



Melbourne Metro EES Report to Panel Traffic & Transport Review Arden Station Precinct

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Instructed by // Planning & Property Partners
Reference // V103310
Hearing Date // 22/08/16
Report Date // 12/08/16

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Traffic & Transport Review

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Issue: Final 12/08/16

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Reference: V103310

GTA Consultants Office: VIC



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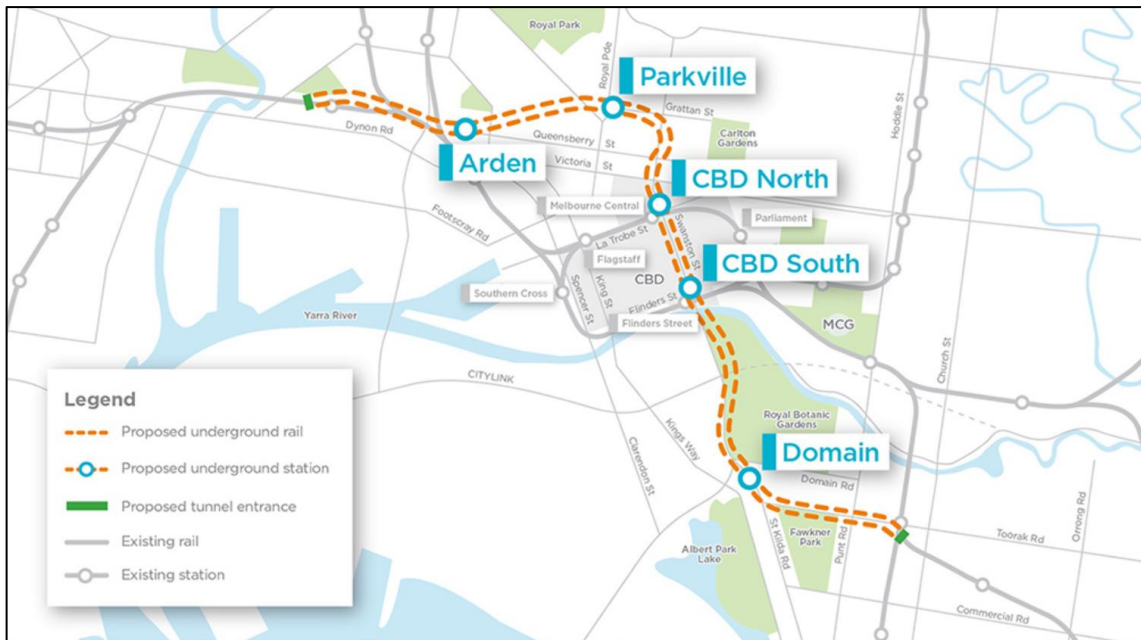
1. Introduction

1.1 Melbourne Metro Project Overview

The Melbourne Metro Rail Project (MMRP) is a fully funded (\$10.9B) project of state significance designed to increase the capacity of the metropolitan railway system. The MMRP includes the following key components:

- Two rail tunnels between South Kensington and South Yarra, through Melbourne's Central Business District (CBD). These lines will create a connection between the existing Sunbury and Cranbourne/ Pakenham railway lines.
- A total five new train stations will be constructed at the following locations as outlined in Figure 1.1.

Figure 1.1: MMRP – Project Station Map



Source: www.metrotunnel.vic.gov.au

Following completion of the project, the MMRP will free up the existing City Loop allowing additional trains to operate on the Upfield, Craigieburn, Sunbury, Frankston, Cranbourne, Pakenham, Werribee and Sandringham lines. Specifically, it is estimated that the project will deliver additional capacity for approximately 40,000 passengers during each peak period, ease overcrowding in the inner core of the existing rail network whilst relieving tram overcrowding and congestions issues within the Melbourne CBD and its immediate vicinity.

Construction of the MMRP is expected to commence in late 2018 and finish in 2026. It is expected to create 3,900 jobs across the state of Victoria with 4700 jobs supported at the peak of its construction.

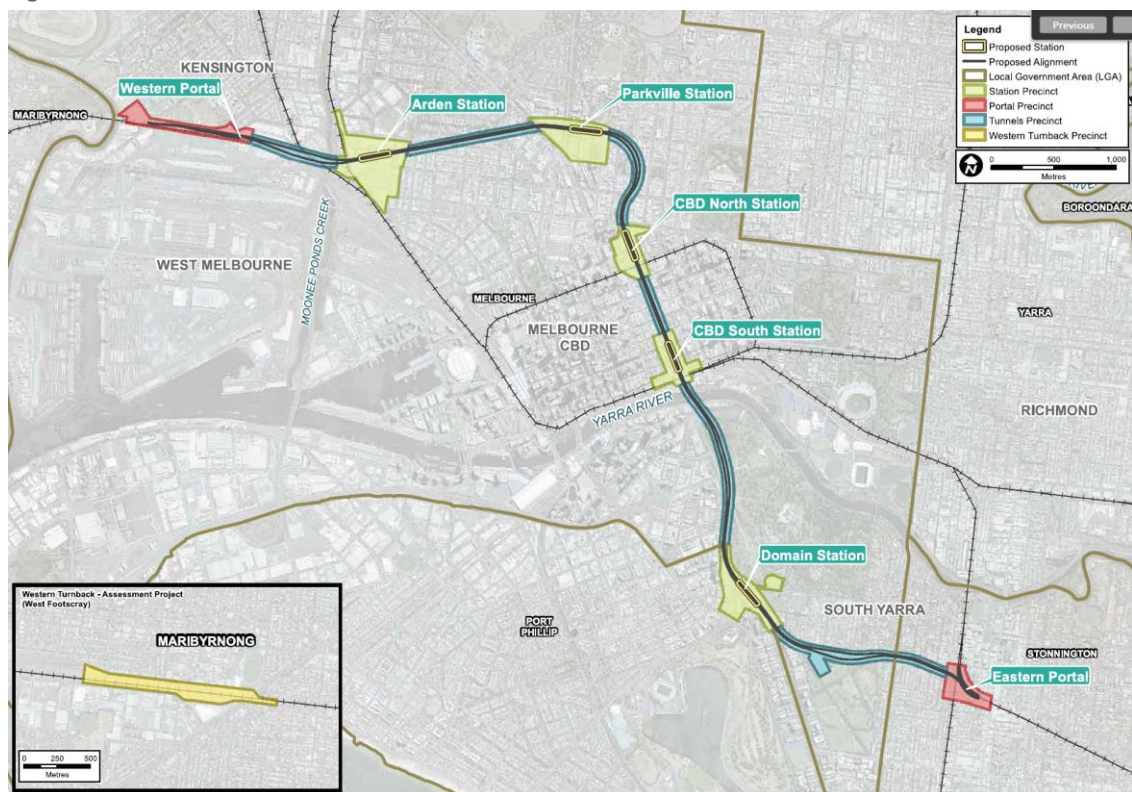
1.2 Environmental Effects Statement Process

The MMRP is currently being assessed via an Environment Effects Statement (EES) process. The EES allows for an overarching and integrated assessment of impacts of the project and draws on the findings of a number of supporting documentation and studies before any approval or conditions are granted. The EES process also allows for a comprehensive public engagement program to seek input from the community and other stakeholders which will help confirm the ultimate delivery of the MMRP including considerations throughout the construction period.

As part of the EES process, a Transport Impact Assessment (TIA) was prepared by AJM in April 2016. This TIA provides a review of transport related aspects associated with the construction and post implementation operation of the MMRP and makes a series of recommendations in an effort to manage activities during construction and the post implementation (or EES identified legacy) outcome.

For the purposes of the EES assessment, the MMRP project was broken down into 9. The project map is reproduced below in Figure 1.2.

Figure 1.2: MMRP Precincts



Source: MMRP Transport Impact Assessment, April 2016

Transport modelling was undertaken to assess existing and post development traffic conditions within each precinct of the MMRP. The extent of modelling varies between each of the Station Precincts.

In order to ascertain baseline or a suitable existing conditions scenario, a desktop analysis of available traffic data and associated site inspections was undertaken by the project team charged with preparing the EES TIAR. Modelling and other analysis has been undertaken in an

effort to estimate impacts during the construction period (design year 2021) and for the legacy outcome (i.e. post completion design year 2031¹) both with and without the MMRP.

1.3 References

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

- Melbourne Planning Scheme
- Melbourne Metro Rail Project, Transport Impact Assessment prepared by AJM, April 2016, including appendices.
- Citywide operational data provided to GTA Consultants
- Citywide submission dated 5 July 2016
- traffic and car parking surveys undertaken by GTA Consultants as referenced in the context of this report
- an inspection of the site and its surrounds
- other documents as nominated.

1.4 Tests, Experiments & Assistance

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

- Mr Simon Beardall – Associate – BAppSc(Geomatics)(Hons)
- Mr Joshua Haigh – Consultant – BEng(Civil)(Hons)

1.5 Expert Witness Details

**John Kiriakidis BE (Civil & Computing) (Hons) MAITM, MVEPLA, MIEAust
Director (National) - GTA Consultants**

L25, 55 Collins Street, Melbourne

Areas of Expertise: Traffic Engineering & Transport Planning

I have been awarded a Bachelor of Engineering with Honours (Civil Engineering and Computing) degree from Monash University and am a Member of the Institute of Engineers Australia, Australian Institute of Traffic Planning and Management and the Victorian Planning and Environmental Law Association.

I possess over 18 years' experience in the traffic, transport and urban planning industry and am responsible for managing teams of traffic and transport planning specialists including, traffic engineers, strategic, micro and nano-simulation modellers, active transport planners and designers.

I have a thorough understanding of federal, state and local transport planning policy and am regularly involved in complex projects.

I appear regularly at the Victorian Civil and Administrative Tribunal (VCAT) and Panels Victoria as an independent expert witness in the field of traffic and transport planning.

Further details of my experience are provided in Appendix A.

¹ 5 years post planned completion date of MMRP.

1.6 Relationship to Submitter

I have no ongoing private or business relationship with the submitter, and have been retained to provide expert witness services at this hearing for a mutually agreed fee.

2. Purpose of Report

2.1 Appointment & Scope

I have been retained by Planning Property Partners Pty Ltd on behalf of Citywide Service Solutions Pty Ltd (Citywide) to prepare and present expert traffic and transport evidence at the upcoming Melbourne Metro Rail Project Inquiry and Advisory Committee (IAC), scheduled to commence 22 August 2016.

Citywide are concerned with the potential impact of the MMRP on the day to day operations of its Arden precinct civil infrastructure, environment and open space services both during construction and post construction. Specifically, Citywide's concerns pertain to:

1. Impacts generated by increased traffic
2. Impacts on car parking and general transport activity on existing precinct road network levels of service
3. General road safety

GTA has been instructed to:

1. Undertake a review of the EES material and identify any areas of legitimate concern around short-comings or omissions associated with the Melbourne Metro project and in particular the EES documentation (including transport impact assessment prepared by AJM).
2. Identify any possible recommendations which can / should be made to better inform any EES review and protect the operational interests of Citywide as they relate to the discipline of traffic and transport planning.

This evidence sets out an assessment of the anticipated parking, traffic and transport implications of the proposed MMRP as it relates to Citywide's operations within the Arden Precinct, including consideration of the:

- i Existing traffic and parking conditions surrounding the site.
- ii Arden-Macaulay Structure Plan and land use outcomes associated with that Strategic document on the short-term, medium term and long-term transport outcomes for Arden-Macaulay.
- iii Impacts to on-street parking conditions in the vicinity of the Arden Station precinct and Citywide operations as a result of the MMRP.
- iv Appropriateness of the proposed construction traffic vehicle access routes in the vicinity of the Arden Station precinct and Citywide operations.
- v Traffic generation characteristics of the MMRP, including construction traffic anticipated to be generated by the project.
- vi Anticipated transport impact of the MMRP on the surrounding road network both during the construction phase and legacy phase (i.e. post completion of the project).

2.2 Review Area

This evidence has been prepared to have specific regard to the potential impact of the MMRP both during construction and post construction on the day-to-day operation of Citywide facilities and infrastructure within the Arden Station precinct only.

Further discussion outlining the specific to day operation of Citywide services in the vicinity of the Arden Street station is provided in Section 3 of this evidence statement.

2.3 Review Limitations

In preparing this evidence statement, it is noted that due to time constraints no detailed interrogation of the modelling inputs or coding contained within TIAR prepared in support of the EES submission has been made. As such, I have relied on the outputs contained within the TIA in forming my opinion and recommendations.

3. Arden Macaulay Structure Plan

3.1 Preamble

The EES at Chapter 3 of the Transport Impact Assessment sets out a range of legislation, policy and guidelines that have helped inform the technical documentation and findings. A review of the nominated reference documents contained at Chapter 3 as well as those outlined in additional detail at Appendix A indicate the absence of any specific consideration around the Arden-Macaulay Structure Plan 2012 (adopted February 2012). This document was subject to a Planning Scheme Amendment (C190) which sought to:

“implement new land use and development controls into the Melbourne Planning Scheme as recommended within the Arden-Macaulay Structure Plan”.

The amendment study area is set out in Figure 3.1

Figure 3.1: Arden Macaulay Structure Plan Study Area



3.2 Amendment C190 Status

The Amendment was considered by a Ministerially appointed panel which heard submissions in June and July 2015. As an outcome of the Panel Hearing a series of recommendations were formed and these were set out in their report of 23 October 2015².

City of Melbourne's Future Melbourne Committee considered the panel's recommendations at its 2 August 2016 meeting. The report is available for viewing on Council's website.

The key issues identified / observed by the Panel and submitted to the Future Melbourne (Planning) Committee for consideration included:

"5. The Panel generally supports Amendment C190. Many of the Panel's recommendations propose to simplify the structure of the planning controls rather than change their intent. The Panel's support for controls on mandatory street wall heights and mandatory overall building heights is a significant achievement and will ensure that Council's objectives for a mid-rise neighbourhood are achieved.

6. The Panel report made some recommendations that management does not support. These include the rezoning of VicTrack land to the Mixed Use Zone; the removal of proposed street wall height and setback controls along existing laneways; and the panel's suggested exemption from the absolute maximum building height for areas 6 and 7 on the basis of the provision of additional open space contributions. Management does not support these panel recommendations as they would potentially compromise Council's ability to achieve the strategic directions of the Arden Macaulay Structure Plan 2012 and/or the land use and built form outcomes sought for the area.

7. This management report provides a detailed assessment of the Panel's recommendations and management's response in Attachment 4. The changes to the Schedule to the Design and Development Overlay as recommended by the Panel are at Attachment 5 and those recommended by management are at Attachment 6.

8. Management proposes that Council request that the Minister for Planning, prior to approval of Amendment C190 (Attachment 7), ensure the following:

8.1. Implementation of a mechanism to contribute toward the infrastructure necessary to support the population growth resulting from Amendment C190. It is proposed that a suitable interim control for requiring development contributions be put in place by the Minister in conjunction with the approval of Amendment C190. This will allow time for a permanent Infrastructure Contributions Plan to be developed.

8.2. The setting aside of land adjacent to Moonee Ponds Creek for future recreational purposes. As identified in the Arden Macaulay Structure Plan 2012, the Moonee Ponds Creek corridor is strategically important in achieving the open space aspirations for the area. The City of Melbourne would continue to work with the Metropolitan Planning Authority, Melbourne Water and other key stakeholders to determine how this outcome can be achieved."

The recommendations from Management included:

"9. That the Future Melbourne Committee recommends Council:

9.1. adopt Planning Scheme Amendment C190 as shown in Attachment 7 to this report.

² This report can be accessed via:
[http://dsewebapps.dse.vic.gov.au/Shared/ats.nsf/\(attachmentopen\)/560814F4EE310ECFCA257EEE001273E1/\\$File/Melbourne+C190+Panel+Report.pdf?OpenElement](http://dsewebapps.dse.vic.gov.au/Shared/ats.nsf/(attachmentopen)/560814F4EE310ECFCA257EEE001273E1/$File/Melbourne+C190+Panel+Report.pdf?OpenElement)

9.2 submit the adopted Amendment to the Minister, requesting that Amendment C190 be approved in conjunction with a Ministerial Amendment under section 20(4) of the Planning and Environment Act 1987 that introduces a suitable interim development contributions control over the area affected by Amendment C190

9.3. request the Minister identify and secure open space along the Moonee Ponds Creek for future recreational purposes, consistent with the Arden Macaulay Structure Plan 2012."

Unconfirmed meeting minutes from the Council meeting on 2 August 2016 agreed to support the management recommendation and adopt the report but recommend future consideration of a range of issues including:

1. The zoning of land along the Moonee Ponds Creek corridor
2. Built form controls in Precincts 6 and 7
3. A need to collaborate closely with State Government on the delivery of Arden Station as part of Melbourne Metro.

At the time of writing this report the confirmed minutes were unavailable. They are however due for confirmation at the Future Melbourne Committee scheduled for Tuesday 16 August 2016.

Returning to the report to Council, its content notes that the State Government has now committed to delivering Melbourne Metro (refer Direction 1) and that this new underground station has acted as a catalyst for the Minister for Planning to charge the Metropolitan Planning Authority (MPA) with leading a strategic planning process for the Arden Urban Renewal Precinct. The work being completed under the direction of the MPA is an extension of the City of Melbourne's Arden Macaulay Structure Plan 2012.

A review on the MPA website dated 10 June 2016 states the following:

"The Arden Precinct

Arden represents the next front in Melbourne's evolution as a world-class capital city and will be a major new commercial and residential precinct that will represent an extension of the CBD and be a great legacy project for the state.

At the heart of the new precinct will be the Arden underground train station, due to be completed in 2026. This will be a catalyst for enterprise, linking Melbourne's booming west with Australia's premier knowledge cluster, Parkville, and the remainder of Melbourne's CBD.

The MPA is preparing a Vision and Framework document for Arden that builds on the City of Melbourne's Arden-Macaulay Structure Plan, puts the station in context, enables new land uses and addresses environmental issues such as contamination and flooding.

The Melbourne Metro Environmental Effects Statement (EES) consultation is now underway. The MPA will continue to work in partnership across government to achieve an integrated planning outcome that delivers a high-quality living and working environment catalysed by the new station. Keep in touch with the project via our Shape Victoria website.

We will now feed the responses into our work for the Framework Plan to be released for further consultation next year. The Framework Plan will also respond to directions arising from the refreshed Plan Melbourne."

A review of the Shape Victoria website indicates that no further information is available to help inform the inputs relied upon in the strategic model evaluation underpinning the EES.

3.3 Population & Employment Forecasts

On the level of change forecast for the Arden Macaulay precinct, the report submitted to Council nominates the most recent population and employment growth forecasts. These are set out in Table 3.1 and Table 3.2 on the following page noting that these forecasts represent an update of those originally set out in the 2012 Structure Plan. The original 2012 forecasts were limited to those associated with Stage 1 of the Structure Plan (or for Macaulay only)³. As I appreciate it, the revised figures now include estimates for Arden Central in association with the delivery of Arden Station.

Table 3.1: Summary of Employment Forecasts for Arden Macaulay (no. of persons)

Precinct	Employment			Change	
	2011	2031	2051	2011-2031	2031-2051
Arden	3,000	9,000	34,000	6,000	25,000
Macaulay	3,000	5,000	9,500	2,000	4,000
TOTAL	6,000	14,000	43,500	8,000	29,000

Table 3.2: Summary of Population Forecasts for Arden Macaulay (no. of persons)

Precinct	Employment			Change	
	2011	2031	2051	2011-2031	2031-2051
Arden	500	5,000	15,000	4,500	10,000
Macaulay	3,000	5,000	10,000	2,500	5,000
TOTAL	3,500	10,000	25,000	7,000	15,000

In comparison to estimates set out in the 2012 Structure Plan, the above figures contemplate an additional increase in employment of 14,000 jobs and 4,000 residents by 2051.

Table 3.1 and Table 3.2 indicate significant uplift in population and employment numbers within the precinct between 2011 and ultimately 2051 as a consequence of the Amendment. Between 2011 and 2031 estimates indicate a 233% (+8,000) increase in jobs and 286% (+7,000) increase in resident population.

The extent to which these changes have been considered under the EES is unclear given that the EES states at Section 4.4 of the Transport Impact Assessment:

".....Each mode has been assessed as part of this analysis taking into consideration the growth in population and employment (based on the VITM transport models) and the associated increase in travel demands in the vicinity of Melbourne Metro."

Beyond this generic statement and what may have been contained in the VITM models provided to the project team some time ago, I have not been able to determine the land use inputs relied upon in VITM (specifically) for the Arden Macaulay precinct in the various models including 2021 base, 2021 construction, 2031 base and 2031 legacy.

Significantly, it appears that the population and employment estimates set out in Tables 3.1 and 3.2 are only recent (i.e. nominated in the Report to the Future (Planning Committee) 2 August 2016) and therefore unlikely to have been included in the base case VITM model relied upon for the EES evaluation. Clarity should be provided by the Melbourne Metro Rail Authority (MMRA) as to what extent the forward looking employment and population projections have been considered in the Strategic Model and the various assessment scenarios.

³ Source: Agenda Item 6.3, @ August 2016, Report to the Future Melbourne (Planning) Committee.

3.4 Comment on Amendment C190 Significance

The technical document (EES TIAR) states specifically on the assessment scenarios for the Arden precinct:

“Modelling has not been undertaken for the western portal in relation to Melbourne Metro construction impacts as there is no material change in traffic demand or supply in the local network resulting from the 2021 Construction when compared to the 2021 Base (No Project) Case.”

This observation raises two questions:

1. Should the evaluation consider a pre-opening 2026 scenario given the material change in land use and associated employment and population estimates expected in the Arden Macaulay Renewal Area over the next decade?
2. If present day transport conditions offer poor levels of operational service, how might the intensification of land use effect the ability of the network to cater for projected construction activity and is a more quantitative assessment necessary?

On the first issue, I am satisfied that the rate of land use change forecast for the Arden Macaulay Renewal Area would warrant an assessment period up until the operation of Melbourne Metro (2026) to better reflect network conditions up until the Metro activation.

On the second issue, comment is reserved until later in this report following documentation of existing transport conditions in the precinct.

4. Citywide Operational Characteristics

4.1 Overview

Citywide is a services infrastructure company with its operations located in North Melbourne. Citywide undertakes a variety of services, including (but not limited) the following:

- Waste collection
- Road maintenance, including asphalt refurbishment
- Parking meters
- Road stabilisation
- Traffic management

Citywide employs in excess of 300 staff and operates at a number of buildings within the Arden Station precinct as outlined below and identified in Figure 4.1.

- 292-294 Arden Street
- 54 Green Street
- 85 Green Street
- 22 Henderson Street

Figure 4.1: Location of Citywide buildings within Arden Precinct



Source: Nearmap

A breakdown of the estimated staffing levels and key services provided within each Citywide building is provided in Table 4.1.

Table 4.1: Staff / Employee Breakdown

Building	Key Service Areas	No. Staff
292-294 Arden Street	Head office (HR, finance, IT, legal, etc.)	69
54 Green Street	Asphalt, Civil Services, Infrastructure, Routine Maintenance, Traffic & Events	87
85 Green Street	Assets, Commercial Sweeping, City of Melbourne Waste, Moreland Waste, Workshop, Parking Meters	120
22 Henderson Street	Open Space, City of Melbourne Trees, Brimbank Trees, Infrastructure.	38
Total		314

4.2 Site Access and Vehicles Types

4.2.1 Site Access

Given the fragmented nature of the Citywide operation, occupying multiple sites within the Arden precinct, access is scattered (rather than consolidated) as shown in Figure 4.2 and Figure 4.3.

Figure 4.2: Citywide Access – Henderson Street & Green Street



Figure 4.3: Citywide Access Points – Green Street, Fogarty Street and Arden Street



4.2.2 Vehicle Types

Observations of Citywide operations indicate that the range of vehicles relied upon to deliver services to market vary widely. Vehicle types relied upon during day-to-day activities, include but are not limited to:

- Utility vehicles
- Small, Medium and Heavy rigid vehicles
- Garbage trucks
- Dump trucks.

4.2.3 Fleetmatics GPS Service Vehicle Data

GTA has been provided access to “Fleetmatics” GPS data for the Citywide fleet to help appreciate existing Citywide service vehicle travel patterns. The findings of this review are summarised below:

- The Citywide fleet generally has origins and destinations throughout metropolitan Melbourne, with most activity from the North Melbourne depots concentrated within the CBD and surrounds.
- High levels of Citywide fleet traffic access the waste transfer station on Dynon Road.
- To access the Melbourne CBD, the majority of the fleet rely on Arden Street or Macaulay Road, as well as the intersections of Boundary Road/Macaulay Road and Arden Street/Macaulay Road.

In addition to the above, the “Fleetmatics” data provides insights into the level of traffic generated by Citywide at their North Melbourne sites. A review of the available data (1 May to 9

August 2016) indicates that the Citywide sites in North Melbourne have generated a total of 9,665 trips over this time. Extrapolating this data out to represent a whole year indicates that the Citywide operations in North Melbourne generate around 35,000 vehicle trips annually excluding activity associated with day-to-day employee / staff travel to and from each depot. This activity is considered in Section 4.3 below.

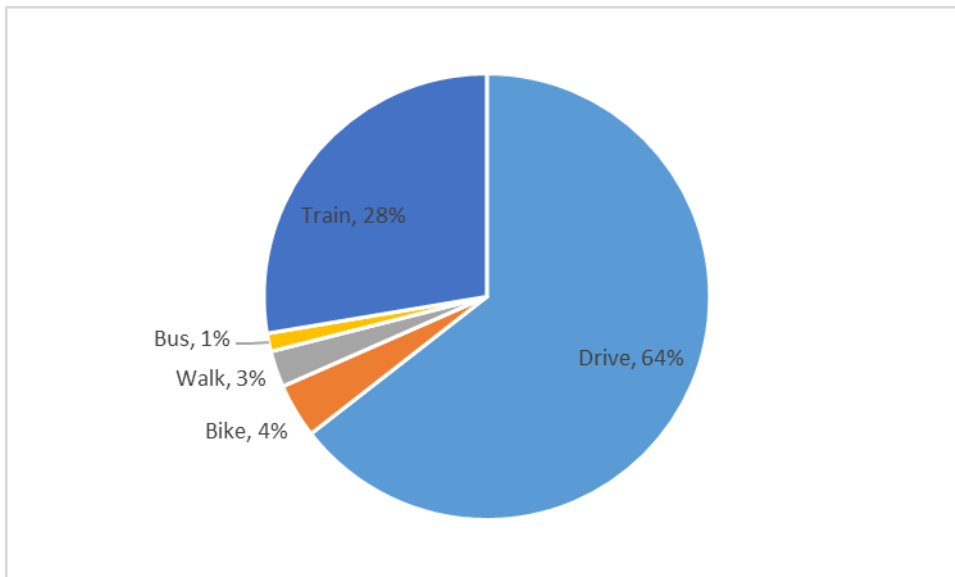
4.3 Citywide Staff Travel Characteristics

GTA administered a questionnaire survey of typical staff travel behaviour for the Citywide between 5 and 10 August 2016.

A total of 59 responses were collected which represents a response rate of 19%. A summary of the collected data is provided below:

An overview of staff travel behaviour is presented within Figure 4.4, with the figure illustrating that 64% of staff arrive to the Citywide sites via motor vehicle (i.e. as either driver or passenger).

Figure 4.4: Citywide Staff Travel Choice Survey Results



From the data, it has been determined that of those staff driving to work, approximately 40% parked on-site within Citywide depots, with the remaining 60% utilising parking on-street in the nearby area.

4.4 Traffic & Parking Generation – Citywide Operations

Having regard to the various survey results and observations, the following is noted in relation to Citywide employees travel characteristics and those likely to be exhibited by workers associated with the MMRP construction:

- A meaningful proportion of employees / staff rely on private motor vehicle travel to and from Citywide depots on a day-to-day basis.
- The travel choice surveys indicate that Citywide generates a demand for around 200 car parking spaces, with around 120 of these parking on-street in the nearby area. This level of demand is considered material and noteworthy.
- Existing travel patterns associated with Citywide staff are likely to change upon the delivery and activation of Arden Station however the extent of change will require

further review and investigation by Citywide for use and input in post implementation strategy prepared in support of the MMRP

- The travel choice survey data collected for Citywide, in the absence of any other material / investigations is likely to be representative of the travel behaviour which could be expected of staff / workers associated with other (similar service based) businesses within the Arden Precinct as well as construction workers associated with the delivery of Melbourne Metro using the Arden Precinct as a base.

Assuming 3 trip ends per employee vehicle per day, it is estimated that Citywide employees / staff generate around 600 vehicle trips per day or 219,000 vehicle trip ends per year⁴. Based on the foregoing analysis, it is estimated that Citywide generates in total, over **250,000** vehicle trip ends annually in association with its day-to-day business activities.

This level of activity is meaningful and demonstrates the significant reliance Citywide has on the Arden Macaulay road network.

⁴ Compares with 4 vte / day / car driver for white collar employment.

5. Arden Transport Network

5.1 Existing Conditions

5.1.1 Road Network

Table 5.1 outlines the characteristics of key roads within the Arden Precinct area.

Table 5.1: Network Characteristics Around Arden Station

Road Name	Road Classification	Road Zone	Authority	Alignment	Configuration	Parking	Pedestrian Paths	Road Reserve Width (approx.)	Daily Traffic Volumes (approx.)
Arden Street	Major Road	Industry/Mixed Use	Council	East-west	<input type="radio"/> Two through lanes each direction <input type="radio"/> Bicycle lane in each direction	Kerbside	Both sides of road	30.0m	5,600vpd [1]
Boundary Road	Primary Arterial	Road Zone 1	VicRoads	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> No bicycle provision	Kerbside	Both sides of road	21.0m	5,800vpd [1]
Macaulay Road (East of boundary)	Primary Arterial	Road Zone 1	VicRoads	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> Bicycle lane each direction	Kerbside	Both sides of road	30.0m	9,500vpd [1]
Macaulay Road (West of Boundary Road)	Major Road	Industry	Council	East-west	<input type="radio"/> One through lane each direction <input type="radio"/> Bicycle lane each direction	Kerbside	Both sides of road	19.5m	6,500vpd [1]
Dynon Road	Primary Arterial	Road Zone 1	VicRoads	East-west	<input type="radio"/> Two through lanes each direction <input type="radio"/> No bicycle provision	None	None	20.0m	16,000vpd [1]
Laurens Street	Local Road	Industry/Mixed Use/Public Use	Council	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> Bicycle lane each direction	Kerbside	Both sides of road	20.0m	4,295vpd [2]
Dryburgh Street	Primary Arterial	Road Zone 1	VicRoads	North-south	<input type="radio"/> Two through lanes in each direction <input type="radio"/> Bicycle lane each direction	Kerbside	Both sides of road	31.0m	8,100vpd [1]
Langford Street	Local Road	Industry	Council	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> No bicycle provision	Kerbside	Both sides of road	20.0m	-
Green Street	Local Road	Industry	Council	East-west	<input type="radio"/> One through lane each direction <input type="radio"/> No bicycle provision	Kerbside	Both sides of road	20.0m	-
Gracie Street	Local Road	Industry	Council	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> No bicycle provision	Kerbside	Both sides of road	21.0m	-
Henderson Street	Local Road	Industry	Council	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> No bicycle provision	Kerbside	Both sides of road	19.5m	-
Fogarty Street	Local Road	Industry	Council	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> No bicycle provision	Kerbside	Both sides of road	21.0m	-
Stubbs Street	Major Road	Industry	Council	North-south	<input type="radio"/> One through lane each direction <input type="radio"/> Bicycle lane each direction	Kerbside	Both sides of road	20.1m	2,700vpd [1]

[1] Volumes sourced from VicRoads traffic profile viewer.

Volumes taken from surveys undertaken by GTA and adopting a peak-to-daily ratio of 10% for local roads.

A review of the road network surrounding Arden Station indicates a range of local access streets which could, during construction, attract a level of non-local or “cut-through” traffic between. These routes comprise:

1. Fogarty Street
2. Gracie Street
3. Langford Street
4. Boundary Road South.

Comment on the appropriateness of use of these non-local traffic usage is set out in Section 7 of this statement.

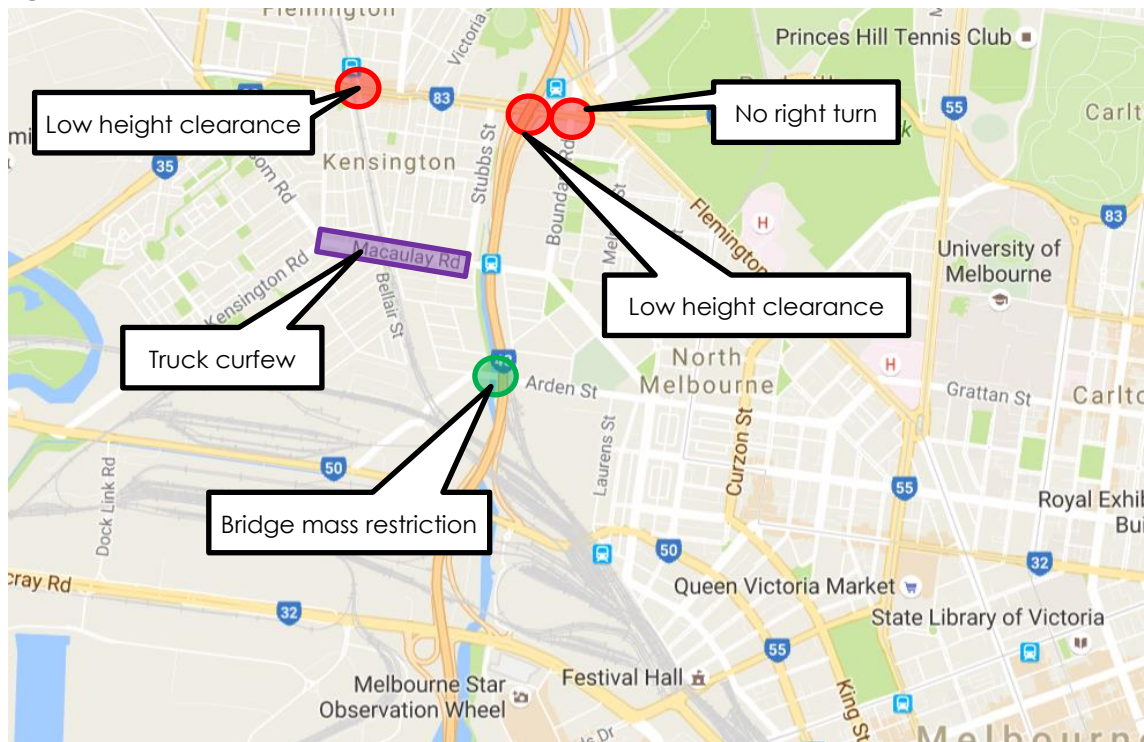
5.1.2 Heavy Vehicle Precinct Routes

Whilst the area immediately surrounding the Arden Station precinct is primarily industrial in nature, there are a number of key restrictions to heavy vehicle traffic wishing to access the area from the arterial and toll road network. These restrictions are outlined in Table 5.2 as well as illustrated in Figure 5.1.

Table 5.2: Heavy Vehicle Network Operational Restrictions

Road	Restriction
Racecourse Road (Shown in red below)	No right turn from Racecourse Road (eastbound) into Boundary Road (southbound)
	Low height clearance (east of Citylink off-ramp)
	Low height clearance (at Newmarket Station)
Arden Street (Shown in green below)	Bridge mass restriction west of Citylink
Macaulay Road (Shown in purple below)	Truck Curfew 7am-7pm Mon-Fri and 7am-1pm Saturday between Epsom Road and Stubbs Street

Figure 5.1: Vehicle Access Restrictions



In relation to Racecourse Road, inspections indicate that a heavy vehicle detour route is provided for trucks exiting City Link onto Racecourse Road over 3.7m in height. This route includes the use of Stubbs Street and Macaulay Road

5.1.3 SmartRoads

SmartRoads is a VicRoads policy which sets 'modal' priorities on the road network and underpins many of the strategies significant to the operational directions that support broader strategies around land use and transport. The policy recognises that:

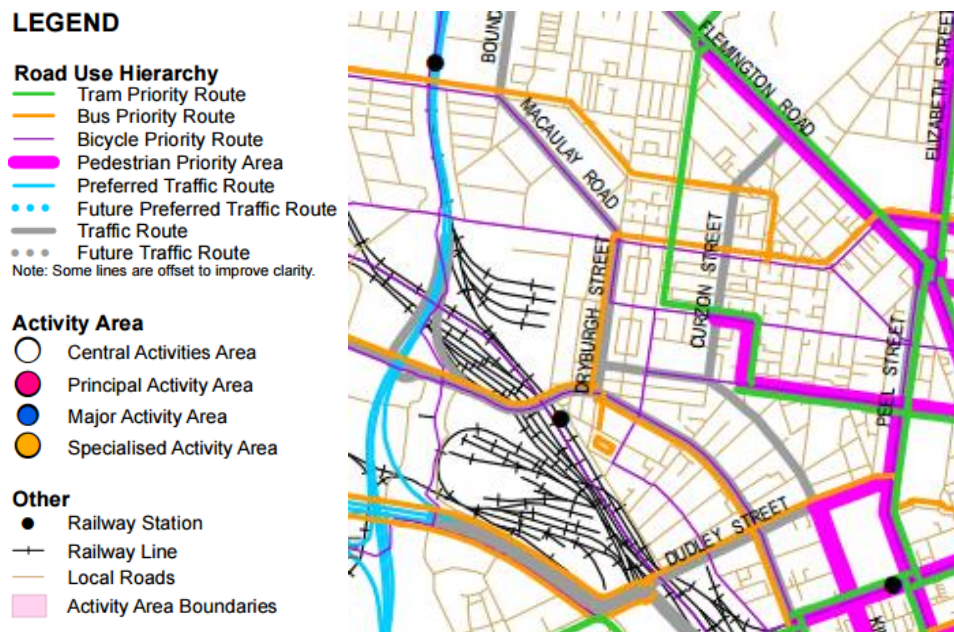
*"There is no single solution to managing congestion on our roads. Sustainable management of congestion will require an integrated approach involving better management of the existing network, building new infrastructure, visionary land use planning, encouraging sustainable transport modes, and changes in behaviour by individuals, businesses and a level of government."*⁵

All road users will continue to have access to all roads. However, certain routes will be managed to work better for cars while others for public transport, cyclists and pedestrians during the various peak and off-peak periods. In this regard, the following is noted by VicRoads for the various modes assigned to roads across the network that form part of the Network Operating Plans:

- "Facilitate good pedestrian access into and within activity centres in periods of high demand
- Prioritise trams and buses on key public transport routes that link activity centres during morning and afternoon peak periods
- Encourage cars to use alternative routes around activity centres to reduce the level of 'through' traffic
- Encourage bicycles through further developing the bicycle network
- Prioritise trucks on important transport routes that link freight hubs and at times that reduce conflict with other transport modes"

The SmartRoads network within the general Arden Precinct Area is shown in Figure 5.2.

Figure 5.2: VicRoads SmartRoads Network Operating Plan around Arden Station



⁵ Sourced from VicRoads

Figure 5.2 indicates that Macaulay Road and Dryburgh Street form the principal traffic routes through the area with Arden Street and Macaulay Road forming key roads required to support bicycle activity.

5.1.4 Traffic Activity

GTA commissioned traffic movements counts at the following intersections on Tuesday 2 August 2016, during the AM (8:00am-9:00am) and PM (5:00pm-6:00pm) peak hours:

- Arden Street/Macaulay Road/Dryburgh Street
- Arden Street/Laurens Street
- Macaulay Road/Boundary Road/Canning Street
- Laurens Street/Queensberry Street/Vehicle Access

The results of these traffic counts are presented in Figure 5.3 to Figure 5.10.

Figure 5.3: Arden Street/Macaulay Road/Dryburgh Street – AM Peak Hour

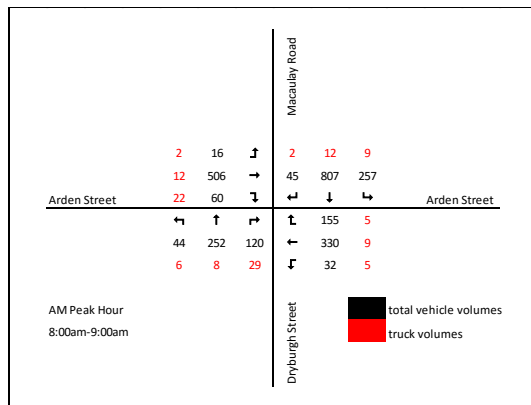


Figure 5.4: Arden Street/Macaulay Road/Dryburgh Street – PM Peak Hour

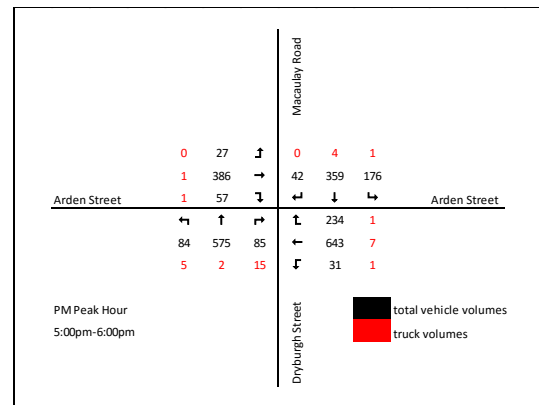


Figure 5.5: Arden Street/Laurens Street – AM Peak Hour

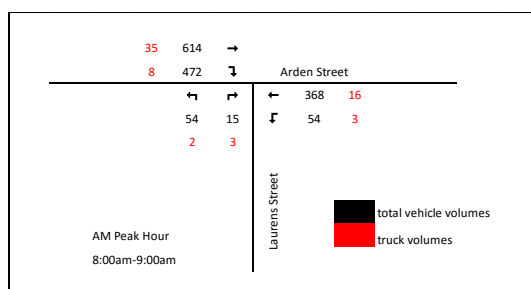


Figure 5.6: Arden Street/Laurens Street – PM Peak Hour

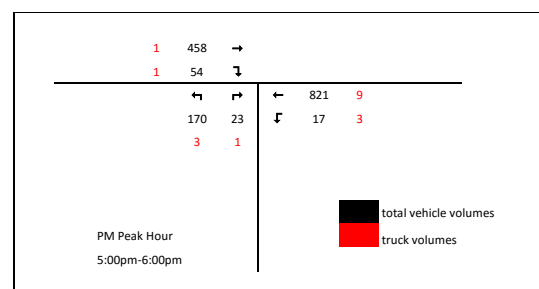


Figure 5.7: Macaulay Road/Boundary Road/ Canning Street – AM Peak Hour

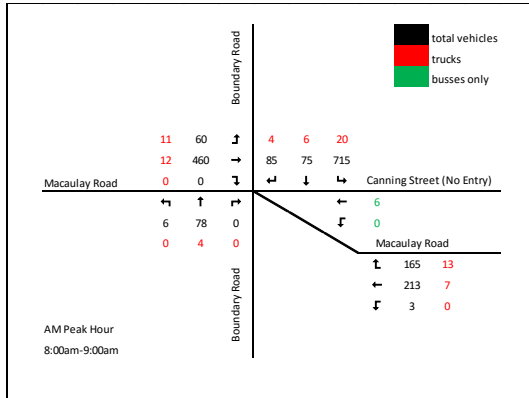


Figure 5.8: Macaulay Road/Boundary Road/ Canning Street – PM Peak Hour

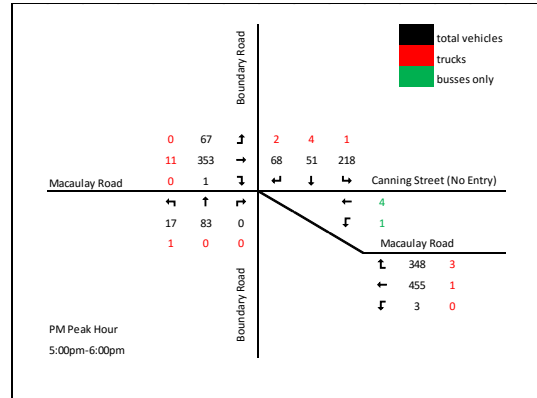


Figure 5.9: Laurens Street/Queensberry Street – AM Peak Hour

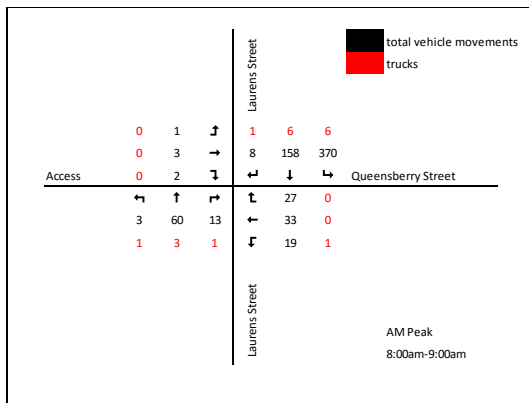
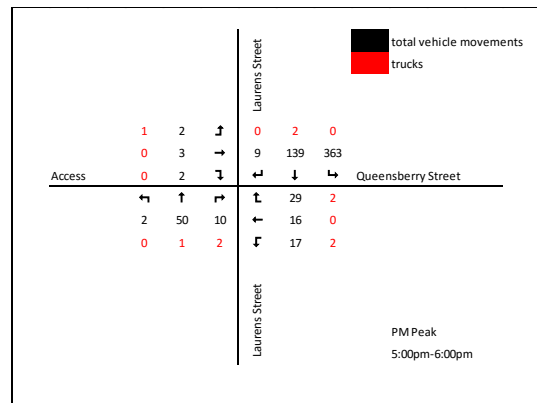


Figure 5.10: Laurens Street/Queensberry Street – PM Peak Hour



In summary, surveys indicate that eastbound traffic (towards the CBD) demands dominate traffic flows in the AM Peak hour with the opposite outcome recorded during the PM peak hour. Interestingly, an existing high level of demand currently occurs in the AM peak hour into Laurens Street from Arden Street with the reverse, to a lesser extent occurring in the PM peak hour. This activity appears to be related to non-local traffic bypassing the Arden Street / Macaulay Road / Dryburgh Street intersection during peak periods. A review of data indicates light levels of right turn activity from west to south at the Arden Street / Macaulay Road / Dryburgh Road intersection e.g. 60 and 57 respectively during the AM and PM peak periods. This compares with 370 and 363 during these same periods at the Laurens Street / Queensberry Street.

Identified traffic patterns deliver higher levels of daily traffic activity on Laurens Street than desired. These values are beyond its functional classification as a local access street. This activity (and traffic behaviour) if unaddressed has the potential to compete with construction activity on Laurens Street, raising a range of safety issues or if re-directed to the Arden Street / Macaulay Road intersection give rise to operational (capacity) issues given the sheer volume of activity on its western approach leg.

As a rule of thumb, single right turn approach lanes at a signalised intersection have a peak hour capacity of around 250 per hour. This compares with a combined demand for right turn traffic of 530 vehicle trips during the AM peak hour between those entering Laurens Street and Dryburgh Street.

This matter warrants detailed consideration in any traffic management plan. Indeed, and depending on what options are available to overcome this existing issue, a case may exist for contributory works to better manage transport activity during both the construction and legacy project stages.

Lastly, it is worth noting that all flows include, low levels of truck / heavy vehicle activity. This observation is in contrast to commentary provided in the EES around uses currently contained on Vic Track land which will be removed as part of delivering Arden Station off-setting estimated construction vehicle activity.

5.1.5 On-street Public Car Parking

To determine the existing availability of car parking within the vicinity of the site GTA has completed car parking demand surveys on Tuesday 2 August at 9:00am and 11:00am. Surveys were informed by a comprehensive car parking inventory prepared for the area surrounding the Citywide depot operations. The area surveyed is depicted in Figure 5.11.

Figure 5.11: Extent (Map) of Surveyed Parking Area



The inventoried area indicates that on-street car parking is for the most part unrestricted in nature. The existing restrictions respond to needs associated with the land uses currently operating in the area and in particular employee / staff parking requirements which are presently accommodated on individual sites within the precinct.

The results of surveys are summarised in Table 5.3, and indicate that parking demands in limited short-term (signed) areas are moderate (67%-77%) whilst demand or an appetite for long-term car parking in the area is very high (or saturated). Notably, the unrestricted car parking supply surveyed represents 85% of the total available supply.

Table 5.3: On-Street Public Car Parking Survey Results

Date	Tuesday 2 August 2016					
Restriction	Short-term [1]		Long-term [2]		Total	
Time	9:00am	11:00am	9:00am	11:00am	9:00am	11:00am
Supply	95	95	539	539	63	634
Demand	64	73	522	524	586	597
Vacancies	31	22	17	15	48	37
Occupancy	67%	77%	97%	97%	92%	94%

[2] Short-term = greater than 1P (e.g. parking suitable for visitors)

[3] Long-term = greater than 8P (e.g. parking suitable for staff)

An illustration of parking demand in the area is provided at Figure 5.12 and Figure 5.13 for the two surveyed time stamps.

Figure 5.12: Long Term Car Parking Demand Map –9:00am

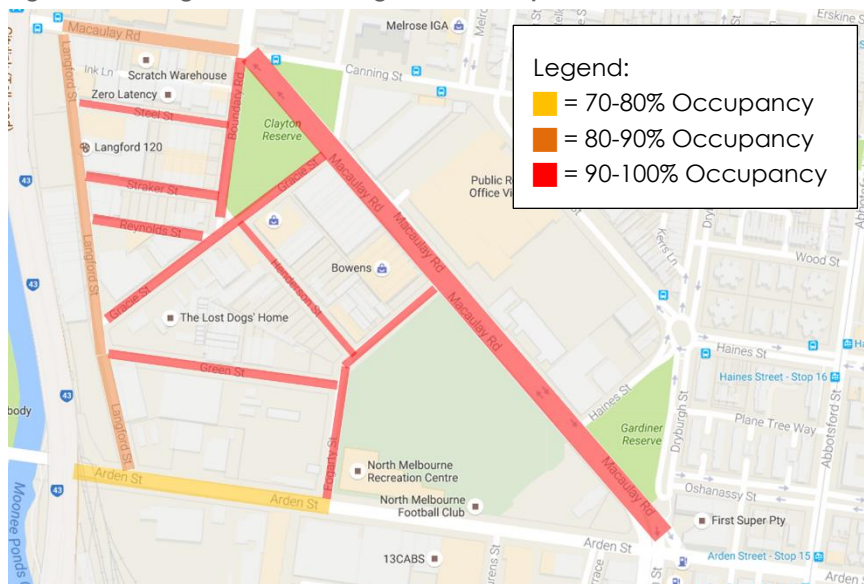
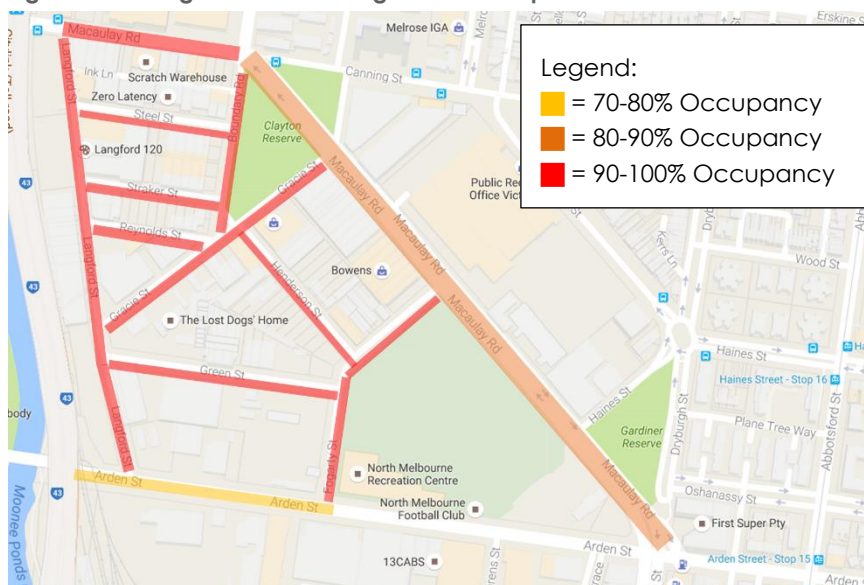


Figure 5.13: Long Term Car Parking Demand Map – 11:00am



5.1.6 Operational Observations

In addition to the above traffic and parking surveys, GTA undertook AM, Midday and PM peak hour observations around the Arden Precinct to identify existing traffic and transport operations. During these surveys, the following observations were made:

Table 5.4: Summary of Observed Network Performance Characteristics

Peak Hour	Location	Observations
AM	Arden Street/Laurens Street intersection	Long eastbound queuing across Laurens Street
	Arden Street	Moderate use of Arden Street as a bicycle route, noting its connection to the Capital City Trail.
	Macaulay Road/Langford Street	Long eastbound queues across Langford Street
	Macaulay Road Rail Crossing	Creates significant delays and queuing for E-W transport movement
	Kensington Station Rail Crossing	Creates significant queues and delays on Macaulay Road High frequency service
Midday	Local Streets between Arden and Macaulay Road	Higher levels of pedestrian activity
	General	Parking was highly occupied Traffic levels were lower and no congestion was observed Road network operating satisfactorily
PM	Arden Street	Queuing eastbound across Langford Street
	Langford Street/Macaulay Road	Queuing in both directions results in vehicles being unable to exit Langford Street

For reference purposes, Figure 5.14 and Figure 5.15 has been prepared illustrating the observed extents of queuing during the AM peak period and PM peak periods.

Figure 5.14: AM Peak Period – Observed Queues

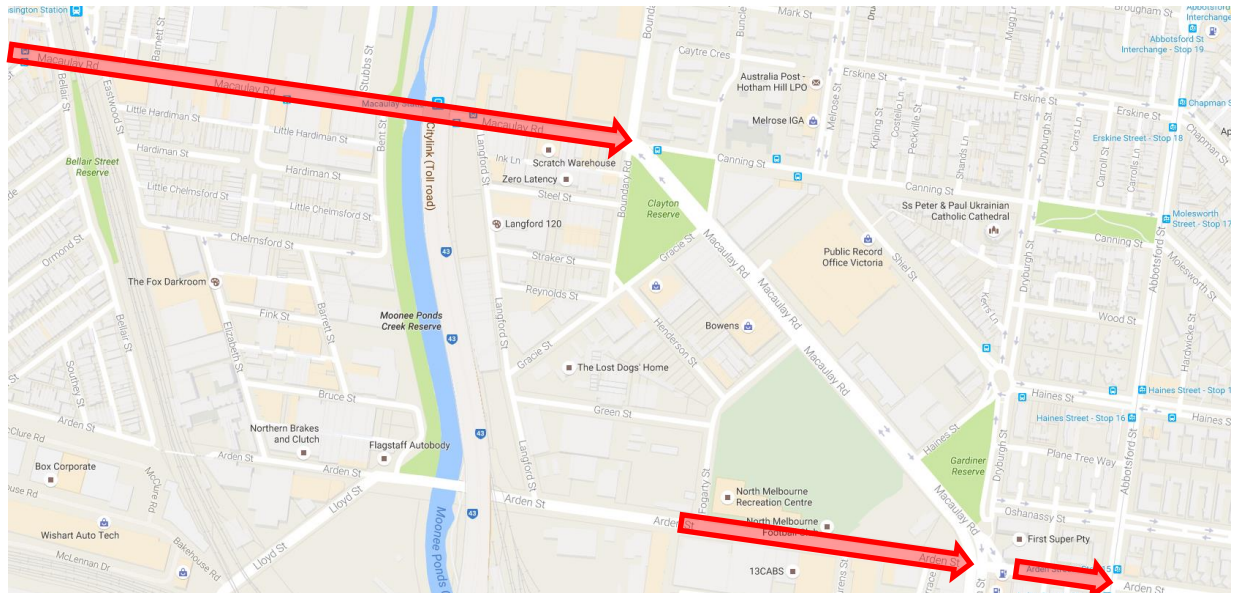
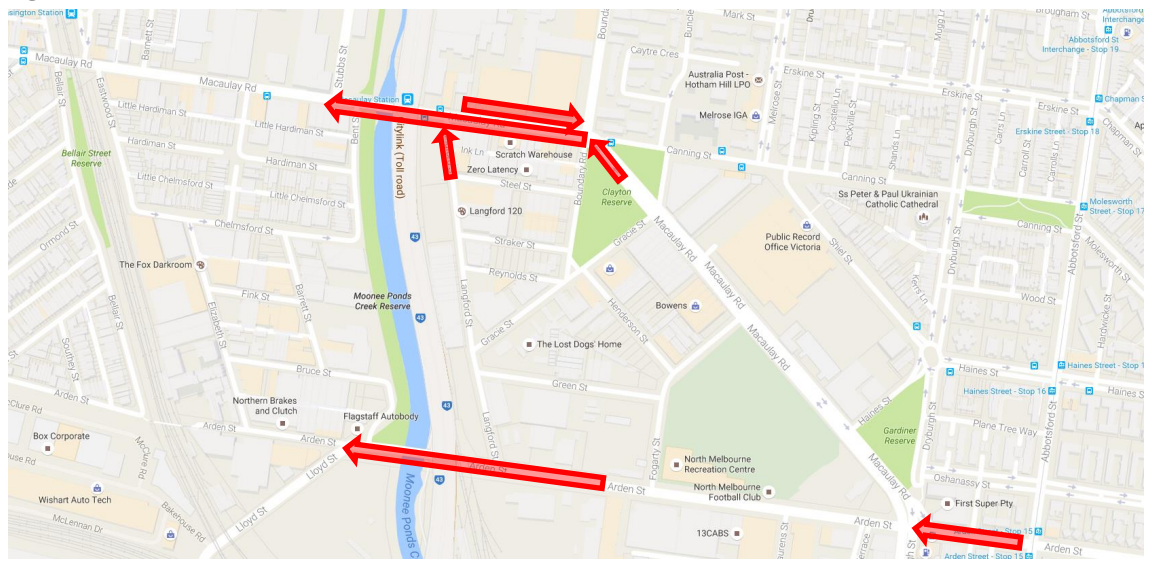


Figure 5.15: PM Peak Period – Observed Queues



6. Arden Station Design & Construction Attributes

6.1 Preamble

Chapter 8 of the EES sets out an assessment of the transport connectivity impacts associated with the construction and operation of the Melbourne Metro and relies on Technical Appendices A through G to substantiate a range of findings.

Chapter 8.1.1 of the EES provides some generalised observations around the main construction generated impacts including:

1. Truck activity associated with spoil removal and equipment transfer
2. The temporary closure of a number of major roads to facilitate the build
3. The presence of a large construction workforce which would need to drive or be transported to and from the workplace, which could potentially have an impact on the local and wider road network at times.

As it relates to the Arden Station precinct, items 1 and 3 are of greater significance given the absence of any road closure proposals in association with the delivery of this Station and the limited impact by proposed road closures nearby associated with Parkville Station.

The following sections set out a review of the material provided in the EES as it relates specifically to Arden Station and sets out my appreciation of the construction approach and considerations relevant to any post implementation outcomes.

Under Chapter 8 of the EES, Arden Station is identified as Precinct 3. The documentation identifies the Arden Station Precinct as:

*"one of the major sites for the construction of Melbourne Metro, more truck activity would be anticipated at this site than in other precincts. Activity at this site would extend over a period of 4 years with 24 hour, 7-day operations and an average of approximately 260 trucks trips each day for spoil removal and materials and equipment delivery. At peak activity, this could increase to around 360 truck movements per day"*⁶

The EES goes on to note that the forecast level of construction workers for the Melbourne Metro project for the Arden Station precinct is 421 workers representing by far the largest workforce at any of the precinct locations⁷. The EES goes on to note that traffic and transport activity associated with precinct site workers are not included in the forecast truck activity.

On managing impacts, the EES notes under its performance requirements at Section 8.6.6 of the Transport Impact Assessment, the requirement for the project to consider and prepare **transport management plans** (TMPs) for a range of impacts on road transport, public transport, active transport and travel demand management during the construction phase.

The EES nominates a range of considerations and in some cases references a need to consult with key transport agencies on TMP content. The need to consider input from others, other than agencies, whom are likely to be effected in the precinct is considered later in this review.

⁶ Section 8.10, page 8-28.

⁷ Table 8-1, EES Transport Impact Assessment.

6.2 Station Characteristics – Legacy Layout

A review of the EES indicates that significant works will be performed to deliver the Arden Station as part of Melbourne Metro. An outline of the proposed layout and configuration of the station is provided below in Figure 6.1.

Figure 6.1: Arden Station Legacy Layout & Configuration

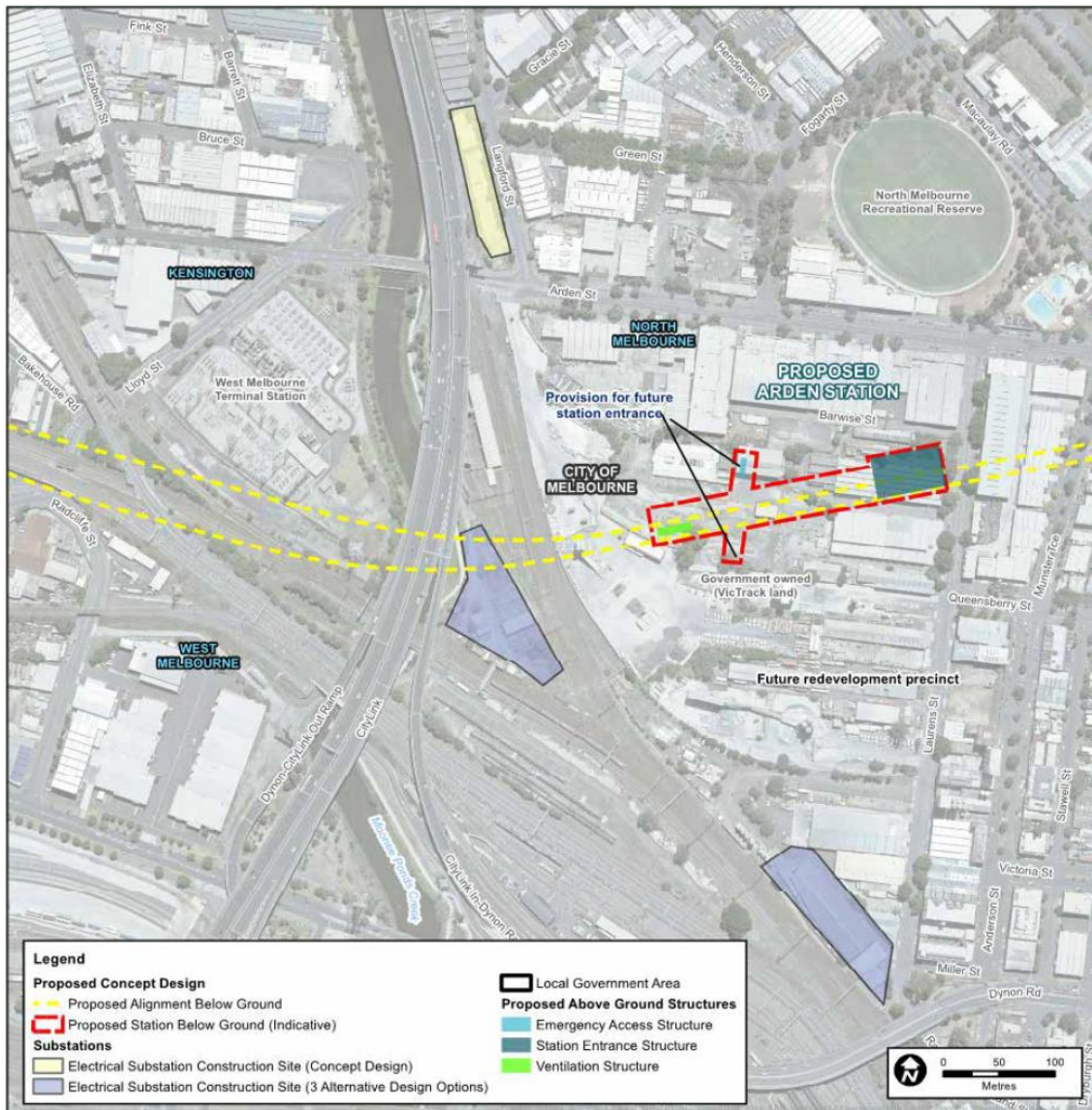


Figure 6.1 shows the proposed station box in red with the entrance structure in green interfacing with Laurens Street. Provisions for future stations entrances are provided roughly at its mid-point to the north and south, these align with work completed under the Arden Macaulay Structure Plan including the provision of direct and connected north-south bus and bicycle routes through the precinct.

A diagrammatic representation of the proposed future linkages, sourced from the Report to the Future Melbourne (Planning) Committee dated 2 August 2016 is provided in Figure 6.2.

Figure 6.2: Proposed Transport Connectivity in Arden Macaulay



The design interface with Laurens Street is provided in Figure 6.3 for reference.

Figure 6.3: Laurens Street Design Treatment

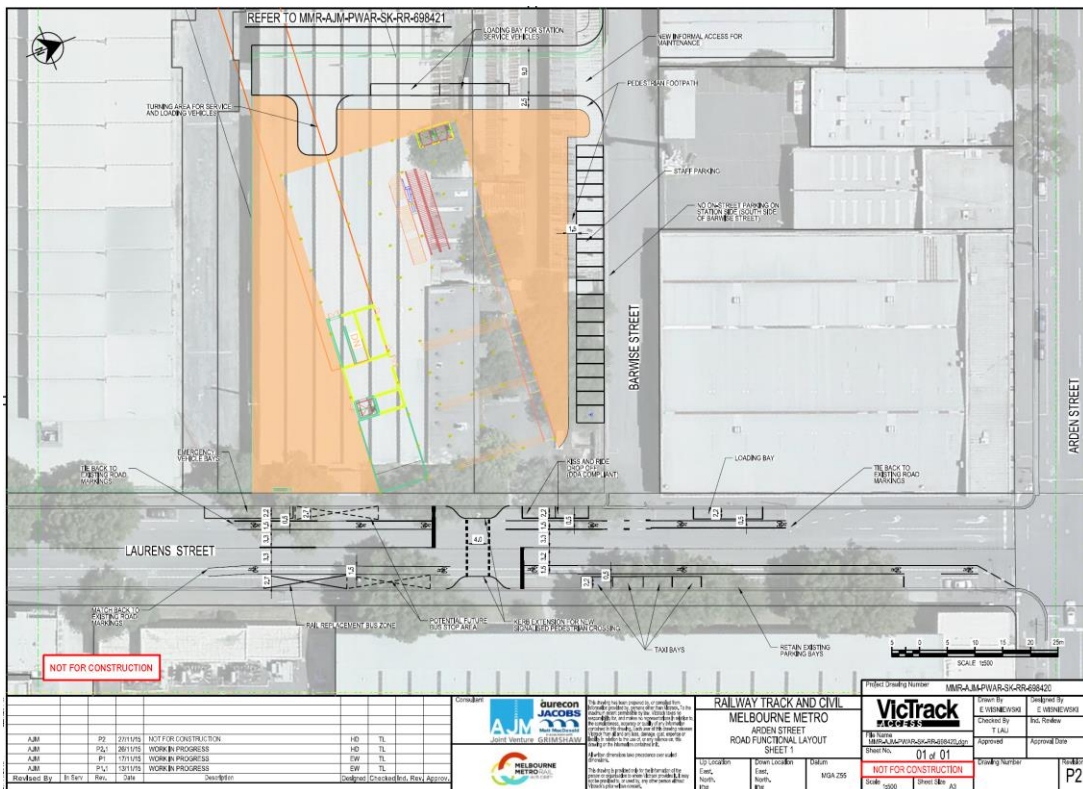


Figure 6.3 indicates the provision of pedestrian operated signals outside the station together with the provision of a single trafficable lane in each direction and independent bus lanes, parking

lanes and associated bus stops. On my review of the plan the proposed pedestrian operated traffic signals outside the station are located approximately 70metres south of Arden Street⁸.

The EES indicates that the station on activation will cater for around 880 passenger entries and exits during the AM 2-hour peak and 800 entry / exits during the PM 2-hour peak, respectively⁹.

Section 4.4.3 of Appendix D, the origins of these passenger entry estimates specifically, states:

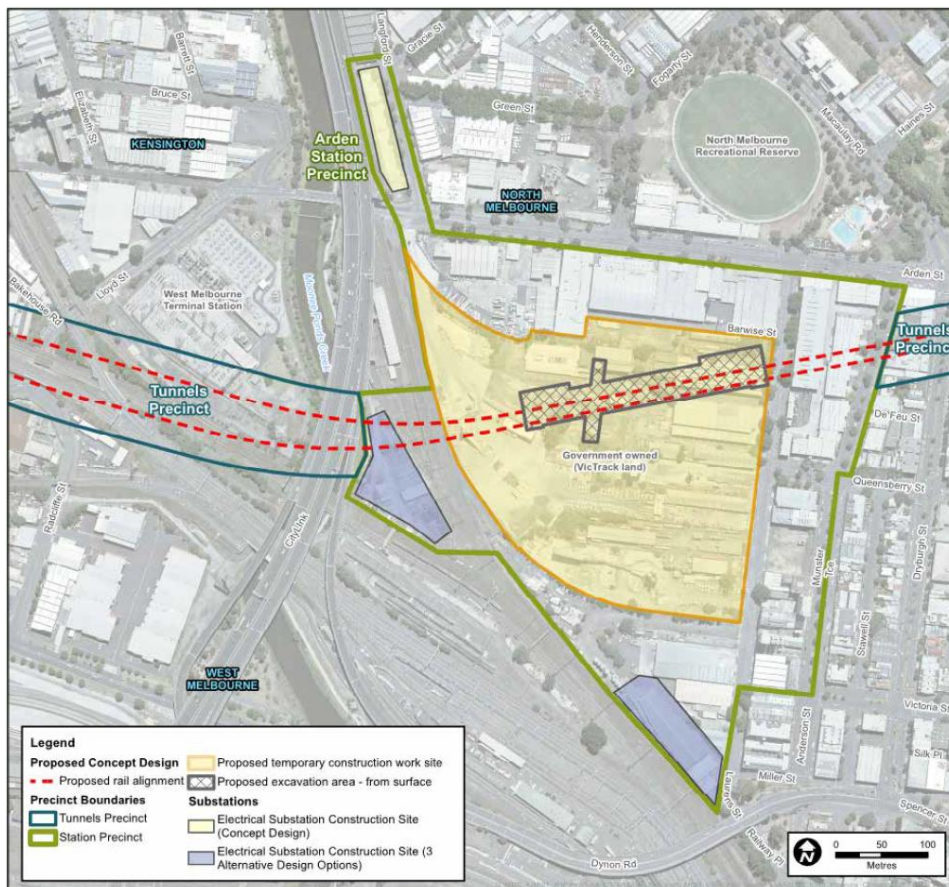
*“Modelled station pedestrian entries and exits for Arden Station for the busiest two-hours in the AM and PM in 2031 are shown in Table 4-7. Initial land use forecasts for redevelopment at Arden have resulted in relatively low passenger volumes using the station. **These numbers are likely to increase substantially if development assumptions increase** (bold my emphasis).”*

In support of observations made earlier in this statement, this commentary reinforces concern over the land use assumptions relied upon in the Strategic Model (VITM) which appears to be absent of forecast population and employment changes for Arden Macaulay under the 2031 Arden Station legacy assessment.

6.3 Construction Strategy

High level construction plans set out an outline of the site area extents being relied upon during construction to deliver Arden Station. These extents are provided at Figure 6.4.

Figure 6.4: Construction Area Extents – Arden Station



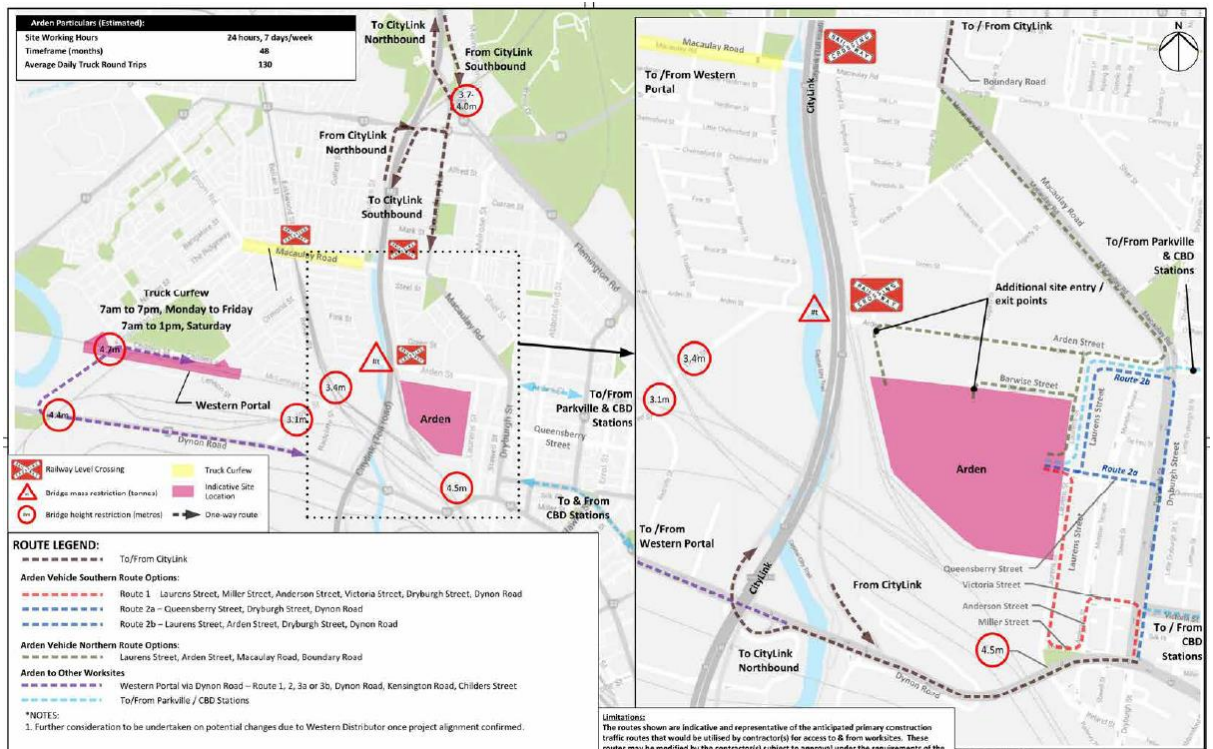
⁸ Measured from stop line to stop line on Laurens Street.

⁹ Table 4-7, Arden Station – 2031 Melbourne Metro weekday passenger entries and exits.

Figure 6.4 sets out the proposed temporary construction work site in yellow, the excavation area in grey and the Station Precinct in light green.

A range of access routes are currently proposed to/from the Arden Precinct as outlined below and shown in Figure 6.5.

Figure 6.5: Proposed Construction Traffic Routes



A review of these routes raises some concern over the intention for traffic exiting Citylink onto Racecourse Road turning right and then right again from Racecourse Road into Boundary Road. Field observations indicate height limitations on Racecourse Road beneath the Citylink overpass (3.7m to 4.0m max) and an all-day (permanent) right turn ban from Racecourse Road into Boundary Road. These restrictions require a review of the nominated route options noting that heavy vehicle traffic exiting Citylink onto Racecourse Road which are affected by the height limitations are encouraged to utilise Stubbs Street and Macaulay Road. Observations confirming use of this route indicate that larger vehicles turning into Stubbs Street do so by straddling the central westbound lane. In the event that this route is pursued for access, the requirement for this type of activity in association with the level of additional heavy vehicle activity associated with spoil removal and equipment delivery should be added to the current risk assessment.

Finally, it is evident that the EES material contains a meaningful absence of detail around existing conditions network performance, existing parking conditions (other than in Laurens Street) and the likely requirement to manage (potentially) significant traffic and parking activities associated with the construction of Arden Station in an area planned to undergo significant transition and growth over the next decade and beyond¹⁰.

¹⁰ Until such time as it is determined how the general construction workforce is provided transport access (individual car based versus shuttle service) to the site it is unclear what level of impact will be generated during construction.

6.4 Construction Activity – Traffic & Parking Estimate

Section 6.1 of this report sets out the level of truck activity likely to be generated through spoil removal and equipment delivery. Separate to this activity and in the absence of any specific detail around the management of Melbourne Metro workforce stationed at the Arden Precinct, it is estimated using characteristics established at Section 4 of this report that the demands set out in Table 6.1 will be generated.

Table 6.1: Melbourne Metro Workforce Generation Estimate - Arden Station Precinct

Category	Predicted Workforce	Estimated Rate of Demand	Estimated Demand
Car Parking	421 persons	0.64 cars per worker	270 car spaces
Traffic Generation		3 vte/driving worker	810 vte/day

Table 6.1 indicates an unconstrained parking demand of 270 car parking spaces and around 810 vehicle trip ends per day on a typical day of construction. In the event that the workforce is segregated into shifts (most likely three), the peak level of demand (for parking) is estimated to be less than the total estimate but noting that periodic overlaps will occur at shift change.

Irrespective of the precise level of demand, it is evident from this assessment that the proposed construction works at the Arden Precinct are significant and will need to be carefully considered given:

1. There is no commitment in the EES that any worker car parking will be provided in the construction area.
2. Long term parking areas (85% of supply) within the public on-street resource is saturated at present and relied upon heavily by existing businesses and operations currently in the area.
3. Any traffic activity (spoil / delivery trucks and / or worker traffic) generated during either of the respective AM and PM road network peak hours will add activity to a transport network which is currently returning poor levels of service for users.

Recommendations in response to these issues for the Panel's consideration are set out in Section 7 of this Evidence Report.

7. Findings & Recommendations

7.1 Preamble

Based on the research and investigations performed under this study, I provide a range of findings and recommendations for the Panel's consideration as they relate to matters of a traffic engineering and transport planning nature. These findings and recommendations consider the construction and post implementation phase of the project separately and are set out in Sections 7.2 and 7.3 below for consideration.

7.2 Construction Phase

7.2.1 Construction Traffic Routes & Accessibility

Section 6.3 of this report sets out the various routes proposed to be relied upon during construction for heavy vehicle activity associated with spoil removal and equipment delivery. It is evident that one of these routes (the Citylink-Racecourse Road-Boundary Road) will need to be reviewed and altered to reflect existing height and turning movement controls.

There is a prima facie case to suggest that the most logical alternate route comprises Stubbs Street and Macaulay Road.

The implications of any change should be reviewed as part of then updated EES Transport Impact Assessment Report (TIAR).

Other than this broad level route review, any Transport Management Plan (TMP) prepared for the Arden Construction project should have specific regard for the potential for construction and construction worker traffic relying on local streets as a bypass access route between precinct arterial roads to avoid any operational issues associated with specific site access requirements. Those which appear susceptible to this type of usage, which could potentially and adversely affect Citywide, north of Arden Street include:

1. Fogarty Street
2. Gracie Street
3. Langford Street.

To ensure these streets are specifically considered, I would recommend that the CMP inclusions set out at Section 8.6.6 of the EES TIAR have specific regard for these local street linkages. This consideration would relate to their usage by non-local traffic wishing to bypass congested nodes on the network around Arden Station.

7.2.2 Existing Traffic Activity Patterns Requiring Consideration

Traffic data provided at Section 5 of this report indicates a range of existing traffic behaviours which involve the use of Laurens Street as a bypass route around the Arden Street / Macaulay Road / Dryburgh Road intersection. These patterns are likely to be interrupted by construction activity associated with the delivery of Arden Station¹¹.

¹¹ The extent of impact will be unclear until a determination is made on how worker parking associated with the construction of the MMRP will be managed.

Based on the extent of bypass activity occurring and the proximity of this activity to the busiest construction precinct amongst all of those forming the overall MMRP, I am satisfied on this issue alone that there is sufficient evidence requiring a more detailed evaluation of performance of key intersections around Laurens Street before the MMRP project proceeds. This evaluation would include the use of software more capable than VITM (a link based modelling tool) to explore nodal network capacity and may require a commitment of contributory road works to ensure transport activities in the area are appropriately managed.

7.2.3 Consideration of Land Use Uplift & Appropriate Design Year

As evidenced in Section 3 of this report, a significant amount of strategic work has been completed and recently adopted which anticipates considerable increases in employment and population density in the Arden-Macaulay Precinct. These estimates include the Arden Central precinct immediately around Arden Station and contemplate year on year growth between now and 2051.

The transitional nature of the Arden Macaulay Precinct and the timeframe required to deliver the project and activate the station (2026) indicates substantial change is likely to occur in land use patterns over the estimated construction duration (circa 8yrs).

These changed patterns based on technical work completed in support of those strategic aspirations indicate (for Amendment C190), independent of the station delivery, material increases in transport activity within the precinct.

Given this forecast material change, I am satisfied that a more appropriate evaluation of network performance during construction for the Arden Precinct would be a 2026 (pre-station operation) design year, inclusive of land use changes estimated for Arden Macaulay in association with the Amendment.

This network performance evaluation should involve a 2026 Strategic Model (VITM) run or at least an interpolation of 2021 and 2031 Strategic model scenarios but with an allowance and recognition of forecast population and employment changes envisaged under the Arden Macaulay Amendment.

These outcomes should in my opinion be utilised to inform a more detailed quantitative assessment of localised impacts around Arden Station which include allowances for both construction vehicle and general workforce transport activities. The latter, until confirmed otherwise, should consider the highest estimate of traffic activity on the network i.e. reliance on private motor vehicle travel to and from the site and surrounds and consider practical outcomes around shift timing and how nominated shifts correlate with transport network peak and inter peak periods.

7.2.4 Design Year Methodology

The EES sets out its methodology on review the need to review the impact of construction outcomes by comparing a 2021 base and 2021 construction case strategic model outcomes and determines that the limited change in link volumes within the Arden Precinct between scenarios is reason enough to avoid any detailed review of network performance.

The EES goes on to note that this absence of any material change in link volumes combined with a limited level of construction activity (up to 360 trucks per day) does not warrant a more detailed review.

On this issue and in the event that the general workforce traffic is expected to rely on private motor vehicle travel to and from the construction site (traffic activity of up to 1 170 vte per day) or any nearby site capable to accommodate a meaningful number of vehicles, a more detailed review is required. I would recommend this review relied upon inputs from a 2026 strategic model assessment (with land use growth) and (in the least) supplemented, by a desktop evaluation of marginal traffic demands associated with general workforce travel. This review must rely on the use of analytical software more capable than VITM which will review nodal capacity outcomes. This work would subsequently inform an appropriately prepared TMP.

7.2.5 Managing Parking

Estimates set out in Section 6.4 of this report indicate that an unmanaged general construction workforce is likely to generate a demand for up to 270 car parking spaces during the course of a typical construction day.

As evidenced in surveys completed by my office, there is a distinct lack of available long term car parking in the area.

On this issue, the EES lacks any real detail around how parking will be managed in association with construction activity. In the event that no specific arrangements are made off-street or through a shuttle service, then alternate changes which (say) comprise of permit only parking for construction staff will have the potential for significant impacts on existing business (including Citywide) in the area which have a material reliance on the resource for their day-to-day operation.

Given these observations, I would recommend the EES make a stronger commitment to managing parking demands, preferably nominating a commitment to a shuttle service with parking provided for construction staff outside the Arden Precinct.

7.2.6 Need for Consultation

It is evident from research compiled in preparing this report (Section 4) that Citywide are a significant generator of traffic and transport activity within the Arden Macaulay Precinct. Indeed, estimates indicate they generate around 250,000 vehicle trips annually.

As a business it relies heavily on the local road network located around its various depots and as an extension of that, the arterial roads of Arden Street and Macaulay Road. Their day-to-day operations are heavily reliant on a network operating with a high degree of consistency. This consistency allows them to plan and map their various activities in an appropriate manner around this network predictability.

On this, the construction of Arden Station, if managed poorly, has significant potential to adversely affect existing network reliability.

Accordingly, given their significance and critical mass as it relates to transport activity I recommend that Citywide is:

1. Afforded an opportunity to comment on developing TMPs for the project including the various and multiple construction phases.
2. Specifically advised (in writing) of transitioning between one construction phase and next to help manage Citywide's day-to-day operations.
3. Be provided and maintain an ability to communicate with an appropriate representative of the construction management team associated with the MMRP to discuss any unforeseen issues (traffic safety and traffic capacity) which need to be addressed throughout construction.

7.3 Post Implementation

7.3.1 Network Performance

The EES at Section 3.4 of Appendix D reports no material change in network performance at a strategic level for the 2031 design year. I set out some commentary earlier on in this report around the accuracy of the strategic modelling outputs relied upon to inform this view. In particular, I raise concern regarding the population and employment forecasts estimated by 2031 for the Arden Macaulay Precinct.

Subject to validating the robustness of the land use inputs, strategic outputs can be confirmed. These settled outputs should then be relied upon to inform any views on the post implementation or legacy outcomes associated with the project.

On the post implementation outputs, I have reproduced the legacy layout for Laurens Street at Section 6.2 of this report. This layout reveals the inclusion of a set of pedestrian operated traffic signals outside the Railway Station entrance. The proximity of the facility to the signalised intersection of Laurens Street and Arden Street raises some concern around their interactivity especially during the AM peak period and considering the high inbound flow from Arden Street. In my experience, it would appear that there would be significant potential for traffic currently entering Laurens Street and that projected (assuming land use uplift in the area) to be impeded and have a flow on effect on traffic exiting Laurens Street and east-west traffic on Arden Street both from a traffic capacity and traffic safety viewpoint.

The interactivity of outcomes associated with is infrastructure requires, in my opinion a review using a network based micro-simulation assessment to avoid operational issues and consider, if required the relocation of the proposed pedestrian operated signals further south on Laurens Street.

7.3.2 Managing Parking

Post implementation or legacy outcomes associated with car parking in the area are of concern given the uncontrolled nature or absence of time based parking restrictions. If these conditions were to remain, significant potential would exist for the generation of commuter based car parking. That is, parking associated with commuters interested in using the Station facility to avoid fee based parking within or around the Melbourne CBD.

Accordingly, before Melbourne Metro activates, it is important that an area wide precinct car parking study is completed to ensure that the public on-street parking resource is appropriately managed. This study should involve input from all effected business' and residents in the area to avoid a difficult transition to legacy outcomes.

This requirement should be specifically included in an updated EES TIAR.

8. Summary of Opinion & Other Statements

8.1 Summary of Opinion

Based on the evaluation and discussions set out in this review, I am satisfied that the Transport Impact Assessment Report prepared in support of the Melbourne Metro Rail project is materially deficient in a range of areas and will require further substantive analysis and additions before it is appropriate for adoption. Indeed, I am satisfied that the circumstances surrounding Arden Station, as they relate to:

1. the level of detail available on managing construction and worker traffic associated with the MMRP
2. the lack of appreciation around the likely operational impact of introducing a set of pedestrian operated traffic signals on Lauren Street under legacy outcomes
3. identified traffic patterns and network operational issues
4. the nature of parking in the area including both the very high level of demand and absence of time restrictions
5. the changing nature of land use in the Arden Macaulay area and in particular the growth expected in population and employment,

demand a more significant quantitative assessment than the one prepared to date. The components of that assessment and the form that it should take are set out in Section 7 of this statement

8.2 Other Statements

- i No opinion provided in this evidence is provisional.
- ii No questions or statements outside of my expertise have been addressed in this evidence.
- iii This evidence is not incomplete or inaccurate.

Declaration

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

(Signature) _____

John Kiriakidis
Director

12/8/16

Appendix A

John Kiriakidis – Curriculum Vitae



John Kiriakidis

Director

GTA consultants

transportation planning, design and delivery

John has served as a consultant in the field of traffic and transport planning since 1994 for a broad cross-section of clients across the Australasian private and public business sector. John has particular expertise in the field of land use planning and design with an emphasis on the preparation of traffic and transport impact evaluations, integrated transport plans, parking assessments, intersection and car park design, sub-division layout and road safety reviews.

John manages a large team of traffic and transport planners in GTA's Melbourne office and services a significant client base which delivers land use projects covering the full cross-section of the commercial development sector, including:

- Transport planning
- Road & intersection layout design
- Car park design & assessment
- Transport impacts
- Strategic and micro modelling

Office

Melbourne

Qualifications

BE(Hons)(Civ&Comp), Monash University

Memberships and Affiliations

Institute of Engineers Australia (Civil College)

Victorian Planning & Environmental Law Association (VPELA)

Australian Institute of Traffic Planning & Management (AITPM)

Industry Roles

Moorabbin Airport Planning Committees

Project Experience

Transport Planning

- Meridian Business Park
- Moorabbin Airport
- Edgewater Maribyrnong
- Merrifield at Kalkallo
- Tooronga Village Re-development, Glen Iris
- Epping North East Structure Plan (450ha)
- Various Planning Panels

Transport Impact

- Logis Business Park, Dandenong
- Alliance Business Park, Epping
- Westfield Southland
- Eureka Tower
- Freshwater Place
- Westfield Doncaster

Road & Intersection Design

- Merrifield Industrial Sub-Division
- Craigieburn Train Maintenance Facility
- Goodyear Redevelopment, Thomastown

Car Park Design & Assessment

- Bunnings Store Locations across Australia
- Masters Store locations across Australia
- RACV Torquay Golf Club Redevelopment

Professional Background

1997 – Present: GTA Consultants

John is proficient in the application of sustainable transport planning principles and initiatives to land use planning projects. These principles encompass all motorised and non-motorised transport modes and extend to include advice on infrastructure requirements necessary to support the full spectrum of travel modes. John is experienced in the delivery of all key design facets of traffic and transport planning elements including road networks, intersections, individual roadways, cross-sections and road safety. He is also experienced in the delivery of projects using prominent micro-simulation network analytical software including Q-Paramics, Vissim and SIDRA. John is regularly involved in the delivery of parking policy guidelines on the management and delivery of car parking for both the public and private sector. This experience includes the use of parking guidance and paid parking infrastructure systems. John's project expertise is extensive and includes major regional shopping centre developments, large scale residential developments including high rise, high density development and low density residential subdivisions.

1995 – 1997: Grogan Richards, Traffic Engineer

As a Traffic Engineer for Grogan Richards, John assisted in the preparation of impact assessments for a range of land use developments throughout Melbourne and Victoria and was also involved in access and parking assessments and design and the preparation and implementation of traffic and parking surveys.

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