Montclair Ave	630	650	-330	-440	-150	-150	-560	-560
3	Coleman Pde East	360	370	-50	-20	50	-60	140	-50
4	Railway Pde N East	840	790	-120	80	-100	120	-10	60
5	Railway Pde West	740	650	-120	-70	-40	50	-40	70
6	Eureva Ave	90	280	160	250	10	-20	60	0
7	O'Sullivan Rd	580	500	140	170	30	-40	30	-80
8	Snedden Dr South	1,520	1,430	40	-120	70	-50	-310	-600
9	Kingsway South	990	1,100	-390	-520	50	-50	-490	-720
10	Kingsway (North of Montclair Ave)	1,020	1,120	-480	-540	-150	-140	-930	-960
11	Kingsway (South of Montclair Ave)	500	520	-70	-40	0	20	-260	-40
12	Ringroad	0	0	480	460	0	0	0	0



## Document Control Record



222 Exhibition Street  
Melbourne VIC 3000  
PO Box 23061 Docklands VIC 8012 Australia

### DOCUMENT CONTROL

Document Title		Glen Waverley Traffic Modelling Options				
Document ID				Contract No.		
File path						
Client						
Rev	Date	Revision details/status	Prepared by	Author	Verifier	Approver
A	31/01/2024					
Current revision		A				

### APPROVAL

Author signature		Approver signature	
Name		Name	

© Copyright 2023 AJM Joint Venture. The concepts, data and information contained in this document are the property of AJM Joint Venture. No part of this document may be reproduced, used, copied, published or adapted for use except in accordance with the provisions of the Copyright Act 1968 or with the consent of AJM Joint Venture.

This document has been prepared on behalf of, and for the exclusive use of Suburban Rail Loop Authority ("SRLA"), and is subject to, and issued in accordance with, the provisions of the contract between AJM Joint Venture and SRLA. AJM Joint Venture makes no representations and undertakes no duty to any third party who may use or rely upon this document, and accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this document by any third party. Any third party using and/or relying upon this document accepts sole responsibility and all risk for using and/or relying on this document for any purpose.

This document has been produced from information sourced from SRLA and/or from other sources, relating to the dates and periods referred to in this document. Except as otherwise stated in the document, AJM Joint Venture has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this document may change. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and reevaluation of the data, findings, observations and conclusions expressed in this document.

This document should be read in full and no excerpts are to be taken as representative of the findings





222 Exhibition Street  
Melbourne VIC 3000  
PO Box 23061 Docklands  
VIC 8012 Australia