Melbourne Metro Rail Project

Business Impact Assessment

Melbourne Metro Rail Authority

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SGS Economics & Planning

Independent insight.

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GLOSSARY AND ABBREVIATIONS

Term	Definition	Abbreviation
Agglomeration	The term agglomeration is used in urban economics to describe the benefits which flow to firms from locating in areas which have a higher density of economic activity.	-
Central Business District		CBD
Census of Land Use and Employment	A census of all businesses in the City of Melbourne conducted every two years by the municipality.	CLUE
Effective Job Density	An index of the relative concentration of employment, derived from data on the density and accessibility of employment across a metropolitan region.	EJD
Gross Domestic Product	The monetary value of all goods and services produced within a country over a specified time period.	GDP
Gross Value Added	The measure of the value of goods and services produced in an area measured by subtracting the cost of inputs from the value of the goods and services produced.	GVA
Higher Education Contribution Scheme	Higher Education Contribution Scheme for tertiary education.	HECS
Labour productivity	Measures the amount of goods and services produced by one hour of labour. It is used as a measurement of economic growth.	-
Multiplier effect	When there is an injection of new demand there is likely to be a multiplier effect. The multiplier effect refers to the increase in final income arising from any new injection of spending.	-
Small Area Land Use Projection	Projections of a range of attributes including dwellings, population, jobs, and school and tertiary enrolments at a fine grain geography (travel zones). There are currently 6,092 travel zones across Victoria with 3.305 in Metropolitan Melbourne. They are primarily developed as an input into the Victorian Integrated Transport Model (VITM).	SALUP
Statistical Local Area	An Australian Standard Geographical Classification used by the Australian Bureau of Statistics. They equate to local government areas or part thereof.	SLA
Victorian Integrated Transport Model	The Department of Transport's strategic transport model	VITM

EXECUTIVE SUMMARY

The Melbourne Metro Rail Project (Melbourne Metro) comprises two nine-kilometre long rail tunnels from Kensington to South Yarra, travelling underneath Swanston Street in the CBD, connecting the Sunbury and Cranbourne/Pakenham lines. Once completed, the project would generate a range of benefits for Melbourne via improved transport outcomes, increased urban development and improved productivity.

This Business Impact Assessment was undertaken to understand potential impacts of the Melbourne Metro on business activity.

While a rail project the scale of Melbourne Metro has not been undertaken in Melbourne since the City Loop, there have been many recent large construction projects which can be used to help understand the potential business impacts from the Melbourne Metro. These projects have generated disruptions in many of the precincts which Melbourne Metro would impact on. For example, the Victoria Comprehensive Cancer Centre on Grattan Street in Parkville, the Myer Emporium development in the heart of Melbourne's retail precinct, Southern Cross Station redevelopment, RMIT Swanston Academic Building, the Swanston Street redevelopment, various tram rerouting and Fitzroy Gardens Stormwater Harvesting System have been considered. These examples have helped to understand the potential risk of business impacts from Melbourne Metro and migration measures which could be put into place. However, the challenge in assessing Melbourne Metro is the length of the construction works which are longer than projects mentioned above.

Business Context

Melbourne Metro would enable an in increase train services on a number of lines thus improving connectivity across the metropolitan rail network. This would benefit businesses across metropolitan Melbourne. However, during the construction phase a range of adverse impacts on businesses in and around the key construction sites are anticipated, including property acquisition, access restrictions, and noise, dust and vibration emissions.

Methodology

The key elements of the impact assessment included:

- A review of business impact assessments of other significant rail and road projects, to understand appropriate approaches
- Identification of the existing conditions and establishment of precinct boundaries
- Risk and business impact assessment.

The impact assessment concluded with estimates of the impact of the project's potential impacts on businesses within the identified precincts in terms of Gross Value Added (GVA). Businesses purchase a range of inputs from suppliers, add value to them and on-sell goods and services to customers. Value added can be used to describe the total of profits and wages for a particular area or particular industry. If a business is faced with reduced (increased) demand from its customers, then gross value added would fall (rise) and hence profits and wages would fall (rise). The same is true if the business is faced with higher inputs cost which cannot be passed to customers as higher prices.

Literature Review

A series of business impact assessments of other significant rail and road projects were reviewed (such as Cross River Rail Project in Brisbane, East West Link – Eastern Section in Melbourne, East Link in Melbourne) to identify potential approaches to assessing business impacts for comparable projects.

The impact of previous construction projects (including the Swanston Street redevelopment, Myer Emporium development, RMIT Swanston Academic Building, Southern Cross Station, Regional Rail Link, Victoria Comprehensive Cancer Centre and Fitzroy Gardens Stormwater Harvesting System) were considered in understanding their impact on surrounding businesses.

Existing Conditions

A combination of Australian Bureau of Statistics (ABS) data, City of Melbourne Census of Land Use and Employment data and a land use audit conducted for the project were used to understand the existing conditions along the project corridor. This information was complemented with ABS data on:

- The average number of employees per business for industries located within each proposed precinct
- The average number of hours worked per employee
- Estimates of labour productivity i.e. gross value added per hour worked).

This data was used to estimate the current economic activity within each proposed precinct by:

- Identifying the number and industry of businesses located within each building
- Identifying the number and industry of employees within each building
- Estimates of Gross Value Add per hour worked by industry
- Calculating the Gross Value Add generated in each precinct based on the number of hours worked.

Site visits were conducted during August 2015. The purpose of the site visits was to cross-check and to supplement the Census of Land Use and Employment data provided and the information contained in the land use audit conducted by the AJM JV Land Use and Planning Team. The site visits focused on each of the proposed station locations with particular emphasis on the proposed Arden Station precinct (opportunity for development uplift) and Eastern Portal precinct where there was no Census of Land Use and Employment data available.
While the number of properties where businesses are being acquired, temporarily occupied or displaced is clear from the Concept Design, the premise number of business impacted is more challenging to estimate. This due to factors such as sub leasing arrangements, vacancies, redevelopment of premises etc. To estimate the number of businesses, land use audit, City of Melbourne CLUE data and site visits were used.

This produced a base line for economic activity (as measured by Gross Value Add) without the Melbourne Metro.

Risk and Impact Assessment

The following steps were taken to estimate the potential impacts of the Melbourne Metro on economic activity within each proposed precinct during the construction phase:

- Consulting with businesses, business associations and local government to help understand the scope and scale of impact
- Eliminating businesses proposed to be acquired and calculating the reduction in activity within each precinct
- Eliminating residential buildings including apartments[1] proposed to be acquired and calculating the reduction in activity within each precinct from reduced retail spend
- Estimating the impact on foot-traffic for each street within each precinct and the associated change in business activity

[1] In instances where apartments are proposed to be acquired, SGS assumed an average number of persons per property.

- Calculating any specific amenity impacts (for example, vibration noise and dust) on the remaining businesses based on other specialist studies.

Risk-Based Approach

The risk-based approach is integral to the Environment Effects Statement (EES). Risk is a function of the likelihood of an adverse event occurring and the consequence of the event. Impact relates to the outcome of an action in relation to values of a resource or sensitivity of a receptor. The impact assessment is informed by a risk assessment so that the level of action relates to the likelihood of an adverse impact occurring. Benefits are considered in impact assessment but not in risk assessment. It is in this context that the business impacts of the Melbourne Metro have been assessed. The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts - Extent of ongoing impacts on businesses through property acquisition - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

For assessment purposes, the proposed project area was divided into distinct precincts as outlined below. The precincts have been defined based on the location of project components and required construction works and their potential impacts on local areas so that businesses potentially significantly impacted by the project are included within the precinct boundaries.

The precincts are:

- Precinct 1: Tunnels (outside other precincts)
- Precinct 2: Western Portal (South Kensington)
- Precinct 3: Arden Station (including substations)
- Precinct 4: Parkville Station
- Precinct 5: CBD North Station
- Precinct 6: CBD South Station
- Precinct 7: Domain Station
- Precinct 8: Eastern Portal (South Yarra)
- Precinct 9: Western Turnback (West Footscray).

The estimated potential impacts of the construction phase are summarised in Table 1.

To provide a transparent understanding of the type of potential impacts from the project, acquisition and non-acquisition impacts (reduced trade linked to access issues, amenity and increased business cost) impacts were separately assessed.

TABLE 1. SUMMARY OF ESTIMATED CONSTRUCTION IMPACTS

Precincts	Gross Value Added ($m)			
	Acquisition / temporary occupation impact	Non-acquisition impact	Total Impact	Redistributed[2]
Tunnels	-0.3	-12.4	-12.7	No
Western Portal	-23.0	0	-23.0	No
Arden Station	-17.0	-0.4	-17.4	Yes, largely dispersed across north and west Melbourne
Parkville Station	-4.7	-12.4	-17.1	Some, largely from food and beverage, retail and accommodation, redistributed in the local area. Impacts to specialist research facilities unlikely to be redistributed.
CBD North Station	-60.0	-11.4	-71.4	Majority redistributed in the CBD.
CBD South Station	-24.0	-11.2	-35.2	Majority redistributed in the CBD.
Domain Station	0	-0.8	-0.8	Yes, in the local area
Eastern Portal	0	-1.1	-1.1	Yes, in the local area
Western Turnback (West Footscray)	0	0	0	N/A

The potential business impact estimates are annual figures for the peak level of impact. The peak level of impact was chosen as the assessment method is designed to be conservative and not underestimate the business impacts.

Estimates of the potential business impacts for non-market (where there is no direct financial transaction) business should be treated with caution, as it is very difficult to assess such business impacts, for example, for hospitals, universities and research facilities.

There are a range of potential impacts, particularly during the construction phase of the project that would need to be managed. These include:

- Disruption to business activity from the acquisition of commercial land and businesses
- Potential secondary effects of business acquisitions (changes in commercial rents and/or activity, and possible agglomeration benefits for the remaining businesses)
- Construction activity disrupting business operations, particularly for hospitals and research institutions with specialist and highly sensitive equipment
- Construction activity adversely affecting the surrounding amenity disrupting business activity, particularly for retail, food and beverage and accommodation businesses
- Construction activity impacting access to businesses thereby disrupting their trade, particularly impacting businesses that rely on passing trade
- Acquisition of dwellings which would reduce the immediate local demand for local goods and services in the local area
- Impacts on major events
- Cumulative impacts from construction of the Western Distributor
- Cumulative impacts from construction of other major construction projects.

Potential impacts for each proposed precinct are summarised in Table 3.

[2] Only declines in Gross Value Added from non-acquisition impacts can be redistributed. Where there is zero or positive impact from non-acquisition impacts there will be no redistribution.

Benefits and Opportunities

The potential impacts to business during the operational phase of the Melbourne Metro were also assessed, particularly the urban development response to the resulting improved transport accessibility. The installation of the new underground stations would be expected to result in a number of land use impacts along the corridor in the Central Subregion (as defined in the Victorian Government's metropolitan planning strategy, *Plan Melbourne*). Broadly speaking, the new stations would help improve connectivity between key precincts such as Arden, Domain and Parkville and the Hoddle Grid[3]. Agglomeration economies would increase the productivity of businesses located in this corridor.

Effectively the Melbourne Metro would help expand the footprint of Melbourne's CBD and allow more firms to access the benefits of a CBD location. The boundary of CBD is not a fixed line: it has expanded over time in response to structural economic changes, infrastructure investments, rezoning and evolving property market dynamics. As the size of the CBD grows it has the capacity to house more jobs and residents increases. Past projects such as the City Loop, Southbank and Docklands have all helped to expand the footprint of Melbourne's CBD, and plans for West Melbourne, Arden-Macaulay and City North/Parkville all envisage intensification of urban development supported by improved transport infrastructure.

In estimating the employment impacts of the Melbourne Metro, it was assumed that any uplift in employment would result from attracting future employment growth away from similar employment areas within the Central Subregion. In effect, this means that total employment within the Central Subregion is kept constant under both the 'with' and 'without Melbourne Metro' scenarios. Constant future employment growth is a feature of the transport model which is the base for the business case, and this provides a conservatively low measure of benefits of the project. On the other hand, population and dwellings are expected to be both redistributed from other inner districts and drawn from regions outside of the Central Subregion. Table 2 summarises the estimated value of operational impacts of the Melbourne Metro in 2041.

TABLE 2. SUMMARY ESTIMATED OPERATIONAL IMPACTS 2041

Precincts	Gross Value Added ($m)
Tunnels	0
Western Portal	0
Arden Station	1.8
Parkville Station	3.0
CBD North Station	1.5
CBD South Station	1.8
Domain Station	2.0
Eastern Portal	0
Western Turnback	0
Total Precincts	10.1
Rest of Melbourne	~800

[3] Covers the area from Flinders Street to Queen Victoria Market and from Spencer Street to Spring Street and is served by the existing City Loop station.

Environmental Performance Requirements

The following Environmental Performance Requirements are recommended:

Environmental Performance Requirements
Reduce the disruption to businesses from direct acquisition or temporary occupation of land, and work with business and land owners to endeavour to reach agreement on the terms for possession of the land.
Prepare a business disruption plan to manage impacts to non-acquired businesses and to engage with business, property owners and the community throughout construction. The plan shall include: – Timely information on key project milestones – Changes to traffic conditions and duration of impact – A project construction schedule developed in coordination with transport authorities and local councils and in consultation with businesses to minimise cumulative impacts of this and other projects – Plans for notifying customers of proposed changes to business operations, including the setting of suitable timeframes for notification prior to commencement of works – Measures to ensure access to businesses is maintained for customers, delivery and waste removal unless there has been prior engagement with affected businesses (including mutually agreed mitigation measures as required). This could include the installation of directional and business signage to assist customers – Process for registering and management of complaints from affected businesses.
Following consultation with potentially affected businesses and prior to main works or shaft construction commencing, prepare management plans to minimise dust, noise and vibration impacts during construction, as per AQ1, NV1 and NV4.
Maintain vehicular and pedestrian access to hospital emergency departments at all times during construction and to other key health and medical facilities where practicable.
Develop a stop work contingency plan for Class 1 emergencies (as defined in the Emergency Management Act 2013) in consultation with medical institutions in the Parkville precinct in the event that Melbourne Metro construction works are required to cease.
Also refer to the following Environmental Performance Requirements for 'Business': T1, SC2, LU1, AQ1, NV1.

TABLE 3. SUMMARY OF IMPACTS BY PRECINCT

	Tunnels	Western Portal	Arden	Parkville	CBD North	CBD South	Domain	Eastern Portal	Western Turnback
Disruption to business activity from the acquisition of commercial land and businesses	✖	✖	✖	✖	✖	✖			
Potential secondary effects of business acquisitions (changes in commercial rents and/or activity, and possible agglomeration benefits for the remaining businesses)		✖	✖	✖	✖	✖			
Construction activity disrupting business operations (e.g. medical equipment sensitive to vibration)				✖	✖				
Construction activity adversely affecting the surrounding amenity disrupting business activity, particularly for retail and food and beverage businesses	✖	✖	✖	✖	✖	✖	✖	✖	
Construction activity impacting access to businesses thereby disrupting their trade, particularly impacting businesses that rely on passing trade.	✖	✖	✖	✖	✖	✖	✖	✖	
Acquisition of dwellings which would reduce the immediate local demand for local goods and services in the local area.		✖						✖	
Impact on major events						✖	✖		
Cumulative impacts from construction of the Western Distributor	✖	✖	✖						
Cumulative impacts from construction of other major construction projects				✖					
Benefits									
Construction workers generating demand	✖	✖	✖	✖	✖	✖	✖	✖	✖
Productivity benefits (agglomeration economies)			✖	✖	✖	✖	✖		

1 INTRODUCTION

This report provides an assessment of the anticipated potential business impacts of the Melbourne Metro Rail Project (Melbourne Metro). Related issues such as social and community and land use and planning, are covered in other impact assessments, as follows:

- Technical Appendix D *Land Use and Planning*
- Technical Appendix E *Social and Community*

1.1 Project Description

The Melbourne Metro comprises two nine-kilometre long rail tunnels from South Kensington to South Yarra, travelling underneath Swanston Street in the CBD, connecting the Sunbury and Cranbourne/Pakenham lines to form the new Sunshine-Dandenong Line. Figure 1 shows the project corridor.

The infrastructure proposed to be constructed as part of Melbourne Metro broadly comprises:

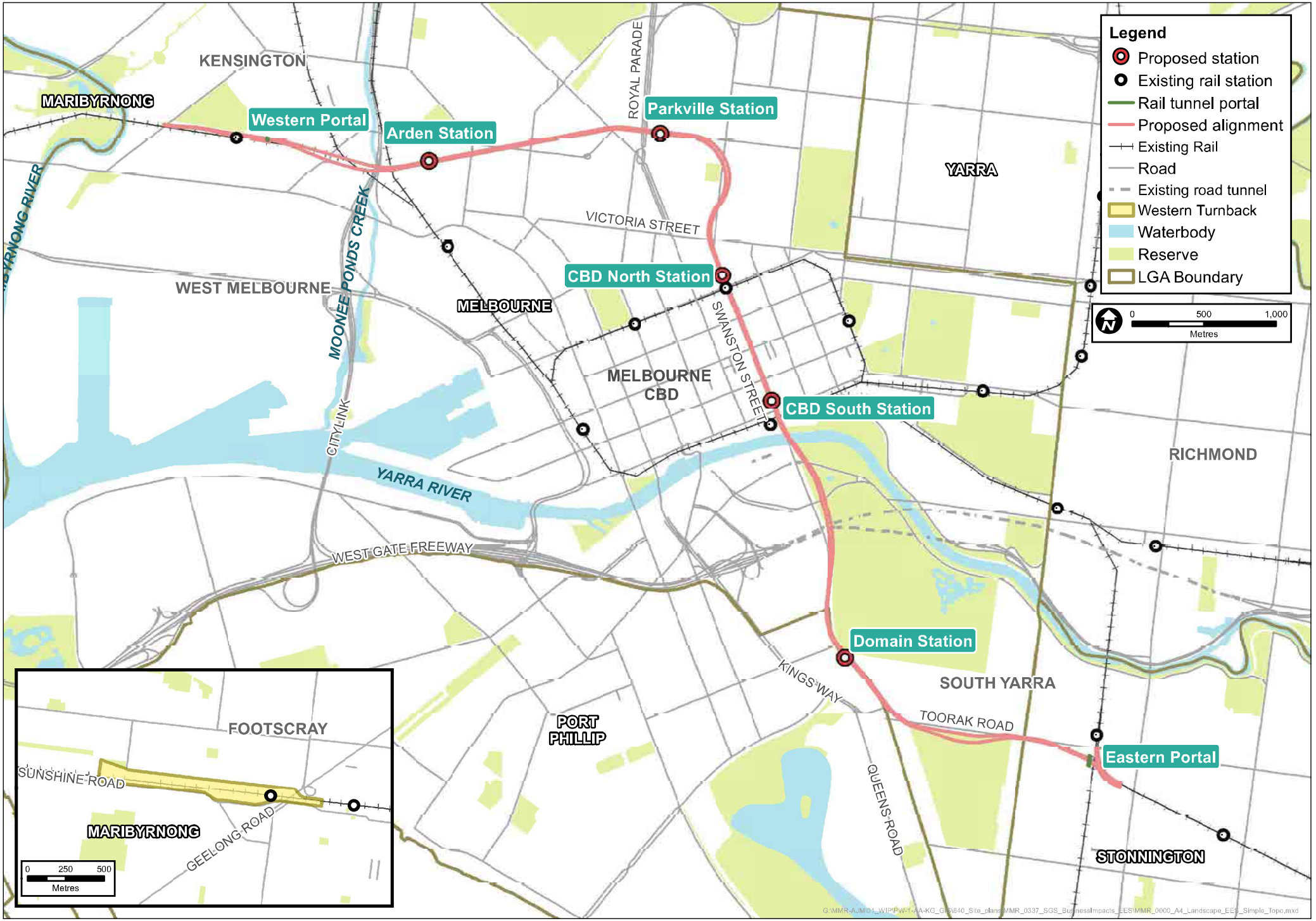
- Twin nine-kilometre rail tunnels from Kensington to South Yarra connecting the Sunbury and Cranbourne/ Pakenham railway lines (with the tunnels to be used by electric trains)
- Rail tunnel portals (entrances) at South Kensington and South Yarra
- New underground stations at Arden, Parkville, CBD North, CBD South and Domain with longer platforms to accommodate longer High Capacity Metro Trains (HCMTs). The stations at CBD North and CBD South would feature direct interchange with the existing Melbourne Central and Flinders Street Stations respectively
- Train/tram interchange at Domain station.

Proposed construction methods would involve bored and mined tunnels, cut and cover construction of station boxes at Arden, Parkville and Domain and portals, and cavern construction at CBD North and South. The project would require planning, environmental and land tenure related approvals to proceed.

1.1 Purpose of this Report

This report assesses the anticipated potential impacts to businesses associated with the proposed construction and operation of the Melbourne Metro and identifies performance requirements necessary to address these impacts.

FIGURE 1. MAP OF THE MELBOURNE METRO RAIL PROJECT ALIGNMENT AND FIVE UNDERGROUND STATIONS



1.2 Project Precincts

For assessment purposes, the proposed project boundary was divided into precincts as outlined below. The precincts were defined based on the location of project components and required construction works, the potential impacts on local areas and the character of surrounding communities. Temporary road closures and significant construction traffic routes were also considered when defining the precincts.

The proposed precincts are:

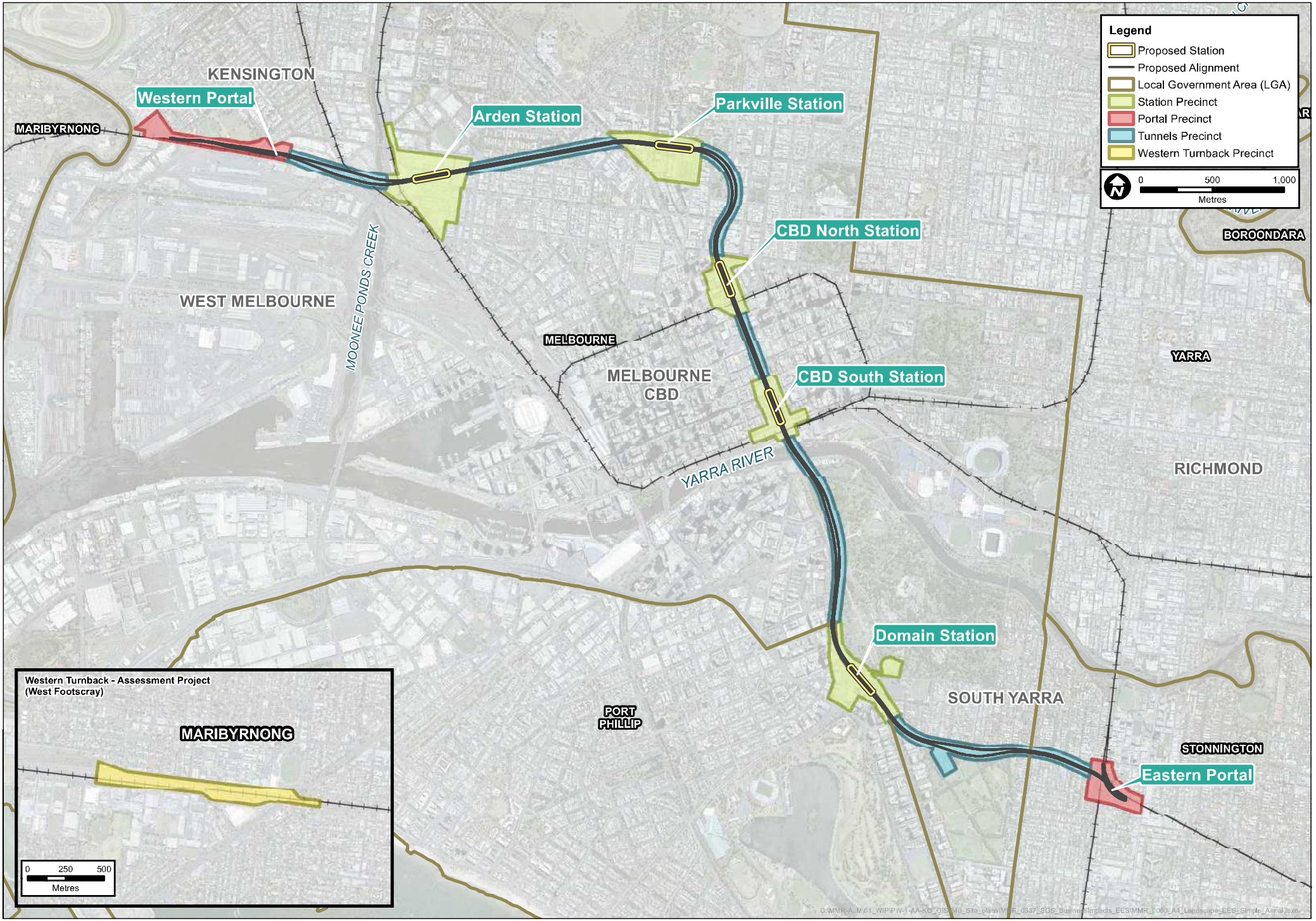
- Precinct 1: Tunnels (outside other precincts)
- Precinct 2: Western Portal (South Kensington)
- Precinct 3: Arden Station
- Precinct 4: Parkville Station
- Precinct 5: CBD North Station
- Precinct 6: CBD South Station
- Precinct 7: Domain Station
- Precinct 8: Eastern Portal (South Yarra)
- Precinct 9: Western Turnback (West Footscray).

The nine precincts are shown in Figure 2.

1.3 Study Area

As the project would improve connectivity across the metropolitan rail network and increase train services on a number of lines, the Melbourne Metro is anticipated to benefit businesses across metropolitan Melbourne. The greatest benefits and impacts, however, are anticipated in the vicinity of surface construction works. The proposed tunnels alignment and precincts with surface works are therefore the focus of this impact assessment (see Figure 2).

FIGURE 2. MAP OF THE MELBOURNE METRO PRECINCTS



2 SCOPING REQUIREMENTS

2.1 EES Objectives

The draft evaluation objectives shown in (Table 4 below) are relevant to business and identify the desired outcomes in the context of potential project impacts. The draft evaluation objectives provide a framework to guide an integrated assessment of environment effects of the project, in accordance with the *Ministerial guidelines for assessment of Environment Effects under the Environment Effects Act 1978*.

TABLE 4. SOCIAL, COMMUNITY, LAND USE AND BUSINESS EVALUATION OBJECTIVE

Draft EES evaluation objective	Key legislation
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	*Environment Protection Act 1970* and State Environment Protection Policies and guidelines. *Planning and Environment Act 1987* *Transport Integration Act 2010*

2.2 EES Scoping Requirements

Table 5 provides the extract from the Scoping Requirements, issued by the Minister for Planning that are relevant to the business impact assessment.

TABLE 5. SCOPING REQUIREMENTS RELEVANT TO BUSINESS IMPACT ASSESSMENT

Aspect	Relevant responses
Key issues	- Potential for changed accessibility for residents, including to community services or facilities resulting from construction works or from operation of the project - Potential acquisitions of private property for project purposes - Potential effects on individual businesses and commercial precincts resulting from changed access for customers, deliveries or other business elements - Maintaining amenity in the CBD and other key areas for residents, businesses and visitors during construction.
Priorities for characterising the existing environment	- Describe the land which may be required permanently or temporarily for the delivery of the project, including its current uses and sensitivities - Describe in broad terms land uses in the area neighbouring the alignment, and particularly in the neighbourhood of stations, portals and construction works compounds - Describe the individual businesses or business precincts (as may be appropriate) which could be affected temporarily or permanently by

Aspect	Relevant responses
	project activities. - Describe the relevant infrastructure, networks and other elements that provide for connectivity within and between communities, to the extent that such features may be disrupted or additionally loaded due to project works or activities.
Design and mitigation measures	- Describe processes to be applied to gain access to land required for the project, including the approach to compensation and managing adverse effects for landowners - Describe the approach to provide alternative access to properties for which customary access may be disrupted by the project - Describe the approach to be taken to enable or assist businesses which may be adversely affected by the project, whether temporarily or permanently, to maintain business continuity.
Assessment of likely effects	- Analyse the effects of temporary and longer-term land use changes which would result from the implementation of the project - Analyse the residual (mitigated) effects on communities, community cohesion and business operations, categorising the severity of residual effects and identifying further measures which may be taken to manage residual effects - Analyse indirect effects which might result from the project (e.g. on catchments for community facilities or other land uses) and propose measures for addressing such effects, including both temporary and permanent effects - Analyse effects on businesses and business precincts, especially with respect to management of routine operations and business viability.
Approach to manage performance	- Describe the principles to be adopted for any monitoring program to be implemented to track actual social and business effects relative to predicted effects, including proposed trigger levels for initiating contingency actions which might be necessary - Describe the principles to be adopted for contingency actions which could be implemented if foreseeable but uncertain adverse effects are detected.

3 LEGISLATION, POLICY AND GUIDELINES

Table 6 summarises the relevant primary legislation that applies to the project as well as the implications, required approvals and interdependencies and information requirements associated with obtaining approvals.

Broadly speaking, the project needs to align with the objectives outlined in legislation and contribute to the realisation of state and local policy objectives. The key implications for the project from relevant legislation and policy are:

- Any land use changes would require a planning scheme amendment
- Legislation requires the decision making process to:
- Be integrated, particularly transport and land use planning
- Consider equity, not just economic efficiency
- Balance the present and future interests of all Victorians
- Involve stakeholder engagement and community participation
- Transport planning should facilitate increased productivity, economic prosperity, access to social and economic opportunities, and the efficient movement of goods to markets
- The expansion of the city centre to Arden and City North relies on the Melbourne Metro, with proposed stations at Arden and Parkville, to realise the worker, population and student projections.

Reviewing the Concept Design against the legislation, policy and guidelines of relevance to business impacts suggests the project would deliver on the key strategies/policies for a transport project at both state and municipal level, while recognising there would be some adverse impacts on businesses during construction.

TABLE 6. PRIMARY LEGISLATION AND ASSOCIATED INFORMATION

Legislation/ policy	Key policies/ strategies	Implications for this project
Commonwealth		
NA		
State		
Transport Integration Act 2010	Division 1 – Vision statement Division 2 – Transport system objectives Division 3 – Decision making principles	The project is to contribute to delivering a transport system by which: - persons can access social and economic opportunities - enables efficient and effective access to places of employment, markets and services - is integrated with land use and facilitates access to social and economic opportunities - Investigations are undertaken through a process that includes integrated decision making, considerations of equity, and stakeholder engagement and community participation.
Planning and Environment Act 1987	Part 1, Clause 4 – Objectives	Any project that requires a planning scheme amendment needs to be assessed against the objectives set out in the Act. The objectives are set out in Clause 4(1) and include: - Clause 4(1)(a) providing for fair, orderly, economic and sustainable use, and development of land - Clause 4(1)(g) objective balancing the present and future interests of all Victorians.
Land Acquisition and Compensation Act 1986	Part 2 – Acquisition of Interests in Land Part 3 – Compensation for Acquisition Part 4 – Measure of Compensation Part 5 – Compensation Where No Interest in Land Is Acquired Part 6 – Payment of Compensation and Interest on Compensation Part 10 – Determination of Disputes	Where land is being acquired or temporarily occupied for the project, the Act sets out the process to be followed including how notice must be given, minimum timeframes for notice, how valuation is determined and how disputes are resolved.

Legislation/ policy	Key policies/ strategies	Implications for this project
State Planning Policy Framework (part of all Victorian planning schemes)	Clause 11 – Settlement Clause 17 – Economic Development Clause 18 – Transport	The project should demonstrate alignment with the objectives of Clauses 11, 17 and 18. Clause 11 states that planning is to respond to the needs of existing and future communities through provision of zoned and serviced land for, amongst other things, employment, commercial and community facilities and infrastructure. Sub clause 11.04-1 addresses the delivery of jobs and investment in Metropolitan Melbourne. The objective is to create a city structure that drives productivity, supports investment through certainty and creates more jobs. This includes strengthening the competitiveness of Melbourne's employment land and planning for an expanded central city which would become Australia's largest commercial and residential centre by 2040. Sub clause 17.01-1 relates to business. The objective is to meet the communities' needs for retail, entertainment, office and other commercial services and provide net community benefit in relation to accessibility, efficient infrastructure use and the aggregation and sustainability of commercial facilities. Clause 18 states that planning should ensure an integrated and sustainable transport system that provides access to social and economic opportunities, facilitates economic prosperity, contributes to environmental sustainability, coordinates reliable movements of people and goods, and is safe. Sub clause 18.01-1 relates to the integration of land use and transport planning with an objective to create a safe and sustainable transport system by integrating land use and transport.
Plan Melbourne	Key policy outcomes include: - Delivering jobs and investment - Housing choice and affordability - A more connected Melbourne	The project should align with the aims of the following policy outcomes: - create a city structure that drives productivity, supports investment through certainty and creates more jobs. - provide a diversity of housing in defined locations that cater for different households and are close to jobs and services. - provide an integrated transport system connecting people to jobs and services, and goods to market.
Local		
Local Planning Policy Framework (part of the Melbourne's Planning Scheme)	Municipal Strategic Statement	The Municipal Strategic Statement sets out the vision, objectives and strategies for managing land use change and development. It provides the basis for the application of local policies, zones, overlays and other provisions in the Planning Scheme. Of particular relevance are Clauses 21.04 Settlement, 21.08 Economic Development, 21.09 Transport, 21.10 Infrastructure, 21.12 The Hoddle Grid, 21.13 Urban Renewal, 21.14

Legislation/ policy	Key policies/ strategies	Implications for this project
		Proposed Urban Renewal and 21.16 Other Areas. Clause 21.04 Settlement sets out the Growth Area Framework with a focus on promoting areas of growth and protecting areas of stability. The five types of areas are: 1. the Hoddle Grid which is to retain central city functions; 2. urban renewal areas of Southbank, Docklands and Fishermans Bend; 3. Proposed urban renewal areas of City North, Arden-Macaulay and E-Gate; 4. Potential urban renewal areas of Dynon, Racecourse Rail corridor and Jolimont rail corridor; 5. Stable residential areas. Clause 21.08 Economic Development in the objectives: - Retail: to support the Central City and local retail uses - Business: to reinforce the City's role as Victoria's principal centre for commerce - Business: to encourage employment opportunities for local residents - Industry: to improve the long-term viability and security of the city's industries - Maritime precincts: to promote water transport for recreational and commuter use as part of a larger integrated transport system and consistent with maintaining safe and efficient Port operation. - Knowledge precincts: to support education, medical and research activities Clause 21.09 Transport states that an efficient transport system is vital for the economic, cultural and social operation of the City. Relevant objectives include: - Integrated transport: to integrate transport and urban growth - Integrated transport: to maximise access to the city - Public transport: to maximise the use of public transport through efficient urban structure. Clause 21.10 Infrastructure includes the following objectives for education facilities, health facilities and cultural/arts and entertainment facilities: - Education facilities: to support education facilities - Education facilities: to ensure a high standard of 'soft infrastructure' to support innovative activity and education - Health facilities: to support medical and research activities - Health facilities: to encourage research and development uses throughout the city - Cultural facilities: To provide a diverse range of leisure, arts, cultural and entertainment facilities - Cultural facilities: enhance the city as Victoria's pre-eminent cultural and entertainment location. Clauses 21.12, 21.13, 21.14, 21.16 provide more detail of strategies at a local level.

Legislation/ policy	Key policies/ strategies	Implications for this project
City West Plan (2003) (including West Melbourne Structure Plan)	Chapter 4 – Role and Directions for City West	The project should contribute to the achievement of the City West Plan. 4.1 Strategic role of City West City West presently performs – or has the potential to perform – five land use and economic roles including: - International and national transport and logistics - Business and industry including accommodating activity in transport and logistics, manufacturing, capital city support roles and is part of the inner urban business services and information economy. Future specialisation may include innovation, technology and business services - Tourism and recreation based on natural attractions, built attractions and events and festivals - Connections for people. The area is an important hub for people movement including road, rail, tram, water and bike/walking with significant nodes at Southern Cross and North Melbourne stations. 4.2 Aim The aim for City North is "to support and enhance the development of City West over the next 20 years as an internationally and nationally significant transport and logistics node and business and tourism address, while providing mixed housing and recreation opportunities".
Draft Arden Macaulay Structure Plan (2012)[4]	Key directions	The project should contribute to the achievement of the Arden Macaulay Structure Plan. The precinct is considered a key opportunity for renewal in Melbourne. There are five key directions identified for the urban renewal of Arden-Macaulay which include as relevant: - Direction 1 – Develop Arden Central as a new extension of Melbourne's Central City. Arden Central is to accommodate 14,000 jobs, 4,000 residents and 12,000 students[5] in a mixed used precinct. - Direction 2 – Develop three new local centres within a mixed use neighbourhood. These are to be located at Macaulay, Flemington Bridge and North Melbourne Stations and would accommodate retail, commercial, community service and other facilities. - Direction 3 – expand transport connectivity to and within Arden-Macaulay including a new metro railway station and transport interchange at Arden Central.

[4] This Structure Plan is being updated by the City of Melbourne and the Metropolitan Planning Authority alongside this Project.
[5] These are total numbers by the end of the 30 year life of the Structure Plan.

Legislation/ policy	Key policies/ strategies	Implications for this project
City North Structure Plan (2012)	Key directions	The project should contribute to the achievement of the City North Structure Plan. There are five key directions identified for City North including: - Direction 1 – integrate the knowledge cluster into the Central City. - This would be visible through the integration and prosperity of knowledge-based enterprises in a dense, vibrant urban culture; the campuses of Melbourne and RMIT Universities would have expanded and merged into a vibrant precinct; and two new Melbourne Metro rail stations would provide high speed connection to the wider metropolitan knowledge network, particularly to the Alfred medical research and education precinct. - Direction 2 – boost transport infrastructure. - Two new Melbourne Metro rail stations at either end of the precinct are central to this mobility as is integration with new and upgraded tram and bus services and pedestrian connections at public transport interchanges. - Direction 3 – Create a compact, liveable precinct that builds on the existing urban heritage qualities. - Preserving, protecting and activating the unique urban form provides a quieter setting and opportunities for smaller, boutique retail and commercial uses. There is also opportunity for organisations associated with design, information technology and bio-medicine to locate in the area.
Retail and Hospitality Strategy (2013)	Strategic objectives	The project should contribute to the achievement of the Retail and Hospitality Strategy. The Strategy is built around four strategic priorities which include: - Business development and innovation – working with the retail and hospitality sectors to encourage collaboration, promote innovation and improve local and state government business support systems. - Positioning and activation – working with the retail and hospitality sector to find new ways to attract people to the city, enhance the customer experience and position the city as a compelling destination for new international and local investment. - Business mix – work to ensure that the city's retail and hospitality offer remains diverse, authentic and continually evolving.
Port Phillip Local Planning Policy Framework (part of the City of Port Phillip's	Municipal Strategic Statement.	The project should support the vision for Port Phillip set out in the Municipal Strategic Statement which includes: - A city that promotes sustainable economic growth, high accessibility to goods and services, and prosperous conditions for all residents and businesses.

Legislation/ policy	Key policies/ strategies	Implications for this project
Planning Scheme)		- A city that manages traffic and transport in a way that maximises use of environmentally sustainable modes of travel. To achieve the vision, Clause 21.01-2 outlines Council's Strategic Approach including: - Contribute to a more sustainable environment through increasing housing and employment densities in locations closest to public transport. - Build on Port Phillip's competitive strengths to maximise job opportunities in a changing economy through: protecting the core industrial hub of Fishermans Bend and its association with the Port; maintaining the role of St Kilda Road as the city's premier commercial strip; facilitating the transition of key business clusters to capitalise on the proximity to the Central Activity District, and the emerging demand for advanced business services and knowledge based industries. - Provide for a broader land use mix within Port Phillip's highly accessible Major Activity Centres, which support economic viability, local access to goods and services, and the social and cultural role of centres. - Support a vibrant, well managed local tourism industry that co-exists harmoniously with local residents, businesses, traders and the natural environment.
City of Port Phillip Economic Development Strategy (2012)	Strategic Directions	The project should contribute to the achievement of the City of Port Phillip Economic Development Strategy. Six strategic directions have been identified which include: - Direction 3 – A first class tourism destination which balances visitation and amenity. - Direction 4 – Flourishing activity centres - Direction 5 – Strong economic clusters - Direction 6 – The creative city.
St Kilda Road North Precinct Plan - Draft (2013)	Strategic Directions	The project should contribute to the achievement of the St Kilda Road North Precinct Plan. Directions include: - Sustainable growth. The vision is 'St Kilda Road North Precinct would continue to accommodate demand for residential and commercial floor space in a sustainable and sensitive manner' - High quality public realm and linkages. The vision is 'high quality green public places that support convenient access to nearby parks, services and sustainable transport modes' - Sustainable transport priority. The vision is 'St Kilda Road North Precinct has convenient, safe and accessible sustainable modes of travel that provide residents, workers and visitors with the ability to

Legislation/ policy	Key policies/ strategies	Implications for this project
		live and travel car-free'.
Stonnington Local Planning Policy Framework (part of the Stonnington Planning Scheme)	Municipal Strategic Statement.	The project should support the MSS statement. Clause 21.03-2 states the strategic vision. For economic development this includes: - The city has a well-distributed network of vibrant activity centres providing a diversity of living, working, shopping and socialising opportunities at the heart of their respective neighbourhoods - There is a range and high standard of professional services and creative industries and increased opportunities are available for local service and office employment - The city's high quality and diverse tourist and cultural activities and experiences are celebrated, accessible and inclusive to all - Entertainment and hospitality uses are recognised for their contribution to the vitality and viability of the city; however, they do not dominate or adversely affect activity centres and the surrounding residential areas - The city retains the full spectrum of service industries integrated within selected mixed use precincts and designated industrial areas, with appropriate amenity and environmental controls. Economic development objectives include: - To make provision for increased local employment in a broader range of commercial activities - To support entertainment uses in activity centres that reflect the role and function of individual centres whilst minimising adverse amenity impacts - To promote Stonnington as a premier arts and cultural destination - To provide for a wide variety of specialist industrial and local service uses in the City while protecting the character and amenity of surrounding residential areas
City of Stonnington Economic Development Strategy (2012)	Strategic themes	The project should contribute to the achievement of the City of Stonnington Economic Development Strategy. There are four strategic themes which include: - Theme 2 – Thriving precincts. Council strategy is to maintain attractive and vibrant precincts which are embraced by residents and visitors and where businesses thrive. - Theme 3 – Destination marketing and development. The strategy is to continue to attract visitors to Stonnington, maximise the quality of the visitor experience and to grow visitor expenditure - Theme 4 – Business development for the creative city. The strategy is to attract and promote the growth and development of creative industries in the city.

Legislation/ policy	Key policies/ strategies	Implications for this project
Chapel reVision Structure Plan 2013-2031 (2014)	Chapter 7 – Planning Framework	The project should contribute to the achievement of the Chapel reVision Structure Plan. Objectives under 7.1 Land use and activity include: - To retain and enhance the Chapel Street area's role as a premier metropolitan and higher order shopping, entertainment, tourism, business, civic, community and cultural destination, with a strong local community role that continues to serve the needs of people living and working in the area. - To recognise the important entertainment and hospitality role of the Centre and to achieve a balance between the amenity considerations of daytime and night-time users, and the needs of residents and visitors, all of which contribute to the role of the Centre. - To recognise that the Centre is a metropolitan focal point for significant new inner city living and employment, and to provide a wide range of housing and employment choices including: higher density, affordable, community and mixed use housing; corporate, boutique and incubator offices; creative jobs focused on the new economy. - To provide greater opportunity for business and employment space throughout the Centre, to balance the influx of new housing, particularly work environments for the 'creative' sector of the economy.
Maribyrnong Local Planning Policy Framework (part of the Maribyrnong Planning Scheme)	Municipal Strategic Statement.	The project should support the MSS. Clause 21.08 identifies the Economic Development objectives for Maribyrnong. This includes: Retail - To ensure that retail premises are developed in appropriate locations - To ensure restricted retail premises are developed in appropriate locations. Office - To ensure that offices are developed in appropriate locations. Industry - To maintain core industrial precincts - To ensure high quality industrial development. Tourism - To support appropriate tourism development. Licensed premises and gaming

Legislation/ policy	Key policies/ strategies	Implications for this project
		- To minimise adverse social impacts from electronic gaming machines - To minimise adverse social impacts from licensed premises.
Maribyrnong Economic and Industrial Development Strategy (2011)	Chapter 1.2 – Economic Vision Chapter 4 – Core Economic Development Activities	The project should contribute to the achievement of the Maribyrnong Economic and Industrial Development Strategy. Chapter 1.2 sets the Vision which is '*The City of Maribyrnong is a leader in urban economic transition and renewal, embracing its traditional industrial past whilst delivering vibrant and successful urban places and meaningful employment*'. There are five objectives contained in Chapter 4 which are: - To undertake targeted and well-regulated land planning and development to aid in creating cohesion between land use and associated activities with the aim of retaining existing and attracting new business, as well as promoting population growth. This would provide planning certainty. - To support and assist the development, expansion and growth of existing local businesses to ensure existing employers can remain competitive. - Increase the attractiveness of the municipality for prospective businesses. - Building the skills and resources of community members, in order to enable them to contribute effectively to the economic development of their own area. - To advocate together with and on behalf of local businesses.

4 METHODOLOGY

The methodology to assess the potential impacts on businesses from the Melbourne Metro is outlined in this section. Previous impact assessments were reviewed to understand the best practice and the types of business which should be considered. A desktop assessment was undertaken to collect relevant data and background documents to understand the current land use patterns, industry structure and the level of economic activity.

Consultation with a range of businesses[6] across the different proposed precincts was undertaken to understand the nature of their operations and how the project could impact on them. By reviewing technical reports prepared by other specialists the likely impact on businesses in the different precincts was assessed. A conservative approach was taken so the potential impacts on business were not underestimated.

All this was undertaken within a risk, impact and mitigation framework.

4.1 Existing Conditions

Previous Investigations

A series of business impact assessments of other significant rail and road projects were reviewed to inform the impact assessment. These included:

- Cross River Rail Project (Rail) – QLD
- Bat Tunnel – Underground bus and train project (Rail)[7] – QLD
- East West Link – Eastern Section (Road) – Vic
- East Link (Road) – Vic
- NorthConnex (Road) – NSW.

The impacts identified in these studies are summarised in Table 7. These studies, in addition to the consultation performed, help inform the assessment of potential impacts of the Melbourne Metro. The 2012 assessment of the Agglomeration Benefits of the Melbourne Metro was also used as a resource for this business impact assessment (SGS Economics and Planning 2011). Unpublished research[8] feeding into the City of Melbourne Retail and Hospitality Strategy 2013-2017 was also drawn upon.

The impact of previous construction projects (including the Regional Rail Link, Swanston Street redevelopment, Myer Emporium development, RMIT Swanston Academic Building, Southern Cross Station, Victoria Comprehensive Cancer Centre and Fitzroy Gardens Stormwater Harvesting System) were considered in understanding their impact on surrounding businesses. Previous tram rerouting (Routes 30, Route 70, Route 86 and Route 48) were also considered.

[6] We also spoke to local government and business groups.

[7] Despite the similarities, both the Cross River Rail Project and the BaT Tunnel were included in the literature review as the business impact assessments were conducted by independent consultants and the projects involved a rail tunnel within a CBD.

[8] This research was in the form of interviews with hospitality and retail businesses within the City of Melbourne and workshops with the Restaurant & Catering Victoria, where key issues facing these business were discussed. Much of this was documented in reports prepared by SGS Economics and Planning for Tourism Victoria and the City of Melbourne.

TABLE 7. IDENTIFIED BUSINESS IMPACTS

Project phase	Business impacts	Cross-river rail	BaT tunnel	East West Link – eastern section	East Link	NorthConnex
Construction	Disruption to business activity due to noise, dust and vibration	Yes	Yes	Yes	Yes	Yes
	Disruption to business activity from changed local traffic flows and increased traffic congestion	Yes	Yes	Yes	Yes	Yes
	Disruption to business activity due to temporary occupation of business car parks	Yes	Yes	Yes	Yes	Yes
	Disruption to business activity due to changes in access for cyclists and pedestrians	Yes	Yes	Yes	Yes	Yes
	Disruption to business activity due to acquisition and change in access to public/park lands		Yes	Yes	Yes	Yes
	Demand for goods and services from construction workers		Yes	Yes	Yes	Yes
	Displacement of businesses from current premises, with associated job losses	Yes	Yes	Yes		
	Increase in business activity due to construction	Yes	Yes			Yes
	Cumulative impacts due to concurrent construction activities		Yes			Yes
	Reduction in public events that indirectly affect business activity	Yes				
Operational	Loss of 'passing-trade'		Yes	Yes	Yes	Yes
	Disruption to business activity due to changes in access, land use, business mix etc.		Yes	Yes	Yes	Yes
	Direct and indirect activity due to operation of infrastructure		Yes			Yes
	Cumulative and isolated productivity benefits from infrastructure		Yes			Yes

Sources: AECOM, NorthConnex Technical Working Paper: Business, 2014; Matters Moore Consulting Pty Ltd, Social and Business, East West Link – Eastern Section, 2012. BaT Project, EIS - Socio-Economic Assessment, 2014. Cross River Rail Project, EIS - Socio-Economic Assessment

Desktop Assessment

Land Users and Land Use

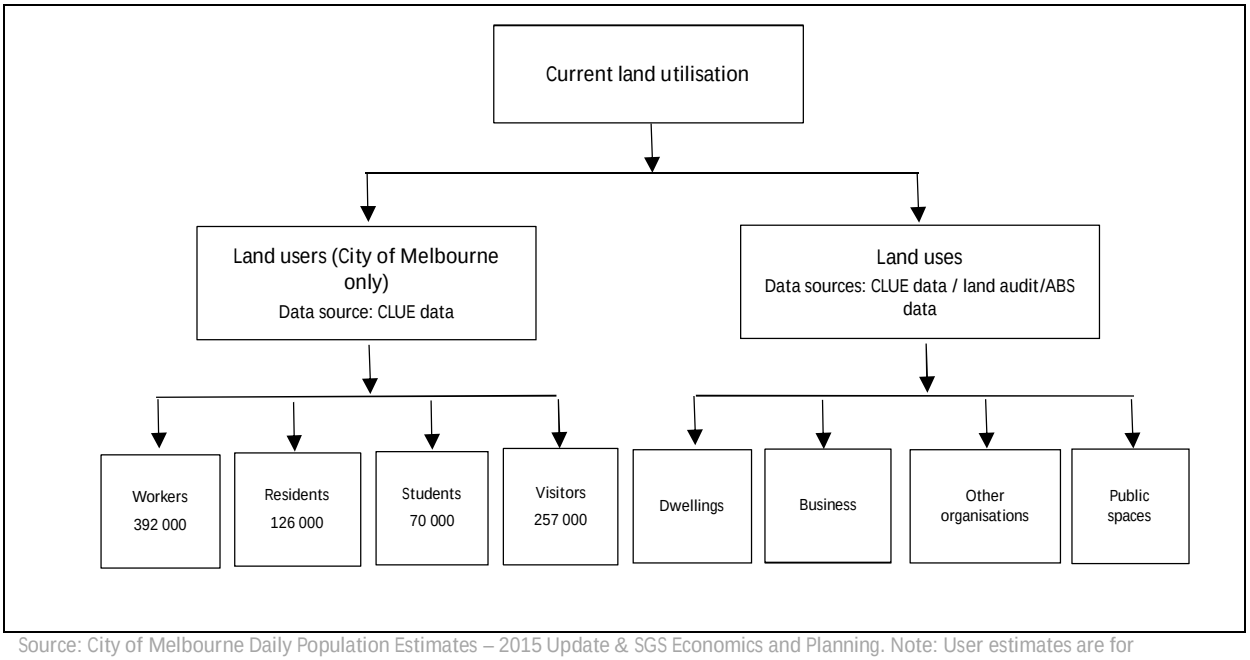
Figure 3 provides a schematic overview of the business and economic framework for analysing current utilisation across the study area. A combination of Australian Bureau of Statistics (ABS) data, the City of Melbourne's Census of Land Use Data and a land use audit conducted for the project used to understand the existing conditions along the project corridor.

For proposed project precincts in the Melbourne municipality, data on the number and type of users on a typical weekday in the city was sourced from the City of Melbourne. In addition, current land uses were reviewed using the Census of Land Use and Employment and an independent land use audit.

For proposed project precincts within the municipalities of Port Phillip and Stonnington, the land use audit conducted by the AJM JV Land Use and Planning Team was used to identify commercial buildings within these precincts and their use. For the western turnback, a desktop assessment using web based maps was used to identify commercial buildings and their use. This information was complemented with ABS data on:

- The average number of employees per business for industries located within the vicinity,
- The average number of hours worked per employee
- Estimates of labour productivity i.e. gross value added per hour worked.

FIGURE 3. LAND USERS AND LAND USE



Source: City of Melbourne Daily Population Estimates – 2015 Update & SGS Economics and Planning. Note: User estimates are for an average weekday during 2015. Residents include people under 15 years of age.

Measurement of Business and Economic Activity

The City of Melbourne produces Census of Land Use and Employment data for the municipality based on census of businesses. The data collected includes the number and industry of businesses and employees, as well as information regarding car spaces, public spaces and dwellings.

Census of Land Use and Employment data was obtained from the City of Melbourne collected by Census of Land Use and Employment blocks (varies in size, but in the CBD is generally equivalent to a city block) as well as by property, and followed the steps below to estimate the current economic activity within each precinct:

- Identify the number and industry of businesses located within each building
- Data was collected by street to account for possible alternative design in foot-traffic flow

- Identify the number and industry of employees within each building
- Obtain estimates of Gross Value Add per hour worked by industry for the relevant Statistical Local Area regions
- These estimates are based on SGS' small regional Gross Domestic Product accounts
- Calculate the Gross Value Add generated in each precinct based on the average number of hours worked per person
- These estimates are based official estimates from the ABS.[9]

In instances where a proposed precinct expanded beyond the City of Melbourne, site inspections and/or the land use audit conducted by the AJM JV were used to assess the commercial activity within a proposed precinct.

Site Investigations

A site visit was conducted during the week ending 7 August 2015. The purpose of the site visit was to supplement and cross-check the Census of Land Use and Employment data provided and the information contained in the independent land use audit conducted by the AJM JV Land Use and Planning Team.

4.2 Peer Review

This assessment has been independently peer reviewed by Ms Marianne Stoettrup of Matters More – Land Use and Economics. The peer reviewer reviewed and provided feedback on drafts of this report. The peer reviewer's methodology is set out in their report which in general terms it included a review of the assumptions, methodology, assessment criteria and scope applied in this report. It also addressed whether there were any additional matters which should be considered as part of the impact assessment in order to address the EES Scoping Requirements that are relevant to business impacts or management. The peer reviewer was also required to consider whether there are any gaps or matters where she disagreed with this assessment. The final peer review report is attached at Appendix A of this report, which sets out the peer reviewer's conclusions in relation to this report, and whether or not all of their recommendations were adopted

4.3 Risk and Impact Assessment

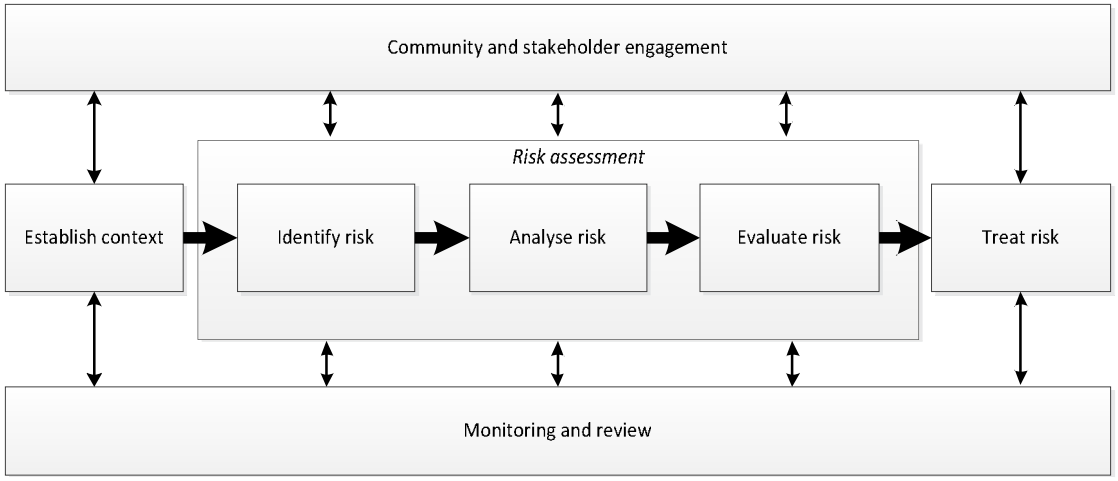
Overview

An Environmental Risk Assessment has been completed for the potential impacts of the Melbourne Metro. The risk-based approach is integral to the EES as required by Section 3.1 of the Scoping Requirements for the EES. Importantly, an environmental risk is different from an environmental impact. Risk is a function of the likelihood of an adverse event occurring and the consequence of the event. Impact relates to the outcome of an action in relation to values of a resource or sensitivity of a receptor. Benefits are considered in impact assessment but not in risk assessment. Impact assessment must be informed by risk assessment so that the level of action to manage an impact relates to the likelihood of an adverse impact occurring.

The overall risk assessment process adopted was based on AS/NZS ISO 31000:2009, as illustrated in Figure 4.

[9] ABS, 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, Table 11. Employed persons by Industry division of main job (ANZSIC) and Hours actually worked in all jobs, 2015

FIGURE 4. OVERVIEW OF AS/NZS ISO 31000-2009 RISK PROCESS



The following tasks were undertaken to determine the impact pathways and assess the risks:

- Setting of the context for the environmental risk assessment
- Development of consequence and likelihood frameworks and the risk assessment matrix
- Review of project description and identification of impact assessment pathways by specialists in each relevant discipline area
- Allocation of consequence and likelihood categories and determination of preliminary initial risks
- Workshops with specialist team members from different yet related discipline areas and focussing on very high, high and moderate initial risks to ensure a consistent approach to risk assessment and to identify possible interactions between discipline areas
- Follow-up liaison with specialist team members and consolidation of the risk register.

A more detailed description of each step in the risk assessment process is provided in Technical Appendix B *Environmental Risk Assessment Report*.

Context

The overall context for the risk assessment and a specific context for each specialist study is described in Technical Appendix B *Environmental Risk Assessment Report*. The context describes the setting for evaluation of risks arising from the Melbourne Metro. The specific context for the business impact assessment follows:

> *'The Melbourne Metro traverses an area containing one of the most significant concentrations of business activity in Australia including the central business district of Melbourne, the education and hospitals precinct at Parkville, the education precinct around RMIT University and the commercial precinct in St Kilda Road. Central Melbourne has evolved and expanded over the past 180 years with almost continuous development and intensification of uses. In total, there is close to 35,000 businesses located within the districts of the CBD, Carlton, North Melbourne, Parkville, South Yarra (East and West), Southbank, and Kensington. This represents just under 10 per cent of the total number of businesses located in Greater Melbourne. A high share of these businesses are large, high value-add, professional services. In terms of 'land users', close to one million people are currently forecast to use the City of Melbourne local government area on a typical weekday, with visitors and workers making up close to 50 per cent and 30 per cent of city users respectively.'*

The likelihood rating criteria used in the risk assessment by all specialists is shown in Table 8.

TABLE 8. LIKELIHOOD RATING CRITERIA

Level	Description
Rare	The event is very unlikely to occur but may occur in exceptional circumstances.
Unlikely	The event may occur under unusual circumstances but is not expected.
Possible	The event may occur once within a five-year timeframe.
Likely	The event is likely to occur several times within a five-year timeframe.
Almost Certain	The event will occur one or more times a year.

The consequence criteria framework used in the risk assessment is shown in Table 9. Each specialist has used this framework to develop criteria specifically for their assessment.

For the business impact assessment the framework is used to understand the risk, likelihood and consequence for the different precincts. Given that the impact of the project varies within the precincts and how that impact affects business varies depending on the type of business, a precinct approach has been used. The level of consequence is based on the total impact on the precinct business income10.

It should be noted, that firms' share of precinct business income would vary. Some small firms could make up a very small percentage of business income in the precinct, while a large firm could represent a very large percentage of business income.

Accounting for the size of impact for each firm and considering its share of precinct business income, is applied in the assessment of consequence levels for each precinct.

In very simple terms, at one extreme the project could directly cause all business to ceases operation (Severe), while at the other extreme there would be no impact on any business due to the project (Negligible). A consequence of Minor for a precinct could mean that all firms have a small reduction in income. Alternatively, a small number of firms (which represent a small percentage of precinct business income) has a severe reduction and all other firms remain unchanged would also result in a Minor consequence.

In addition to the consequence level for each precinct, it is also made clear if a particular firm or cluster of firms is impacted. For example, if a precinct is rated as Minor level consequence, but one business which represent a share percentage of the precinct's business income is likely to be severely impacted, that would be made clear in the text.

TABLE 9. CONSEQUENCE FRAMEWORK

Level	Qualitative description of biophysical / environmental consequence	Qualitative description of socio-economic consequence
Negligible	No detectable change in a local environmental setting.	No detectable impact on economic, cultural, recreational, aesthetic or social values.
Minor	Short-term, reversible changes, within natural variability range, in a local environmental setting.	Short-term, localised impact on economic, cultural, recreational, aesthetic or social values.
Moderate	Long-term but limited changes to local environmental setting that are able to be managed.	Significant and/or long-term change in quality of economic, cultural, recreational, aesthetic or social values in local setting. Limited impacts at regional level.

[10] Please refer to the Methodology section on how business income is calculated for the various precincts.

Level	Qualitative description of biophysical / environmental consequence	Qualitative description of socio-economic consequence
Major	Long-term, significant changes resulting in risks to human health and/or the environment beyond the local environmental setting.	Significant, long-term change in quality of economic, cultural, recreational, aesthetic or social values at local, regional and state levels. Limited impacts at national level.
Severe	Irreversible, significant changes resulting in widespread risks to human health and/or the environment at a regional scale or broader.	Significant, permanent impact on regional economy and/or irreversible changes to cultural, recreational, aesthetic or social values at regional, state and national levels.

Table 10 highlights some features of the criteria and the rationale for their inclusion. The consequence rating criteria used in the risk assessment specifically for the business impact assessment is shown in Table 11.

TABLE 10. RATIONALE FOR CONSEQUENCE CRITERIA

Feature of criteria	Rationale
'Net change'	Economic shocks / events can hinder some businesses and benefit others. Therefore it is important to capture the net change.
Inclusion of demand and supply criteria	Economic shocks / events can affect demand and/or supply in the economy? Changes in the supply capacity of the economy can be permanent and have significant consequences over time.
'Per cent of real annual business income within the precinct'	The potential impact of economic shocks or events should be assessed against current levels of activity within a given catchment area and account for inflation.
Numeric ranges used	The average profit margin for all businesses is 14.9 per cent. If the impact was to exceed this then, on average, half of all business would. If the impact was less than 5 per cent very few business would fail. If the impact was fail.

Source: SGS Economics and Planning

TABLE 11. CONSEQUENCE RATING CRITERIA

Level of consequence	Consequence criteria
Negligible	The *net change* in real annual business income in the precinct is in the range of 0-5 per cent. On average, that would result in only the most very marginal businesses in the precinct being unprofitable.
Minor	The *net change* in real annual business income in the precinct is in the range of5-10 per cent. On average, that would result in only the marginal businesses in the precinct being unprofitable.
Moderate	The *net change* in real annual business income in the precinct is in the range

Level of consequence	Consequence criteria
	of 10-15 per cent. On average, that would result in many businesses in the precinct being on the verge of being unprofitable.
Major	The *net change* in real annual business income in the precinct is in the range of 15-20 per cent. On average, that would likely result in most businesses being unprofitable.
Severe	The *net change* in real annual business income in the precinct is greater than 20 per cent. On average, that would likely result in all businesses being unprofitable.

The environmental risk assessment matrix used by all specialists to determine levels of risk from the likelihood and consequence ratings is shown in Table 12.

TABLE 12. RISK ASSESSMENT MATRIX

		Consequence ratings				
		Negligible	Minor	Moderate	Major	Severe
Likelihood rating	Rare	Very Low	Very Low	Low	Medium	Medium
	Unlikely	Very Low	Low	Low	Medium	High
	Possible	Low	Low	Medium	High	High
	Likely	Low	Medium	Medium	High	Very High
	Almost Certain	Low	Medium	High	Very High	Very High

Section 6 provides a summary of the business risks assessed as part of the EES.

4.4 Impact Assessment

This section outlines how the potential impacts to businesses from construction and operation of the Melbourne Metro was conceptualised and quantified. This section consists of the following sub sections:

- Understanding the interrelationship between business income and economic activity
- Measuring business income / economic activity
- Pedestrian flows
- Pedestrian perceptions of construction
- Defining acquisition and non-acquisition impacts
- Business consultation
- Increases in labour productivity during operational phase

Understanding the Interrelationship between Business Income and Economic Activity

Businesses purchase a range of inputs from suppliers, add value to them and then sell goods and services onto customers. This value add, generated by the business, flows to the owner of the business via profits and to workers via wages. Value added can be used to describe the total of profits and wages for a particular area or particular industry. The total value added for a nation is described as Gross

Domestic Product, while total value added for a state is described as Gross State Product (GSP). The term 'gross' is used as value added does not account for any depreciation (consumption of fixed capital) of business assets during the time period.

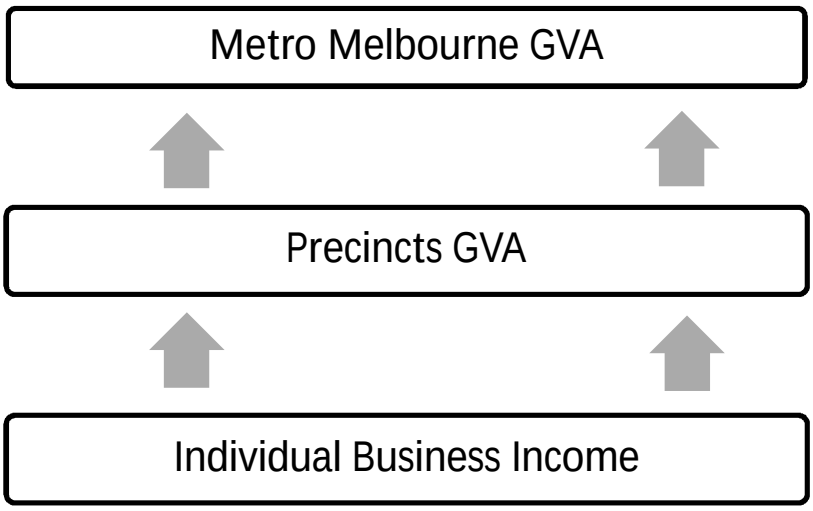
If a business is faced with reduced (increased) demand from its customers, then gross value added would fall (rise) and hence profits and wages would fall (rise). The same is true if the business is faced with higher inputs cost which cannot be passed onto customers as higher prices.

This report focuses on potential changes to total profits and wages for business in the proposed project boundary. The total of these profits and wages is reported as Gross Value Added. It is assumed that only businesses within the precinct boundaries would be adversely affected by the project. Figure 5 provides a conceptual overview of this.

Businesses include hospitals, child care centres and universities. These types of businesses purchase inputs and sell services and products to customers just like other business. However, in this type of business, the payment for goods and services is more complex than in, for example, a café. Income is transferred via government entities to the business rather than a direct payment from the customer, such as, Medicare bulk billed medical appointment. There is also the case where the government provides a subsidy to help fund the cost of the service. For example, a HECS payment only covers some of the costs of a university degree.

If these types of businesses are faced with increased cost or reduced demand, then there would be a reduction in the Gross Value Add for that industry/precinct.

FIGURE 5. IMPACT ASSESSMENT FRAMEWORK



Costs to transport operators of increased travel time to/from the precincts and within the precincts are considered by the business impacts assessment. It could be possible that a large increase in time could cause a worker to leave their job and hence impact on the business. However, none of the travel time increases were considered large enough to impact on workers behaviour. Increased travel times are covered by in the transport impact assessment.

Measurement of Business Income / Economic Activity

The following steps were taken to estimate the potential impacts of the Melbourne Metro on economic activity within each proposed precinct during construction and operation.

Construction Phase

Remove the businesses and residential buildings proposed to be acquired within the construction footprint and calculate the reduction in activity

- In instances where apartments were acquired, an average number of persons per property, and average retail spend within each precinct was assumed.
- Estimate the impact on foot-traffic for each street within each precinct, and the associated change in business activity
- Calculate any specific amenity impacts on the remaining businesses within each precinct based on other specialist studies.

Operational Phase

SGS's small area land use projections database was used to estimate the change in business activity and land use within each precinct during the operational phase. The following steps were taken:

- Identify the Victorian Integrated Transport Model[11] travel zones which overlay each precinct (see Figure 6)
- Identify the number and industry of employees located within each Victorian Integrated Transport Model travel zone
- Identify the forecast growth in the number of employees located within each Victorian Integrated Transport Model travel zone under the without project case and the with project case
- Apply these growth rates to estimates of the current number of employees based on Census of Land Use and Employment data
- Abstract estimates of Gross Value Add per hour worked by industry for the relevant Statistical Local Area
- These estimates are based on SGS' small regional Gross Domestic Product accounts
- Calculate the change in Gross Value Add generated in each station precinct based on the average number of hours worked per person
- Calculate agglomeration benefits.

Agglomeration Benefits

The section below provides an overview of the methodology used to estimate agglomeration benefits from the Melbourne Metro.

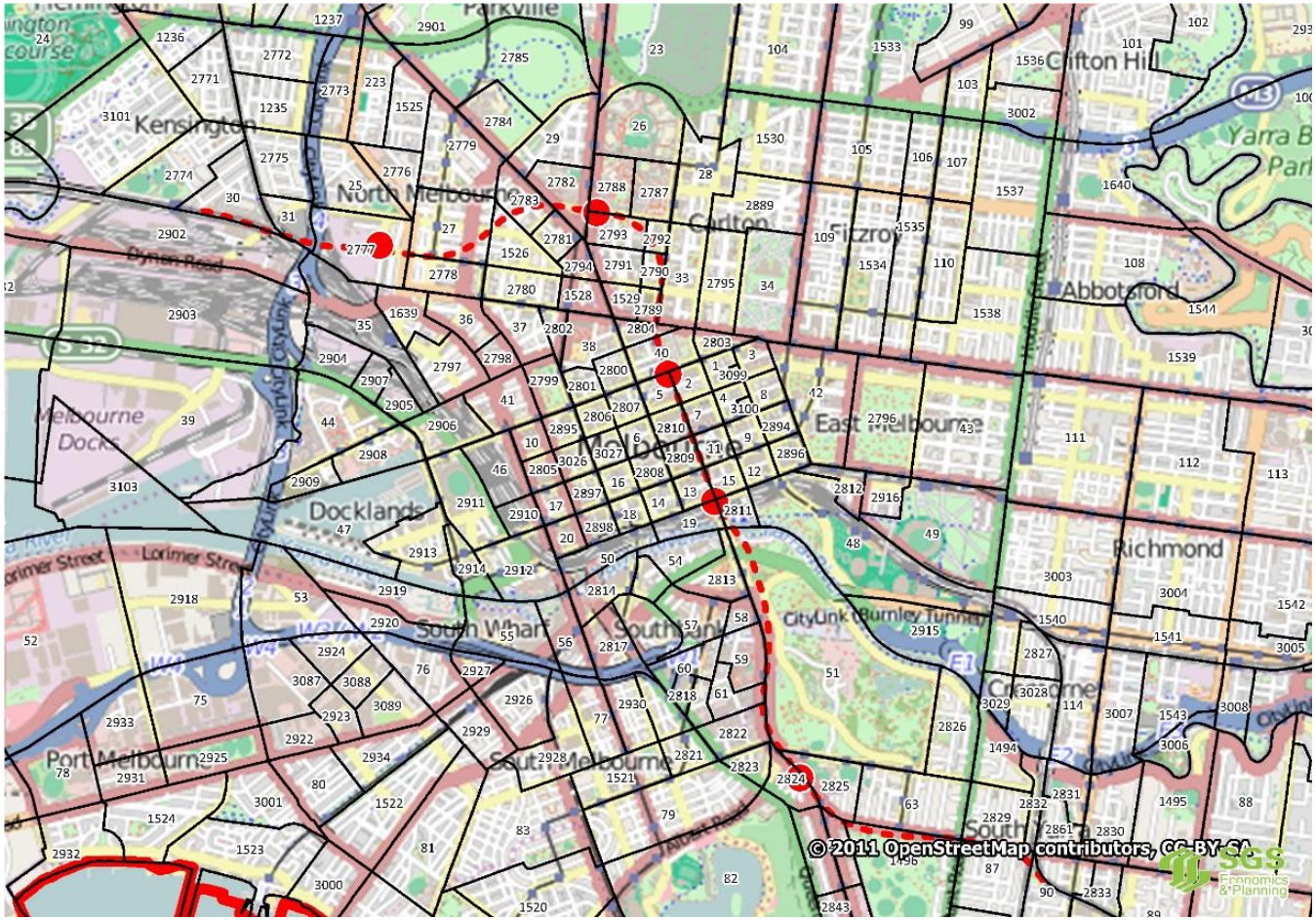
Background

The term agglomeration is used in urban economics to describe the benefits which flow to firms from locating in areas which have a higher density of economic activity. Macroeconomic theory describes agglomeration as part of 'economies of scale and scope'.

A simple measure, such as looking at the employment density of an area, does not adequately reflect the phenomenon of agglomeration. A firm in a relatively low-employment area but located on the edge of a CBD could potentially capture agglomeration benefits through such proximity. Thus a measure of agglomeration must "incorporate both proximity and the scale of the economic activity and …be calculated for very small areas" (Graham, 2006). The improved transport infrastructure as a result of the Melbourne Metro is anticipated to increase the number of businesses/employees that can be accessed within, say, a 10-minute travel time, thus increasing density of economic activity.

[11] Victorian Integrated Transport Model

FIGURE 6. VICTORIAN INTEGRATED TRANSPORT MODEL TRAVEL ZONES, MELBOURNE[12]



Source: SGS Economics and Planning 2015

[12] Please note this map is from another report and the alignment of the tunnel may have changed since this map was produced.

Effective Job Density

SGS has used the level of employment relative to the time taken to gain access to that employment and the employees' mode split as a measure of effective job density. A travel time matrix (sourced from the Victorian Government's Melbourne Integrated Transport Model which was developed as part of Melbourne Metro Business Case) is available for all travel zones in Melbourne. This shows how long it takes to travel from one zone in the city to all other zones by both car and public transport. In the analysis presented in this section the travel times have been converted from the travel zone level to a Statistical Local Area level.

This measure of effective job density enables a more 'real life' representation of the proximity (in terms of travel time) component of agglomeration that other more basic measures overlook. That is, a rational commuter would use the mode of transport which minimises their travel costs, including value of time and any monetary cost

Estimate the Effective Job Density for each Statistical Local Area based on the formula below:

$$EJD_i = \sum_j \left(\frac{PT\ Mode\ Share_j \times Emp_j}{PT\ Travel\ Time_{ij}} + \frac{(1 - PT\ Mode\ Share_j) \times Emp_j}{PV\ Travel\ Time_{ij}} \right)$$

Where:

EJD_i= Effective Job Density for Statistical Local Area i
$PT\ Mode\ Share_j$ = per cent of work trips which involve public transport for zone j
Emp_j= number of jobs/employment within zone j
$PT\ Travel\ Time_{ij}$ = time it takes to travel on public transport from zone i to zone j
$PV\ Travel\ Time_{ij}$ = time it takes to travel by private vehicle from zone i to zone j

In this formula it is assumed that other travel costs such as tickets, petrol and parking remain unchanged.

This method reflects real and perceived costs associated with travel in various parts of the city. Travel zone Effective Job Density has been aggregated to a Statistical Local Area level using a weighted average based on population origin and employment for destination.

Labour Productivity

Labour productivity is calculated by dividing the Gross Value Added for an industry by the total number of hours worked in that industry.

$$LP_i = \frac{GVA_i}{Hours\ Worked_i}$$

Where: LP_i is the Labour Productivity for zone i
GVA_i is the Gross Value Added for zone i
$Hours\ Worked_i$ is the number of hours worked for zone i

Relationship between Labour Productivity and Effective Job Density

The degree to which agglomeration affects labour productivity for each industry is now estimated using a translog regression where the natural log of labour productivity levels for the respective industry is regressed against the natural log of effective job density by Statistical Local Area.

The relationship has been estimated as follows:

$$\log_n(ILP_i) = \beta_0 + \beta_1 w \log_n(EJD_i) + \varepsilon_i$$

Where:

ILP_i is the Industry Labour Productivity for Statistical Local Area i
EJD_i is the Effective Job Density for Statistical Local Area i
w is the weighted based on total Statistical Local Area i industry Gross Value Added and
ε_i is a zero mean random disturbance.

This basic equation has been used for each industry. Some industries (Manufacturing, Wholesale and Transport and storage, Accommodation and Food services) have had more variables included to account for other known spatial alternative design across Melbourne which impact on labour productivity.

Pedestrian Flows

The flow of pedestrians (and hence potential customers) is driven by a range of factors. There is the origin of the pedestrian (dwelling, tram stop, train station, bus stop, carpark, and place of business) and their destination (place of business, retail, food service, other services, transport hub). There is the distance to be travelled to reach the destination. These two factors can be considered as key drivers, but there are also a range of other more subtle factors. Other factors pedestrian may consider include:

- Dangerous vehicle traffic
- High levels of pedestrian traffic/crowding
- Changes in levels (particularly stairs) and uneven finishes (e.g. cobblestones) can deter certain demographics (elderly, people with wheelchairs, prams) from certain routes.
- The composition of the route. That is a route with alternating spaces would often have the psychological effect of making the walking distances seem shorter
- Routes with poor amenity
- The field of vision associated with the route
- The significance or importance of the destination.

The purpose of the journey may also play a role in people's choice of route. A journey to work trip may be quick and direct, while a leisure trip may focus more on amenity.

We assume that there is no difference in the way pedestrians travel along footpaths and laneways.

To understand these flows, the City of Melbourne has developed a model to understand pedestrian flows across the municipality. The model captures flows as a result of vehicle traffic and public transport. The model does not capture drive-through shopping (e.g. fast food), but none such outlets were identified in the precincts.

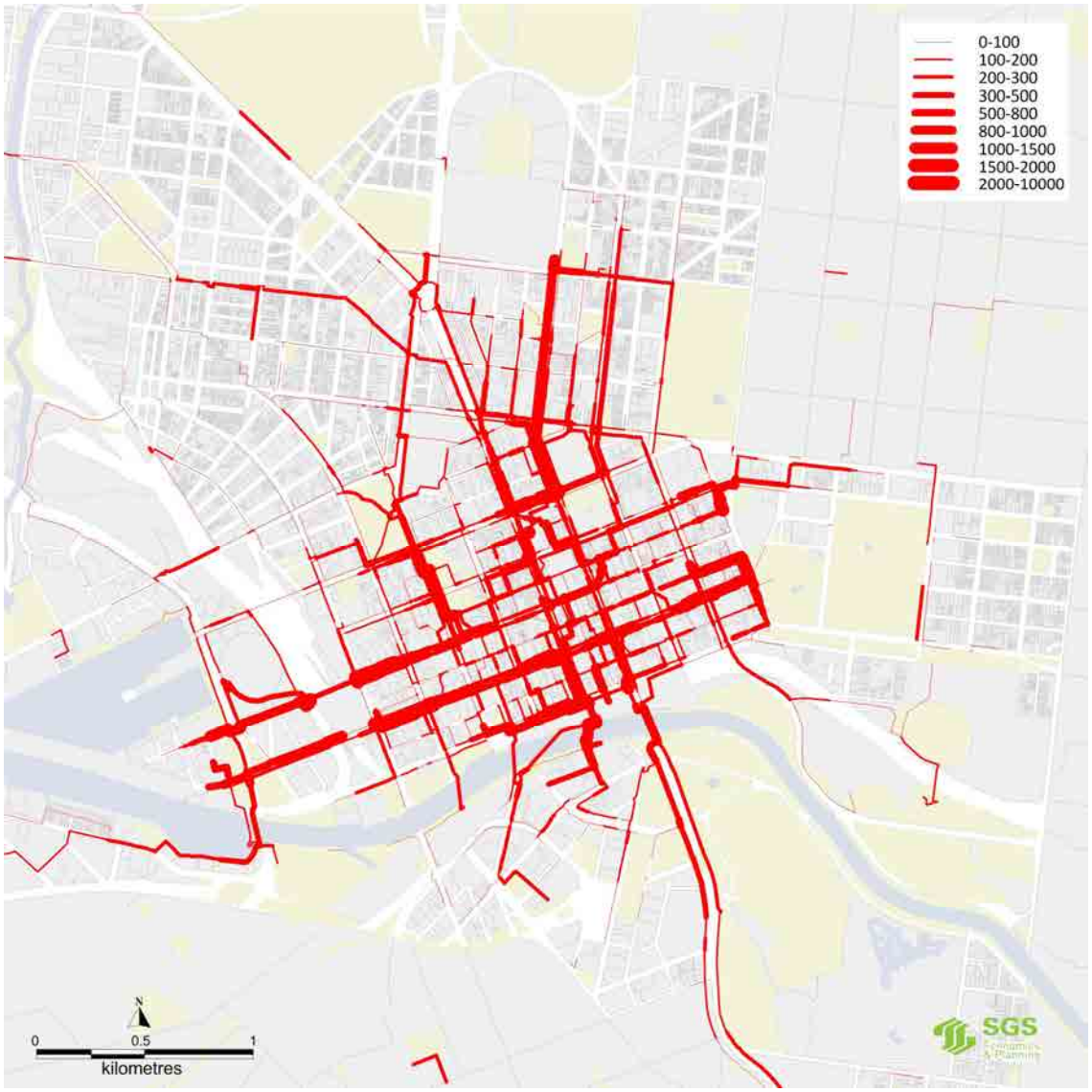
Figure 7 shows the pedestrian flows for people disembarking and embarking all modes of transport (train, tram, bus and car and walking).

FIGURE 7. ASSIGNMENT OF PEDESTRIAN FLOWS, ALL MODES OF TRANSPORT

Source: SGS Economics and Planning

The total number of trips for all purposes including journey to work, journey to education and retail/food services, was also modelled for each hour of the day. This modelling was calibrated with the City of Melbourne's pedestrian count data. This modelling provides a detailed understand the movement of pedestrian, by purpose and by time of day (Figure 8 shows walking trips at 8am, Figure 9 shows 1pm and Figure 10 shows 7pm[13]). It also highlights there are large attractors (locations which draw significant pedestrian flows towards them) such as retail clusters, universities, commercial precincts, hospitals and cultural institutions which would continue to draw people despite construction impacts.

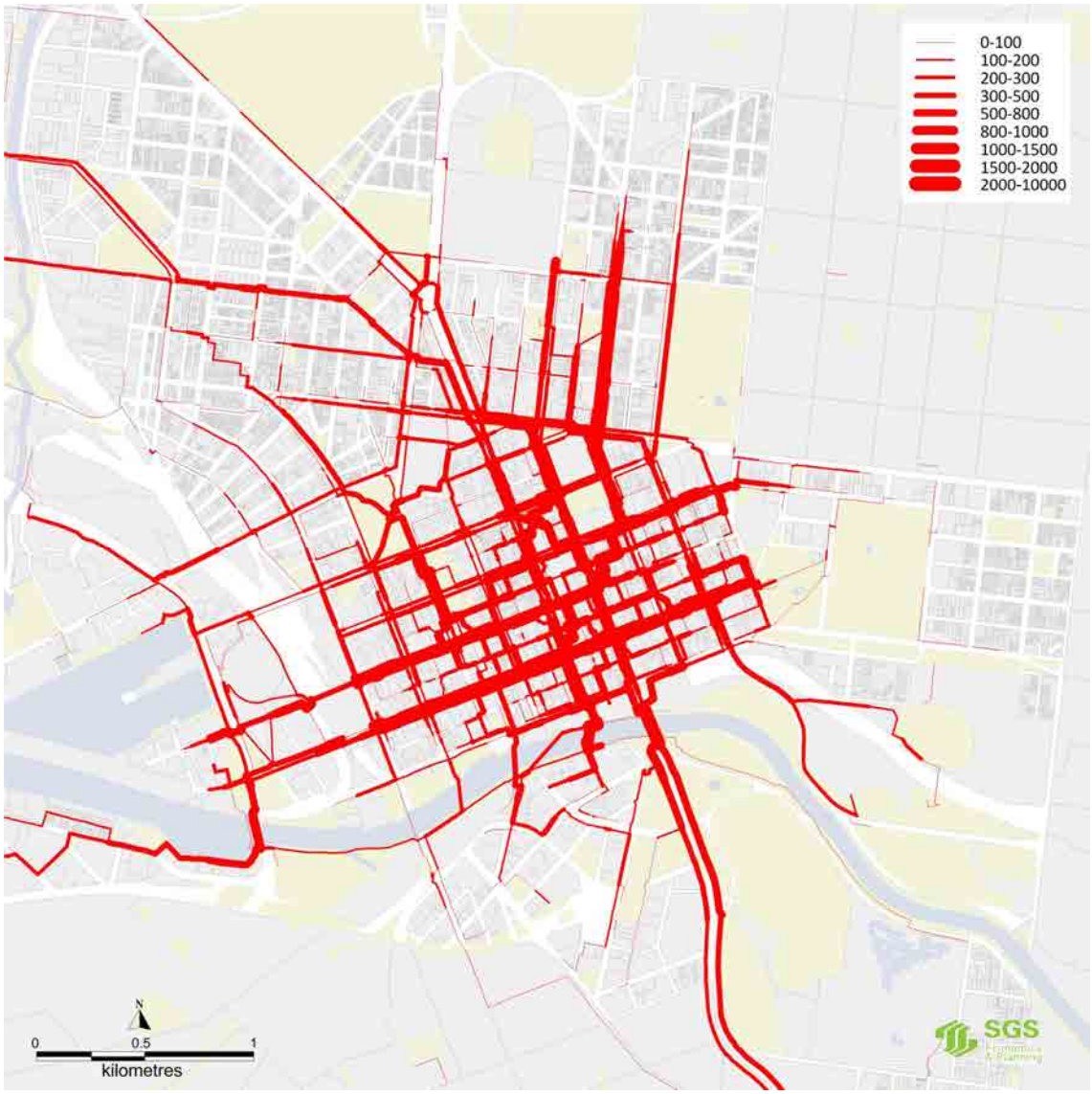
FIGURE 8. NUMBER OF WALKING TRIPS IN MELBOURNE AT 8AM



Source: SGS Economics and Planning

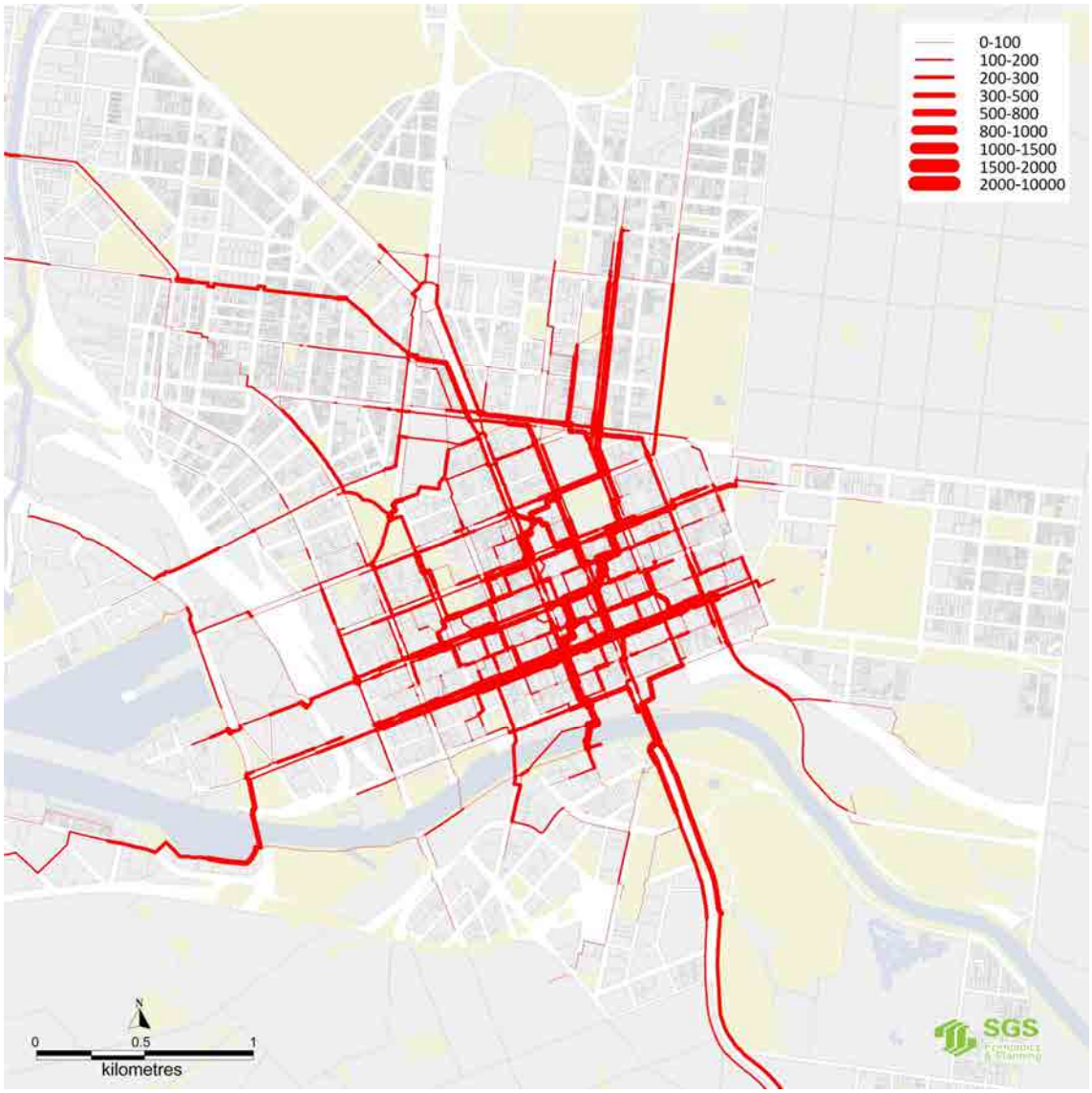
[13] More details can be found here http://www.sgsep.com.au/assets/Walk-21-presentation.pdf

FIGURE 9. NUMBER OF WALKING TRIPS IN MELBOURNE AT 1PM



Source: SGS Economics and Planning

FIGURE 10. NUMBER OF WALKING TRIPS IN MELBOURNE AT 7PM



Source: SGS Economics and Planning

Pedestrian Perceptions of Construction Activity

To understand how pedestrian flows might be impacted by construction related to the Melbourne Metro, previous construction projects were considered. Consultation with businesses and local government provided an insight into impacts of previous construction projects. This was combined with a review of a selection of major projects which have taken place across the study area. For example, the Hoddle Grid is subject to ongoing major construction projects which have impacted on pedestrian flows and amenity of the surrounding area. Some of the projects considered are listed below. The period of construction is provided in brackets. In addition to major projects, there have been many large scale commercial and residential projects under way across the Hoddle Grid, including:

- Swanston Street redevelopment (2011–2013)
- Myer Emporium development (2012–2014)
- RMIT Swanston Academic Building (2010–2012)
- RMIT Capital Works Program (2007–2016)
- Tram Super Stops (CBD) (2011–2012)
- State Library of Victoria (six major stages from 1986 to 2006)
- City Square (1997–2000)
- Federation Square (1998–2002)

- Southern Cross Station (2002–2007)
- Melbourne Central (2000–2003).

Parkville has different pedestrian movement patterns than the Hoddle Grid. The hospitals and university are the main attractors in the area and there are a relatively limited number of routes to access them. Where as in the Hoddle Grid there are many, many attractors which pedestrian would be drawn to via a larger number of alternative routes. The construction projects considered when assessing the Parkville impacts were:

- Victorian Comprehensive Cancer Centre (2012-2016)
- Various projects on campus (e.g. Peter Doherty Institute, School of Genetics Building)
- Royal Children's Hospital (2007-2011).

The proposed Domain station precinct presents a different urban form due to the major parkland and commercial development within the precinct. Projects considered when assessing the proposed Domain Station precincts impacts are:

- Fitzroy Gardens Stormwater Harvesting System (2013)
- Melbourne Museum (1998–2000)
- Melbourne Sports and Aquatic Centre (1996–1997)
- Previous tram rerouting (Routes 30, Route 70, Route 86 and Route 48).

The proposed Arden station precinct is a mostly industrial area which has been transitioning to a different range of employment types. It presents a different urban form and pedestrian and vehicle movements in comparison to the other precincts. In assessing the impact of the proposed Melbourne Metro on the Arden Station precinct, the construction of CityLink (1996–2000) which took place on the edge of the proposed Arden Station precinct was considered.

This process of examining pedestrian movements and the impact of previous construction projects has helped to highlight a number of different customers groups. A brief summary of these groups is:

- Some customers are opportunistic. For example, they are travelling along a route for different purpose, but in passing a café they stop in for a coffee
- Some customers are loyal and would travel to a business despite reduced access and amenity
- Some customers would adapt. They would change their movements to avoid areas of reduced access and amenity to access a business
- Over time some customers would develop new trip patterns. People would change their trip patterns to avoid the area completely and take their business elsewhere
- Some customers would not be perturbed by amenity impacts. Increased noise, dust, reduced pedestrian access or gantries may not impact on some people
- Over time, some customers would accept the access and amenity impacts. Customers may avoid the construction impacts for a period of time by taking a longer route. Over time, people accept that the original route has reduced amenity and return to their original travel and consumption patterns.

All the factors outlined in this subsection were considered in assessing the potential impact on pedestrian flows. In summary, a reduction in pedestrian flows (and hence potential customers) would be driven by:

- Closures and/or changes to footpaths access
- Increased vehicle traffic across footpaths
- Increased vehicle traffic (see traffic maps)
- Increased noise, dust and vibrations from construction activities
- Construction of gantries reducing visibility for pedestrians
- Perceptions of an area being closed for business.

In particular, information regarding changes to the characteristics/status of foot paths was provided by the authors of Technical Appendix D *Transport*. In particular, pathways with the following characteristics/status were identified:

- Path closure
- Hoarded areas
- Construction traffic entry and exit
- Path open, but with some diversions.

A limitation of the pedestrian analysis is that no information is available regarding timing and length of disruptions of footpaths.

To understand the number of customers who might be deterred from coming to the Central City due to the perceptions (reduced amenity, car parking) related to the project, data was extracted from the Victorian Integrated Survey of Travel and Activity (VISTA). This data provides information on where people travelling to the Central City are coming from and for what purpose. Weekend data is provided in Table 13. Weekday data is shown in Table 14.

The bulk of visitors on weekdays and weekends to the Central City are drawn from the Inner Subregion. As local residents, these people are likely to be well aware of the impact of construction and are not likely to be deterred purely as a result of perceptions. People travelling from the Outer Subregion are likely to have weaker links to the Central City and are less likely to be made aware (either via direct observations or informal conversation with each other) of the true nature of construction impacts. Furthermore, the number of visitors from the Outer Subregion is very low.

TABLE 13. WEEKEND TRIP PURPOSE TO CENTRAL CITY

Origin subregion	Work Related	Education	Personal Business	Buy Something	Recreational	Social	Pickup/Dropoff Someone	Accompany Someone	Pickup/Deliver Something
Inner	22,000	6,000	32,000	150,000	27,000	138,000	3,000	15,000	8,000
Middle	17,000	3,000	5,000	13,000	24,000	79,000	23,000	15,000	1,000
Outer	18,000	1,000	4,000	10,000	10,000	22,000	2,000	6,000	0

Source: VISTA

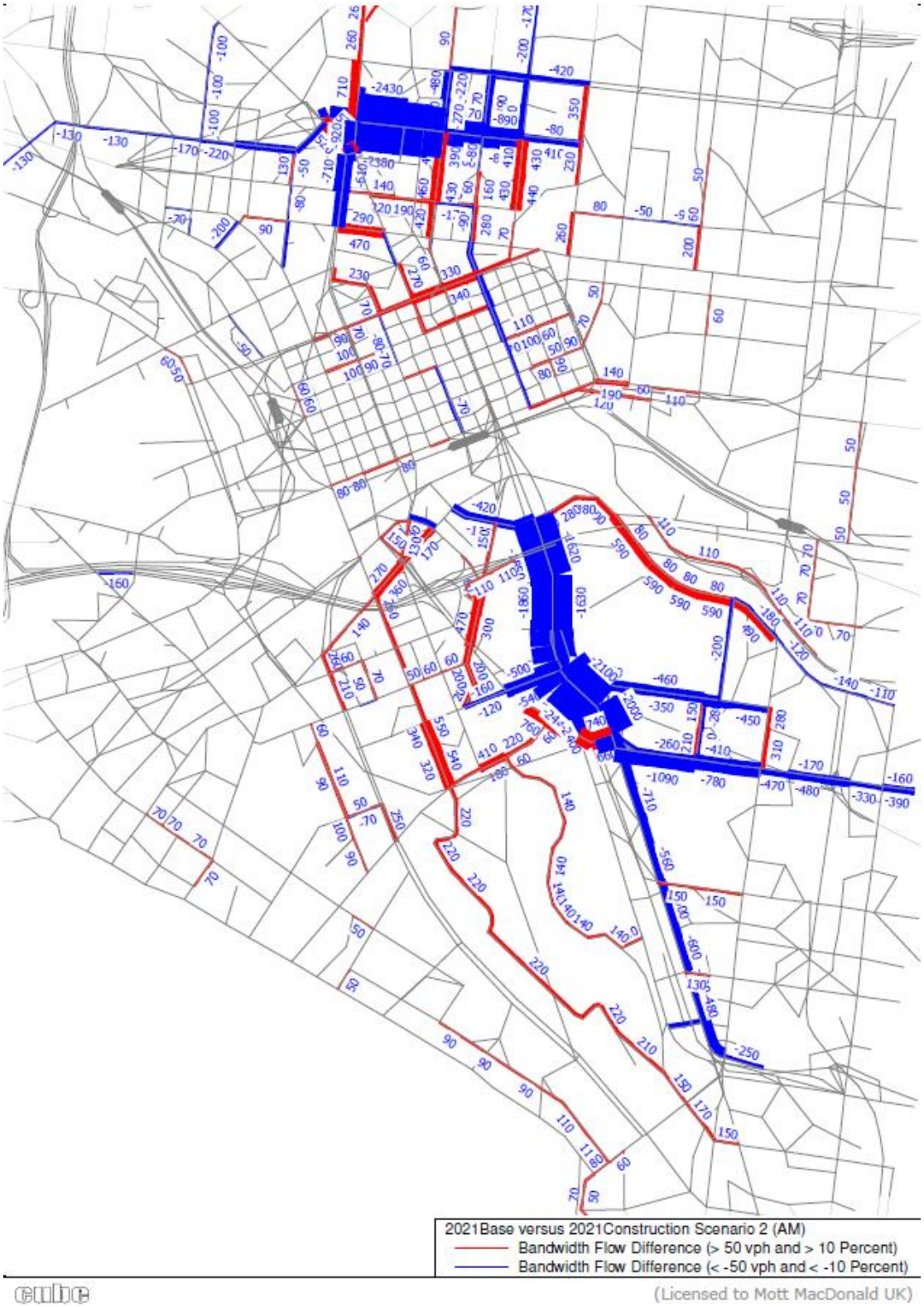
TABLE 14. WEEKDAY TRIP PURPOSE TO CENTRAL CITY

Origin subregion	Work Related	Education	Personal Business	Buy Something	Recreational	Social	Pickup/Dropoff Someone	Accompany Someone	Pickup/Deliver Something
Inner	230,000	35,000	40,000	58,000	33,000	112,000	16,000	20,000	7,000
Middle	173,000	17,000	12,000	10,000	7,000	33,000	9,000	12,000	3,000
Outer	99,000	11,000	7,000	2,000	1,000	9,000	7,000	6,000	1,000

Source: VISTA

Figure 11 was used to understand if additional vehicle trips would reduce amenity for pedestrians. This information was used to further refine the pedestrian analysis and assumptions.

FIGURE 11. VEHICLE TRAFFIC CHANGES DURING CONSTRUCTION, AM



Source: Transport Impact Assessment Report, 2016

Acquisition and Non-acquisition

To provide a transparent understanding of the type of impacts from the project, acquisition and non-acquisition (reduced trade linked to access issues, amenity and increased business cost) impacts were separately assessed.

Consultation

Consultation with local government, traders associations and businesses was undertaken to confirm the scope and significance of impacts assessed for this study.

Gross Value Added and Labour Productivity Data Sources and Methods

The small area Gross Value Add and labour productivity estimates were developed using the methods, principles and where possible the datasets set out in the Australian System of National Accounts (Cat. No. 5216.0). More details can be located in the following chapters: Chapter 24: Value added by industry Chapter 27: Productivity measures and Chapter 28: State accounts.

In summary the construction data uses three primary data sources:

- 2011 Census of Population and Housing – which provides data on workers income and hours worked
- Australian Industry (Cat. No. 8155.0) – which provides detailed Gross Value Add per worker at the 2 digit ANZSIC level
- SGS Australian Cities Accounts – which provides one digit ANZSIC level estimates of Gross Value Add and hours worked for Melbourne.

A number of variables are taken from the Census; individual weekly income, hours worked, the industry of employment (at the one digit) and location of work for each Statistical Area Level 2 (SA2).

For capital intensive industries (manufacturing, wholesale trade and transport and storage), GVA per employee using the two digit ANZIC level sourced from Australian Industry, (Cat. No. 8155.0) was combined with industry employment for each SA2 to calculate the Gross Value Add share of each SA2. This share was then used to allocate the Melbourne total industry Gross Value Add to each SLA. For labour intensive industries average wages rates from the Census and hours worked within each SA2 were used to distribute the Melbourne industry Gross Value Add to each SA.

The hours worked share for each SA2 was used to allocate the Melbourne industry hours worked. The SA2 GVA for each industry was divided by the hours worked to produce the labour productivity.

Increase in Labour Productivity from Melbourne Metro

The labour productivity impact of the Melbourne Metro was estimated by:

1. Using the projected travel time matrix (i.e. incorporates the Melbourne Metro) based on transport model outputs from the transport model and employment in each travel zone for a future year to estimate future Statistical Local Area Effective Job Density
2. Projected industry labour productivity for each Statistical Local Area. (This is based on projected future industry labour productivity for Melbourne disaggregated to each Statistical Local Area based on the current distribution. That is, labour productivity would increase across the city, but the relative ranking of the Statistical Local Areas would not change.)
3. Applying the observed elasticity for each industry to the projected industry labour productivity;
4. Applying the industry labour productivity to the number of hours worked
5. Sum the increases in industry labour productivity for all industries and all Statistical Local Areas.

4.5 Assumptions

Elasticities

Assumptions regarding the elasticity of foot-traffic to sales were made for each industry (e.g. an elasticity of 0.4 would indicate a 10 per cent fall in foot-traffic would lead to a 4 per cent fall in sales). These assumptions were largely based on SGS' previous experience in assessing the pedestrian economy in the City of Melbourne and information gained during the consultation process. During the consultation, SGS asked businesses within the precincts to estimate the proportion of their sales that are directly attributable to foot-traffic. While there was some alternative design in responses, the range was generally between 30 to 60 per cent for retail and food service businesses interviewed.

Other businesses, such as those in the professional services and construction sectors indicated that foot-traffic was not a concern for their businesses, as clients do not typically walk-in off the street. This feedback lead to the following elasticity assumptions:

- Retail and food services – 0.40[14]
- Accommodation – 0.10
- All Other Industries – 0.

Time Profile of Impact

The business impact estimates are annual figures for the peak level of impact. The peak level of impact was chosen as the assessment method is designed to be conservative and not underestimate the business impacts.

In some precincts (for example the western portal), the business impact is driven by the acquisition / temporary occupation impact. Hence once all the business are acquired / temporarily occupied the impact would be 100 per cent.

In other precincts as the nature of the construction evolves the level of the impact would reduce. For example, construction works for the Parkville station would be very disruptive while the station site is prepared. After the station box is installed the intensity of the construction works would lessen.

Table 15 sets out a time profile showing the various levels of impacts in the proposed project precincts from 2017 to 2024. This profile is based on the proposed construction works but without a very detailed construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 15. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
Western Portal	100%	100%	100%	100%	100%	100%	100%	100%
Arden Station	95%	100%	100%	100%	100%	95%	95%	95%
Parkville Station	95%	100%	100%	100%	90%	50%	35%	15%
CBD North Station	50%	100%	100%	100%	65%	65%	65%	65%
Tunnels	75%	100%	100%	100%	60%	50%	30%	15%

[14] It should be noted that the 0.4 elasticity for Retail and food services would be the average for those businesses in that sector. Some retailers may be more sensitive to changes to foot traffic (for example a 7-Eleven) while others would be less sensitive (for example a Hermes).

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
CBD South Station	75%	100%	100%	100%	65%	65%	65%	65%
Domain Station	50%	100%	100%	100%	65%	50%	35%	15%
Eastern Portal	60%	100%	100%	100%	65%	50%	35%	15%

Source: SGS Economics and Planning

The Number and Distribution of Construction Workers

Construction workers that occupy the proposed station, portal, and tunnel precincts are expected to spend money on food, beverages and possibly other retail items during the construction phase. This represents additional income for businesses in theses precincts. In the analysis below, we have assumed that workers would typically buy a meal within the precinct during their shift, and possibly some other retail items from time-to-time.

These assumptions resulted in an estimate of construction worker spending $20 per worker per day (i.e. it is estimated that construction workers would on average spend close to $20 for lunch or dinner depending on the shift worked in addition to other items such as coffee and newspapers). The total annual level of construction workers across the construction phase was based on estimates provided in the Concept Design as set out in (Table 16. Further assumptions are summarised in Table 17).

It should be noted that these represent an estimate of the workers on site and other personnel would be required to deliver the project that would not be part of the on-site workforce, such as support offices, manufacturing plants etc. Separate economic wide modelling has been completed and summarised in Chapter 2 *Project Rationale and Benefits* of the EES. It identifies the Melbourne Metro would create 3,900 jobs (net) across Victoria and approximately 4,700 (net) jobs nationally would be supported at the peak of construction.

TABLE 16. CONSTRUCTION WORKERS ACROSS PRECINCTS

Level	2017	2018	2019	2020	2021	2022	2023	2024
Western Portal	87	175	175	175	117	87	58	29
Arden Station	438	876	876	876	584	438	292	146
Parkville Station	176	352	352	352	234	176	117	59
CBD North Station	157	314	314	314	209	157	105	52
CBD South Station	157	314	314	314	209	157	105	52
Domain Station	301	601	601	601	401	301	200	100
Fawkner Park	97	193	193	193	129	97	64	32
Eastern Portal	87	175	175	175	117	87	58	29
Total	1500	3000	3000	3000	2000	1500	1000	500

Source: Melbourne Metro Project Description, Addendum 3, p.9.

TABLE 17. FURTHER ASSUMPTIONS

Assumptions
Land acquired for construction works would be available for other uses after construction completed.
Census of Land Use and Employment data on the number of businesses and employees are based on data collected conducted in 2012 and 2014. These estimates were updated based on projected growth rates of the relevant travel zones in the SGS small area land use database.
Estimates of economic output for each precinct were based on official measures of labour productivity for the relevant statistical local areas. The labour productivity of individual businesses varies within each precinct and is likely to vary to some extent from these estimates.
Where a precinct fell outside the City of Melbourne, the employment profile of businesses was assumed based on the employment profile of the relevant statistical local area.
Planning regimes do not change.

4.6 Stakeholder Engagement

Table 18 summarises stakeholder engagement undertaken for this assessment:

TABLE 18. SUMMARY OF STAKEHOLDER ENGAGEMENT

Activity	When	Matters discussed / issues raised	Consultation outcomes
Consultation with Federation Square	15/09/15	- Business types and activities at Federation Square - Catchment - Possible impacts during construction and operation - Possible mitigation measures.	Confirmation of high level impacts.
Consultation with City of Stonnington	17/09/15	- New developments - Educational institutions in the area - Key concerns for residents - Usage and catchment - Opportunities for improvements - Things to consider for the project - Other reports.	Confirmation of high level impacts and stakeholders contacts.
Consultation with City of Stonnington – Economic and Cultural Development	11/11/15	- Existing issues for traders in each precinct - Possible impacts to businesses from construction and operation of the project - Experience with other projects (scope of impacts) - Possible mitigation measures - Identification of relevant traders associations and businesses for consultation.	Confirmation of high level impacts and business and trader association contacts.
Consultation with City of Port Phillip	28/09/15	- Existing issues in the area in proximity to Domain - Issues associated with the project	Confirmation of high level impacts and stakeholders contacts.

Activity	When	Matters discussed / issues raised	Consultation outcomes
		- Identification of stakeholders - Experiences with other projects.	
Consultation with City of Melbourne	12/10/15	- Existing issues for traders in each precinct - Experience with other projects (scope of impacts) - Possible mitigation measures - Contacts for consultation in the City of Melbourne.	Confirmation of high level impacts and council contacts.
Consultation with City of Melbourne – Events Melbourne	27/10/15	- Number/type of events in the City - Key events locations - Possible impacts to the staging of events from the construction and operation of the project - Possible mitigation measures.	Confirmation of high level impacts to operation of events.
Consultation with City of Melbourne – International and Civic Services	28/1015	- Overview of commercial activity at the Town Hall - Possible impacts to these operations from construction and operation of the project - Possible mitigation measures.	Confirmation of high level impacts to operations at the Town Hall.
Consultation with City of Melbourne – Business and Tourism	29/10/15	- Existing issues for traders in each precinct - Possible impacts to businesses from construction and operation of the project - Experience with other projects (scope of impacts) - Identification of relevant traders associations and businesses for consultation - Possible mitigation measures.	Confirmation of high level impacts and business and trader association contacts.
Consultation with South Yarra Business Association	03/12/15	- Business types and operation of the precinct - Possible impacts during construction and operation - Possible mitigation measures.	Confirmation of high level impacts.
Consultation with Toorak Village Traders Association	03/12/15	- Business types and operation of the precinct - Possible impacts during construction and operation (particularly the rerouting of the number 8 tram) - Possible mitigation measures.	Confirmation of high level impacts.
City Precinct Traders Association	8/12/15	- Business types and operation of the precinct - Possible impacts during construction and operation - Possible mitigation measures.	Confirmation of high level impacts.

In addition, face-to-face and telephone discussions were held with businesses which are likely to be acquired for the project and in the vicinity of each proposed precinct. Consultation activities are summarised in Table 19.

TABLE 19. CONSULTATION SUMMARY

Precinct	Acquisition status	Interviews completed or scheduled	No response or SGS continuing to contact	Declined to participate, unavailable within timeframe, or no longer in precinct	Total businesses contacted
Western Portal	Acquired	-	-	1	1
	Not acquired	3	2	3	8
Arden Station	Acquired	2	1	-	3
	Not acquired	4	-	1	5
Parkville Station	Acquired	N/A	N/A	N/A	N/A
	Not acquired	5	2	-	7
CBD North	Acquired	1	1	-	2
	Not acquired	5	4	2	11
CBD South	Acquired	1	-	-	1
	Not acquired	10	15	1	26
Domain Station	Acquired	2	-	-	2
	Not acquired	6	6	1	13
Eastern Portal	Acquired	N/A	N/A	N/A	N/A
	Not acquired	5	8	2	15
Western Turnback	Acquired	N/A	N/A	N/A	N/A
	Not acquired	-	2	-	2
Councils		10	1	-	10
Total	Acquired	6	2	1	9
	Not acquired	48	40	10	97

4.7 Data Summary

A range of different data sources were used to assess the potential business impacts of the project in the precincts.

TABLE 20. DATA SUMMARY

Precinct	CLUE data	Site visit	Land use audit	Hours worked by industry	Productivity estimates	SGS modelling	
						Small area employment projections	Effective job density modelling
Tunnels	X	X		X	X		
Western Portal	X	X		X	X		
Arden Station	X	X		X	X	X	X
Parkville Station	X	X		X	X	X	X

Precinct	CLUE data	Site visit	Land use audit	Hours worked by industry	Productivity estimates	SGS modelling	
						Small area employment projections	Effective job density modelling
CBD North Station	X	X		X	X	X	X
CBD South Station	X	X		X	X	X	X
Domain Station	X	X	X	X	X	X	X
Eastern Portal		X	X	X	X		
Western Turnback		X					

Sources: CLUE data is produced by the City of Melbourne. The land use audit was completed by the AJM. Hours worked data was sourced from ABS, Labour Force, Australia, Detailed, Quarterly, May 2015

This is due to some datasets being available for some precincts and not others. For example, the Census of Land Use and Employment is only available for the City of Melbourne. Table 20 summarises the data sources used.

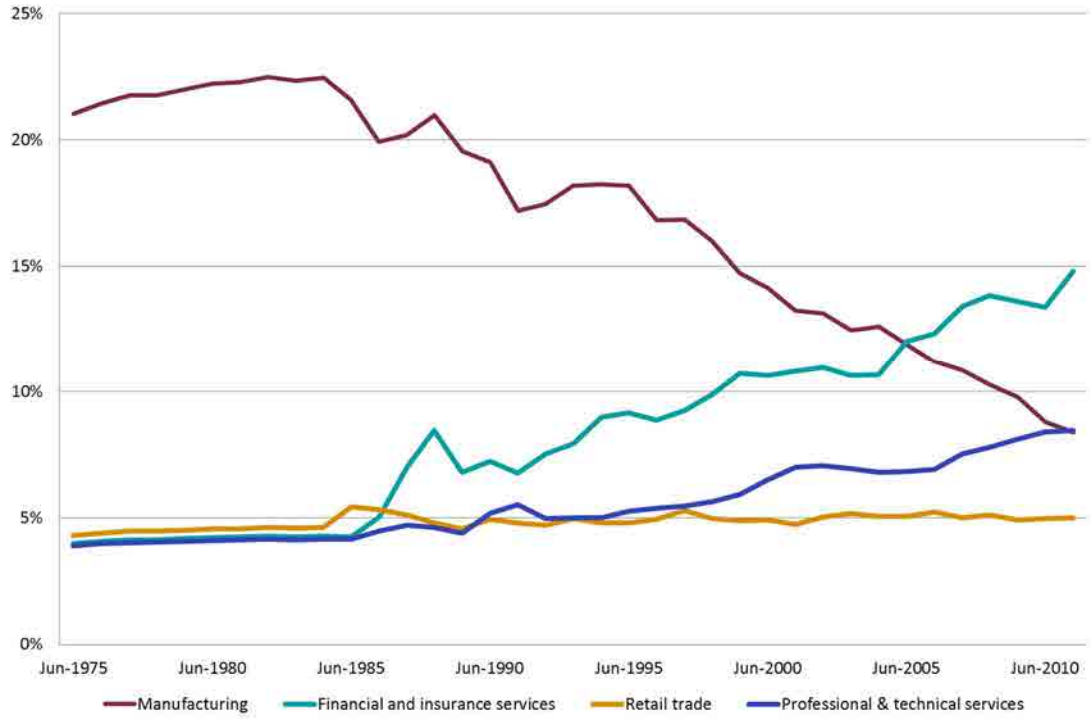
4.8 Limitations

- This report is reliant upon other specialist reports provided to SGS, namely the transport, noise and vibration assessment, air quality, construction and property acquisition. All of these reports are in turn reliant upon the Concept Design
- Estimates of the potential business impacts for non-market (where there is no direct financial transaction) business should be treated with caution, as it is very difficult to assess the business impacts on organisations such as hospitals, universities and research facilities
- Information has been provided by the transport specialists on the likely (not certain) footpath closures during construction. This information is preliminary nature and the accuracy of this report is necessarily linked to, and reliant upon these assumptions
- There are uncertainties associated with the impact assessment as in the absence of data or modelling a number of assumptions have been made. The demand elasticity of foot-traffic is an example of this
- During the final stage of the development of this report the City of Melbourne has released updated Census of Land Use of Employment for 2015. This data has not been incorporated into the report
- There are approximately 2,500 businesses in the proposed project precincts, of which roughly 700 would be potentially impacted. Consultation is therefore based on a sample of businesses from the proposed project precincts representing different business types. This report is not based on consultation with all those businesses, but on consultation undertaken with a representative sample of businesses from the project precincts
- To maintain consistency with broader Concept Design transport modelling and the Business Case, it has been assumed the project does not allow additional jobs or residential to locate in Melbourne. Job and residents are reallocated across Melbourne but there are no net increases in employment or population. This assumption is a limitation for this business impact assessment.

5 REGIONAL CONTEXT

As with all large cities, Melbourne is a complex entity, with millions of residents and billions of dollars of economic activity contained within its boundaries. The Melbourne economy has been undergoing a significant structural change over the past 30 years. This has had substantial implications for the spatial growth of the city. The former manufacturing-based economy, reliant on long standing protectionist policies, has transformed into a diversified post-industrial economy spurred by growth in knowledge intensive services. This has led to a reshaping of the city. This structural shift in the economy is illustrated in the changing share of Gross Domestic Product generated by key industries as shown in Figure 12. Before the mid-1980s, manufacturing contributed around a quarter of Melbourne's Gross Domestic Product. Today its contribution is closer to 8 per cent. Melbourne's Gross Domestic Product is increasingly generated by financial and insurance services, and professional and technical services.

FIGURE 12. MELBOURNE GROSS DOMESTIC PRODUCT INDUSTRY CONTRIBUTIONS



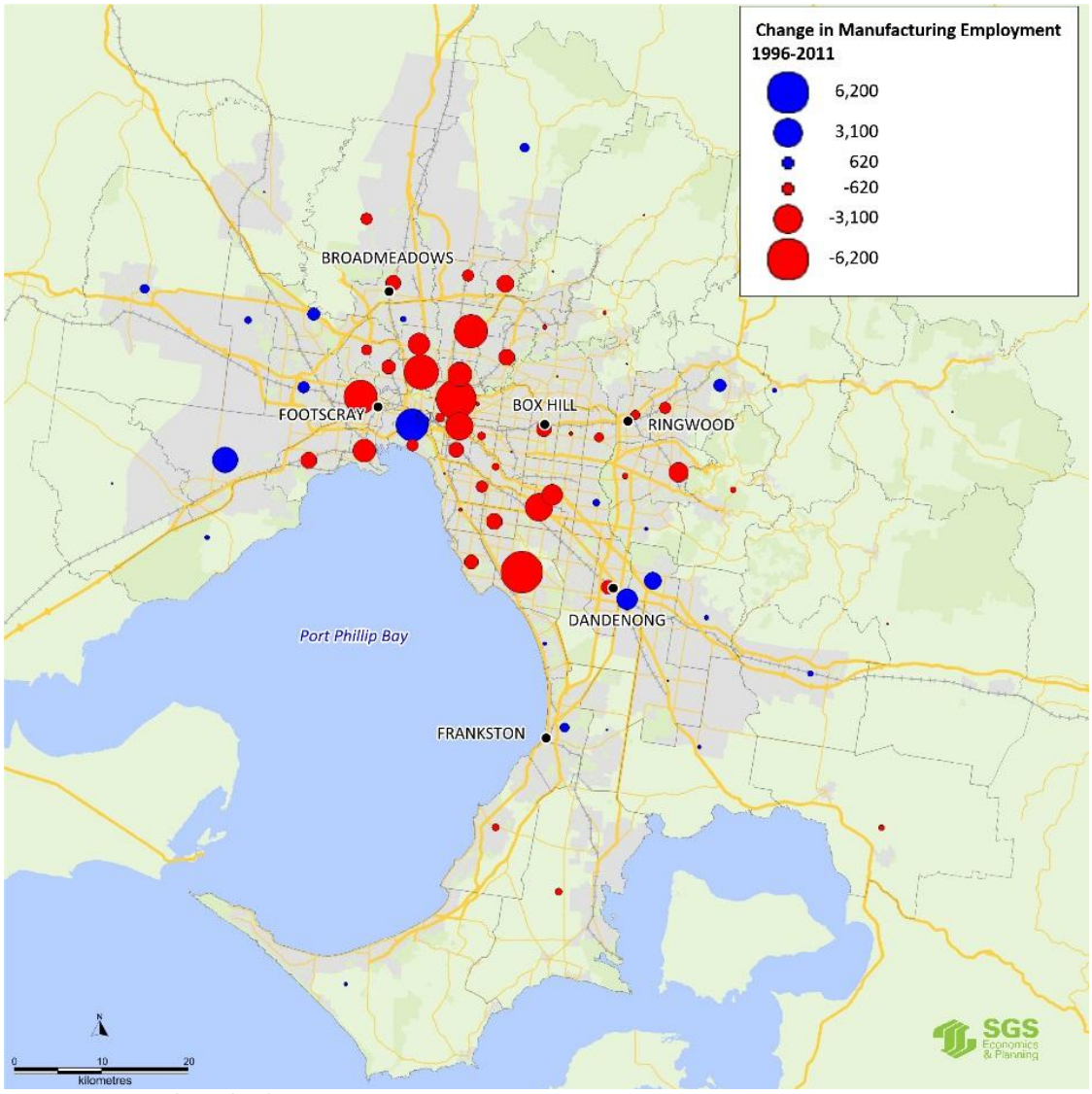
Source: SGS Economics & Planning, ABS

During this economic restructuring over the past 30 years, Melbourne has added over 900,000 jobs (250,000 of these in the Melbourne municipality) and 1.4 million residents which has fundamentally re-shaped its economy. From the mid-1990s the outward expansion slowed and the inner city and locations along public transport corridors began to attract development which increased urban densities. While always the largest centre for employment, at this time the CBD began to experience a substantial increase in jobs, while also seeing the productivity of those jobs rise dramatically. In stark contrast to the 1970s and 1980s where the emphasis was on suburban growth, the 90s saw a population and employment growth return to the inner suburbs, in large part as a result of Melbourne's changing economic structure.

The transition from a manufacturing-based economy to a knowledge economy based around professional and financial services (referred to as advanced business services), has resulted in a concentration of higher paying employment to the city centre, with employment in the suburbs being

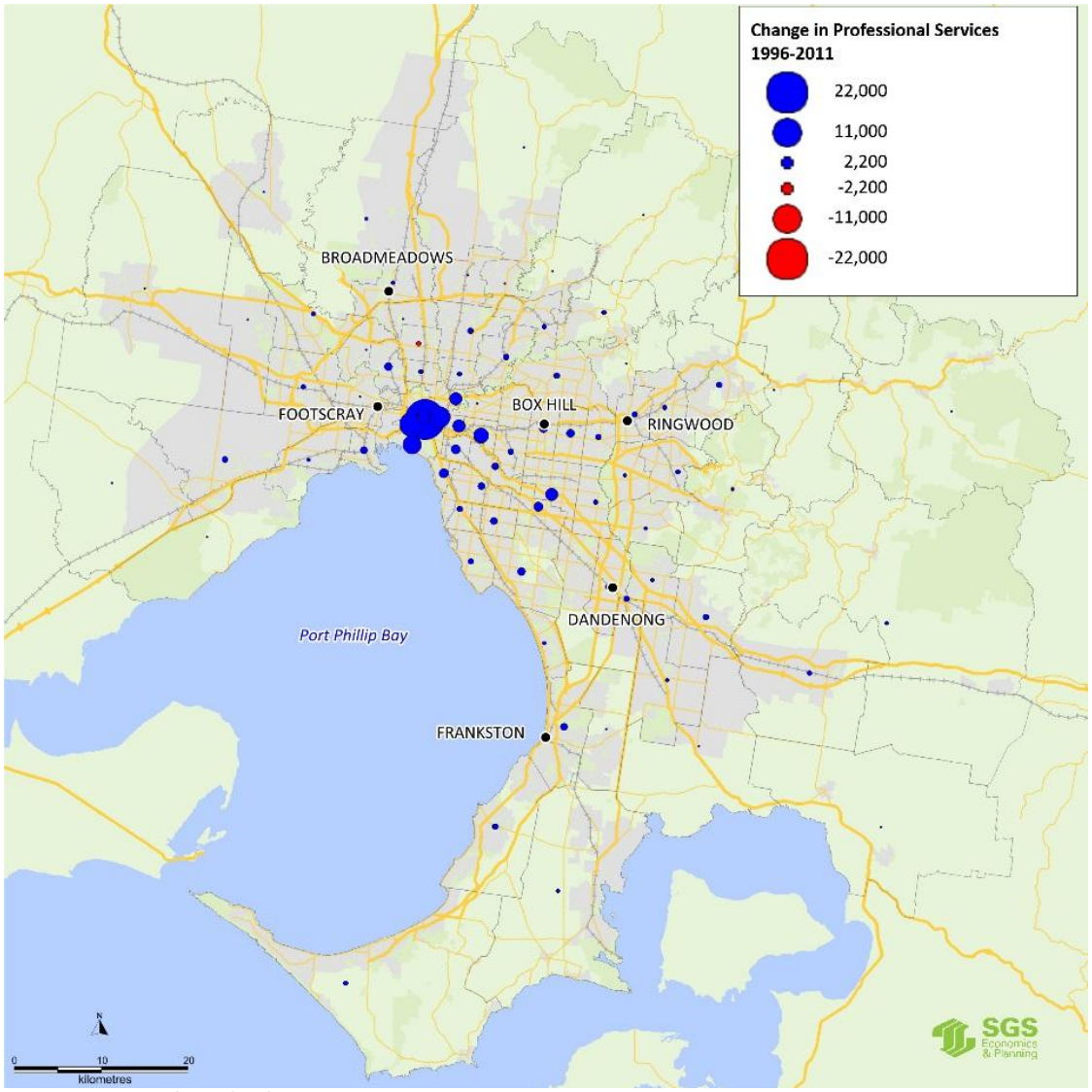
largely population serving. This shift has raised the value of land with good access to the employment opportunities of the CBD and Central Subregion. This change is also spatially evident. Figure 13 and Figure 14 depict change in employment from the 1996 to 2011 Censuses for manufacturing and professional services. Manufacturing has declined in most parts of Melbourne, while growth in professional services has been concentrated in the City of Melbourne.

FIGURE 13. CHANGE IN MANUFACTURING EMPLOYMENT, 1996-2011



Source: SGS Economics & Planning, ABS

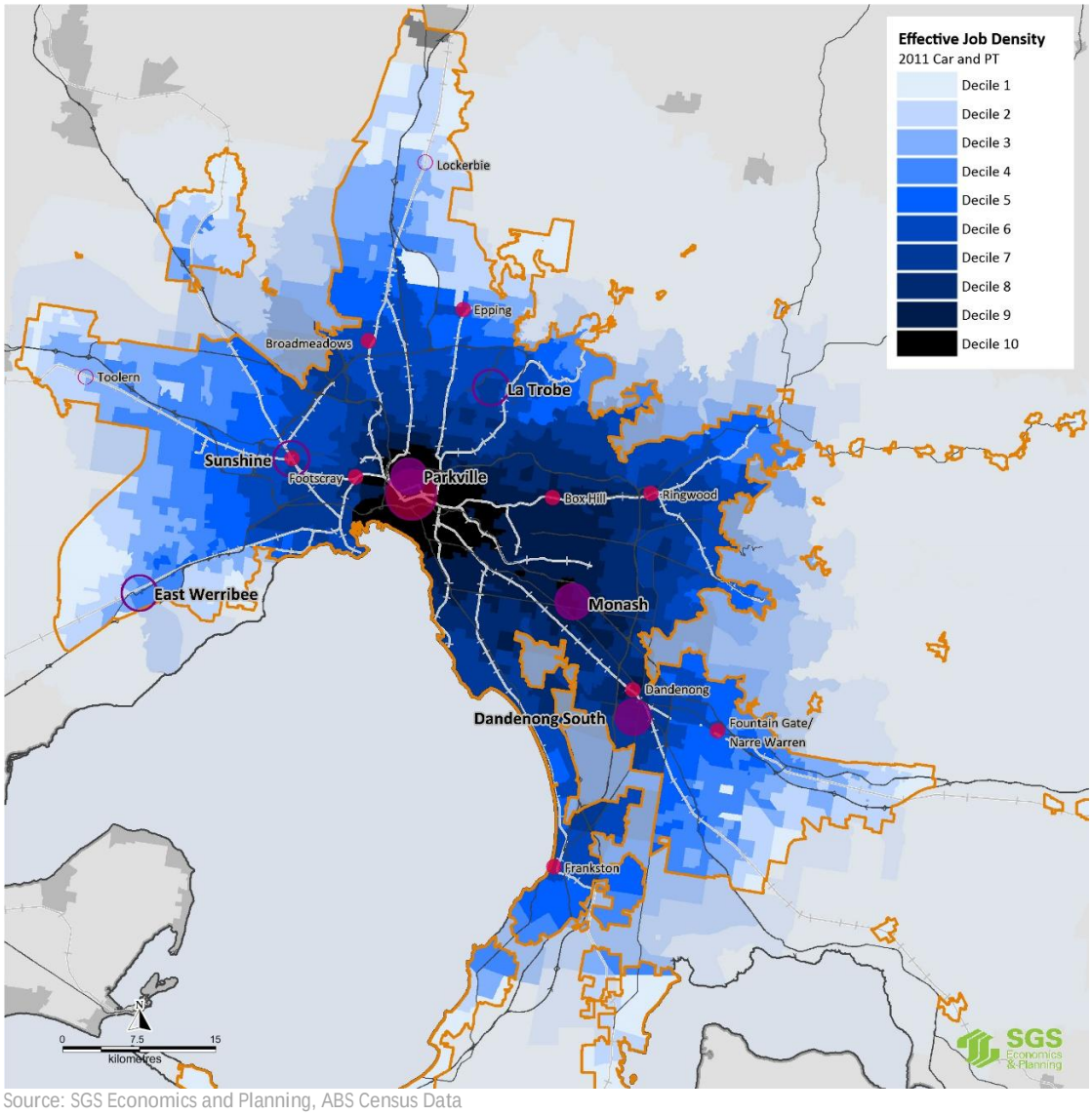
FIGURE 14. CHANGE IN PROFESSIONAL SERVICES EMPLOYMENT, 1996-2011



Source: SGS Economics & Planning, ABS

The growth in professional services is enhanced by the agglomeration economies which are generated within Melbourne. Effective Job Density is used to help understand agglomeration economies. Effective Job Density is a measure of the relative concentration of employment, derived from the density and accessibility to all jobs across Melbourne. Figure 15 shows that Central Melbourne has the most intense agglomeration economies with the eastern suburbs ranking higher than the west and north.

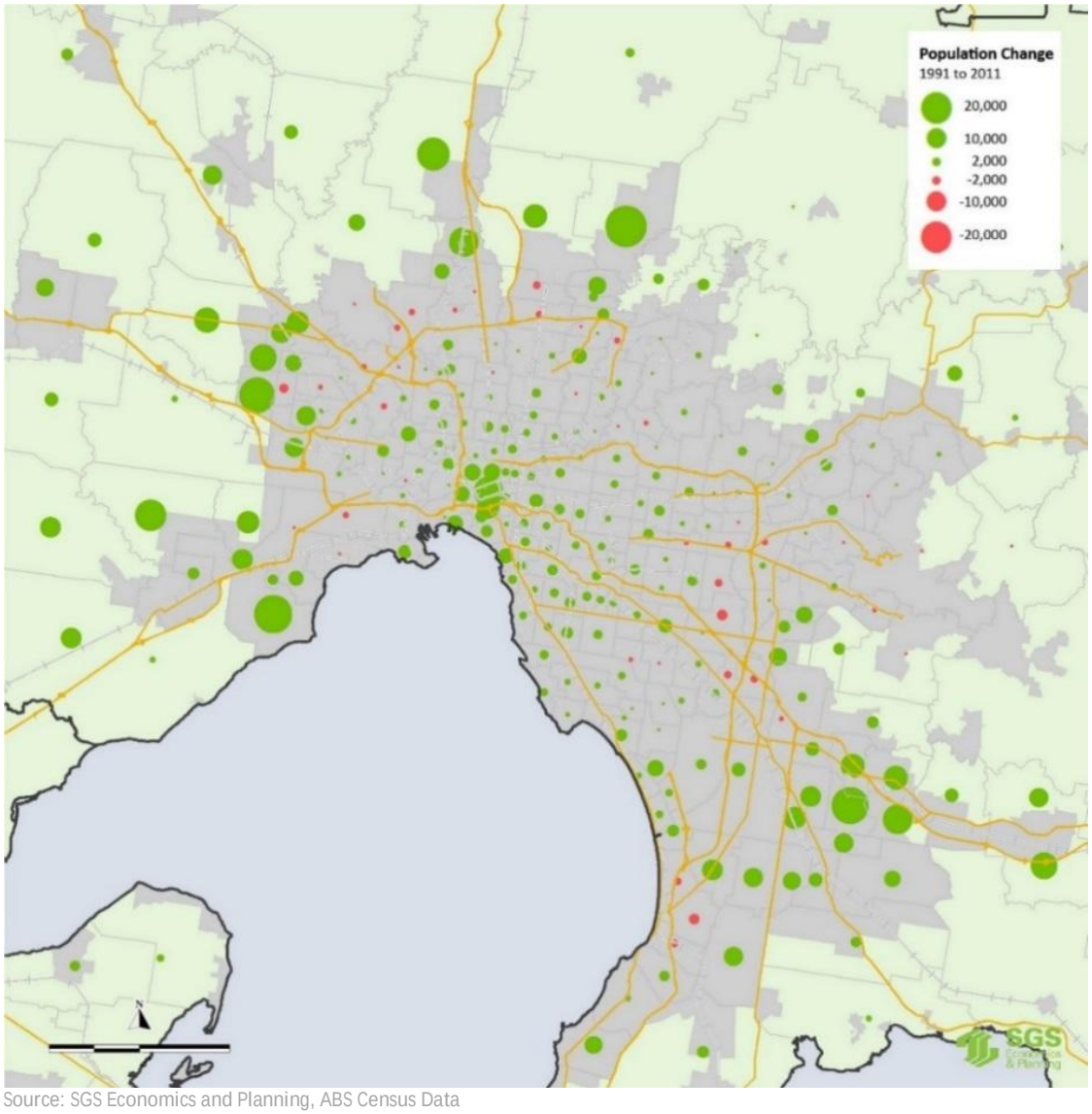
FIGURE 15. EFFECTIVE JOB DENSITY INDEX



Source: SGS Economics and Planning, ABS Census Data

While employment growth has been heavily tied to agglomeration economies, at the same time, there has been strong population growth on Melbourne's fringe, as shown in Figure 16 below. This mismatch between jobs growth and population growth has created challenges for the public transport and road networks. This has proved particularly challenging for residents in the west and north. With lower employment growth and fewer transport options than the central and eastern regions of Melbourne, residents are faced with fewer economic opportunities and longer and less reliable travel options. This also impacts on businesses in the north and west who have difficulties accessing markets in the rest of Melbourne.

FIGURE 16. POPULATION CHANGE MELBOURNE 1991-2011



Source: SGS Economics and Planning, ABS Census Data

Conclusion

Over the past thirty years, the economy of Melbourne has become more focused on knowledge intensive industries, while manufacturing has been in decline. This has led to more employment growth being focused on the Central City, while jobs growth in the suburbs has slowed. Over the same period, there has been strong population growth in the north, west and south-east of Melbourne. Linking together the growing employment in the Central City and the population on Melbourne's fringes is key to economic and social outcomes.

6 RISK ASSESSMENT

Table 21 presents the potential business risks associated with the project, based on a precinct basis. The environmental risk assessment methodology is outlined in Section 4.

Existing performance requirements were identified to inform the assessment of initial risk ratings. These existing performance requirements are based on standard requirements that are typically incorporated into construction contracts for rail projects. They have also considered the impacts from previous construction projects undertaken including:

- Swanston Street redevelopment (2011–2013)
- Myer Emporium development (2012–2014)
- RMIT Capital Works Program (2007–2016)
- Tram Super Stops (CBD) (2011–2012)
- City Square (1997–2000)
- Federation Square (1998–2002)
- Southern Cross Station (2002–2007)
- Melbourne Central (2000–2003)
- Victoria Comprehensive Cancer Centre (2012–2016)
- Fitzroy Gardens Stormwater Harvesting System (2013)
- Melbourne Sports and Aquatic Centre (1996–1997)
- Numerous residential and commercial developments
- Tram rerouting (Routes 30, Route 70, Route 86 and Route 48).

There were actions taken to mitigate the impact of these projects. This provided a key insight for the risk assessment for specific performance requirements for the Melbourne Metro.

As a result of the risk assessment, project-specific performance requirements (Environmental Performance Requirements) have been proposed to reduce risks and hence determine the Residual Risk Rating. The Environmental Performance Requirements are outlined in the following sections of the impact assessment and collated in Table 21. All Environmental Performance Requirements are incorporated into the Environmental Management Framework for the project (Chapter 23 of the EES).

For the business impact assessment the risk of the various events is examined. Given the potential impacts of the proposed Concept Design varies within the precincts and how that impact affects business varies depending on the type of business a precinct approach has been used. The initial risk and residual risk is based on the total impact on the business income precinct.

The risks assessment were informed by desktop assessment to collect relevant data and background documents to understand the current land use patterns, industry structure and the level of economic activity.

Site visits and consultation with a range of businesses across the different precincts were undertaken to understand the nature of their operations and how the project could potentially impact on them. By reviewing technical reports prepared by other specialists the likely impact on businesses in the different precincts was assessed. The previous projects listed above were also used to assess the risk. A conservative approach was taken so potential business risks were not underestimated.

TABLE 21. RISK REGISTER FOR IMPACT ASSESSMENT

Impact pathway		Precinct	Initial risk			Residual risk			Risk no.
Category	Event		Cons.	Like.	Risk level	Cons.	Like.	Risk level	
Construction									
Construction activity impacting operations (i.e. from noise, dust, vibration, construction materials)	Business functions unable to occur due to construction impacts. Some business types would be impacted more than others, particularly those operating sensitive equipment.	1 - Tunnels 2 - Western Portal 3 - Arden Station 5 - CBD North Station 6 - CBD South Station 7 - Domain Station 8 - Eastern Portal	Negligible	Likely	Low	Negligible	Likely	Low	B001
Construction activity impacting operations (i.e. from noise, dust, vibration, construction materials)	Business functions unable to occur due to construction impacts. Some business types would be impacted more than others, particularly those operating sensitive equipment.	4 - Parkville Station	Minor	Likely	Medium	Minor	Likely	Medium	B002
Construction activity causing a reduction in amenity (i.e. from noise, dust, vibration)	Business activity disrupted as customers avoid construction areas due to decreased amenity (real or perceived) and from decreased productivity of workers. Some business types would be impacted more than others, particularly those that rely on passing trade or where other easily accessible locations offer similar goods and services (e.g. retail or accommodation businesses such as the Westin Hotel).	1 - Tunnels 2 - Western Portal 3 - Arden Station 4 - Parkville Station 5 - CBD North Station 6 - CBD South Station 7 - Domain Station 8 - Eastern Portal	Negligible	Likely	Low	Negligible	Likely	Low	B003

Impact pathway		Precinct	Initial risk			Residual risk			Risk no.
Category	Event		Cons.	Like.	Risk level	Cons.	Like.	Risk level	
Construction activity impacting access to businesses (e.g. from changed traffic flows, increased congestion, occupation of car parks, changes in access for cyclists, pedestrians)	Business activity disrupted as customers cannot access the area, or because customers avoid the area due to real (or perceived) decrease in access. Business activity disrupted due to changes in access impacting business operation (e.g. delivery vehicle and truck access). Some business types would be impacted more than others, particularly those that rely on passing trade or where other easily accessible locations offer similar goods and services (e.g. retail or accommodation businesses).	1 - Tunnels 2 - Western Portal 3 - Arden Station 4 - Parkville Station 5 - CBD North Station 6 - CBD South Station 7 - Domain Station 8 - Eastern Portal	Negligible	Likely	Low	Negligible	Likely	Low	B004
Construction activity impacting business activity	Some businesses may go out of business sooner with Melbourne Metro. Some business types would be impacted more than others, particularly those that rely on passing trade or where other easily accessible locations offer similar goods and services (e.g. retail and accommodation businesses). How established the business is, business size and a range of other individual business factors may also play a role.	1 - Tunnels 2 - Western Portal 3 - Arden Station 4 - Parkville Station 5 - CBD North Station 6 - CBD South Station 7 - Domain Station 8 - Eastern Portal	Negligible	Likely	Low	Negligible	Likely	Low	B005

Impact pathway		Precinct	Initial risk			Residual risk			Risk no.
Category	Event		Cons.	Like.	Risk level	Cons.	Like.	Risk level	
Acquisition of businesses and properties	Relocation causing a disruption to business activity.	1 - Tunnels 2 - Western Portal 3 - Arden Station 4 - Parkville Station 5 - CBD North Station 6 - CBD South Station 8 - Eastern Portal	Negligible	Likely	Low	Negligible	Likely	Low	B006
Construction activity leading to a reduction in public events that indirectly affect business activity	Reduction in public events indirectly affecting the level of business activity. Some business types would be impacted more than others, particularly those that rely on passing trade or where other easily accessible locations offer similar goods and services (e.g. retail or accommodation businesses).	1 - Tunnels 5 - CBD North Station 6 - CBD South Station 7 - Domain Station	Negligible	Likely	Low	Negligible	Likely	Low	B007
Construction activity leading to a reduction in public events that indirectly affect business activity	Reduction in public events indirectly affecting the level of business activity. Some business types would be impacted more than others, particularly those that rely on passing trade or where other easily accessible locations offer similar goods and services (e.g. retail or accommodation businesses).	2 - Western Portal 3 - Arden Station 4 - Parkville Station 8 - Eastern Portal	Negligible	Unlikely	Very Low	Negligible	Unlikely	Very Low	B008

Impact pathway			Initial risk			Residual risk			
Category	Event	Precinct	Cons.	Like.	Risk level	Cons.	Like.	Risk level	Risk no.
Cumulative impacts due to concurrent construction activities	Impacts to businesses from construction activity are greater than described in the precinct due to construction of multiple projects and/or at multiple sites in proximity to the precinct.	1 - Tunnels 2 - Western Portal 3 - Arden Station 4 - Parkville Station 5 - CBD North Station 6 - CBD South Station 7 - Domain Station 8 - Eastern Portal	Negligible	Likely	Low	Negligible	Likely	Low	B009
Operation									
Increased connectivity from operation of Melbourne Metro	Change in commercial market demand leading to higher rents and displacement of some business types. Some business types would be impacted more than others, particularly those that do not benefit from productivity improvements from increased accessibility (e.g. manufacturing and industrial businesses).	1 - Tunnels 2 - Western Portal 3 - Arden Station 4 - Parkville Station 5 - CBD North Station 6 - CBD South Station 7 - Domain Station 8 - Eastern Portal	Negligible	Almost Certain	Low	Negligible	Almost Certain	Low	B010

For further details refer to Technical Appendix B *Environmental Risk Assessment Report* (of the EES) which includes the full Risk Register, with existing performance requirements and Environmental Performance Requirements s assigned to each risk.

In the impact assessment for each precinct, to help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

7 METROPOLITAN IMPACTS

While this study focuses primarily on the proposed project corridor from the western portal in Kensington to the Eastern Portal in South Yarra, the construction of the Melbourne Metro has broader implications for Melbourne's transport network and therefore business activity across metropolitan Melbourne. Given its scale and strategic impact on connectivity, particularly in Melbourne's core economic region, the Melbourne Metro is a 'city shaping[15]' project that would impact productivity[16] and the locational choices of firms and people.

7.1 Metropolitan-Wide Impacts

Productivity Growth

The Melbourne Metro is likely to provide key linkages and enhance connectivity across metropolitan Melbourne. By reshaping accessibility across the metropolitan areas, particularly for the western and northern sub-regions, the project would enable businesses to achieve a higher productivity through economies of scale and scope. This is illustrated by the change in effective job density as a result of the project, as shown in Figure 17. By 2041, a significant amount of growth in both population and jobs is anticipated in areas (often in close proximity to railway stations) that are projected to experience a substantial rise in effective job density as a result of the Melbourne Metro.

The inner west and inner north of Melbourne is expected to see the biggest uplift in effective job density as a result of the Melbourne Metro. However, the areas around South Yarra and Richmond stations could see a decrease in effective job density as a result of the project, as the Pakenham and Cranbourne train lines would no longer stop at these stations.

By reshaping the accessibility for the metropolis, particularly for the western and northern sub-regions, the Melbourne Metro would enable businesses to achieve higher productivity through economies of scale and scope. The elevation of labour productivity from this source would be expected to generate additional gross value added of around $850.0 million across the metropolitan economy by 2041 (SGS Economics and Planning 2011). Around 800 million of this benefit would accrue outside Central Melbourne.

Appendix 6[17] of the Melbourne Metro Business Case provides more detail on the labour productivity impact for each industry due to Melbourne Metro in 2031.

The integration of the Sunbury and Pakenham/Cranbourne line train services into the Melbourne Metro would improve the capacity, reliability and efficiency of train lines serving Melbourne's growth areas in the north, west and south-east. This would help reduce the journey-to-work times between these growth areas and the Central City and, in turn, generate additional demand for dwellings and employment near and around existing stations along these lines. This closely aligns with Plan Melbourne's objectives for an Integrated Economic Triangle[18], with the Sunbury to Pakenham corridor passing through or very close to several key precincts identified in the Plan, along with the expanded Central City. These include the Sunshine, Parkville, Monash and Dandenong South National Employment

[15] http://www.sgsep.com.au/insights/urbecon/evaluating-city-shaping-infrastructure-projects/

[16] http://ptv.vic.gov.au/assets/PTV/PTV%20docs/Melbourne-Metro/MM-Agglomeration-Benefits-of-the-Melbourne-Metro-ud.pdf

[17] See section 6.2.3 Key Findings http://melbournemetro.vic.gov.au/__data/assets/pdf_file/0003/40494/MM-Business-Case-Feb-2016-APPENDIX-06.PDF

[18] Connecting Melbourne's productive employment centres with an enhanced transport network. Connects the Hastings-Dandenong corridor with the Hume corridor to the north and the Wyndham-Geelong corridor to the south west

Clusters. Accordingly, all are expected to experience a greater level of employment growth from the Melbourne Metro, with the municipalities of Monash and Greater Dandenong projected to have an incremental growth without the project.

Figure 18 shows the Melbourne Metro in relation to the key economic clusters identified in Plan Melbourne.

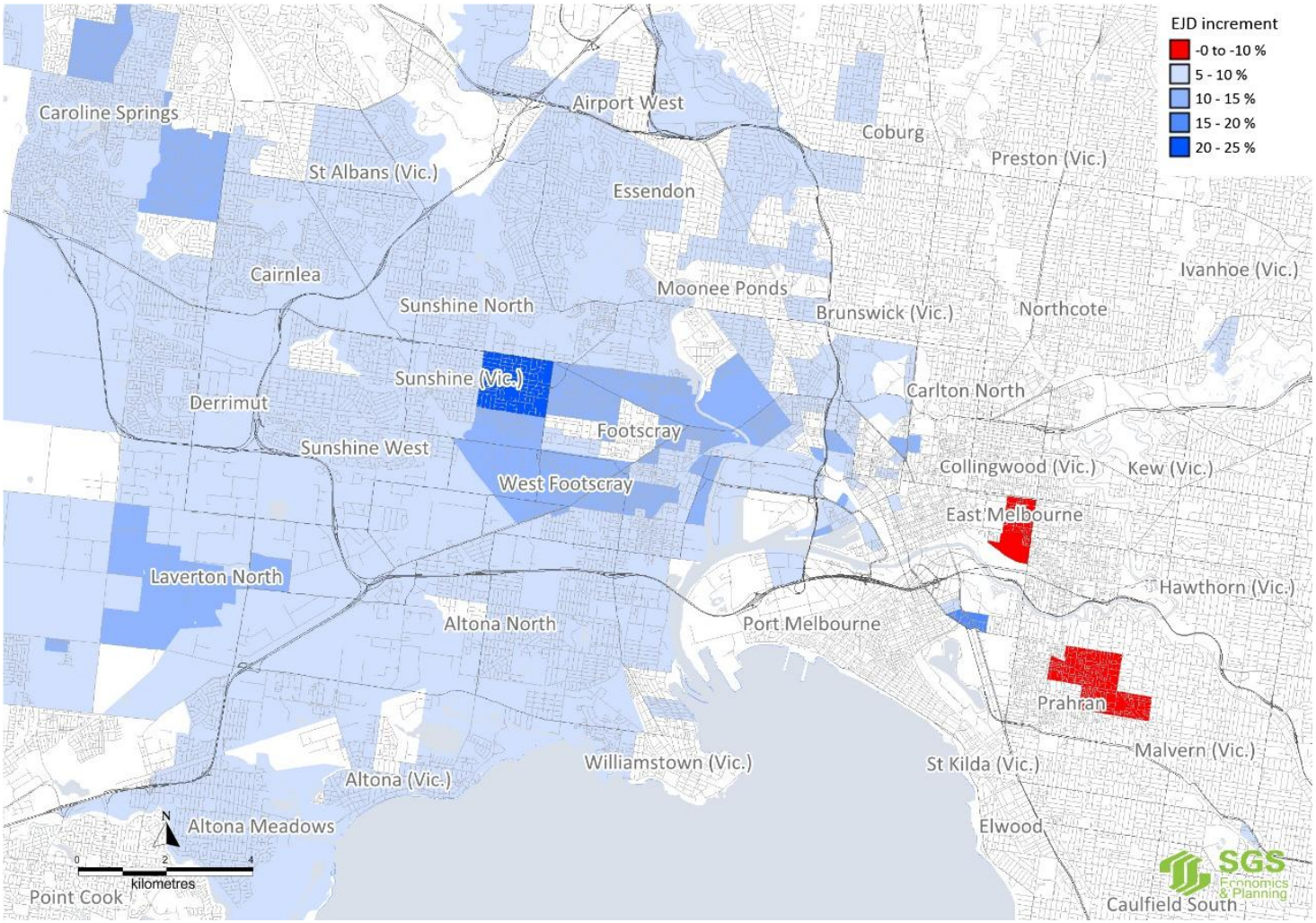
The Melbourne Metro is also expected to be of particular importance to western Melbourne, as it would improve connectivity to both the jobs-rich Central City and the south-eastern suburbs. It is also anticipated to stimulate jobs growth in the west, many of which would be in more productive and knowledge-intensive industries than the traditional manufacturing base of the area.

Given its existing high level of accessibility, Melbourne's south-eastern suburbs would be anticipated to experience only a relatively small uplift from the project.

Change in Business Mix

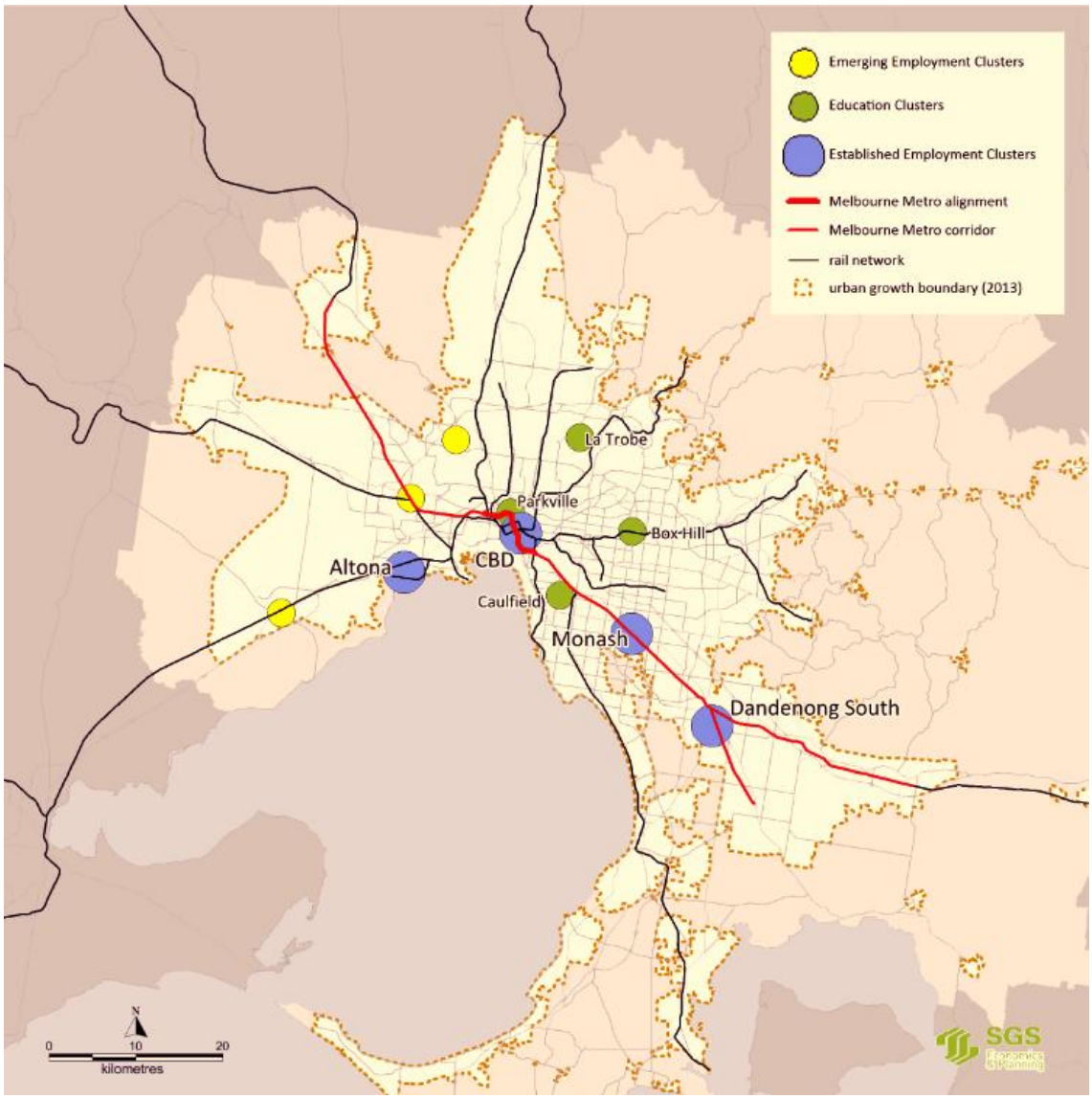
In addition to improving connectivity and accessibility, the project would likely transform the business mix of some areas and/ or provide the stimulus for urban renewal (e.g. Arden precinct). The intensified agglomeration economies and associated improvements in productivity generated by the Melbourne Metro would likely spark shifts in the locational preferences of firms, particularly those that are relatively knowledge- or creativity-intensive.

FIGURE 17. CHANGE IN EFFECTIVE JOB DENSITY BETWEEN THE WITHOUT PROJECT AND WITH PROJECT SCENARIOS



Source: SGS Economics and Planning, 2015

FIGURE 18. KEY ECONOMIC CLUSTERS



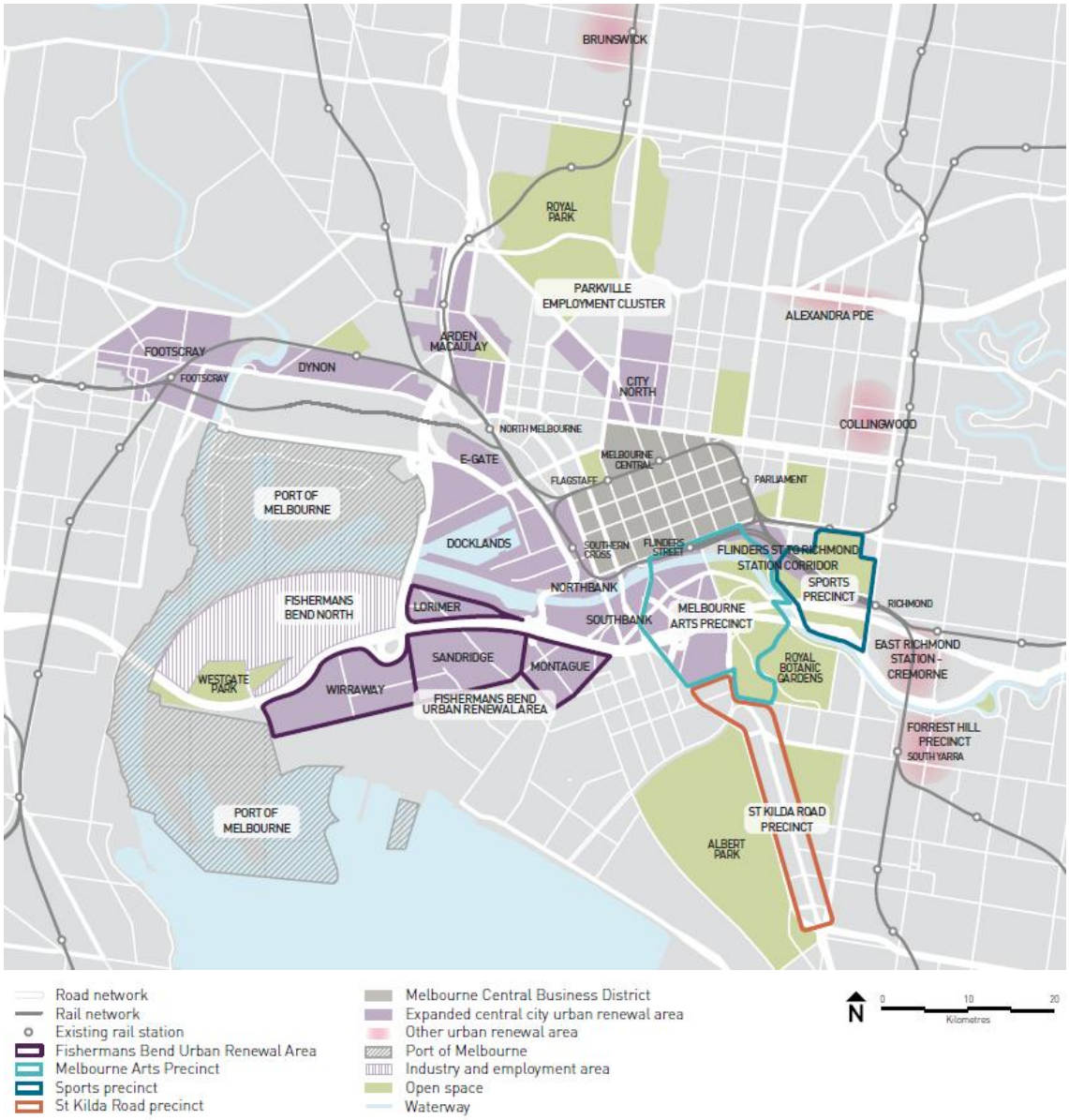
Source: SGS Economics and Planning 2015

7.2 Expanded Central City

Urban Renewal and Employment Growth

The Melbourne Metro would also further strengthen the Central City, which is the most highly productive and economically-significant area within Melbourne and Victoria. An expansion of the Central City region was proposed in Plan Melbourne (2014), as seen in Figure 19.

FIGURE 19. THE 'EXPANDED CENTRAL CITY'



Source: Plan Melbourne (2014).
Note: Superseded rail alignment shown.

Given this strategic impetus and wider structural changes to the economy, a significant amount of future employment growth is anticipated within the inner city of Melbourne. While the Melbourne Metro would be unlikely to further increase this already significant level of growth, it would adjust the spatial distribution of the central city and create a more resilient transport structure. This would in turn help to 'de-risk' the significant future growth projected for Central Melbourne, including by increasing densities in high accessibility locations.

Although the Melbourne Metro would be expected to have significant impacts across the metropolitan area as described above, the relative uplift in development would be most notable across areas in close proximity to the new underground stations. The installation of the new underground stations would be expected to result in a number of land use impacts throughout the inner city. This would play a key role in the expansion of the Central City to the north in particular, with improved connectivity from key districts to the Hoddle Grid. Stations at Arden and Parkville would be likely to increase demand for commercial and residential space in the areas and stimulate urban renewal. The proposed Parkville station, along with the proposed CBD North station, would be expected to strengthen development potential in the City North urban renewal precinct.

Following the construction period, the number of jobs located in transport zones close to the new stations would be expected to increase gradually over time, reflecting (in some instances) a change in industry composition, greater utilisation of offices, and lower floorspace ratios. Uplift in commercial development would largely be determined by the change that the station makes to the relative attractiveness of the district to residents and businesses, and the development potential of the area.

Business and Worker Accessibility

The accessibility improvements the Melbourne Metro would generate also have significant implications for workers and business activity in the Central City and surrounds. Businesses would be able to locate outside the Central City but still have rapid access to its benefits. Removal of the Sunbury and Pakenham/Cranbourne train lines from the City Loop would also improve access to the city centre. It would allow more frequent services on other lines that connect into the Hoddle Grid, particularly those currently at or near capacity. However, their removal from the City Loop would reduce access to CBD west (Southern Cross Station precinct) and CBD east (Parliament Station precinct) for travellers using the Sunbury or Pakenham/Cranbourne lines.

Given that Plan Melbourne anticipates the City of Melbourne would become Australia's largest business centre in the coming decades, with a jobs growth of 435,000 in 2011 to almost 900,000 by 2051, the Melbourne Metro would be able to play a significant role in meeting the rapid growth in demand for public transport into the Central City. This would improve reliability of services and reduce total commute and wait times for workers travelling into the city centre thereby reducing travel time costs and positively impacting on labour output. This could effectively widen the total employee pool available to businesses in the Central City, ensuring more appropriate matching of worker skills to jobs and increasing productivity. These improvements would not only improve business profitability but also attract greater levels of investment into the city, in turn promoting jobs and income growth. The increased accessibility provided by the Melbourne Metro and the liveability benefits this would generate would further serve to attract and retain workers, particularly those in knowledge-intensive industries.

8 PRECINCT 1: TUNNELS

The proposed Precinct 1: Tunnels covers the alignment of the proposed tunnels between the Western Portal at Kensington and the eastern portal at South Yarra (with the exception of the stations and portals) between the following precincts:

- Western Portal to Arden Station
- Arden station to Parkville Station
- Parkville station to CBD North Station
- CBD North station to CBD South Station
- CBD South station to Domain Station
- Domain station to Eastern Portal.

The majority of the precinct would be located underground, with the exception of the proposed Tunnel Boring Machine (TBM) launch sites and emergency access shafts as described below. The potential impacts in the Tunnels precinct would come about from construction impacts (loss of amenity, truck movements, noise and vibration, and changes to pedestrian and vehicle access) and customers perceptions about the how the different areas would function during the construction phase. The construction impact can be informed by the assessment from other technical streams, while impacts from customer perceptions is based on a more qualitative assessment drawing on previous construction projects.

Note that much of the potential impacts on businesses in Swanston Street is anticipated to be due to construction activity in the CBD North and CBD South precincts at each end of Swanston Street. However, to align the business impact report with other specialists' reports, the impact is covered as part of the Tunnels Precinct.

8.1 Project Components

Infrastructure

The proposed Tunnels precinct would include the following infrastructure:

Vertical Alignment

Two tunnels would be located at a depth of 10 - 40 m below the existing ground level. Where possible the tunnels would be located under existing road reserves.

Yarra River Crossing – TBM under the River

The tunnels would pass beneath the Yarra River, both under and to the east of Princes Bridge.

Emergency Access Shafts

Two emergency access shafts are proposed with permanent, above ground structures. The proposed locations are:

- the north east corner of Fawkner Park
- Queen Victoria Gardens adjacent to Linlithgow Avenue.

TBM Southern Launch Site

The TBM southern launch site would either be located within the Domain Precinct (discussed in Chapter 14) or would require both the site in Domain and a site at Fawkner Park. The remainder of this section applies to the Fawkner Park launch site only.

The Fawkner Park construction work site is proposed to be 19,800 m² in area, and include a TBM launch site and other construction related activities such as material laydown, equipment storage and maintenance, site office and amenities and spoil loading facilities. Acquisition of Fawkner Park Tennis Centre and partial acquisition of Fawkner Park are proposed. Temporary occupation of further areas of Fawkner Park would also likely be required during the construction phase.

Construction

The tunnels between the CBD North station and CBD South station are to be mined, with all other tunnels to be excavated using TBM. Surface impacts would be minimal during construction, except at TBM launch sites and emergency access shafts. However, there might be periods where vibration and ground borne noise would be perceptible on the surface as tunnelling progresses below.

Construction would generate 20 truck movements a day for 12 months in Linlithgow Avenue. Construction works for the Fawkner Park emergency access shaft would be expected to generate 20 average truck movements a day for 12 months. Truck access and movement at these locations would occur 24 hours a day, seven days per week (upon placement of acoustic sheds). At the TBM launch site spoil removal would generally occur 24 hours a day, seven days a week. Spoil removal and major deliveries to site are also expected 9.5 hours / day – in time blocks of 05:30 – 07:30, 09:30 –16:00 and 19:00 – 22:00. In total an average of 140 daily truck round trips area expected for 24 months.

Construction vehicle access routes for works at Linlithgow Avenue are shown in Figure 20 with routes for Fawkner Park shown in Figure 21.

Tunnelling operations would occur 24 hours a day, however, truck access to the Fawkner Park site would occur for 9.5 hours per day, in blocks of 05:30-07:30, 09:30-16:00 and 19:00-22:00.

Construction work in Fawkner Park would be anticipated to occur from mid-2018 to mid-2020. Construction of the emergency access shaft at Linlithgow Avenue would occur from 2018 to 2021.

Tunnelling works are anticipated to occur from 2017 and 2023, 24 hours a day and up to 7 days a week.

Alternative Design Options

Infrastructure

Precinct 1 infrastructure would be as above but with the following changes:

Emergency Access Shafts

Two alternate locations for emergency access shafts are proposed:

- The location of the Fawkner Park TBM launch site
- Tom's Block between Linlithgow Avenue and St Kilda Road.

Construction

The proximity of the Tom's Block shaft to the Concept Design location at Queen Victoria Gardens means construction activities would be identical. Co-locating the Fawkner Park emergency access shaft at the proposed Fawkner Park TBM launch site would remove the construction work site in the north east corner of the park.

FIGURE 20. CONSTRUCTION VEHICLE ACCESS ROUTES, LINLITHGOW AVENUE

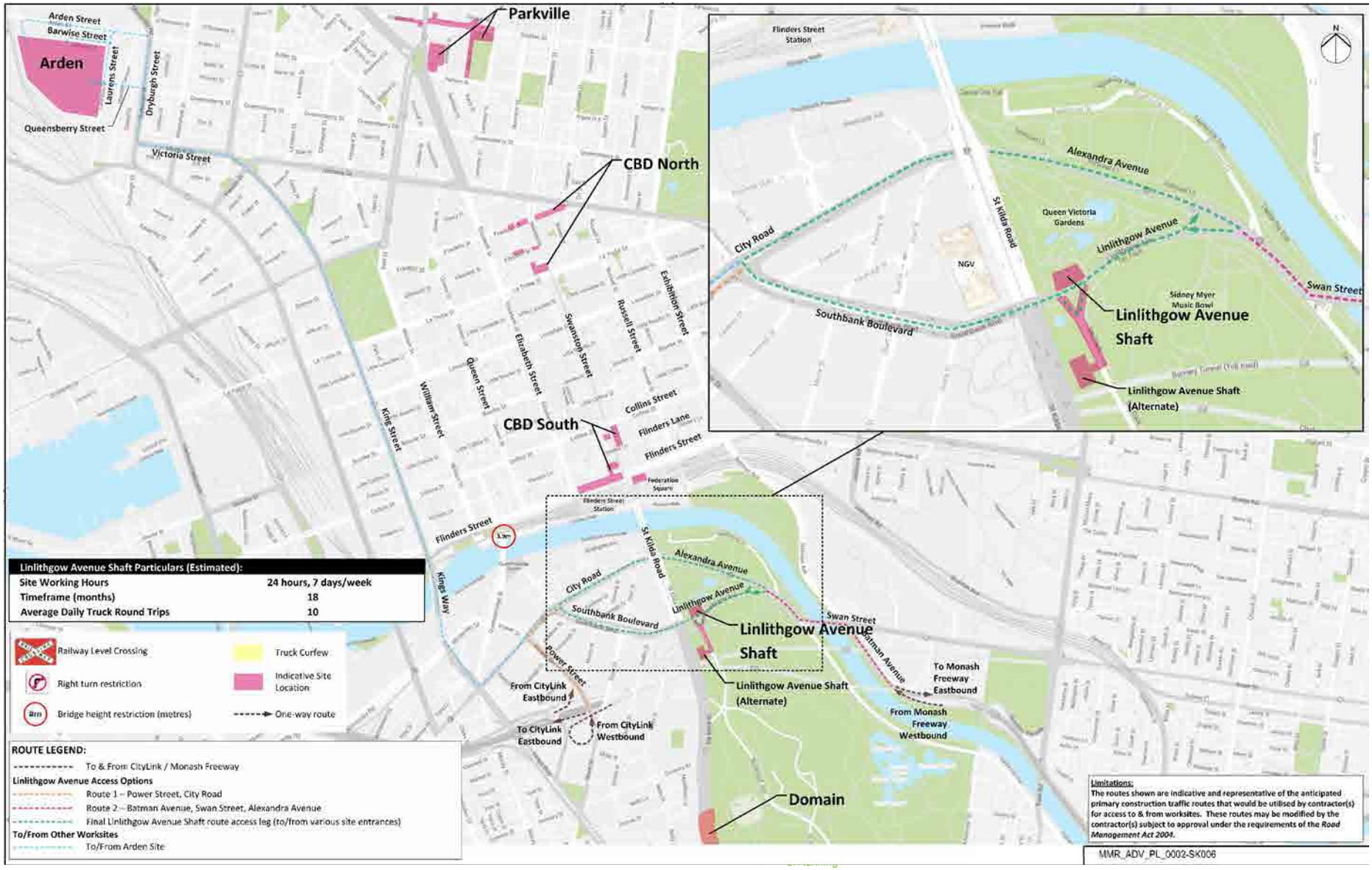
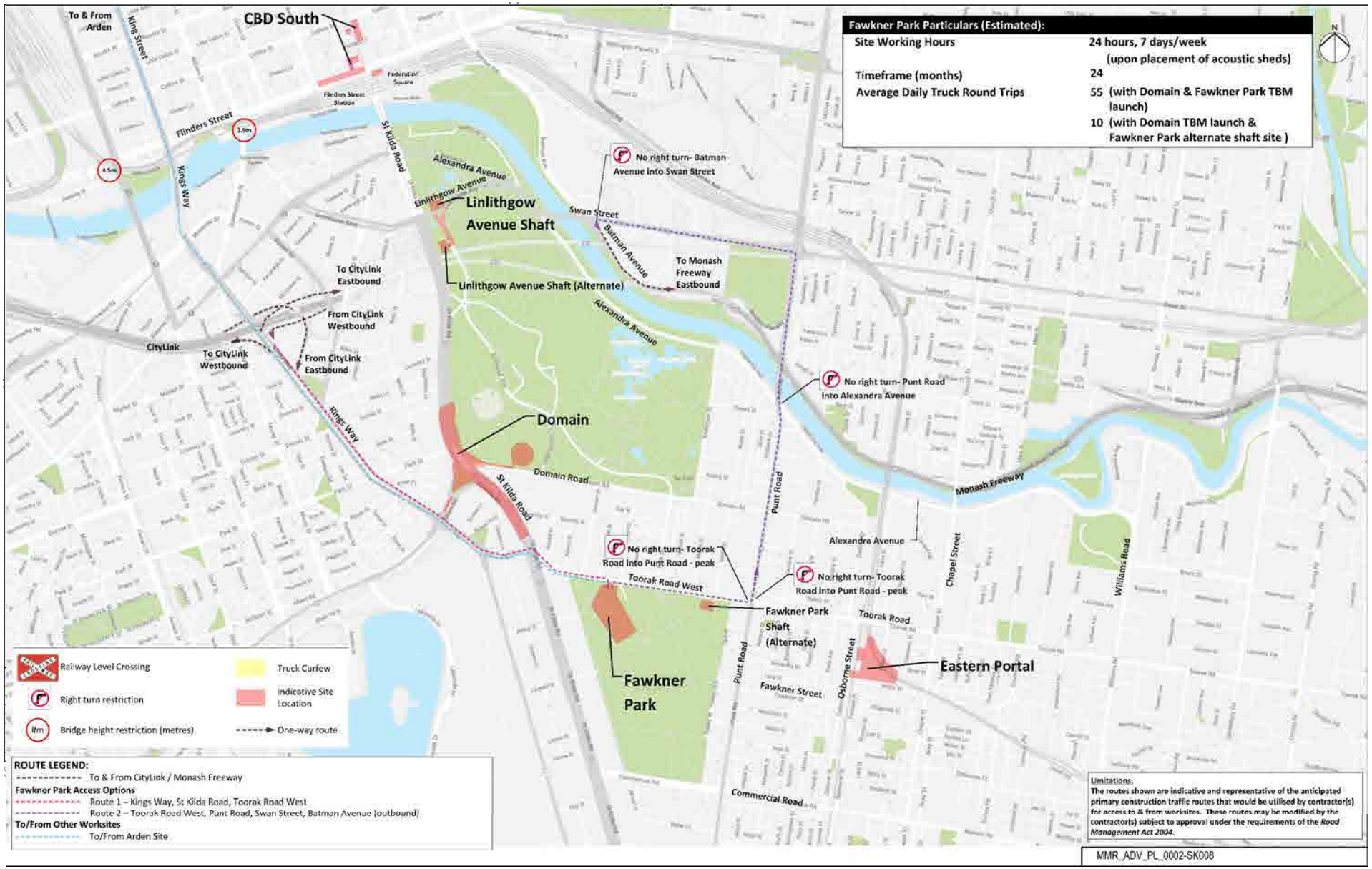


FIGURE 21. CONSTRUCTION VEHICLE ACCESS ROUTES, FAWKNER PARK



8.2 Existing Conditions

While the majority of construction activity in the proposed tunnel precinct would occur underground, there is potential for surface impacts around Linlithgow Avenue, Domain and Fawkner Park. The existing conditions of the proposed Domain TBM launch site are discussed in Section 14.2.

Linlithgow Avenue is located in the north-western part of the parklands that are situated between St Kilda Road, the Yarra River and Domain Road in the south. These parklands include Alexandra Gardens, Queen Victoria Gardens, Kings Domain and the Royal Botanic Gardens and are the setting for the Sidney Myer Music Bowl, Government House, the Yarra River boat sheds and the Shrine of Remembrance. The Alexandra Gardens are located just north of Linlithgow Avenue and are used for events including the Moomba Festival.

Fawkner Park is bound by Toorak Road West in the north and Commercial Road in the south and is set back from St Kilda Road and Punt Road. Fawkner Park Tennis Centre and Fawkner Park Child Centre and Kindergarten are located in the north of the park with playing fields in the south. The park is also used by personal trainers for client sessions, as are other parks in the area. The park is largely surrounded by commercial buildings to the west, the Alfred Hospital to the south and residential areas to the north and east.

Even though there are no surface impacts, as for the parts of the proposed Tunnels precinct described above, this impact assessment also focuses on the proposed tunnels precinct between CBD North and CBD South running under Swanston Street. The density of business activity, combined with the potential for cumulative impacts from works at the CBD North and CBD South precincts have led to a focus on this area.

Census of Land Use and Employment data was used to estimate the number of businesses, jobs and Gross Value Added in the Swanston Street component of the precinct. Figure 22 maps the proposed boundary of the Tunnels precinct and the proposed location of construction sites and project infrastructure. Figure 23 maps the total businesses in the precinct and their location in relation to proposed project construction sites and infrastructure. Figure 24 maps food and accommodation businesses. Figure 25 maps retail businesses. Figure 26 maps health and education facilities.

Estimates from Census of Land Use and Employment data of the number of employees in 2012 within the precinct, and labour productivity in 2011 were extrapolated using historical trends to produce a 2015 estimate.

Census of Land Use and Employment data indicates there were 469 businesses located within the Swanston Street component of the proposed Tunnels precinct in 2015, employing 11,030 staff. Overall, these businesses are estimated to produce $2.3 billion in Gross Value Added in 2015 as set out in Table 22 below. Close to:

- 30 per cent of employment is within the Retail Trade and Food Service sector along Swanston Street
- 25 per cent of employment is within the Information, Media, and Telecommunications sector
- A large share of other professional and business services located in high-rise buildings along Swanston Street.

TABLE 22. BASELINE ACTIVITY, TUNNELS PRECINCT (SWANSTON STREET BETWEEN CBD NORTH AND CBD SOUTH PRECINCTS), 2015

Industry	Businesses (No.)	Staff numbers (No.)	Annual Gross Value Added ($m)
Agriculture and Mining	1	589	113
Manufacturing	2	22	2
Electricity, Gas, Water and Waste Services	0	0	0
Construction	3	80	9
Wholesale Trade	1	8	1
Retail Trade	166	1 908	171
Transport, Postal and Storage	4	22	3
Information Media and Telecommunications	10	3 197	1411
Finance and Insurance	17	680	258
Rental and Hiring Services	1	7	2
Real Estate Services	3	9	3
Business Services	35	804	90
Admin and Support Services	22	211	50
Public Administration and Safety	2	491	46
Education and Training	13	654	74
Health Care and Social Assistance	18	296	17
Arts and Recreation Services	7	121	4
Other Services	35	193	16
Accommodation	2	245	13
Food and Beverage Services	127	1 493	79
Total	469	11 030	2 362

Source: City of Melbourne 2015

As construction activity is underground within the Swanston Street component of the Precinct, impact is anticipated to be limited to vibration or ground borne noise and potentially to disruption to utilities servicing these businesses.

FIGURE 22. PRECINCT BOUNDARY, TUNNELS PRECINCT (SWANSTON STREET BETWEEN CBD NORTH AND CBD SOUTH PRECINCTS)

Legend

- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- Business Impact Assessment Precinct (Based on CLUE 2012 Blocks)

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 5 of 7

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

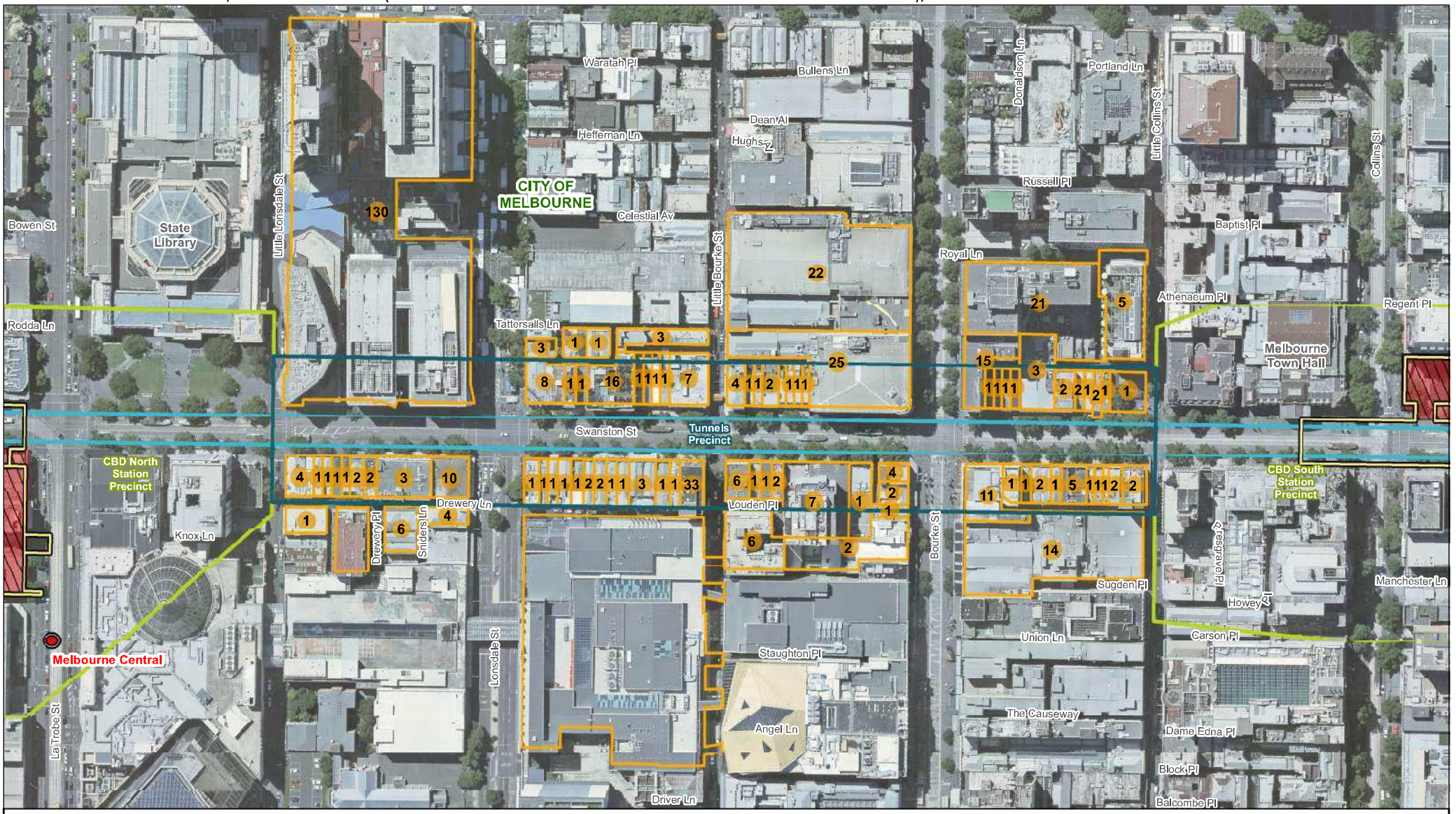
Title:
CLUE 2012 - Stations and Portals

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500244			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 30 60
Metres

G:\MMR-AJM\01_WIP\PW-1-AA-KG_GIS\640_Site_plans\MMR_0337_SGS_BusinessImpacts_EES\MMR_0337_EES_BusinessImpacts_CLUE_2012.mxd

FIGURE 23. TOTAL BUSINESSES, TUNNELS PRECINCT (SWANSTON STREET BETWEEN CBD NORTH AND CBD SOUTH PRECINCTS), 2012



Legend

- Properties with 1 or more businesses (85 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 6 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

Melbourne Metro Rail Project

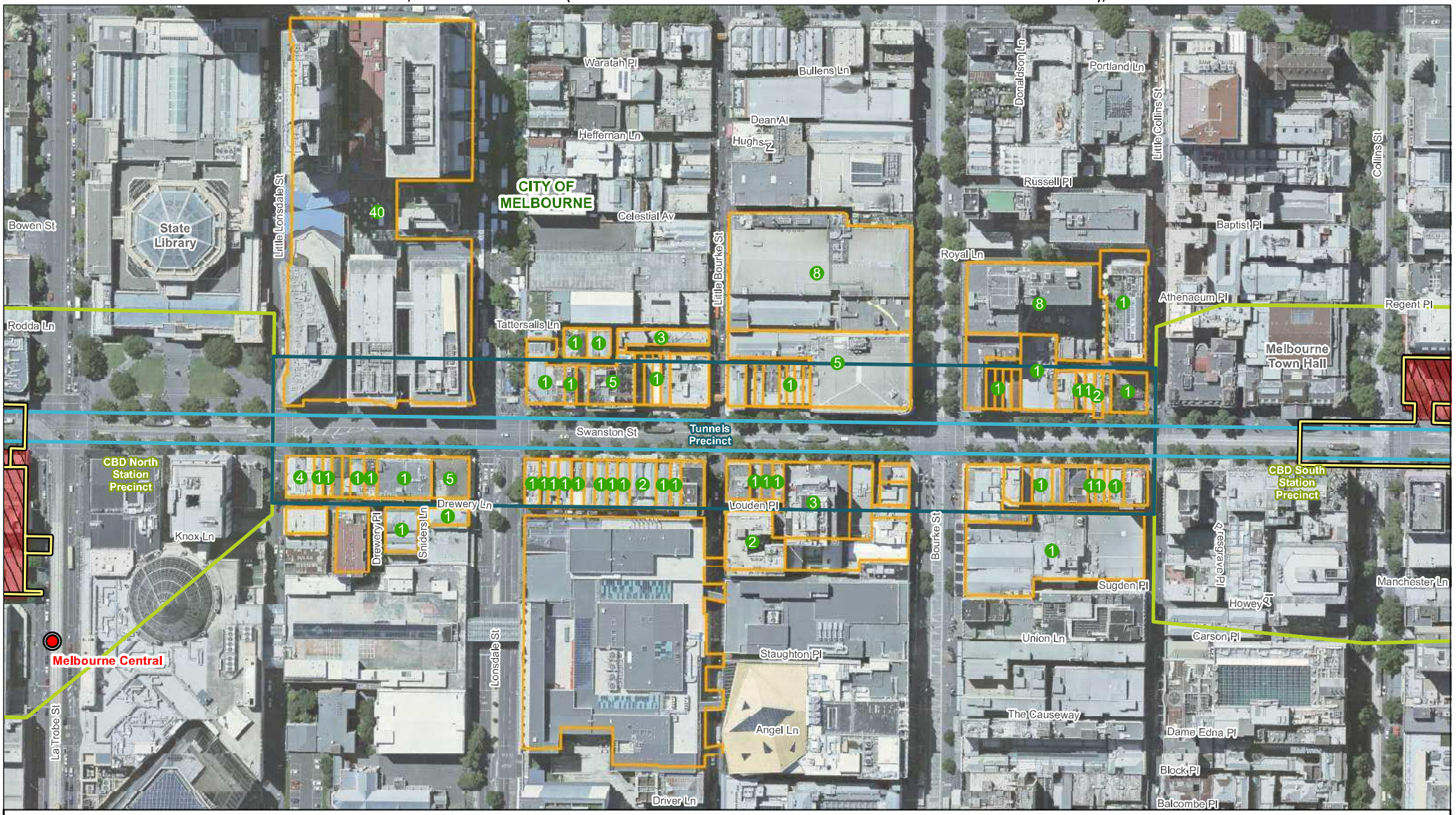
Title:
CLUE 2012 Total Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500327			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 30 60
Metres

G:\MMR-AJM\01_WIP\PW-1-AA-KG_GIS\640_Site_plans\MMR_0337_SGS_BusinessImpacts_EES\MMR_0337_EES_BusinessImpacts_CLUE_2012_Total_Business.mxd

FIGURE 24. FOOD AND ACCOMMODATION BUSINESSES, TUNNELS PRECINCT (SWANSTON STREET BETWEEN CBD NORTH AND CBD SOUTH PRECINCTS), 2012



Legend

- Properties with 1 or more food and accommodation businesses (49 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 6 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

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AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Food and Accommodation Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500325			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 30 60
Metres

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FIGURE 25. RETAIL BUSINESSES, TUNNELS PRECINCT (SWANSTON STREET BETWEEN CBD NORTH AND CBD SOUTH PRECINCTS), 2012

Legend

- Properties with 1 or more retail businesses (49 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Local Government Area (LGA)
- Proposed Excavation Area
- Proposed Construction Area
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 6 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

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AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

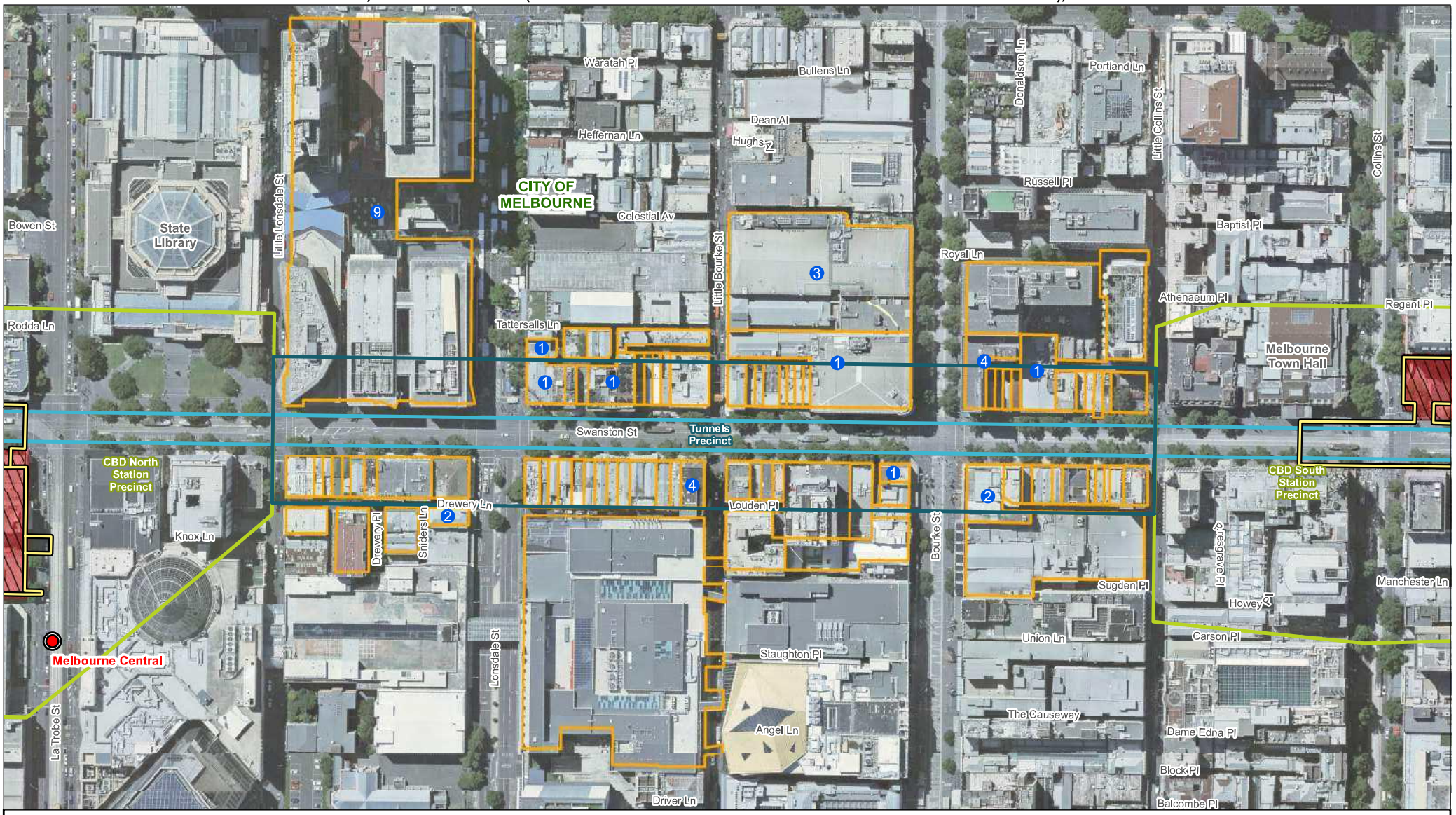
Title:
CLUE 2012 Retail Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500324			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 30 60
Metres

G:\MMR-AJM\01_WIP\PW-1-AA-KG_GIS\640_Site_plans\MMR_0337_SGS_BusinessImpacts_EES\MMR_0337_EES_BusinessImpacts_CLUE_2012_Retail.mxd

FIGURE 26. HEALTH AND EDUCATION BUSINESSES, TUNNELS PRECINCT (SWANSTON STREET BETWEEN CBD NORTH AND CBD SOUTH PRECINCTS), 2012



Legend

- Properties with 1 or more health and education businesses (12 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 6 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Health and Education Businesses

Drawing Number:		Revision:
MMR-AJM-UGAA-MP-NB-500326		P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 30 60
Metres

G:\MMR-AJM01_WIP\PW-1-AA-KG_GIS\640_Site_plans\MMR_0337_SGS_BusinessImpacts_EES\MMR_0337_EES_BusinessImpacts_CLUE_2012_Health_Education.mxd

Alternative Design Option

Baseline conditions are the same as for the Concept Design in the vicinity of Linlithgow Avenue.

8.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 23.

TABLE 23. KEY POTENTIAL ISSUES ASSOCIATED WITH CONCEPT DESIGN, TUNNELS PRECINCT

Concept Design	Issue	Is mitigation possible
Infrastructure		
Vertical Alignment	- Vibration and ground borne noise affecting business operations above - Disruption to utilities impacting on the productivity and output of local businesses.	- Yes
Yarra River Crossing – TBM under the river	- Vibration affecting operation of businesses operating on the river (e.g. tour boat operators).	- Yes
TBM Southern launch site		
Fawkner Park launch site	- Acquisition of Fawkner Park Tennis Centre. Temporary occupation of surrounding open space, and displacement of personal training activities - Truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians - Vibration, noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses - Increased demand for on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses.	- Yes
Domain launch site	- Occupation of traffic lanes, tram realignment works and truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians - Disruption to travel flow reducing access to the CBD - Vibration, noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses and the staging of events - Acquisition of car parks on St Kilda Road impacting access for staff and customers of surrounding businesses - Increased demand for remaining parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses - Reduction in space available for events utilising the surrounding parkland, including the Shrine of Remembrance, and St Kilda Road (covered in the assessment of the Domain Station precinct).	- Yes

Concept Design	Issue	Is mitigation possible
Emergency access shafts		
Fawkner Park north east location	- Truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians - Vibration, noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses - Increased demand for on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses.	- Yes
Queen Victoria Gardens, adjacent to Linlithgow Avenue	- Truck movements disrupting travel flow for vehicles, bicycles and pedestrians - Vibration, noise, dust and decreased amenity from activities at the site impacting on the staging of events - Reduction in space available for events utilising the surrounding parkland - Acquisition of car parks - Increased demand for on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses.	- Yes

Alternative Design Option

The key potential issues associated with the alternative design option are the same as for the Concept Design with the possible addition of the acquisition of one residential property.

8.4 Benefits and Opportunities

Table 24 summarises the potential benefits and opportunities associated with the proposed Tunnels precinct.

TABLE 24. BENEFITS AND OPPORTUNITIES POTENTIALLY ASSOCIATED WITH THE CONCEPT DESIGN, TUNNELS PRECINCT

Concept Design	Benefits	Opportunities
Infrastructure		
Vertical Alignment	- The Vertical Alignment avoids business acquisition compared to other possible construction methods - The Vertical Alignment limits the potential for amenity impacts on the surface and any associated disruption to business activity compared to other possible construction methods.	- Possible employment of local business in the construction phase.
Yarra River Crossing – TBM under the river	- TBM under the river helps to minimise the impact of the construction on the flow on the river and the Yarra River services and businesses in the immediate	- Possible employment of local business in the construction phase.

Concept Design	Benefits	Opportunities
	proximity compared to other possible construction methods.	
- TBM Southern launch site		
Fawkner Park launch site	- The location in parkland helps limit business acquisition - The location in the parkland helps to limit the impact of the infrastructure on business operations - Demand for local goods and services by construction workers.	- Possible employment of local business in the construction phase.
Domain launch site	- The location in parkland helps to limit the impact of the infrastructure on business operations - Demand for local goods and services by construction workers.	- Possible employment of local business in the construction phase.
- Emergency access shafts		
Fawkner Park north east location	- The location in parkland helps to limit the impact of the infrastructure on business operations - Demand for local goods and services by construction workers.	- Possible employment of local business in the construction phase.
Queen Victoria Gardens, adjacent to Linlithgow Avenue	- The location in parkland helps to limit the impact of the infrastructure on business operations - The relatively low flow of traffic along Linlithgow Avenue limits traffic disruptions from construction - Demand for local goods and services by construction workers.	- Possible employment of local business in the construction phase.

Alternative Design Option

Table 25 lists the benefits and opportunities associated with the alternative design option.

TABLE 25. BENEFITS AND OPPORTUNITIES POTENTIALLY ASSOCIATED WITH ALTERNATIVE DESIGN, TUNNELS PRECINCT

Concept Design	Benefits	Opportunities
The location of the preferred Fawkner Park TBM launch site	Colocation in an existing work site reduces the impact on the north-east corner of Fawkner Park.	Possible employment of local business in the construction phase.
Located in Tom's Block	As for Queen Victoria Gardens, adjacent to Linlithgow Avenue described above.	Possible employment of local business in the construction phase.

8.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses - Extent of ongoing impacts on businesses through property acquisition - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Concept Design

Construction Phase

Acquisition Impacts

Acquisition of one business would likely be required in the proposed Tunnels precinct: Fawkner Park Tennis Centre.

TABLE 26. ESTIMATED DIRECT FALL IN BUSINESS ACTIVITY DUE TO ACQUISITION, CONCEPT DESIGN, TUNNELS PRECINCT

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	0	0	0
Electricity, Gas, Water and Waste Services	0	0	0
Construction	0	0	0
Wholesale Trade	0	0	0
Retail Trade	0	0	0
Transport, Postal and Storage	0	0	0
Information Media Telecom	0	0	0
Finance and Insurance	0	0	0
Rental and Hiring Services	0	0	0
Real Estate Services	0	0	0
Business Services	0	0	0
Admin and Support Services	0	0	0
Public Administration and Safety	0	0	0
Education and Training	0	0	0
Health Care and Social Assistance	0	0	0
Arts and Recreation Services	1	2	0.3
Other Services	0	0	0
Accommodation	0	0	0
Food and Beverage Services	0	0	0
Total	1	2	0.3

Source: City of Melbourne 2015

This is estimated to result in a loss of two jobs and $0.3 million in Gross Value Added, as set out in Table 26 below. The cost of acquiring the Fawkner Park Tennis Centre, in terms of business activity (not the value if the land was used for another purpose such as residential) is tentatively valued at $350,000 (Risk #B006).

The majority of activity would be expected to be relocated to other tennis facilities. This reflects the following assumptions:

- Court hire is $25 per hour, 6 courts within the complex
- Average usage of 40 hours per day
- The centre is open for 350 days per year.

Whilst lost from the precinct, the economic output of this business would not be lost from the Melbourne economy, assuming the businesses relocate elsewhere in the area or elsewhere in Melbourne. The impact to this business could be mitigated through compensation entitlements provided through the *Land Acquisition and Compensation Act 1986*, assistance to find suitable alternate premises, early engagement and sufficient notification of acquisition.

Non-acquisition Impacts

The construction phase of the project has potential to disrupt some business activity in the Tunnels precinct from changed amenity due to noise, dust and vibration[19]. This could reduce demand for the goods and services sold by businesses in proximity to the construction work. Nevertheless, overtime, it would be expected that demand would be redirected, to some extent, to businesses located in nearby streets (Risk #B003). Amenity impacts on the operation of food and beverage businesses are expected, especially those with outdoor seating along with service businesses where the customer experience is crucial to attracting customers. This includes retail and accommodation businesses.

Whilst identified as a possible risk, Technical Appendix H *Air Quality* indicates that, with mitigation, air quality could be contained within State Environmental Protection Policy criteria for the majority of the precinct. Even with mitigation, however, construction activity is anticipated to result in exceedances of the State Environmental Protection Policy criteria at the Fawkner Park construction work site. Even though these exceedances would be contained in the construction work site footprint, they would be in very close proximity to the Fawkner Park Children's Centre and Kindergarten. The centre's operation would be particularly sensitive to amenity changes, and also from perceptions of amenity changes. Furthermore, there is a food and beverage and accommodation business located across Toorak Road West of the Fawkner Park construction work site. Whilst sensitive to amenity changes, they are further from the anticipated areas of exceedance with negligible impacts.

Technical Appendix I *Noise and Vibration* identifies that, even with mitigation, there would be amenity impacts from vibration and ground borne noise exceeding human comfort from the construction activities at Fawkner Park. There are also anticipated to be exceedances in the precinct from the operation of the TBM, however the duration of these impacts are anticipated to be limited (Risk #B001). Airborne noise is not anticipated to cause impacts following mitigation.

For the majority of the precinct, works would be located underground and therefore no changes to access to businesses is anticipated from factors such as increased traffic congestion, demand for parking from the construction workforce or from changes to road and pedestrian access routes. The exceptions are at the Fawkner Park and Linlithgow construction work sites and along Swanston Street between the proposed CBD North and CBD South precincts.

Truck movements associated with works at the Fawkner Park and Linlithgow Avenue construction work sites could potentially impact access for businesses in the precinct (Risk #B004). Demand for on street parking by construction workforce vehicles could further exacerbate access issues for businesses. The impact from changes to access in these areas could largely be mitigated through precinct parking plans, maintenance of access and traffic management plans to enable businesses to continue to operate during the construction period.

To understand the potential impact of the project along Swanston Street other major projects undertaken within the Hoddle Grid were considered, including:

- Swanston Street redevelopment (2011–2013)
- Myer Emporium development (2012–2014)
- RMIT Swanston Academic Building (2010–2012)
- RMIT Capital Works Program (2007–2016)
- Tram Super Stops (CBD) (2011–2012).

These previous studies help to understand the potential changes to pedestrian flows and the loss of business activity from the project.

Impacts along Swanston Street are anticipated to stem, not from changes to access in the Tunnels precinct, but from the cumulative impact from works in the nearby CBD North, CBD South and Domain precincts where changes to the road and pedestrian networks are anticipated, as are some short term

[19] To assist in understanding the potential impact on Fawkner Park and surrounds of the construction activities, the Fitzroy Gardens Stormwater Harvesting System project was reviewed and its impact on surrounding businesses was considered. Some similarities between the projects were identified.

tram closures. This is anticipated to lead to a reduction of foot traffic along Swanston Street (Risk #B009).

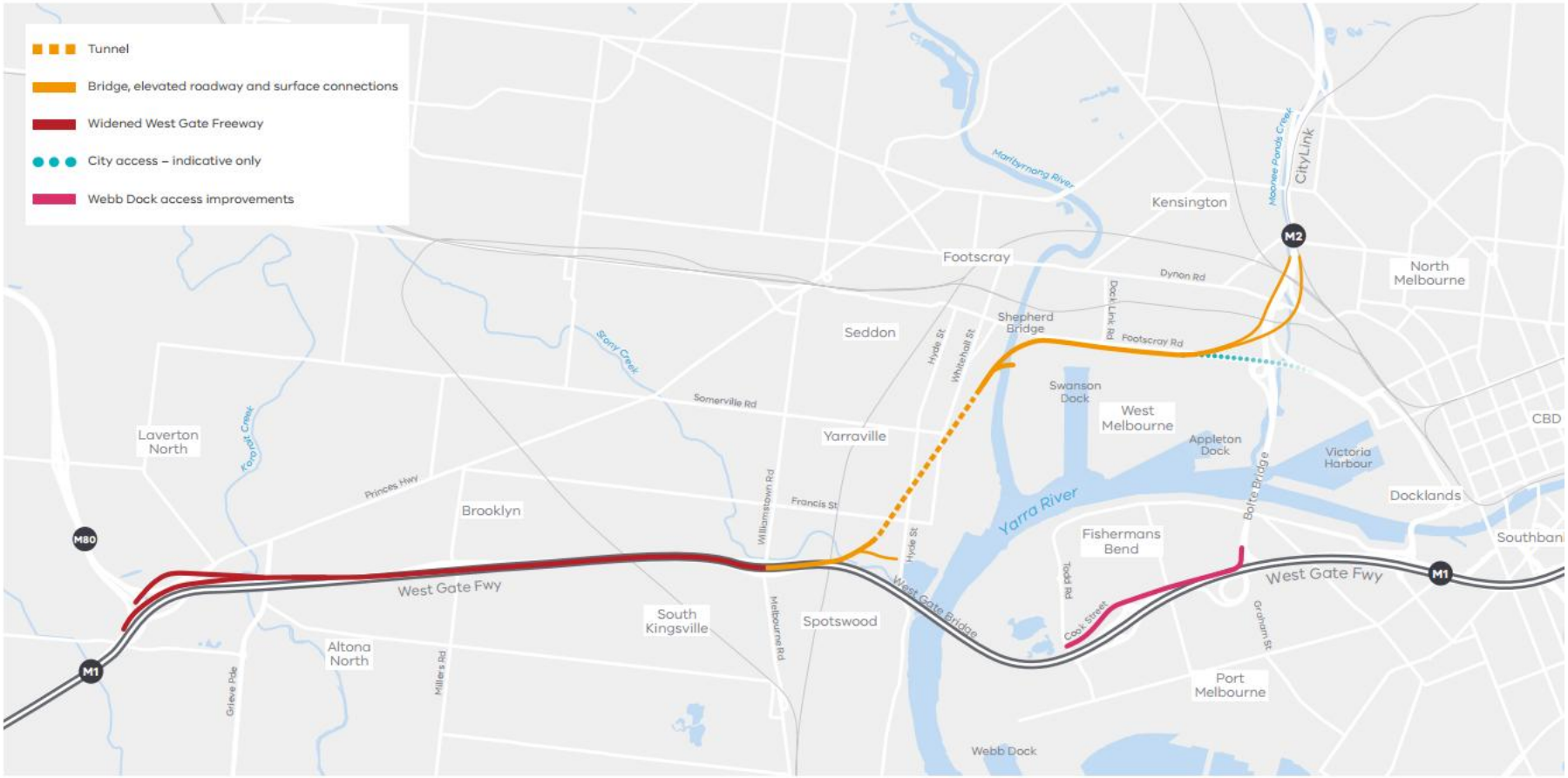
While this activity would be lost from within the precinct, it is anticipated it would redirect to nearby streets and laneways and would not, therefore be lost from the CBD.

For some business types, particularly retail and food and beverage, the employment of construction workers in the precinct (particularly at the TBM launch sites and emergency access shaft construction work sites) would lead to an increase in demand for goods and services in the local area.

While disruptions to utilities are not anticipated, any unexpected disruption would impact the ability of businesses to operate. This risk could be mitigated by informing businesses of the timing and duration of works, alerting them to the risk of unexpected disruptions. The assumed short-term nature of any disruption would have a negligible impact on business activity.

Increases in traffic congestion caused by construction work within the proposed Tunnels precinct may be relatively minor when looked at in isolation, however, the impacts may cumulate with any other congestion that stems from other proposed precincts and major projects scheduled during the construction phase (Risk #B009). However, cumulative impacts are anticipated to stem from such factors as demand for construction workers and increased heavy truck movements, which are not quantified as part of this business impact assessment.

FIGURE 27. PROPOSED WESTERN DISTRIBUTOR CORRIDOR



Source: DEDJTR, 2016

Table 27 summarises the key assumptions underlying the quantification of the business impacts of the proposed Tunnels precinct.

TABLE 27. KEY ASSUMPTIONS UNDERLYING QUANTIFICATION OF RESIDUAL BUSINESS IMPACTS, CBD TUNNELS PRECINCT

Buildings with street frontage	Change in foot-traffic (%)	Description
Swanston Street (between CBD North and South precincts)	-10	Due to reduced access from St Kilda Road due to works in the Domain precinct, noise and amenity issues, and reduced access around the construction work site in CBD South and CBD North precincts. This captures pedestrians who detour off Swanston Street to avoid construction at CBD North and South precincts and people who would not travel into the City of Melbourne due to perceptions about the impact of the construction works.
Demand elasticity of foot-traffic	**Elasticity**	**Description**
Retail	0.40	Retail businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Food services	0.40	Food service businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Accommodation	0.10	Accommodation businesses are expected to be influenced more modestly by foot-traffic than other retail as bookings are generally made in advance.
All other industries	0.00	Changes in foot-traffic are not expected to impact the business activity of other businesses. This 0.0 impact has been confirmed during consultation with business in all other industries. That is, businesses do not feel that foot-traffic impacts on their business activity.
Construction workers	**Time period**	**Spending per worker per day**
Peak number of 300 in 2020	2018 - 2025	$20 / 80 per cent within the precinct.

Source: SGS Economics and Planning

Table 28 summarises the value of the business impact identified for the proposed Tunnels precinct and the other tunnel sections.

TABLE 28. ESTIMATED RESIDUAL BUSINESS IMPACTS, TUNNELS PRECINCT (INCLUDING CBD)

Buildings with street frontage:	Gross value added ($m)	Comments
Business acquisition	-0.3	The majority of activity would be expected to be relocated to other tennis facilities.

Buildings with street frontage:	Gross value added ($m)	Comments
Reduction in foot-traffic (from footpath closures and amenity impacts)	-12.7	This activity would be likely to be redistributed to Elizabeth and Russell Streets.
Spending by construction workers	+0.3	Overall spending by construction workers would be expected to be a modest offset for the fall in foot-traffic.
Total	-12.7	A large share of this activity is likely to be redirected to other retail precincts in Melbourne CBD or broader Melbourne area including Chadstone.

Source: SGS Economics and Planning

Table 29 set out a time profile showing the various levels of impacts in the proposed Tunnels precinct from 2017 to 2024. This profile is based on the proposed construction works, but without a very detailed construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 29. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
Tunnels	75%	100%	100%	100%	60%	50%	30%	15%

Source: SGS Economics and Planning

Operational Phase

Parkland acquired for construction would have permanent structures for the emergency access shafts with the remainder assumed to be returned park once the project is operational. This would have a negligible, if any, impact to businesses.

Assessment Against Draft EES Objectives
The Concept Design is consistent with the draft EES evaluation objective for social, community, land use and business as:

- The tunnelling method of construction minimises surface impacts and therefore disruption to business activity during the construction phase
- Permanent surface works are largely contained to parkland limiting impacts to businesses. Whilst this may have a small impact on the staging of public events, these impacts can be minimised with traffic management and consultation and engagement measures.

Alternative Design Option

Construction and Operational Phases
Impacts are as described for the Concept Design.

Assessment Against Draft EES Objectives
The alternative design options are consistent with the draft EES evaluation objective for social, community, land use and business for the same reasons outlined for the Concept Design.

8.6 Summary Precinct 1: Tunnels

The proposed Tunnels precinct contains a diverse collection of business areas, which would be impacted in differing ways.

The Fawkner Park Tennis Centre would be acquired which would result in a loss of economic activity. The Fawkner Park Children's Centre and Kindergarten operations would be heavily impacted, and some personal training activity would be displaced to other parks in the area.

Due to the cumulative impact from works in the nearby CBD North, CBD South and Domain precincts where changes to the road and pedestrian networks are anticipated, there would be a reduction in business activity along Swanston Street due to reduced passing trade.

This captures pedestrians who would detour off Swanston Street to avoid construction at CBD North and South precincts and people who would not travel into the Central City due to perceptions about the impact of the construction works.

Mainly retail and food business would benefit from demand from construction workers spending in the proposed Tunnels precinct, particularly near the proposed TBM launch sites and emergency access shaft construction work sites, which would lead to an increase in demand for goods and services in the local area.

The Western Distributor, which is slated to occur from 2018 to 2022, is in close proximity to western parts of the proposed Tunnels precinct and could contribute a cumulative impact. However, not enough is known about the construction (e.g. method, truck movements, road closures) of the Western Distributor to quantify if there would be a cumulative impact.

8.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during construction of the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

9 PRECINCT 2: WESTERN PORTAL (KENSINGTON)

Potential impacts of Precinct 1: Western Portal (Kensington) would be generated by the acquisition of businesses as well as construction impacts (truck movements and changes to vehicle access). The assessment of these business impacts was informed by assessments from other technical streams.

9.1 Project Components

Infrastructure

The proposed Western Portal would connect existing railway lines at the surface to the tunnel entrance, located in the east of the precinct. Two additional rail lines are proposed to be built to connect the existing Sunbury railway tracks and the new Melbourne Metro tracks. A permanent retaining wall is proposed to be located along Childers Street and an Emergency Relief Facility located adjacent to the railway reserve on the eastern side of Tennyson Street in the 50 Lloyd Street Business Estate.

Construction

Thirteen commercial properties (and one part common area title) are proposed to be permanently acquired in the east of the precinct to accommodate a construction work site located between Bakehouse Road and McClure Road, Kensington. One commercial property is proposed to be temporarily occupied for much of the construction phase. Nine residential properties are also proposed to be acquired to enable construction works. The car park along Childers Street would be occupied during construction to provide room for construction traffic.

Construction works would include:

- The relocation and protection of utilities including two high voltage transmission towers in Childers Street and the relocation of a gas main under Childers Street
- Construction of a decline structure to the centre of Kensington station
- Cut and cover tunnel construction to the east end of Childers Street
- Tunnel excavation and TBM retrieval
- Construction of services and relief shaft in the west corner of the 50 Lloyd Street Business Estate
- Establishment of construction work sites including a major construction work site proposed to be located on Hobsons Road to support activities at the Western Portal the site would be used for site offices and facilities, laydown areas and materials and equipment storage.

Construction would likely generate 50 average daily truck movements for 30 months.

Site working hours would be Monday to Friday, 07:00 to 18:00, Saturday, 08:00 to 15:00 (excluding rail and bridge night works).

Early Works

Early works in the proposed Western Portal precinct would involve the relocation of utility infrastructure including electricity, gas, sewer, telecommunications, and water and stormwater drainage assets.

Alternative Design Option

The alternative design for the proposed Western Portal would require the construction of an additional rail bridge over Kensington Road and the placement of a TBM Retrieval Box opposite the pavilion on Childers Street. No acquisition of commercial property would likely be required but does require the acquisition of one residential property.

9.2 Existing Conditions

The proposed Western Portal precinct is largely bound by industrial, office, warehouse and park land uses. The precinct extends from the commercial land next to the intersection of Kensington Road and industrial and office properties to the west. There are also a modest number of dwellings located to the east of South Kensington station and north of the railway line, with light industrial uses in the east and west of the precinct. The precinct is bordered by railway land to the south.

Census of Land Use and Employment data was used to estimate the number of businesses, jobs and Gross Value Added in the precinct. Figure 28 shows the proposed boundary of the Western Portal precinct.

Estimates from Census of Land Use and Employment data on the number of employees in 2014 within the precinct, and labour productivity in 2011, were extrapolated using historical trends to produce a 2015 estimate. The data indicates there were 49 businesses located within the proposed Western Portal precinct in 2015, employing 609 staff. Overall, these businesses are estimated to produce $67 million in gross value added in 2015 as shown in Table 30 with close to 75 per cent of businesses in the Transport, Postal and Storage sector.

TABLE 30. BASELINE ACTIVITY, WESTERN PORTAL, 2015

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	8	67	7.2
Electricity, Gas, Water and Waste Services	0	0	0
Construction	0	0	0
Wholesale Trade	0	0	0
Retail Trade	1	5	0.8
Transport, Postal and Storage	38	475	51.9
Information Media and Telecommunications	0	0	0
Finance and Insurance	0	0	0
Rental and Hiring Services	0	0	0
Real Estate Services	0	0	0
Business Services	1	32	3.9
Admin and Support Services	0	0	0
Public Administration and Safety	1	30	3.2
Education and Training	0	0	0
Health Care and Social	0	0	0
Arts and Recreation Services	0	0	0
Other Services	0	0	0
Accommodation	0	0	0

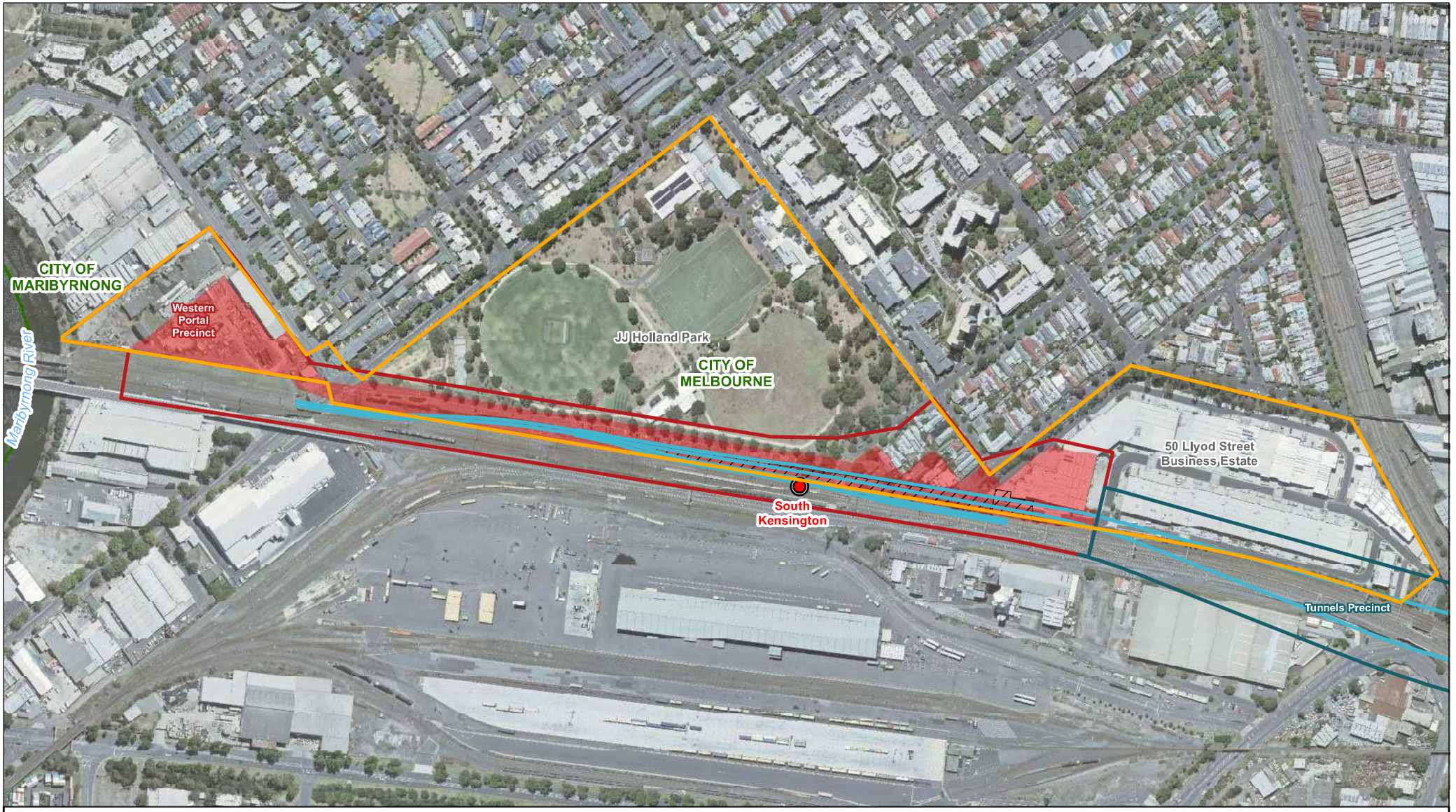
Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Food and Beverage Services	0	0	0
Total	49	609	67

Source: City of Melbourne 2015

The total number of businesses in the precinct is shown in Figure 29[20].

[20] Maps showing businesses by industry are not included as there is five or less businesses in each industry in the precinct. For privacy reasons we have not included maps showing five or fewer businesses.

FIGURE 28. PRECINCT BOUNDARY, WESTERN PORTAL



Legend

- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- Business Impact Assessment Precinct (Based on CLUE 2012 Blocks)

Environmental and Planning Precincts

- Portal Precinct
- Tunnel Precinct

Map 1 of 7

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

aurecon JACOBS Mott MacDonald

Melbourne Metro Rail Project

Title:
CLUE 2012 - Stations and Portals

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500244			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 70 140
Metres

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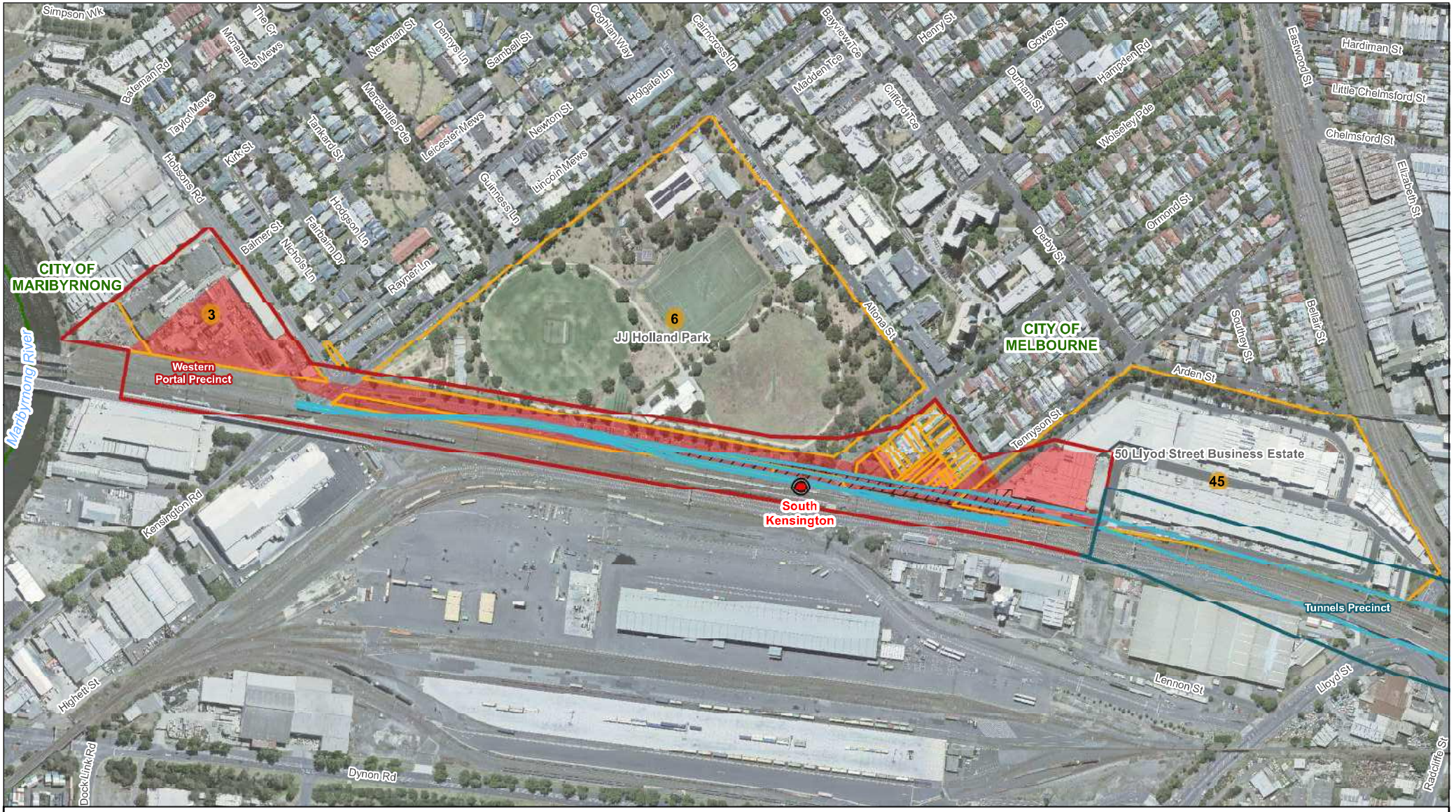
FIGURE 29. TOTAL BUSINESSES, WESTERN PORTAL, 2012



Legend

- Properties with 1 or more businesses (3 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Portal Precinct
- Tunnel Precinct

Map 1 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

aurecon JACOBS Mott MacDonald

Melbourne Metro Rail Project

Title:
CLUE 2012 Total Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500327			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 70 140
Metres

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9.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 31.

TABLE 31. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Direct reduction in business activity within the precinct due to the acquisition of industrial and commercial property	No
Indirect or secondary loss of output from businesses that remain in the precinct that were previously supplying the displaced businesses	No
Acquisition of residential property reducing business activity in the precinct	No
Vibration, noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses	Potentially
Difficulty renting commercial property due to poor amenity and access constraints	Potentially
Truck movements disrupting travel flow for vehicles, bicycles and pedestrians	Potentially
Access to the eastern entrance of the 50 Lloyd Street Business Estate impacted by construction activity impacting business operation	Yes
Acquisition of car parks along Childers Street impacting access for staff and customers of surrounding businesses	Potentially
Increased demand for on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses	Potentially
Disruption to utilities impacting on the productivity and output of local businesses	Yes

Alternative Design Option

The Alternative Design has no commercial acquisition proposed. All other potential issues remain.

9.4 Benefits and Opportunities

Table 32 summarises the potential benefits and opportunities associated with the Concept Design.

TABLE 32. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, WESTERN PORTAL

Concept Design	Benefits	Opportunities
50 Lloyd Street Business Estate TBM Retrieval box and a shorter decline structure	Construction	
	- Demand for local goods and services by construction workers	- Possible employment of local business in the construction phase
	Operation	
	- None identified	- None identified

Alternative Design Option

The potential benefits and opportunities associated with the alternative design option are as for the Concept Design.

9.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses - Extent of ongoing impacts on businesses through property acquisition - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Early Works

Early works are not expected to impact businesses in the area as interruptions to utility services are not anticipated. However, utilities are essential for business operations and if works unexpectedly cause any interruption to services this may suspend business activity until services are returned. It is assumed that any disruption would be short-term in nature and therefore would have a negligible impact on businesses. This risk could be mitigated by informing businesses of the timing and duration of planned works and disruptions.

Construction Phase

<u>Acquisition Impacts</u>

The construction phase would likely involve the acquisition of commercial land next to the intersection of the rail corridor and Kensington Road and some of the industrial and office properties to the west of Bakehouse Road. This would force some businesses in the precinct to relocate and reduce aggregate output of businesses with the precinct (Risk #B006).

The acquisition of businesses includes 13 businesses from the 50 Lloyd Street Business Estate. As Census of Land Use and Employment data does not provide estimates of the employment levels of individual businesses within the Estate, these had to be estimated from average employment levels in the local area. In addition, one business located on Hobsons Road is expected to be temporarily occupied.

Business acquisitions are expected to lead to a reduction in gross value added of close to $23 million across the precinct as shown in Table 33. The majority of the acquired businesses provide warehouse

and storage services – the business park provides a suitable location for this type of industry servicing Melbourne's west. Remaining businesses in the business park would continue to function in the same way and won't be impacted by the departure of the other firms. No further reduction in Gross Value Add is anticipated outside the precinct.

TABLE 33. DIRECT FALL IN BUSINESS ACTIVITY DUE TO ACQUISITION, CONCEPT DESIGN, WESTERN PORTAL

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	0	0	0
Electricity, Gas, Water and Waste Services	0	0	0
Construction	0	0	0
Wholesale Trade	0	0	0
Retail Trade	0	0	0
Transport, Postal and Storage	11	138	15.0
Information Media and Telecommunications	0	0	0
Finance and Insurance	0	0	0
Rental and Hiring Services	0	0	0
Real Estate Services	0	0	0
Business Services	1	32	3.9
Admin and Support Services	0	0	0
Public Administration and Safety	1	30	3.2
Education and Training	0	0	0
Health Care and Social Assistance	0	0	0
Arts and Recreation Services	0	0	0
Other Services	0	0	0
Accommodation	0	0	0
Food and Beverage Services	1	4	0.5
Total	14	204	23.0

Source: City of Melbourne 2015

Whilst economic impact of these businesses would be lost from the precinct, their economic output would not be lost from the Melbourne economy, as it is anticipated the businesses would relocate elsewhere in Melbourne. Considering the business types and their current location, it is most likely they would relocate in Melbourne's north and west, and continue to service this wider area.

The impact to these businesses could be mitigated through compensation entitlements provided through the *Land Acquisition and Compensation Act 1986*, assistance to find suitable alternate premises, early engagement and sufficient notification of acquisition.

Acquisition of dwellings would also likely be required during the construction phase which would relocate people from the construction footprint and in turn reduce demand for local goods and services in the local area.

In addition, nine dwellings are expected to be acquired to enable the construction of the project. This would relocate households and in turn may reduce demand for goods and services sold by businesses within the precinct. This residential displacement is not expected to result in any precinct impacts as there are few available options in terms of retail and food services within the precinct. The reduction in household spending would, however, be expected to impact businesses in the surrounding area.

Non-acquisition Impacts

For businesses in the precinct that are not acquired, a range of impacts would be likely during the construction phase. Tenants of the 50 Lloyd Street Business Estate are likely to be impacted by access changes as accessing the entrance opposite JJ Holland Park is crucial for tenants who use large freight vehicles. The alternative entrance in the east of the estate cannot be used by large vehicles due to the low height of the rail bridges over Lloyd Street. This was raised as an issue for a number of businesses in the 50 Lloyd Street Business Estate (Risk #B004). The exact number of vehicles impacted is not known.

Changes to access would also result from the temporary occupation of car parks along Childers Street, increased congestion from truck movements, the construction workforce vehicle movements and demand for parking from construction workers. This is anticipated to impact access to businesses and therefore their operations.

The impact from changes to access could be mitigated through precinct parking plans, maintenance of access and traffic management plans to enable businesses to continue to operate during the construction period.

The construction phase has the potential to create disruptions to some business activity from changed amenity due to noise, dust and vibration. This could reduce demand for the goods and services sold by businesses in proximity to the construction work, though, overtime, it would be expected that demand would be redirected, to some extent, to businesses located in nearby streets. Whilst identified as a possible risk, Technical Appendix H *Air Quality* indicates that, with mitigation, air quality can be contained within State Environmental Protection Policy criteria. The Noise and Vibration Impact Assessment, however, does identify that there would be some impact from vibration and ground borne noise in the precinct. The predominantly light industrial nature of the precinct, however, means that any changes to amenity are not likely to impact productivity or output of businesses.

Changes to access and proximity to construction work may increase the difficulty of renting commercial property in the precinct (Risk #B001). However, the limited availability of similar commercial space in the surrounding area, the ability to mitigate traffic and parking impacts, and the negligible impact to amenity means it would likely only add slightly to the time it takes to rent a premises. The impact would therefore be minimal.

Whilst there are no food and beverage or retail businesses in the precinct, the location of construction workers in the precinct may increase demand for goods and services in the local area outside the precinct.

As with early works, disruptions to utilities are not anticipated, however, any unexpected disruption would impact the ability of businesses to operate. The assumed short-term nature of disruptions would have a negligible impact on business activity. This risk could be mitigated by informing businesses of the timing and duration of planned works/disruptions.

Increases in traffic congestion caused by construction work within this precinct may be relatively minor when looked at in isolation, however, the impacts may cumulate with any other congestion that stems from other precincts and major projects scheduled during the construction phase (Risk #B009). For example, the Western Distributor which is discussed in Section 8.5.

TABLE 34. ESTIMATED RESIDUAL BUSINESS IMPACTS, CONCEPT DESIGN, WESTERN PORTAL, 2020

Buildings with street frontage:	Gross value added ($m)	Comments
Business acquisition	-23	This activity is not likely to be lost to Melbourne, as these businesses are likely to relocate to Melbourne's North and West.
Reduction in foot-traffic (from footpath closures and amenity impacts)	-	Given the industrial nature of the area and businesses within the precinct, the impact of changes in foot-traffic are likely to be minimal.
Spending by construction workers	-	Given the industrial nature of the area and businesses within the precinct, spending by construction workers is assumed to occur outside the precinct.
Dwelling acquisition	-	Given the industrial nature of the area and businesses within the precinct, the reduction in household spending associated with displacements is assumed to occur outside the precinct.
Total	-23	

Source: SGS Economics and Planning

Table 35 sets out a time profile showing the various levels of impacts in the proposed Western Portal precinct from 2017 to 2024. This profile is based on the construction works, but without a very detailed construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 35. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
Western Portal	100%	100%	100%	100%	100%	100%	100%	100%

Source: SGS Economics and Planning

Operation Phase

As works in this precinct do not affect the areas accessibility no significant business impacts anticipated during the operation phase. Land used for construction, however, may be available for future development.

Assessment Against Draft EES Evaluation Objectives

The Concept Design is consistent with the draft EES evaluation objective for social, community, land use and business as impacts to businesses are minimised by containing works in the existing rail reserve where possible limiting acquisition requirements.

Alternative Design Option

Construction Phase

The alternative design option would not likely require any commercial or industrial property acquisition. As a results, the business impacts are expected to be negligible during the construction phase. The value of the estimated residual impacts for the alternative design option in 2020 are summarised in Table 36.

TABLE 36. ESTIMATED RESIDUAL BUSINESS IMPACTS, ALTERNATIVE CONCEPT DESIGN OPTION, WESTERN PORTAL, 2020

Buildings with street frontage:	Gross value added ($m)	Comments
Business acquisition	0	No acquisition is likely to be required.
Reduction in foot-traffic	-	Given the industrial nature of the area and businesses within the precinct, the impact of changes in foot-traffic are likely to be minimal.
Spending by construction workers	-	Given the industrial nature of the area and businesses within the precinct, spending by construction workers is assumed to occur outside the precinct.
Dwelling acquisition	-	Given the industrial nature of the area and businesses within the precinct, the reduction in household spending associated with displacements is assumed to occur outside the precinct.
Total	-	-

Source: SGS Economics and Planning

Operation Phase

Operational phase impacts are as for the Concept Design.

Assessment Against Draft EES Evaluation Objectives

The Concept Design is consistent with the draft EES Evaluation objective for social, community, land use and business and preferred when compared to the Concept Design as:

- No business acquisition is likely to be required
- Impacts to businesses are minimised by containing works in the existing rail reserve where possible.

9.6 Summary Precinct 2: Western Portal

Acquisition of commercial land is proposed near the intersection of the rail corridor and Kensington Road and some of the industrial and office properties to the west of Bakehouse Road. This would force some businesses in the precinct to relocate and reduce aggregate businesses Gross Value Add.

Traffic management should allow the remaining tenants of the 50 Lloyd Street Business Estate with larger trucks to continue to operate from the site so there would be no additional business impact.

Given the industrial nature of the precinct and the current levels of amenity, construction impacts of the project would not have any impact on business activity.

9.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during construction pf the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

10 PRECINCT 3: ARDEN STATION

The proposed Arden Station precinct is dominated by industrial land uses, including two concrete batching plants, but also contains a small number of offices premises. There are retail and food services on the fringe of the precinct. There would be significant activity in this precinct during construction of the project which would displace a number of businesses and require the acquisition of some.

These impacts have been informed by the assessment from other technical streams. Retail and food services would potentially be adversely impacted by changes to pedestrian flows (based on current pedestrian movements and footpath changes), but this could be offset by the spending of construction workers.

10.1 Project Components

Infrastructure

The proposed Arden station is located underground with an alignment between Arden and Queensberry Streets, and contained entirely within a publicly owned (VicTrack) site.

The initial station entrance is proposed to be located approximately 120 m south of Arden Street in line with a future southward extension of Fogarty Street. A second future entrance, to service future development, is proposed to be located in the centre of the site currently owned by VicTrack.

Construction

Seven businesses which currently lease land on the publicly owned (VicTrack) site would be displaced to enable construction of the project.

Proposed construction works include:

- Cut and cover construction of the station
- Tunnel excavation and TBM launch (with two TBMs – one for each tunnel – driving first to the Western Portal before being retrieved and re-launched from Arden station for the second drive to CBD North station)
- Station structural works, architectural and mechanical and electrical fit-out.

The publicly owned (VicTrack) land would also provide the major staging area for the Melbourne Metro western section works and would include site offices and staff amenities, fabrication sheds, major storage areas and spoil extraction and handling facilities. A tunnel construction water treatment plant and water tanks, and a tunnel air ventilation and extraction plant, would also be located on the site.

Construction would likely generate 260 average daily truck movements each day for 48 months with truck access and movement occurring 24 hours a day, seven days per week. Proposed construction vehicle access routes are shown in Figure 30.

Parts of Laurens Street may need to be closed to traffic for the construction period. While there would be a significant amount of construction traffic accessing the site for materials delivery and spoil removal, the site's proximity to CityLink would limit impacts on roads in the immediate vicinity.

Tunnelling operations are expected to occur from 2017 to 2023 and operate 24 hours a day, 7 days a week. Construction work site support facilities and station fit-out is also expected to occur from 2017 to 2023 and operate 24 hours a day, 7 days a week. The construction of the station box is expected to occur

from 2017 to 2021, and run from Monday to Friday 07:00-24:00 and Saturday 8:00am-3:00pm. The tunnel fit-out – first stage is expected to occur from 2019 to 2023, also from Monday to Friday 07:00-24:00 and Saturday 08:00-15:00, and the station fit-out is expected to occur from 2020 to 2023, also from Monday to Friday 707:00-24:00 and Saturday 08:00-15:00.

Early Works

Early works in the Arden Station precinct would involve the replacement or relocation of some utility infrastructure including electricity, telecommunications and storm water drainage assets.

10.2 Existing Conditions

The Arden Station precinct is located within industrial land bounded by Arden Street, Laurens Street and railway land. The precinct is dominated by industrial land uses including two concrete batching plants but also contains a small number of offices and accommodation premises.

Census of Land Use and Employment data was used to estimate the number of businesses, jobs and Gross Value Added in the precinct. Figure 31 shows the proposed boundary of the Arden Station precinct.

Estimates from Census of Land Use and Employment data of the number of employees in 2014 within the precinct, and labour productivity in 2011 were extrapolated using historical trends to produce a 2015 estimate.

Census of Land Use and Employment data indicates there were 66 businesses located within the proposed Arden Station precinct in 2015, employing 671 staff. Overall, in 2015, these businesses are estimated to have produced $70 million in gross value added as set out in Table 37 with:

- 50 per cent of these businesses in the services sector and located along Laurens Street, opposite the industrial precinct, Munster Terrace, and Arden Street
- 10 per cent of these businesses in the manufacturing industry and located within the industrial precinct on Laurens Street.

The following features were noted during the site visit:

- The Arden industrial area is not densely populated and has a large amount of vacant land. This implies the installation of a station may have a more limited impact on businesses during construction than would be the case in a more densely populated industrial area
- The area is likely to include a number of significant pieces of infrastructure for businesses that may be difficult to relocate.

FIGURE 30. VEHICLE ACCESS ROUTES, ARDEN STATION

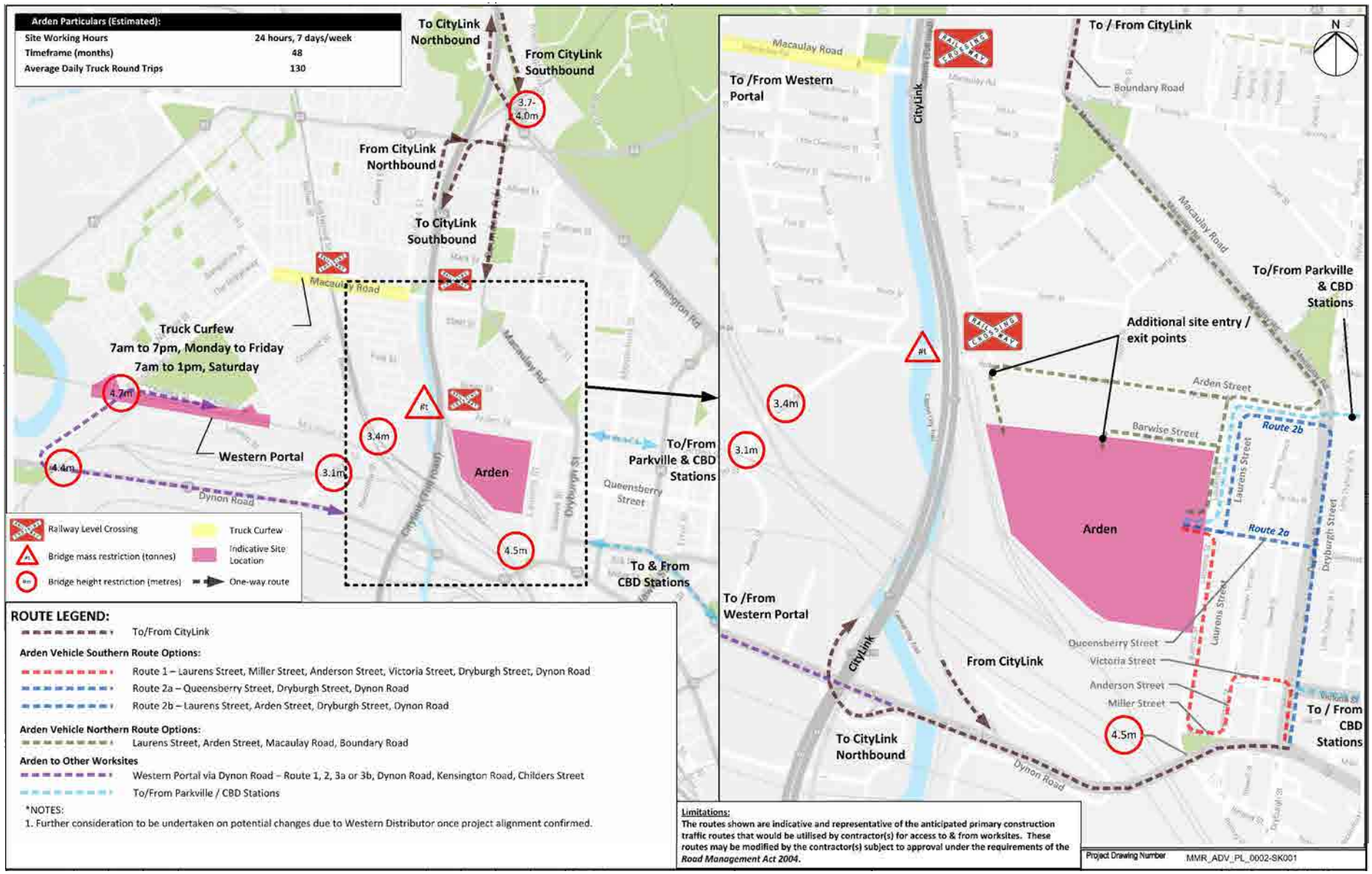


TABLE 37. BASELINE ACTIVITY, ARDEN STATION PRECINCT, 2015

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	20	268	23
Electricity, Gas, Water and Waste Services	0	0	0
Construction	7	50	5
Wholesale Trade	9	50	6
Retail Trade	3	27	2
Transport, Postal and Storage	8	55	6
Information Media and Telecommunications	2	7	3
Finance and Insurance	0	0	0
Rental and Hiring Services	1	12	4
Real Estate Services	0	0	0
Business Services	6	123	14
Admin and Support Services	2	14	4
Public Administration and Safety	0	0	0
Education and Training	2	6	1
Health Care and Social Assistance	0	0	0
Arts and Recreation Services	1	8	0
Other Services	4	40	3
Accommodation	0	0	0
Food and Beverage Services	1	11	0
Total	66	671	70

Source: City of Melbourne 2015

Figure 31 maps the proposed project boundary of the proposed Arden Station precinct and the proposed location of construction work sites and project infrastructure. Figure 32[21] maps the total businesses in the precinct and their location in relation to proposed project construction work sites and infrastructure.

[21] Maps showing businesses by industry are not included as there is five or less businesses in each industry in the precinct. For privacy reasons we have not included maps showing five or fewer businesses.

FIGURE 31. PRECINCT BOUNDARY, ARDEN STATION PRECINCT

FIGURE 32. TOTAL BUSINESSES, ARDEN STATION PRECINCT, 2014

Legend

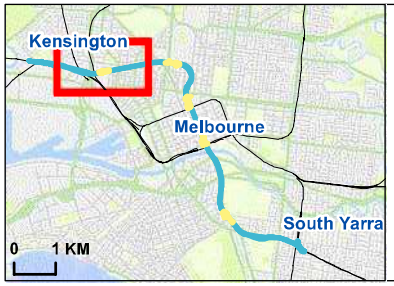
- Properties with 1 or more businesses (44 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2014 Blocks

Environmental and Planning Precincts

- Station Precinct
- Portal Precinct
- Tunnel Precinct

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

Map 2 of 10



MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2014 Total Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500331			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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Metres

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10.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 38.

TABLE 38. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Direct reduction in business activity within the precinct due to the acquisition of industrial and commercial property	No
Indirect or secondary loss of output from businesses remaining in the precinct that were previously supplying the displaced businesses	No
Difficulty renting commercial property due to poor amenity and access constraints	Potentially
Truck movements disrupting travel flow for vehicles, buses, bicycles and pedestrians	Potentially
Truck movements causing traffic congestion affecting business operations	Potentially
Vibration, noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses	Potentially
Increased demand for on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses	Potentially
Disruption to utilities impacting on the productivity and output of local businesses.	Yes

10.4 Benefits and Opportunities

Table 39 summarises the potential benefits and opportunities associated with the proposed Arden Station precinct.

TABLE 39. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, ARDEN STATION

Concept Design	Benefits	Opportunities
Aligned between the alignment of Arden and Queensberry Streets, in the publicly owned (VicTrack) land	Construction	
	- Demand for local goods and services by construction workers.	None identified
	Operation	
	- Productivity benefits including greater access to labour. - Improved access to businesses in the precinct for customers. - Improved connectivity would help stimulate urban renewal opportunities.	None identified

10.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. Risk numbers are presented in brackets when discussing some impacts.

Draft EES evaluation objectives	Assessment Criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Early Works

Early works are not expected to impact businesses in the area as interruptions to utility services are not anticipated. However, utilities are essential for business operations and if works unexpectedly cause any interruption to services this may suspend business activity until services are returned. It is assumed that any disruption would be short-term in nature and therefore would have a negligible impact on businesses. This risk could be mitigated by informing businesses of the timing and duration of works.

Construction Phase

Acquisition Impacts

TABLE 40. DISPLACED BUSINESSES, ARDEN STATION

Business	Role / connection
Lease Lot 89	- Concreting batching plant business. - Access to Arden Street B siding.
Arden Street tenant (Lease Lots 27, 43 & 87)	- Concrete plant business. - Access to Arden Street C siding.
Arden Street tenant (Lease Lot 29)	- Timber Recycling and Furniture manufacture business.
Arden Street tenant (Lease Lot 45)	- Storage business.
Arden Street tenant (Lease Lot 15)	- Concrete plant business. - Access to Arden Street D siding.
Arden Street tenant (Lease Lot 89)	- Warehouse business. - Access to Arden Street C siding.
Arden Street tenant (Lease Lot 87)	- Grain storage shed business. - Access to Arden Street B siding.

Source: Melbourne Metro Rail Authority 2015

The construction phase would include the displacement of industrial businesses currently located on the publicly owned (VicTrack) land that is to be occupied during the construction of the project. Table 40 lists displaced businesses and their activity (Risk #B006).

This displacement would reduce aggregate output of businesses with the study area. The displacement of these businesses would lead to a reduction of seven businesses, 180 jobs and around $17 million in Gross Value Added, as set out in Table 41.

TABLE 41. ESTIMATED DIRECT FALL IN BUSINESS ACTIVITY DUE TO BUSINESS DISPLACEMENT, ARDEN STATION PRECINCT

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	4	130	12
Electricity, Gas, Water and Waste Services	0	0	0
Construction	0	0	0
Wholesale Trade	0	0	0
Retail Trade	0	0	0
Transport, Postal and Storage	3	50	5
Information Media and Telecommunications	0	0	0
Finance and Insurance	0	0	0
Rental and Hiring Services	0	0	0
Real Estate Services	0	0	0
Business Services	0	0	0
Admin and Support Services	0	0	0
Public Administration and Safety	0	0	0
Education and Training	0	0	0
Health Care and Social Assistance	0	0	0
Arts and Recreation Services	0	0	0
Other Services	0	0	0
Accommodation	0	0	0
Food and Beverage Services	0	0	0
Total	7	180	17

Sources: SGS Economics and Planning

This displacement is mitigated relative to business acquisition in other precincts as businesses in Arden are located on publicly owned (VicTrack[22]) land.

Whilst the business activity would be lost from the precinct, it is not anticipated it would be lost from metropolitan Melbourne, with displaced businesses assumed to be able to relocate elsewhere in Melbourne. Due to the nature of these businesses, however, there is a greater risk they may have difficulty finding suitable sites with equivalent levels of access. These businesses are manufacturing and light industrial businesses that generally need larger footprints, suitable setbacks from sensitive uses and good access to the road network. It is also possible that displaced businesses may have to pay higher rent at a new premises as VicTrack leases would likely be more affordable as there is not security of tenure, and due to the increased demand for land from displaced businesses all seeking alternative premises at the same time.

[22] It should be noted that VicTrack holds this land for the Victorian Government and is required to make that land available should it be required for transport projects. The early planning of Melbourne Metro allowed sufficient notification to these tenants that the land will be required for the delivery of this project in line with the project timeline

Two of the displaced businesses are concrete batching plants. The delivery of concrete from batching plants is an important component of most major construction projects. The proximity of the batching plants to central city construction work sites is crucial; it minimises costs associated with transport of concrete and the delivery of concrete once batched is time sensitive. Given the scale of current and projected growth in Melbourne's central city, there would be demand for significant quantities of concrete. Construction of the project would also require significant quantities of concrete. Therefore, the ability of these batching plants to relocate to suitable locations, is important to ensure their continued support of construction in central Melbourne. This issue requires careful management by state and central sub-region local government planners.

As the businesses on publicly owned (VicTrack) land are being displaced from the site, but not acquired, they are not entitled to compensation and assistance available via the *Land Acquisition and Compensation Act 1986*. However, given the nature and importance of these businesses, it is recommended that assistance is provided to help them to find suitable new premises. This would mitigate against the risk they are unable to relocate in metropolitan Melbourne.

While consultation did not identify it as an issue, it is possible that indirect or secondary loss of output from businesses remaining in the precinct that were previously supplying the displaced businesses may occur. This would be an impact if there are strong linkages between the displaced businesses and surrounding businesses. Without knowing all suppliers of every business, it is not possible to understand if this could be an issue for any business. However, data analysis and consultation has suggested this is not an issue.

The reduction in commercial space and the number of businesses located in the proposed Arden Station precinct may have secondary effects such as changes in commercial rents and/or activity for the remaining businesses in the vicinity. This is considered marginal.

Non-acquisition Impacts

The construction phase of the project has the potential to disrupt some business activity in the Arden station precinct from changed amenity due to noise, dust and vibration. Technical Appendix H *Air Quality* identifies that, even with mitigation, construction activity is anticipated to result in exceedances of the State Environment Protection Policy criteria. This is anticipated to occur in the south west of the precinct, and away from the majority of businesses. The Technical Appendix I *Noise and Vibration* identifies that there is likely to be some impact from vibration and ground borne noise in the precinct, even after mitigation. No impacts are anticipated from airborne noise. For the light industrial, changes to amenity are not likely to impact productivity or output of businesses. This could reduce demand for the goods and services sold by businesses in proximity to the construction work, though, overtime, demand is expected to be redirected, for some industry types, to businesses located in nearby streets. This is anticipated to particularly impact food and beverage, retail and accommodation businesses (Risk #B003).

The large number of workers located in the proposed Arden station precinct during the construction phase would result in an increase in demand for goods and services which may benefit some business types, particularly food and beverage. The large numbers of workers would also increase demand for street parking which may impact access for staff and customers to surrounding businesses. This impact could largely be managed through a precinct parking strategy (Risk #B004).

Changes to access and proximity to construction work may increase the difficulty of renting commercial property in the precinct. However, the limited availability of similar commercial space in the surrounding area, the ability to mitigate traffic and parking impacts, and the negligible impact to amenity means it would likely only add a slightly to the time it takes to rent a premises. The impact would therefore be inframarginal.

As with early works, disruptions to utilities are not anticipated, however, any unexpected disruption would impact the ability of businesses to operate. The assumed short-term nature of disruptions would have a negligible impact on business activity. This risk could be mitigated by informing businesses of the timing and duration of works (Risk #B001).

The construction phase would generate truck movements in the proposed Arden station precinct related to construction activity as well as traffic movements from construction worker vehicles. However, this activity is not anticipated to increase traffic congestion in the precinct as traffic movements are anticipated to be lower than those currently generated by displaced businesses. While this congestion, in and of itself, may not cause significant disruptions to business practices in the precinct, if the congestion occurs concurrently with other road works, the cumulative impact may be more severe (Risk #B009).

Cumulative impacts are possible in the proposed Arden Station precinct from construction of the Western Distributor which is discussed in Section 8.5.

Table 42 lists the key assumptions underlying the quantification of the potential residual business impacts of the project discussed above.

TABLE 42. KEY ASSUMPTIONS UNDERLYING QUANTIFICATION OF RESIDUAL BUSINESS IMPACTS, ARDEN STATION

Buildings with street frontage	Change in foot-traffic (%)	Description
Laurens Street	-10	Modest reduction in foot-traffic due to noise, dust, and amenity issues stemming from construction.
Langford Street	-10	
Muster Terrace	-10	
Arden Street	-10	
Demand elasticity of foot-traffic	**Elasticity**	**Description**
Retail	0.40	Retail businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Food services	0.40	Food service businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Accommodation	0.10	Accommodation businesses are expected to be influenced more modestly by foot-traffic than other retail and food-traffic businesses as bookings are generally made in advance.
All other industries	0.00	Changes in foot-traffic are not expected to impact the business activity of other businesses. This 0.0 impact has been confirmed during consultation with business in all other industries. That is, businesses do not feel that foot-traffic impacts on their business activity.
Construction workers	**Time period**	**Spending per worker per day**
Peak number of 876 in 2020	2018 - 2025	$20 / 80 per cent within the precinct.

Table 43 summarises the value of the potential residual business impacts identified for the Arden Station precinct in 2020.

TABLE 43. ESTIMATED RESIDUAL BUSINESS IMPACTS, ARDEN STATION, 2020

Buildings with street frontage:	Gross value added ($m)	Comments
Business displacement	-17.0	- This activity would not likely be lost to Melbourne, as these businesses relocate to other parts of the
Reduction in foot-traffic (from footpath closures and amenity impacts)	-0.2	- This activity would likely be redistributed from Laurens Street and Munster Terrace to other streets/precinct across Arden.
Spending by construction workers	+0.6	- Overall spending by construction workers would be expected to be a modest offset for the fall in foot-traffic.
Total	-17.4	- More than other precincts, a large share of this activity may in fact be lost to Melbourne if businesses can't find an adequate site close to the CBD.

Source: SGS Economics and Planning

Table 44 sets out a time profile showing the various levels of impacts in the proposed Arden Station precinct from 2017 to 2024. This profile is based on the proposed construction works, but without a very detailed construction plan the precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 44. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
Arden Station	95%	100%	100%	100%	100%	95%	95%	95%

Source: SGS Economics and Planning

Operational Phase

A new underground station in the proposed Arden precinct would increase accessibility of the area and enable residents to easily access key business precincts such as the Melbourne CBD and Southbank. Consistent with the most recent Arden Macaulay Structure Plan, the new station would also likely improve other local transport networks (such as buses). This would result in Arden having 'CBD like' levels of accessibility to the broader Melbourne labour market. The large potential labour force and developable land would increase the attractiveness of the district to prospective businesses, particularly professional services businesses that benefit from agglomeration economies. This has occurred in the past with the construction of Melbourne Central, Flagstaff and (to a lesser extent[23]) Parliament stations.

A sharp rise in population and employment would be expected in the Arden precinct, given the cost of land is likely to be significantly less than in Melbourne CBD, and the district has been designated as an urban renewal area. In addition, a structural change in the employment is projected, with the precinct moving from industrial blue collar jobs to white collar jobs. This occurrence has been witnessed in previous urban renewal sites in Melbourne (e.g. Southbank and Docklands). The commercial development would draw a few business from the catchments of existing train stations, but most of the business would come from other fringe CBD locations. Given the uncertainty about the future development site, a conversation set of assumptions around the scale of development have been used.

[23] The eastern end of Lonsdale Street was greatly enhanced as a result of Parliament Station, while Collins Street was far more established due to tram lines and Flinders Street Station.

Table 45 outlines the change in annual Gross Value Added that would be expected to occur in the Arden Station precinct in 2041 based on the:

- Increase in population and employment projected
- Structural change in employment.

As outlined above in the methodology section, the operation of the tunnels is expected to generate labour productivity increases due to a range of agglomeration benefits such as greater access to potential labour. These productivity improvements were calculated by:

- Calculating the number of workers from each sector as indicated in the table below
- Estimating the number of hours worked
- Applying the estimated change in labour productivity based on the methodology outlined above
- Aggregating the increase in productivity for each worker within the precinct.

Based on this methodology, these productivity benefits are estimated to generate additional annual production of close to $1.8 million for the proposed Arden station precinct.

TABLE 45. ESTIMATED CHANGE IN BUSINESS ACTIVITY, OPERATION PHASE, ARDEN STATION, 2041

	Without project case		With project case	
Industry	Staff numbers (No.)	Gross Value Added ($m)	Staff numbers (No.)	Gross Value Added ($m)
Agriculture and Mining	0	0	0	0
Manufacturing	329	36.9	88	9.9
Utilities	0	0.0	0	0.0
Construction	66	10.2	66	10.2
Wholesale Trade	149	31.6	94	19.9
Retail Trade	87	5.5	325	20.6
Transport, Postal and Storage	138	22.0	100	16.0
Media and Telecommunications	6	1.4	6	1.4
Finance and Insurance	0	0.0	1500	724.6
Rental and Hiring Services	19	4.6	400	94.9
Real Estate Services	0	0.0	0	0.0
Business Services	265	62.1	2200	516.2
Admin and Support Services	11	0.7	11	0.7
Public Administration and Safety	0	0.0	0	0.0
Education and Training	13	1.5	13	1.5
Health Care	0	0.0	0	0.0
Arts and Recreation Services	7	0.7	7	0.7
Other Services	77	5.5	77	5.5
Accommodation	0	0.0	0	0.0
Food and Beverage Services	22	1.3	22	1.3
Total	1207	184.0	4909	1423.3

Source: SGS Economics and Planning

Assessment Against EES Objectives

The Concept Design is consistent with the draft EES evaluation objective for social, community, land use and business as:

- Construction activity would be contained in the publicly owned (VicTrack) land, minimising the requirement to acquire commercial land
- The proposed construction work site currently contains industrial uses with associated truck movements, minimising any change to amenity in the precinct during the construction period
- However, the project would displace two concrete batching plants and considering the time sensitive nature of concrete batching activities, their proximity requirements to construction activity and their critical role in construction works, if the displaced facilities could not find suitable alternative sites, there could be a risk this business activity was negatively impacted.
- In addition, once the project was operational, the changed land values from greater connectivity may displace some industries, particularly industrial and manufacturing businesses.

10.6 Summary Precinct 3: Arden Station

Construction of the proposed new Arden station would displace a number of businesses and require business acquisition. Retail and food services would be adversely impacted by changes to pedestrian flows, but this would be offset by the spending of construction workers.

With the improved accessibility provided by the station, the precinct would attract residential and commercial development. The commercial development would draw a few businesses from the catchments of existing train stations, but most would come from other fringe CBD locations. This would help expand the physical footprint of Melbourne's CBD which provides a range of benefits. However, this would also increase land values which may cause rents for existing business to increase.

The project would displace two concrete batching plants and considering the time sensitive nature of concrete batching activities, their proximity requirements to construction activity and their critical role in construction works, if the displaced facilities cannot find suitable alternative sites, there could be a risk of this business activity being negatively impacted.

10.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during construction of the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

11 PRECINCT 4: PARKVILLE STATION

The proposed Parkville Station precinct sits within the Parkville Employment Cluster, which has a strong concentration of institutions and businesses in the education, research, health, professional and technical industries. This includes the University of Melbourne, the Royal Melbourne Hospital and associated research institutes. The main potential impact on these businesses would be during the project's construction phase, with tunnelling having potential to cause vibration that may affect sensitive specialist equipment that contributes to the productivity and output of medical and research facilities.

Estimates of the business impacts for non-market (where there is no direct financial transaction) businesses should be treated with caution, as it is very difficult to assess the business impacts. For example, hospitals, universities and research facilities.

11.1 Project Components

Infrastructure

The proposed Parkville station would be located under the Grattan Street road reserve, to the east of Royal Parade. The station's footprint would occupy the full width of Grattan Street and extend from the intersection of Grattan Street and Royal Parade to University Square.

Key features of the proposed Parkville station design include:

- Two entrances located at the University of Melbourne at the intersection of Royal Parade and north of Grattan Street (adjacent to Gatekeepers Cottage)
- One entrance located outside the Victorian Comprehensive Cancer Centre (near the corner of Royal Parade)
- Crossings beneath Royal Parade and Grattan Street
- Construction of a Disability Discrimination Act compliant tram stop on Royal Parade.

Construction

Two commercial properties are proposed to be permanently acquired. 712 Elizabeth Street and the northern section of University Square would be temporarily occupied to enable construction works.

Proposed construction works include:

- Cut and cover construction of the station along Grattan Street, east of Royal Parade
- Cut and cover construction for the underground pedestrian connection across Royal Parade to the health facilities
- Protection or relocation of major underground utilities
- Station structural works, architectural and mechanical and electrical fit-out
- Establishment of construction work sites at 712 Elizabeth Street and the northern section of University Square.

The construction footprint and method in the proposed Parkville Station precinct would result in changes to surrounding traffic movements:

- Grattan Street would be closed to traffic between Royal Parade and Leicester Street
- The 401 and 402 buses and cyclists would be diverted
- Vehicular access to surrounding businesses would be constrained

- While pedestrian routes linking the precinct across Royal Parade and Grattan Street would be diverted and constrained, pedestrian access would be maintained to the university and health facilities adjacent to the construction and within the precinct during construction works
- Short-term temporary tram closures would be required during the construction of the cut and cover entrance structure across Royal Parade.

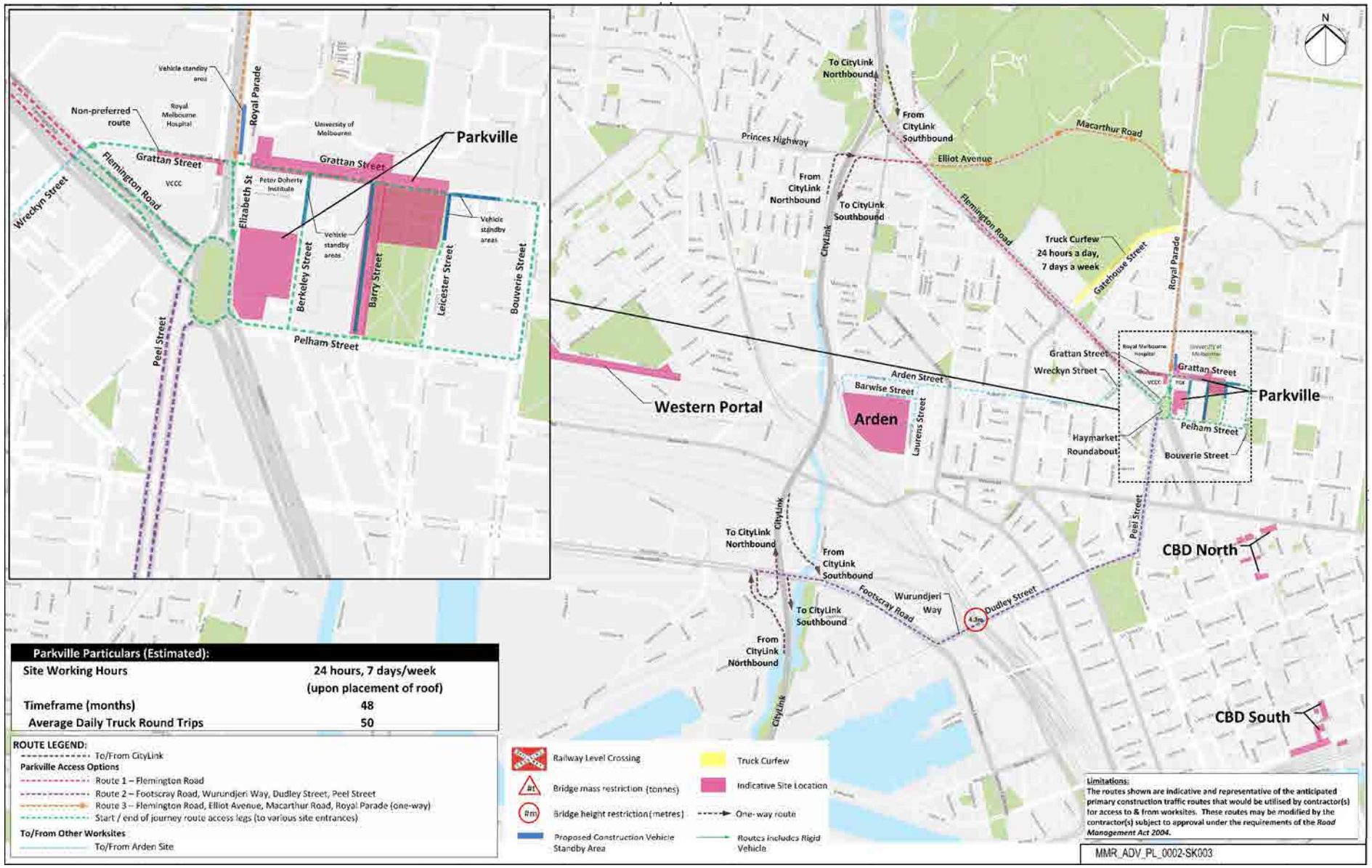
Construction in this precinct would likely generate 100 average daily truck movements each day for 48 months with truck access and movement occurring 24 hours a day, seven days per week. Proposed construction vehicle access routes are shown in Figure 33.

Station box construction works are expected to run from 2017 to 2020 with works occurring from Monday to Friday 07:00-24:00 and Saturday 08:00-15:00. The entrance structures would be built from 2019 to 2022, Monday to Friday, 07:00 to 18:00 and Saturday 08:00-15:00. The station fit-out would run from 2020 to 2023 with operating hours also Monday to Friday 07:00-24:00 and Saturday 08:00-15:00.

Early Works

Early works in the Parkville Station precinct involve the replacement or relocation of some utility infrastructure including electricity, gas, sewer, telecommunications, and water and storm water drainage assets.

FIGURE 33. CONSTRUCTION VEHICLE ACCESS ROUTES, PARKVILLE STATION PRECINCT



11.2 Existing Conditions

The proposed Parkville Station precinct sits within the Parkville Employment Cluster which has a strong concentration of workers in the education, research, health, professional and technical industries. Key institutions include the University of Melbourne, Royal Melbourne Hospital, Royal Women's Hospital, Royal Children's Hospital and the Victorian Comprehensive Cancer Centre.

The area is currently served by public transport including:

- Tram lines along Royal Parade and, further to the west, along Flemington Road
- Tram lines along Swanston Street to the east
- Two bus routes along Grattan Street (401 and 402) and a bus route along part of Royal Parade.

The area has existing bicycle connections with unseparated bicycle lanes provided along Royal Parade and to the west of the precinct along Flemington Road. There are no marked bicycle lanes on Grattan Street.

The proposed precinct is adjacent to a number of the large institutions within the Parkville Employment Cluster[24] including the University of Melbourne and Royal Melbourne Hospital, as well as the Victorian Comprehensive Cancer Centre which is currently under construction.

Estimates from Census of Land Use and Employment data of the number of employees in 2014 within the precinct, and labour productivity in 2011 were extrapolated using historical trends to produce a 2015 estimate.

Census of Land Use and Employment data indicates that there were 387 businesses located within the proposed Parkville Station precinct in 2015, employing 19 473 staff. Overall, these businesses are estimated to produce $1.6 billion in gross value added in 2015, as detailed in Table 46. Close to:

- 60 per cent of employment is within the Health Care sector
- 20 per cent of employment is within the Education sector, in particular the University of Melbourne.

Census of Land Use and Employment data was used to estimate the number of businesses, jobs and Gross Value Added in the precinct. Figure 34 shows the boundary of the proposed Parkville Station precinct.

TABLE 46. ESTIMATED BASELINE ACTIVITY, PARKVILLE STATION, 2015

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	1	19	4
Manufacturing	2	11	1
Electricity, Gas, Water and Waste	0	0	0
Construction	4	163	18
Wholesale Trade	12	26	3
Retail Trade	21	329	31
Transport, Postal and Storage	5	4	0
Information Media and	2	44	21
Finance and Insurance	7	37	15
Rental and Hiring Services	0	0	0
Real Estate Services	1	4	1
Business Services	24	901	101
Admin and Support Services	8	44	10

[24] One of six national employment clusters identified in Plan Melbourne with identified strengths in education, research, health, professional and technical industries, and significant parkland.

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Public Administration and Safety	0	0	0
Education and Training	41	5 224	601
Health Care and Social Assistance	146	12 108	737
Arts and Recreation Services	10	38	1
Other Services	21	24	2
Accommodation	6	78	4
Food and Beverage Services	76	418	22
Total	387	19 473	1 574

Source: City of Melbourne

Figure 35 shows the total number and location on businesses in the proposed Parkville Station precinct in relation to the proposed Parkville Station precinct in relation to the proposed location of construction sites and project infrastructure. Figure 36 shows food and accommodation businesses. Figure 37 maps retail businesses. Figure 38 maps health and education businesses.

The following features were noted during the site visit:

- The precinct has a high level of public transport access including 12 of Melbourne's 29 tram routes mainly via Swanston and Elizabeth Streets
- Retail businesses appear to largely serve workers and students in the area and therefore may not be significantly affected by the construction phase of the project.

FIGURE 34. PRECINCT BOUNDARY, PARKVILLE STATION PRECINCT

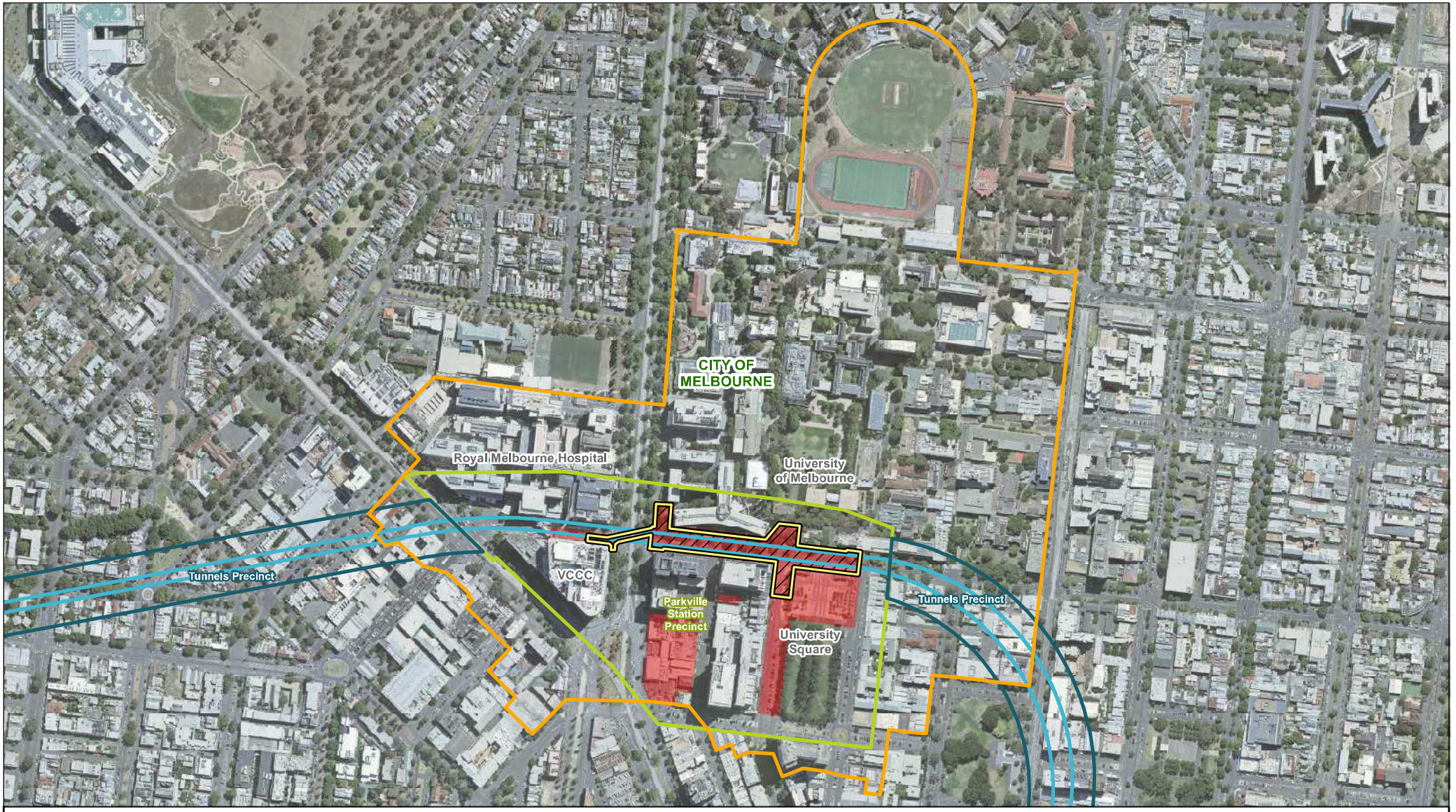
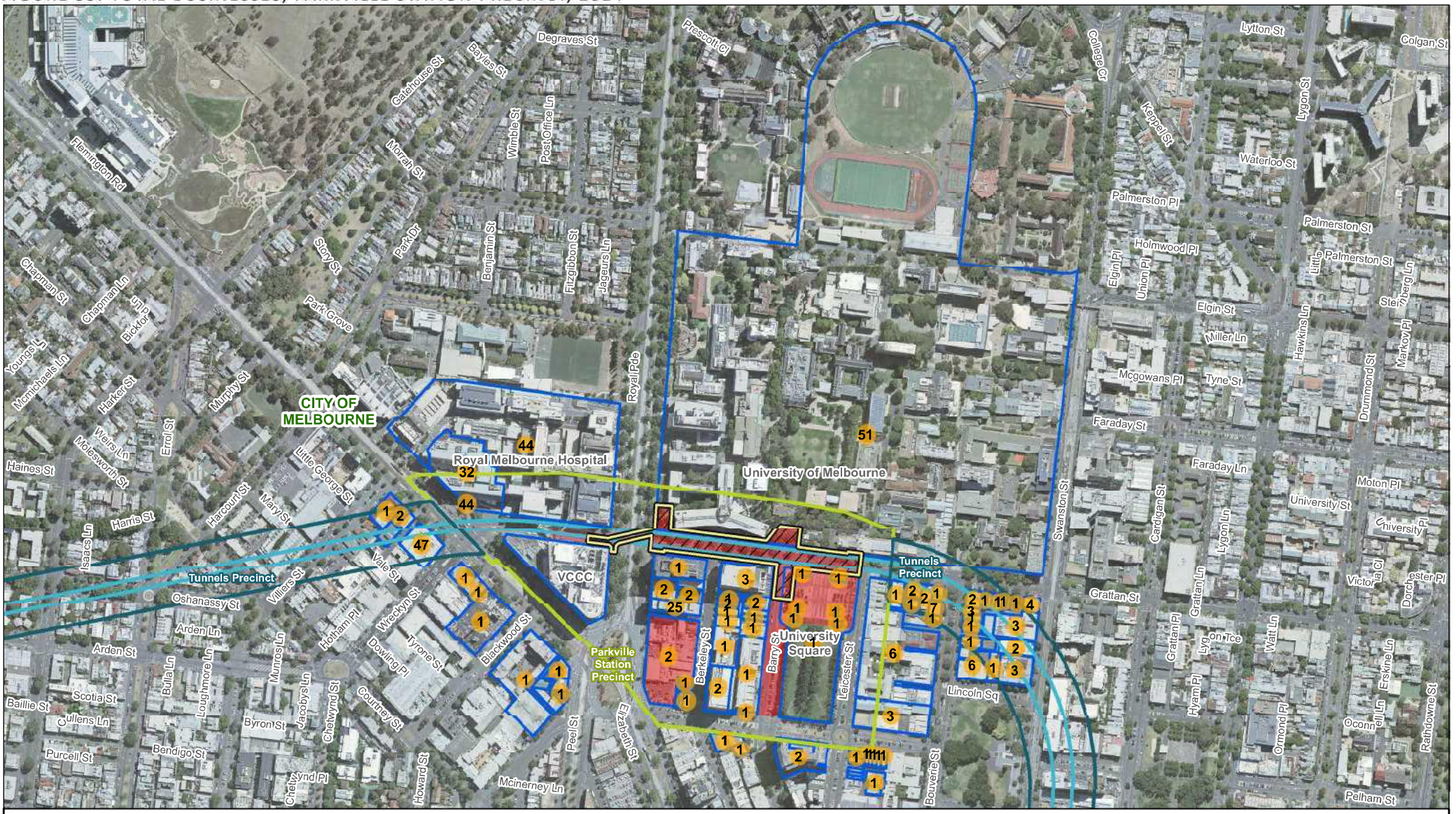


FIGURE 35. TOTAL BUSINESSES, PARKVILLE STATION PRECINCT, 2014



Legend

- Properties with 1 or more businesses (73 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2014 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

Map 3 of 10

MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2014 Total Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500331			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 90 180
Metres

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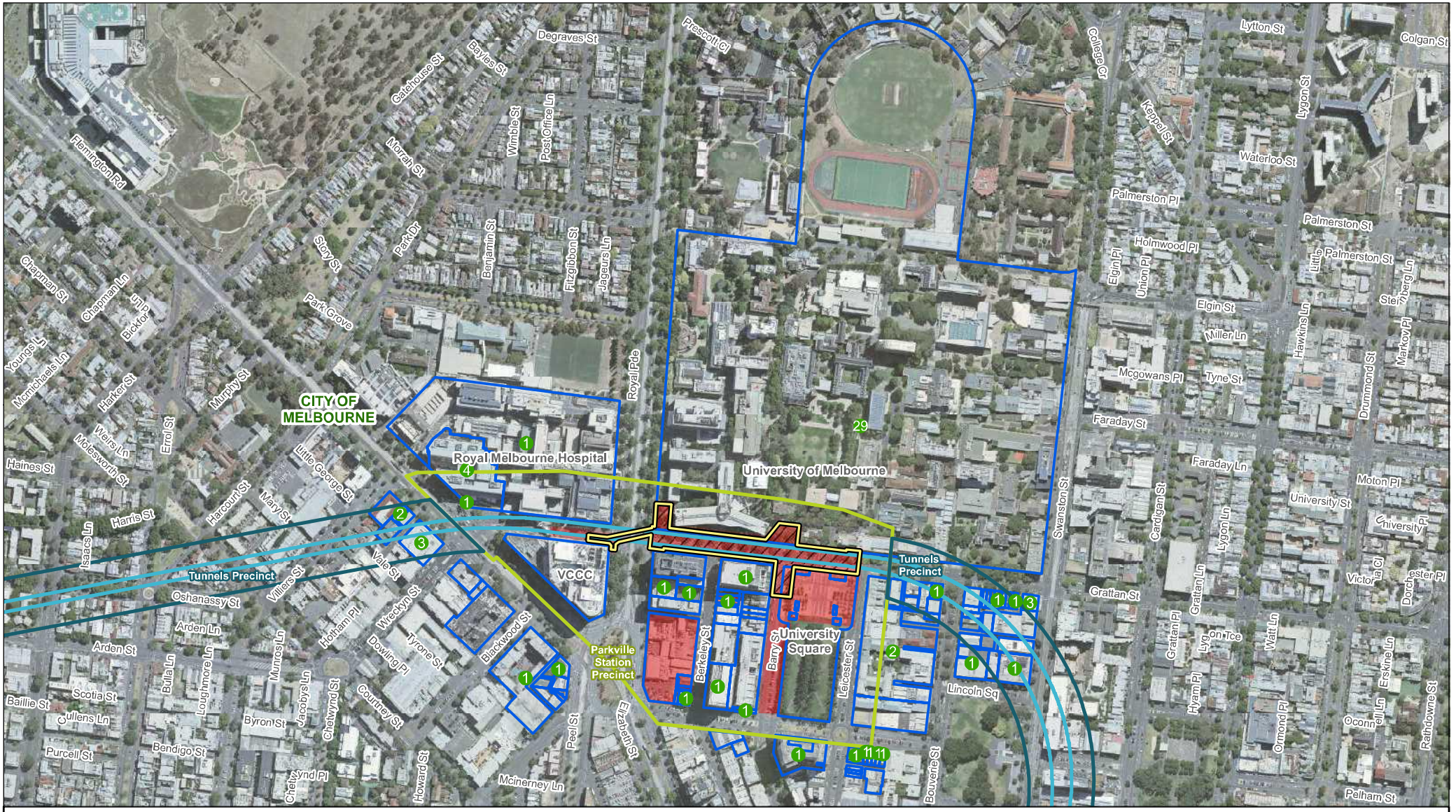
FIGURE 36. FOOD AND ACCOMMODATION BUSINESSES, PARKVILLE STATION PRECINCT, 2014



Legend

- Properties with 1 or more food and accommodation businesses (28 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2014 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

Map 3 of 10

MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

aurecon JACOBS Mott MacDonald

Melbourne Metro Rail Project

Title:
CLUE 2014 Food and Accommodation Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500329			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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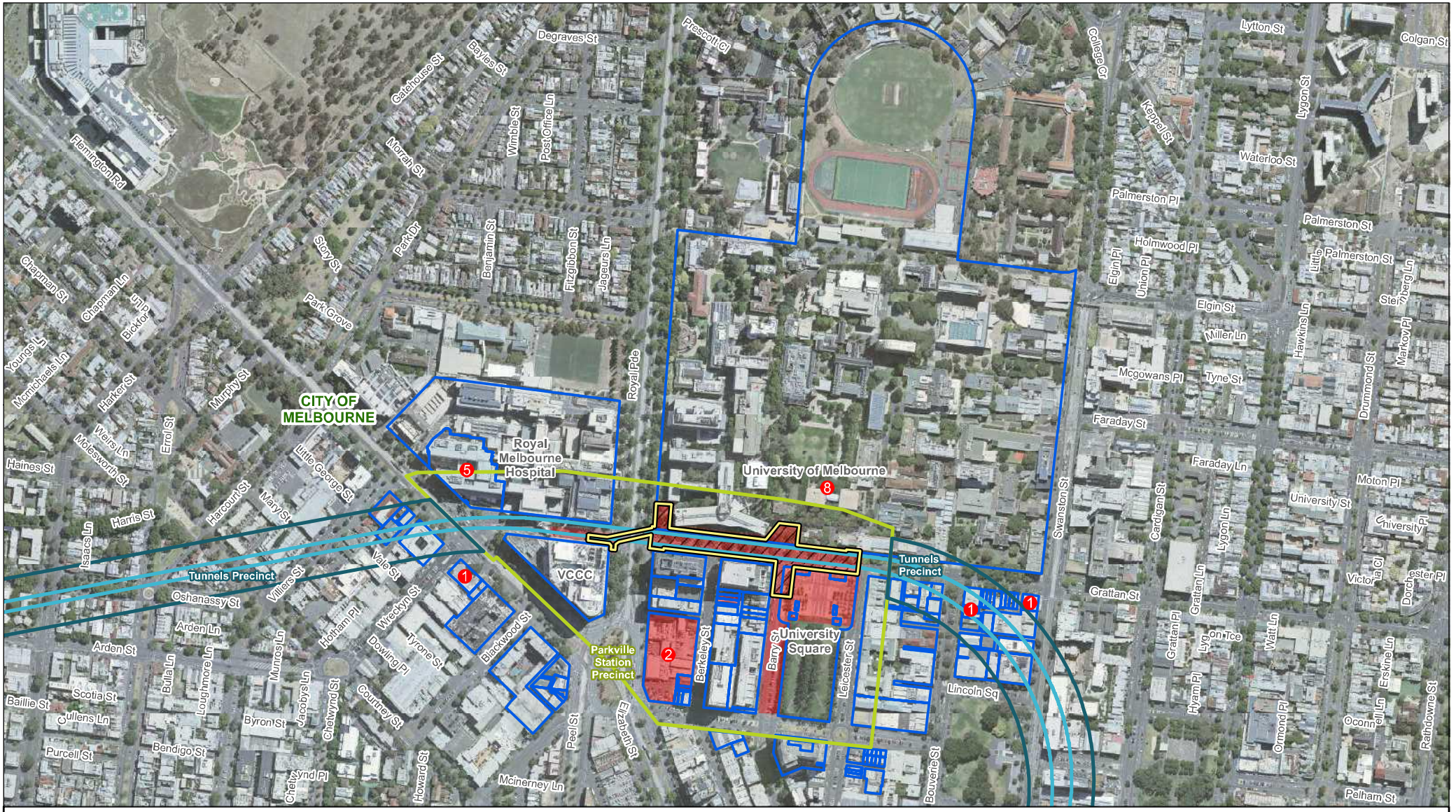
FIGURE 37. RETAIL BUSINESSES, PARKVILLE STATION PRECINCT, 2014



Legend

- Properties with 1 or more retail businesses (6 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2014 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 3 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture GRIMSHAW

aurecon JACOBS Mott MacDonald

Melbourne Metro Rail Project

Title:
CLUE 2014 - Retail Businesses

Drawing Number:	Revision:
MMR-AJM-UGAA-MP-NB-500328	P1

Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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Metres

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FIGURE 38. HEALTH AND EDUCATION BUSINESSES, PARKVILLE STATION PRECINCT, 2014

Legend

- Properties with 1 or more health and education businesses (37 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2014 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 3 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture GRIMSHAW — aurecon JACOBS Mott MacDonald

Melbourne Metro Rail Project

Title:
CLUE 2014 Health and Education Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500330			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 90 180
Metres

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11.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 47.

TABLE 47. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Acquisition of commercial property impacting business activity in the precinct	No
Indirect or secondary effects such as changes in commercial rents and/or activity for remaining businesses in the vicinity.	No
Decreased amenity from activities at the site impacting on the productivity and output of local businesses	Potentially
Construction materials and activities interfering with the operation of specialist hospital and research equipment	Potentially
Disruption to utilities impacting on the productivity and output of businesses	Potentially
Difficulty renting commercial property due to poor amenity and access constraints	Potentially
Occupation of Grattan Street disrupting business operations through decreased access for staff and customers by bus and vehicles	Yes
Tram closure disrupting business operations through decreased access for staff and customers	Potentially
Truck movements causing traffic congestion affecting business operations	Potentially
Acquisition of car parks on Grattan Street impacting access for staff and customers of surrounding businesses	Potentially
Increased demand for remaining parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses	Potentially
Cumulative impacts due to concurrent construction activities	Potentially

11.4 Benefits and Opportunities

Table 48 summarises the potential benefits and opportunities associated with the Concept Design.

TABLE 48. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, PARKVILLE STATION

Concept Design	Benefits	Opportunities
Located under Grattan Street, to the east of Royal Parade	Construction	
	- Demand for local goods and services by construction workers.	- Melbourne University to use the construction phase as a teaching tool for students in relevant courses.
	Operation	
	- Productivity benefits including greater access to labour. - Improved access to businesses in the	- Improve east-west pedestrian access across Royal Parade. - Improve north-south pedestrian access

Concept Design	Benefits	Opportunities
Located under Grattan Street, to the east of Roval Parade	Construction	
	precinct for customers.	across Grattan Street between Flemington Road and Swanston Street.

11.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Early Works

Early works are not expected to impact businesses in the area as interruptions to utility services are not anticipated. However, utilities are essential for business operations and if works unexpectedly cause any interruption to services this may suspend business activity until services are returned. The sensitive activities occurring in the hospital and research institutions means any interruption to utilities, particularly electricity and water, can have significant consequences (for example, interrupting experiments and medical monitoring equipment). Whilst these facilities have backup generators there is often a delay before the generator starts. This risk could be mitigated by informing businesses of the timing and duration of works to enable them to plan for generators to activate immediately.

Construction Phase

<u>Acquisition Impacts</u>

Part of 230 Grattan Street[25] (owned by the University of Melbourne) would need to be acquired permanently to enable construction of Melbourne Metro. Two other properties on Berkeley (also owned by the University of Melbourne) would be acquired. Two properties would be temporarily occupied, one

[25] This parcel of land is undeveloped.

property is University Square and the other is the City Ford site at 712 Elizabeth Street. This site would be needed for a period of five years.

Combined, this would lead to a reduction in approximately four businesses, 48 jobs and $4.7 million in Gross Value Added (Risk #B006).

While this activity would be lost from the Parkville Station precinct, it would not be lost from metropolitan Melbourne but redirected to other metropolitan locations.

Non-acquisition Impacts

Parkville has different pedestrian movement patterns seen elsewhere in the Melbourne municipality. The hospitals and university are the main attractors in the area and there are a relatively limited number of routes to access them[26]. Previous construction projects considered when assessing the potential impacts of the project in the precinct were:

- Victoria Comprehensive Cancer Centre (2012–2016)
- Various projects on campus (e.g. Peter Doherty Institute, School of Genetics Building)
- Royal Children's Hospital (2007–2011).

These previous projects highlighted the impact of construction activities, noise and vibration, changed traffic conditions and changes to pedestrian access (Risk #B002).

Vibration from construction activities is anticipated to impact on the productivity and output of medical and research institutes in the precinct. These institutions operate equipment and run experiments that are highly sensitive to construction impacts, particularly from vibration. Technical Appendix I *Noise and Vibration* shows that even with mitigation, construction activity would impact the operation of sensitive equipment to the extent they may not be able to be used, or their use would be limited during the construction period. The long time frames for some research that uses this equipment, may mean the impacts extend from well before and after the actual construction phase. For example, research scheduled to start in 2016, with a duration that extends into the construction period, would likely not occur in the precinct. Consultation with these institutions to negotiate the most suitable times for disruptive activity would enable them to plan for the restricted use or shut down of these facilities. However, vibration would still result in a reduction in business activity in the precinct.

It is unlikely that some of this activity would be able to be redistributed to other locations in Melbourne as the facilities are highly specialised and have no alternative locations. It is therefore possible that some of this activity would be lost to metropolitan Melbourne. Whilst it is unlikely to affect the overall numbers of students and staff it may impact the University's ability to appeal to research staff and students attracted by those specialised facilities.

MRIs can also be disrupted by metal construction materials (for example scaffolding) as they contain powerful magnets as a crucial component of the system. Scaffolding has been known to interfere with the images produced by MRIs by causing shimmering. MRIs can be shielded to mitigate against these impacts. Constant updates on the project progress and schedule should be undertaken to ensure shielding occurs when necessary.

As discussed under impacts from early works, the operation of medical and research institutions require uninterrupted access to services such as water, electricity and gas. Again, this risk could be mitigated by informing businesses of the timing and duration of works to enable them to plan for generators to activate immediately.

The construction phase has the potential to create disruptions to some business activity in the proposed Parkville Station precinct from changed amenity due to noise, dust and vibration. This could reduce demand for the goods and services sold by businesses in proximity to the construction work, though, over time, demand is expected to be redirected, to some extent, to businesses located in nearby streets. Whilst identified as a possible risk, the Technical Appendix H *Air Quality* indicates that, with mitigation, air quality could be contained within State Environment Protection Policy criteria. The Technical

[26] Where as in the Hoddle Grid there are many, many attractors which pedestrians would be drawn to via a larger number of alternative routes.

Appendix I *Noise and Vibration* identifies there would likely be some impact from vibration and ground borne noise in the precinct, even after mitigation. No impacts are anticipated from airborne noise.

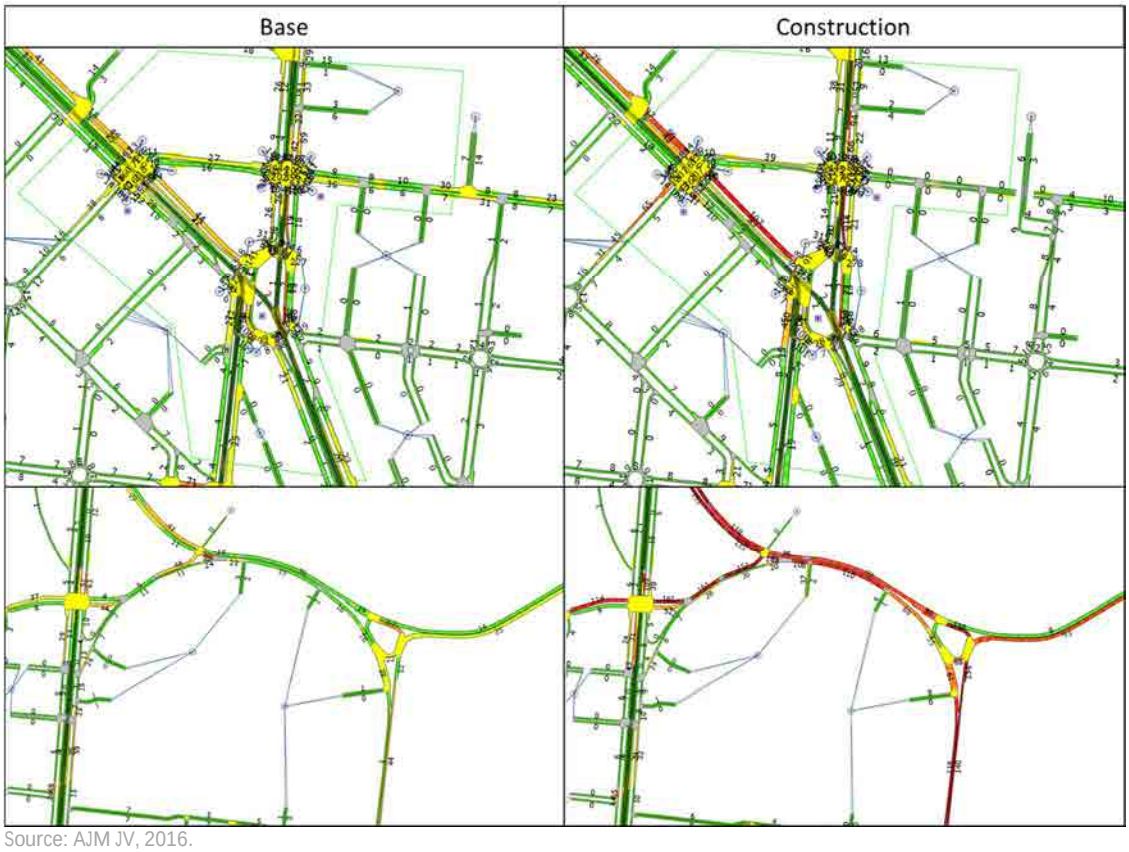
The specialised nature of many of the facilities in the proposed Parkville Station precinct means that, despite these changes in amenity, there would unlikely be a significant change in demand. For example, patients would still attend the hospitals. For other business types, particularly food and beverage, retail and accommodation businesses, amenity changes would potentially have a greater impact. Mitigation measures could be used to manage the impacts, however, there would likely be a reduction in foot traffic on some streets as a result of these amenity impacts.

This business disruption to the hospitals, university and research institutions has been based estimates of the cost of shielding sensitive equipment, internal administration to deal with Melbourne Metro, cost of repeating testing due to unexpected disruption, cost of research activities being delayed / disrupted, cost of research activities being lost from the precinct and cost of day to day operations being changed due to Melbourne Metro.

There would be changes to vehicle, public transport, bicycle and pedestrian access during the construction phase (Risk #B004). Most significant would be the closure of Grattan Street between Royal Parade and Leicester Street to vehicles with Barry Street also closed between Grattan Street and Pelham Street. In addition, there would be truck movements and construction workforce vehicle movements.

The Technical Appendix D *Transport* shows these changes to the road network would lead to increased congestion in the precinct, shown in locations coloured red in Figure 39.

FIGURE 39. TRANSPORT MODELLING OF IMPACT



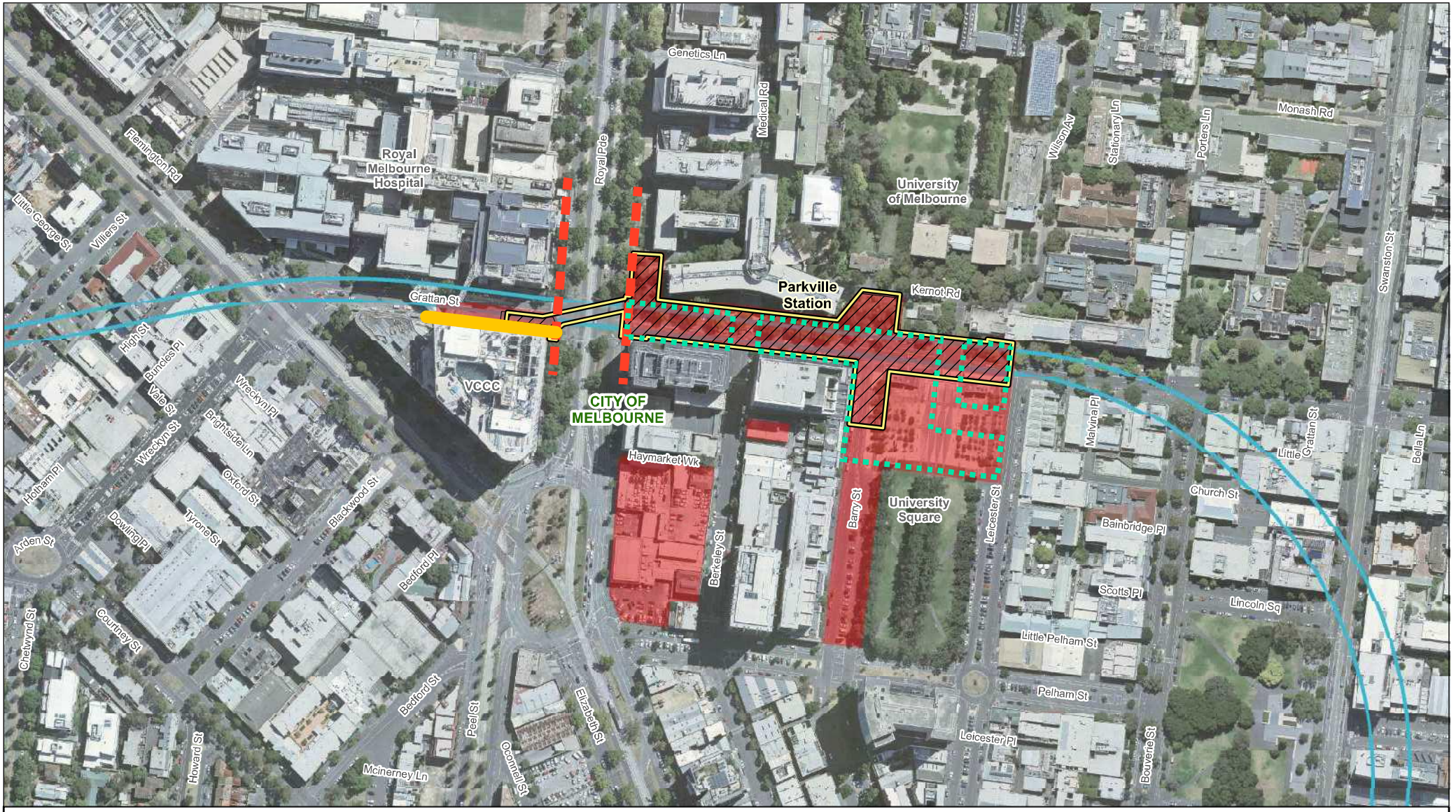
Source: AJM JV, 2016.

Access to businesses would be further affected by changes to public transport. Bus routes through Grattan Street are to be diverted outside Grattan Street for the duration of construction works, east of Royal Parade. Short-term tram closures would be required during construction of the cut and cover entrance structure across Royal Parade. Due to the limited parking in the area, many staff and students travel to the precinct by tram and bus with detours and disruptions impacting their journey.

Pedestrian access would be maintained around construction zones throughout the works, however, some pedestrian routes around construction areas would be via covered walkways. The known impacts to pedestrian networks are shown in Figure 40.

This has been adapted from Technical Appendix D *Transport* and shows the areas where pedestrian movements would be restricted.

FIGURE 40. CHANGES TO PEDESTRIAN NETWORKS, CONSTRUCTION



Legend

Pedestrian Routes

- Footpath Closure
- Footpath Diversion
- Construction Hoarding
- Proposed Station Footprint
- Proposed Alignment
- Proposed Construction Area
- Proposed Excavation Area
- Local Government Area (LGA)

Map 1 of 5

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
Pedestrian routes impacted by construction phase

Drawing Number:		Revision:
MMR-AJM-UGAA-MP-NB-500422		P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	K. Blaylock	13/04/2016	A4

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The closure of Grattan Street would lead to a reduction of on street parking in the area. The large numbers of workers in the precinct would also increase demand for street parking which may further impact access for staff and customers to surrounding businesses (Risk #B004).

Access changes are anticipated to have a significant impact on access for staff, customers and deliveries to businesses in the precinct. As with the impact from amenity changes, the specialised nature of many of the facilities in the precinct means that, despite changes to access, institutions would not likely experience a significant change in demand as staff, students and customers would continue to access these places. However, there may be some impact in the ability to attract casual staff, particularly to the hospitals which require shift work. It would likely transport impact movement networks and take longer to move around the area.

The hospitals and university are the main attractors in the area and there are a relatively limited number of routes to access them. People would continue to travel to access the hospitals and university despite changed pedestrian access.

However, food and beverage, retail and accommodation businesses would likely be impacted the most with customers able to substitute their consumption elsewhere. The businesses on impacted streets that become harder to access would lose customers and therefore income. However, this decline would not be lost from the precinct but redirected to surrounding streets.

Emergency access to the hospitals, however, is critical and any changes cannot impact on this. Access changes could largely be mitigated through a precinct traffic and parking plan, maintenance of access for staff, customers and deliveries, and traffic management plans to enable businesses to continue to operate during the construction period.

The large number of workers located in the precinct during the construction phase would result in demand for goods and services which may benefit some business types, particularly food and beverage.

Changes to access and proximity to construction work may increase the difficulty of renting commercial property in the precinct. However, rather than resulting in higher vacancy rates, this would likely only add a slightly to the time it takes to rent a premises. The impact would therefore be inframarginal.

Cumulative impacts are also possible with construction works potentially occurring at the Royal Melbourne Hospital and the University of Melbourne (likely along the Royal Parade frontage) during the project's construction period (Risk #B009). This could result in even bigger impacts to businesses in the area than those discussed. At this stage, there is no detail on the scope of the proposed works, therefore a detailed understanding of the extent of the cumulative impacts was not possible for this study.

Assumptions have been made around the cost of the medical and research institutes dealing with the project. It was assumed that additional staff would be required to manage the interactions with MMRA. Such interactions would concern the cost of shielding and protecting sensitive equipment, the cost of relocation of research activities, the loss of some researchers to other research facilities, the cost of dealing with access issues and other potential impacts. These various considerations and assumed costs for each type of impact, produced an overall potential impact of $10.8 million (this is less than a one per cent reduction in precinct GVA).

Table 49 summarises the key assumptions underlying the quantification of the potential residual business impacts of the proposed Parkville Station precinct.

TABLE 49. KEY ASSUMPTIONS UNDERLYING QUANTIFICATION OF POTENTIAL RESIDUAL BUSINESS IMPACTS, PARKVILLE STATION

Buildings with street frontage	Change in foot-traffic (%)	Description
Leicester Street	-25	Hoarded area.
Pelham Street	20	Redirected foot-traffic from Grattan Street.
Flemington Road	-10	Modest reduction due to the reduced access of the precinct.
Elizabeth Street	-10	Modest reduction due to the reduced access of the precinct.
Grattan Street	-25	Hoarded area.
Barry Street	-25	Hoarded area.
Berkeley Street	20	Redirected foot-traffic from Barry Street.
Bouverie Street	15	Redirected foot-traffic from Barry Street.
Swanston Street (part in precinct)	-15	Modest reduction due to the reduced access of the precinct.
Demand elasticity of foot-traffic	**Elasticity**	**Description**
Retail	0.40	Retail businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Food services	0.40	Food service businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Accommodation	0.10	Accommodation businesses are expected to be influenced more modestly by foot-traffic than other retail and foot-traffic businesses as bookings are generally made in advance.
All other industries	0.00	Changes in foot-traffic are not expected to impact the business activity of other businesses. This was confirmed by consultations.

Specific issues	Additional change in activity	Description
Medical and research institutes	$10.8 million	These impacts have been 'estimated' based on assumptions informed by consultation with the relevant institutes. Given the complex nature of institutes the accuracy of the estimate must be treated with some caution. The medical and research institutes in the precinct operate equipment and run experiments that are highly susceptible to construction impacts, particularly from vibration. MRI machines which have large magnets are also impacted by some construction materials and may need to be protected. It is expected that medical and research institutes would need to: - Use additional labour resources to manage the issues above - Relocate some services - Invest in some new capital equipment to mitigate the impacts. All of these responses require additional spending. While the scale of this spending is difficult to gauge, we have assessed the impact at $10.8 million, which is expected to be less than 1 per cent of future gross value added by the Health Care sector.
Construction workers	**Time period**	**Spending per worker per day**
Peak number of 350 in 2020	2018 - 2025	$20 / 80 per cent within precinct.

Table 50 summarises the value of the residual business impact identified for the proposed Parkville Station precinct in 2020.

TABLE 50. ESTIMATED RESIDUAL BUSINESS IMPACTS, PARKVILLE STATION, 2020

Buildings with street frontage:	Gross value added ($m)	Comments
Business acquisition	-4.7	- Within the precinct, this activity is likely to be replaced by other businesses attempting to capture the customers of those businesses to be acquired. - More broadly, this activity is not likely to be lost to Melbourne, as these businesses are assumed to relocate to other parts of the city/state.
Reduction in foot-traffic (from footpath closures and amenity impacts)	-1.8	- This activity is likely to be redistributed to other streets in the area.
Spending by construction workers	+0.2	- Overall spending by construction workers is expected to be a modest offset for the fall in foot-traffic.

Buildings with street frontage:	Gross value added ($m)	Comments
Specific noise, amenity and access issues	-10.8	- Overall increase in overhead costs for hospitals, the university, research institutes and other business types in the precinct.
Total	-17.1	- As outlined above, a large share of this activity is expected to be redistributed outside the precinct and across the broader Melbourne area.

Source: SGS Economics and Planning

Table 51 sets out a time profile showing the various levels of impacts in the proposed Parkville Station precinct from 2017 to 2024. This profile is based on the proposed construction works, but without a very detailed construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 51. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
Parkville Station	95%	100%	100%	100%	90%	50%	35%	15%

Source: SGS Economics and Planning

Operational Phase

The proposed new Parkville station would improve the connectivity of the precinct. The commercial and residential uplift from the improved accessibility provided by the new underground station at Parkville is expected to be significant, though more modest than seen at Arden due to:

- A more modest rise in accessibility given the current level of transport infrastructure
- More modest development opportunities given the large institutions that currently occupy much of the area (e.g. the University of Melbourne and Royal Melbourne Hospital).

Consistent with consultation conducted by SGS, the project is expected to increase the number of health jobs in the precinct. With more people using the hospital and the project enabling an easier commute to work for hospital staff, the overall level of employment would increase.

Table 52 sets out the change in annual Gross Value Added that would be expected to occur in 2041 based on the:

- Increase in population and employment projected
- Structural change in employment.

As outlined in the methodology section, the operation of the project is expected to generate a rise in labour productivity due to a range of agglomeration benefits such as greater access to potential labour. These productivity improvements were quantified by:

- Calculating the number of workers from each sector
- Estimating the number of hours worked
- Applying the estimated change in labour productivity based on the methodology outlined above
- Aggregating the increase in productivity for each worker within the proposed precinct.

Based on this methodology, it is estimated these productivity benefits would lead to additional annual production of close to $3 million for the precinct. This productivity benefit would flow to existing business in the form of higher profits. This would enable them to pay higher rents to remain at this location. This may reduce the already limited supply of affordable sites for start-up ventures. Many of these evolved from research activity, particularly at the University of Melbourne, and require access to laboratory space available in the precinct.

TABLE 52. ESTIMATED CHANGE IN BUSINESS ACTIVITY OPERATION PHASE, PARKVILLE STATION, 2041

	Without project case		With project case	
Industry	Staff numbers (No.)	Gross Value Added ($m)	Staff numbers (No.)	Gross Value Added ($m)
Agriculture and Mining	19	2.5	19	2.5
Manufacturing	14	1.5	14	1.5
Electricity, Gas, Water and Waste Services	0	0.0	0	0.0
Construction	216	33.1	216	33.1
Wholesale Trade	78	16.4	78	16.4
Retail Trade	699	44.4	690	43.8
Transport, Postal and Storage	10	1.6	10	1.6
Information Media and Telecommunications	37	8.6	37	8.6
Finance and Insurance	51	24.6	51	24.6
Rental and Hiring Services	0	0.0	0	0.0
Real Estate Services	4	0.9	4	0.9
Business Services	1576	369.8	1 576	369.8
Admin and Support Services	34	2.1	34	2.1
Public Administration and Safety	0	0.0	0	0.0
Education and Training	11 008	1 294.0	11 008	1 294.0
Health Care and Social Assistance	13 464	1 383.9	15 580	1 601.4
Arts and Recreation Services	33	3.3	33	3.3
Other Services	46	3.3	46	3.3
Accommodation	126	7.3	125	7.3
Food and Beverage Services	676	39.4	673	39.3
Total	27 831	3 236.8	29 835	3 453.5

Source: SGS Economics and Planning

Assessment Against Draft EES Evaluation Objectives

The Concept Design is consistent with the draft EES Evaluation objective for social, community, land use and business as construction activities are largely contained within existing road reserves and open space, limiting the need to acquire businesses. However, the highly specialised and sensitive nature of the facilities, mean construction activity could be particularly disruptive to business activity in the precinct.

11.6 Summary Precinct 4: Parkville Station

The most significant potential impact on businesses in the proposed Parkville Station precinct during the construction phase would be the potential disruption of medical and research activities due to the impact of vibrations on sensitive equipment. Whilst mitigation measures would look to minimise this impact, it is possible that some of this activity would be lost to metropolitan Melbourne due to the cost of relocating specialist facilities temporarily during the construction period.

Other expected impacts during the construction period include the acquisition of one business (712 Elizabeth Street), which would likely be lost to the precinct, and also some impacts on retail and food and beverage businesses due to reductions in foot traffic and loss of amenity. The latter is expected to be offset to a small extent by increased spending from construction workers.

During the operation phase, it is expected the project would generate a number of benefits including:

- Commercial and residential uplift due to improved accessibility (albeit more modest than the Arden Station precinct due to the fact that much of the Parkville Station precinct is already occupied by large institutions)
- An increase in health jobs in the precinct due to greater accessibility and utilisation of existing health facilities
- A rise in labour productivity due to a range of agglomeration benefits such as greater access to potential labour.

11.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during construction of the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

12 PRECINCT 5: CBD NORTH STATION

The proposed CBD North Station precinct contains a significant concentration of businesses including education, accommodation and retail land uses. Significant institutions and businesses in the precinct include RMIT University, the State Library of Victoria and Melbourne Central.

Construction activity in this precinct would displace a number of businesses and dwellings, requiring the acquisition of nine property titles that support commercial activity and one residential building. These impacts have been informed by the assessment from other technical streams. Due to the concentration of retail and food and beverage businesses in the area, the number of businesses affected by changes to the pedestrian flows and amenity would be significant. The potential impacts of vibration on sensitive equipment in RMIT buildings would also have an impact during the construction phase.

12.1 Project Components

Infrastructure

The proposed CBD North station is located directly beneath Swanston Street, from La Trobe Street to the north of Franklin Street.

Key features of the proposed CBD North station design include:

- An entrance at La Trobe Street that also provides a direct pedestrian link to the existing Melbourne Central station under La Trobe Street; a surface connection to the existing tram lines running along Swanston and La Trobe Streets; and sufficient space to allow for provision of possible future over-site development opportunities
- An entrance to be located at Franklin Street to the east of Swanston Street
- Ventilation and maintenance access in Franklin Street on the west side of Swanston Street and in A'Beckett Street between Stewart Street and Swanston Street.

Construction

Nine property titles that support commercial activity and one residential building with 49 residential titles are proposed to be acquired to enable construction works.

Proposed construction works include:

- Cut and cover construction along Franklin Street, east of Swanston Street to Bowen Street
- Mined construction of the station under Swanston Street
- Construction of ventilation and maintenance access in Franklin and A'Beckett Streets
- Construction work site(s) established adjacent to the station site.

The construction footprint and method would result in changes to surrounding traffic movements including the closure of Franklin Street east of Swanston Street to all traffic permanently, with the exception of the U-Turn facility from Victoria Street, to provide access to RMIT and City Baths loading bays. The construction of the La Trobe Street entrance would require some works in the La Trobe Street road reserve to connect to the Melbourne Central station which may impact traffic movement.

There are likely to be 150 average truck movements each day for 48 months with truck access and movement occurring 24 hours a day, seven days per week (upon placement of acoustic sheds). Whilst this would see an increase in the movement of trucks in the CBD, in the context of current CBD traffic

levels, this does not represent a significant increase in CBD traffic. Proposed construction vehicle routes are shown in Figure 41.

Shafts and entrances are expected to be completed from 2017 to 2023. Cavern and mined tunnels are expected to be constructed between 2017 and 2021. The station fit-out is expected to occur from 2020 to 2023. Works are expected to occur 24 hours per day if determined to comply with relevant noise management levels at the nearest sensitive noise receiver.

Early Works

Early works in the CBD North Station precinct involve the replacement or relocation of some utility infrastructure including electricity, gas, sewer, telecommunications, and water and stormwater drainage assets.

12.2 Existing Conditions

The proposed CBD North station precinct extends along Swanston Street, north of Little Lonsdale Street. The precinct includes education, accommodation and retail land uses. Significant institutions and businesses in the precinct include RMIT University, the State Library of Victoria and Melbourne Central (which includes Melbourne Central Station, Hoyts Cinema and numerous retail outlets) as well as open space, office, retail and accommodation land uses. Adjacent to the precinct are significant areas of retail, office and education uses.

Swanston Street is the 'civic spine' of Melbourne and a high intensity tram corridor. Tram routes also run along La Trobe Street. The existing Melbourne Central station, located to the south of the precinct, built as part of the City Loop, provides train services.

Census of Land Use and Employment data was used to estimate the number of businesses, jobs and Gross Value Added in the precinct. Figure 42 shows the boundary of the proposed CBD North precinct.

The analysis included an estimate of the workforce for Melbourne Central given the station precinct covers most of the entrances to the building.

Census of Land Use and Employment data of the number of employees in 2012 within the precinct, and labour productivity in 2011 were extrapolated using historical trends to produce a 2015 estimate.

Based on these assumptions, Census of Land Use and Employment data indicates there were 498 businesses located within the proposed CBD North Station precinct in 2015, employing 7,680 people. Overall, these businesses are estimated to produce $925 million in gross value added in 2015 as set in Table 53. Close to:

- 50 per cent of employment is within the education and training sector, particularly RMIT
- 20 per cent of employment is within the retail sector which includes businesses located in Melbourne Central and along Swanston Street
- There are a significant number of business and professional services jobs located in buildings along Swanston Street and with Victoria Street frontage.

FIGURE 41. CONSTRUCTION VEHICLE ACCESS ROUTES, CBD NORTH

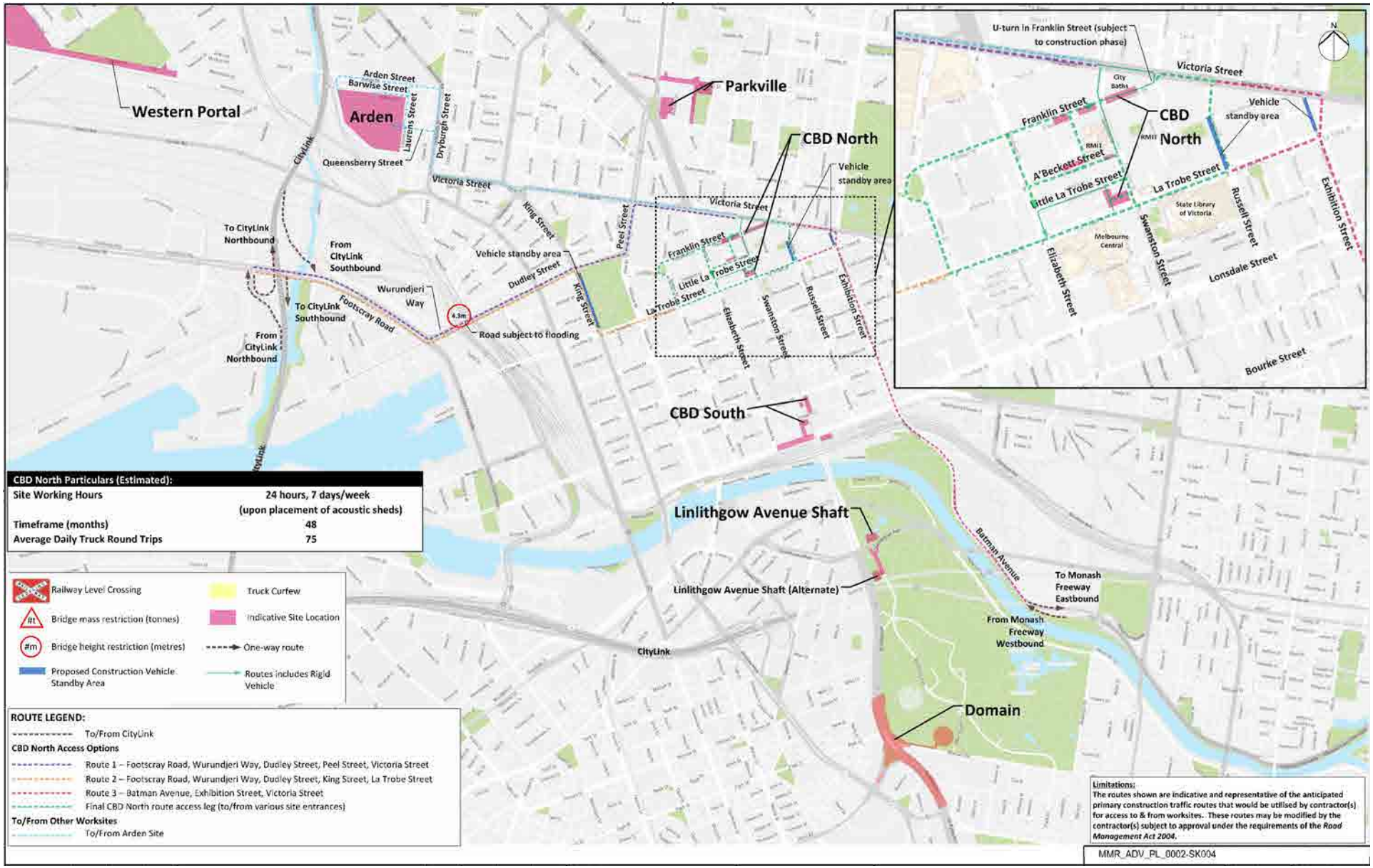


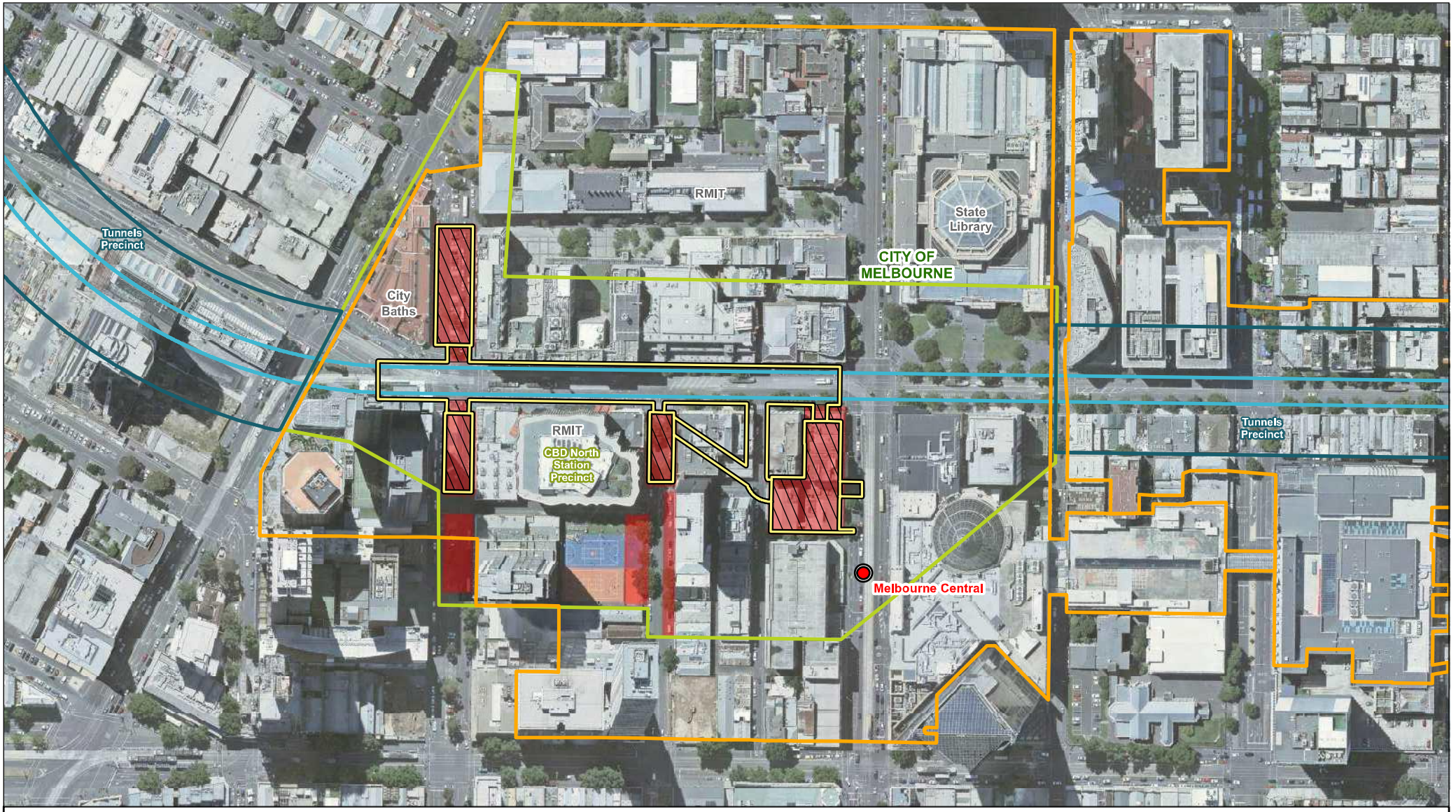
TABLE 53. ESTIMATED BASELINE ACTIVITY, CBD NORTH STATION, 2015

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	5	35	3
Electricity, Gas, Water and Waste Services	1	0	0
Construction	1	25	3
Wholesale Trade	1	14	2
Retail Trade	214	1624	145
Transport, Postal and Storage	3	54	6
Information Media and Telecommunications	7	366	162
Finance and Insurance	6	40	15
Rental and Hiring Services	3	35	11
Real Estate Services	3	50	16
Business Services	19	492	55
Admin and Support Services	8	107	26
Public Administration and Safety	3	21	2
Education and Training	34	3701	416
Health Care and Social Assistance	25	324	19
Arts and Recreation Services	14	197	7
Other Services	40	147	12
Accommodation	2	25	1
Food and Beverage Services	109	422	22
Total	498	7680	925

Source: SGS Economics and Planning based on City of Melbourne Census of Land Use and Employment data

Figure 43 shows the total number and location of businesses in the proposed CBD North Station precinct in relation to the proposed location of construction sites and project infrastructure. Figure 44 shows food or accommodation businesses. Figure 45 shows retail businesses. Figure 46 shows health and education businesses.

FIGURE 42. PRECINCT BOUNDARY, CBD NORTH STATION PRECINCT



Legend

- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- Business Impact Assessment Precinct (Based on CLUE 2012 Blocks)

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 4 of 7

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

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Melbourne Metro Rail Project

Title:
CLUE 2012 - Stations and Portals

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500244			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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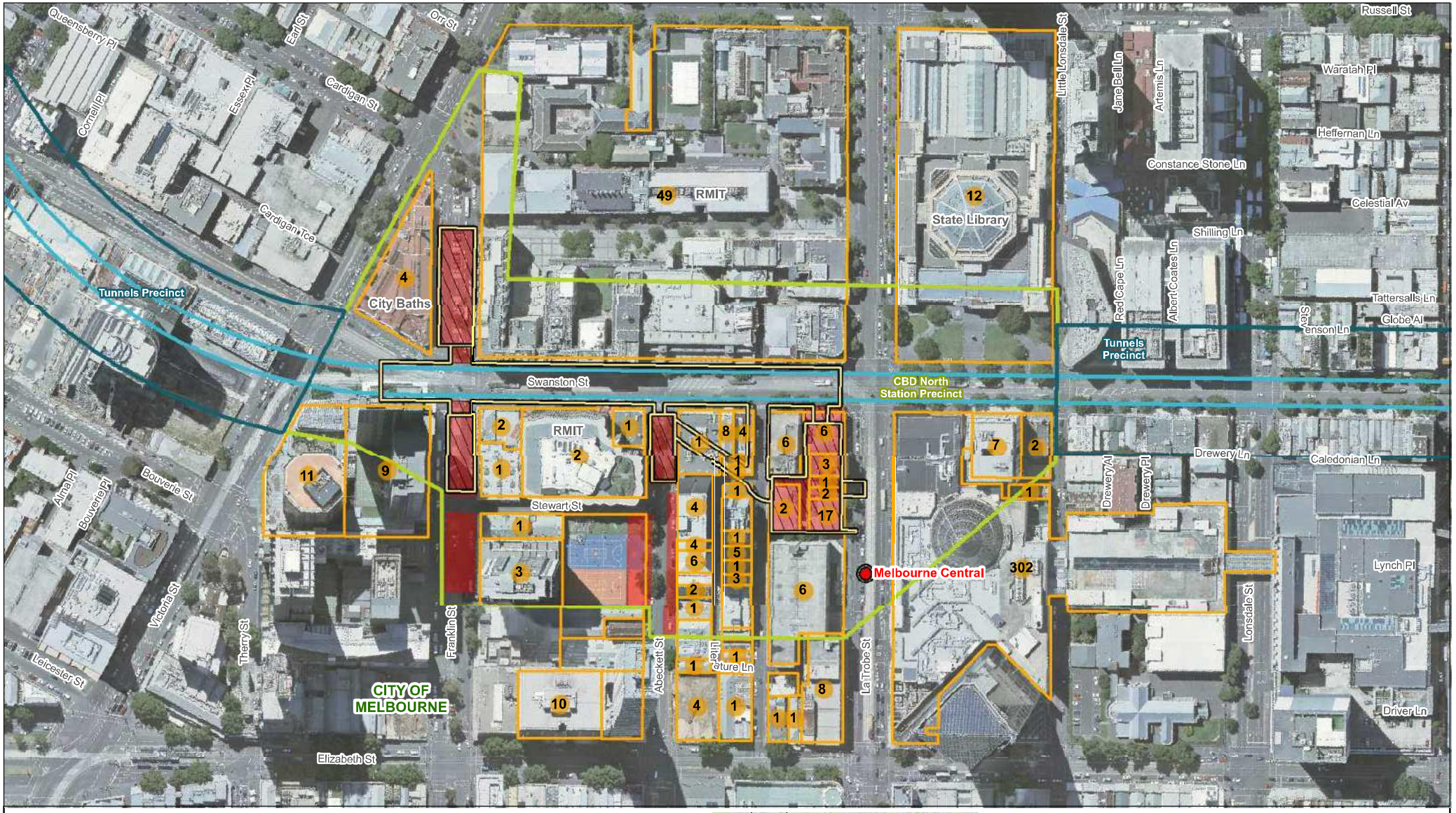
FIGURE 43. TOTAL BUSINESSES, CBD NORTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more businesses (46 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 5 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Matt MacDonald in association with AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Total Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500327			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 40 80
Metres

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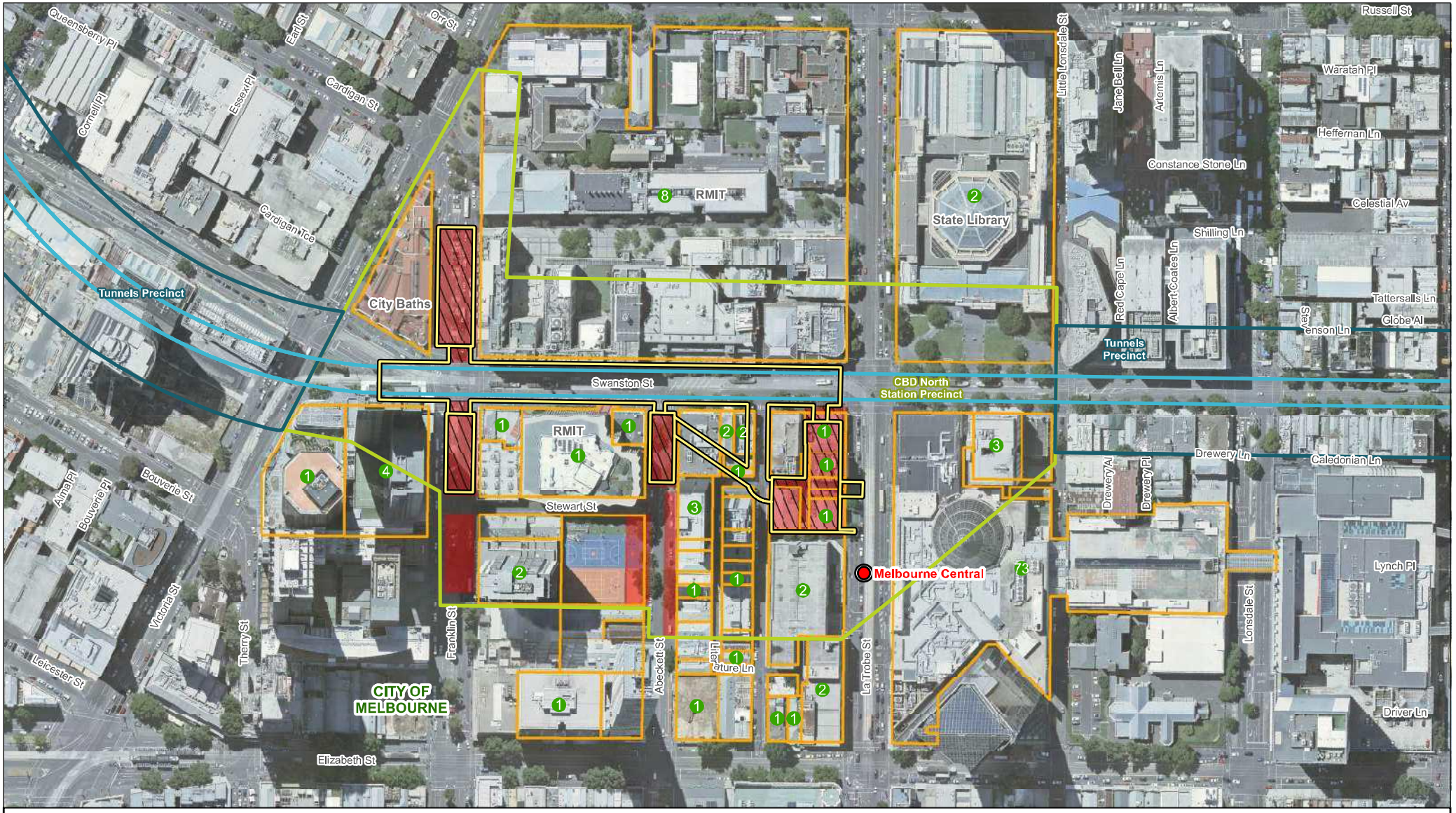
FIGURE 44. FOOD AND ACCOMMODATION BUSINESSES, CBD NORTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more food and accommodation businesses (26 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 5 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

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Melbourne Metro Rail Project

Title:
CLUE 2012 Food and Accommodation Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500325			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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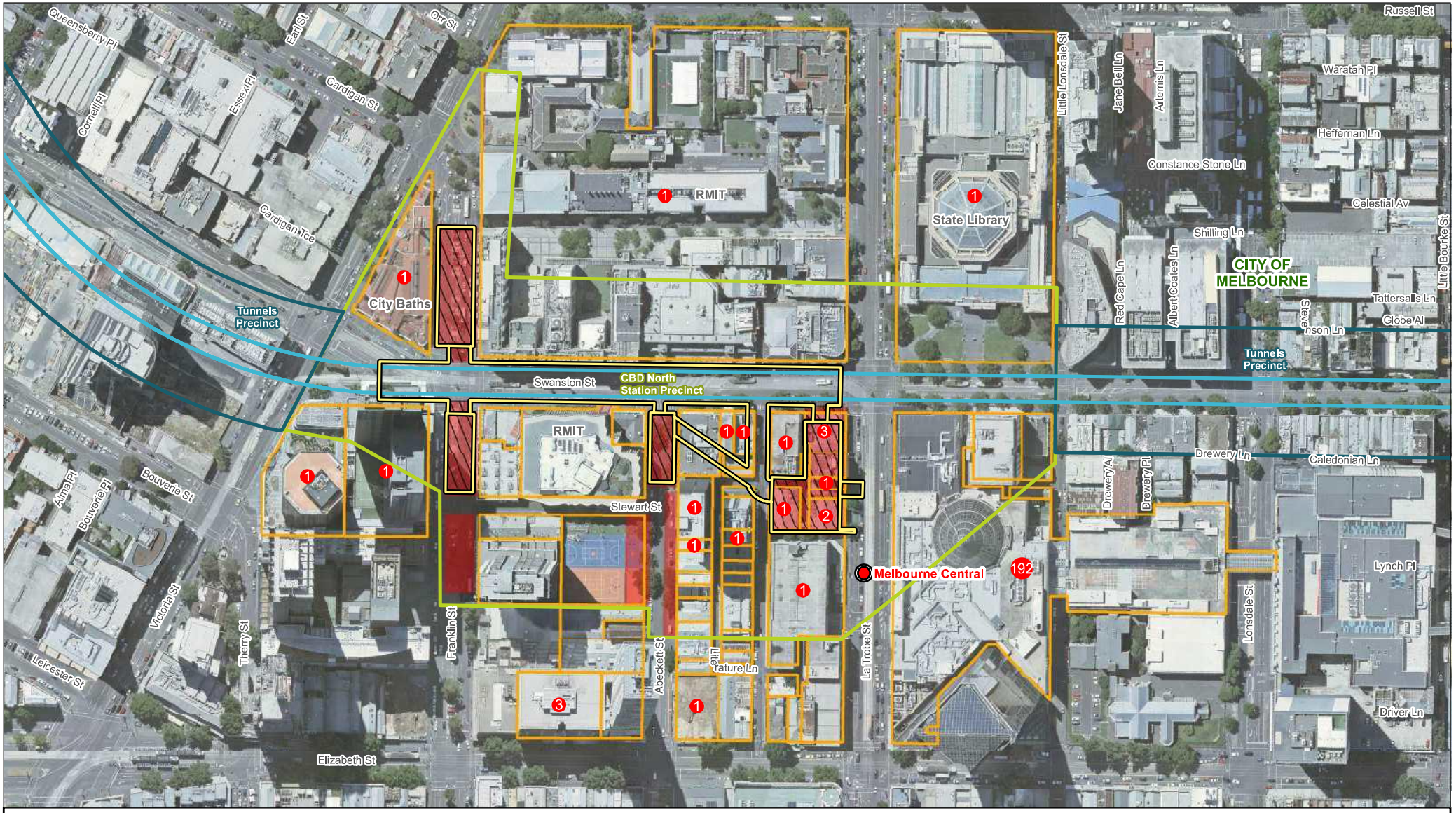
FIGURE 45. RETAIL BUSINESSES, CBD NORTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more retail businesses (19 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Local Government Area (LGA)
- Proposed Excavation Area
- Proposed Construction Area
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 5 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

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Melbourne Metro Rail Project

Title:
CLUE 2012 Retail Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500324			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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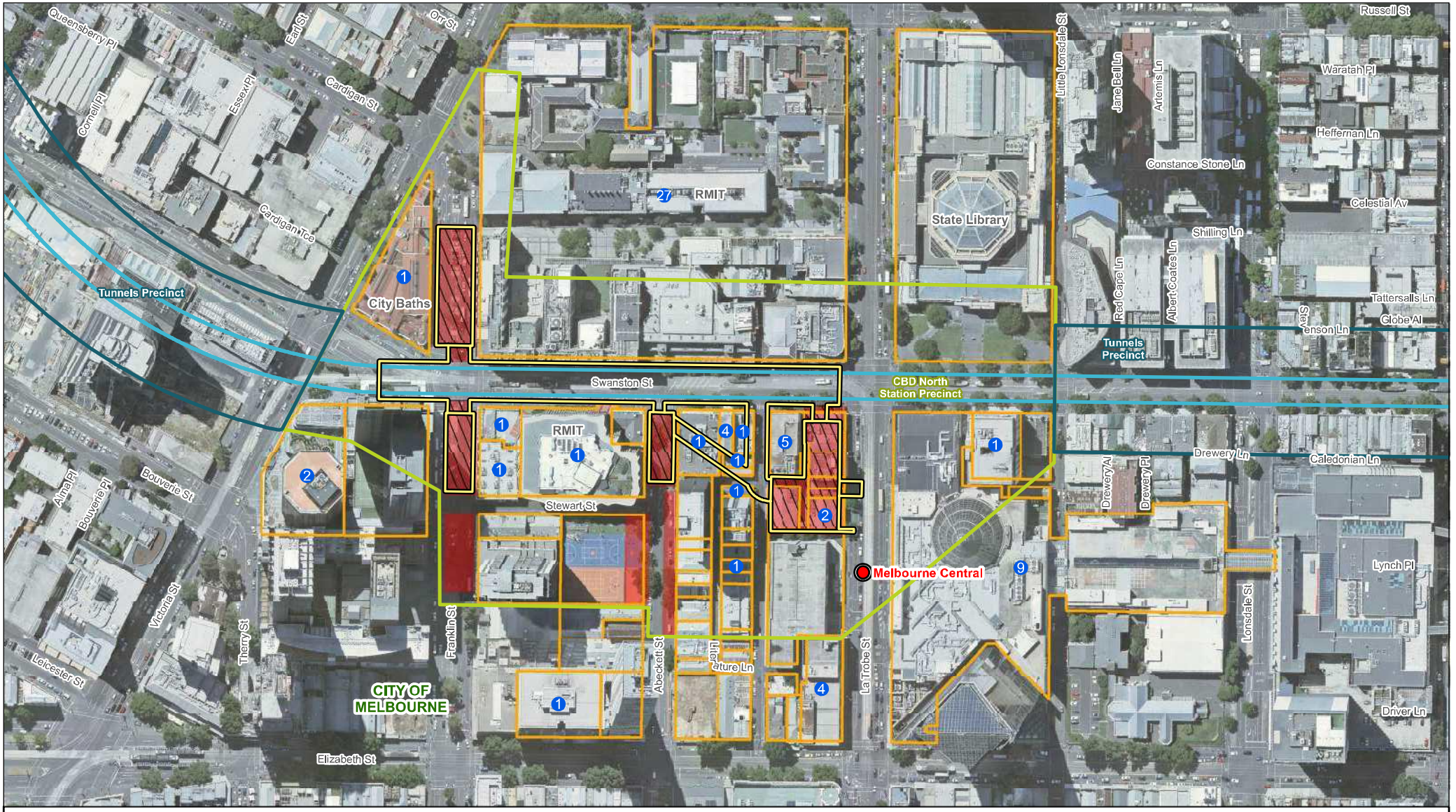
FIGURE 46. HEALTH AND EDUCATION BUSINESSES, CBD NORTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more health and education businesses (18 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 5 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

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Melbourne Metro Rail Project

Title:
CLUE 2012 Health and Education Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500326			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 40 80
Metres

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12.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 54.

TABLE 54. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Acquisition of commercial property impacting business activity in the precinct	No
Acquisition of residential property impacting business activity in the precinct	No
Vibration and ground borne noise affecting business operations above	Potentially
Construction materials and activities interfering with the operation of specialist research equipment	Potentially
Construction noise, dust and decreased amenity impacting on the productivity and output of local businesses	Potentially
Difficulty renting commercial property due to poor amenity and access constraints	Potentially
Disruption to utilities impacting on the productivity and output of local businesses	Yes
Truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians	Yes
Acquisition of car parks impacting access for staff and customers of surrounding businesses	Potentially
Increased demand for remaining parking generated by workers at the construction work site , impacting access for staff and customers of surrounding businesses	Potentially
Cumulative impacts due to consecutive and concurrent construction activities	Potentially

12.4 Benefits and Opportunities

Table 55 summarises the potential benefits and opportunities associated with the Concept Design.

Another potential benefit that may arise after the construction phase is the unlocking of development potential above the station box. To a large extent the employment benefits from this opportunity would be dependent on the scale of development that is possible and also the nature of the development. For instance, a residential building may only bring employment benefits during the construction period, whereas an office building would also bring a larger workforce to the precinct once completed. These potential benefits have not been explicitly estimated at this stage, as there is not enough detail in terms of the scale and nature of development that may be possible.

TABLE 55. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, CBD NORTH STATION

Concept Design	Benefits	Opportunities
Located under Swanston Street, between Franklin and La Trobe Streets Entrances on the: - East side of Franklin Street - Corner of Swanston and La Trobe Street - Underground connection to Melbourne Central Station Plant room located under Franklin Street, between Swanston and Bowen Streets	Construction	
	- Demand for local goods and services by workers.	- RMIT University to use the construction phase as a teaching tool for students in relevant courses.
	Operation	
	- Productivity benefits including greater access to labour. - Improved access to businesses in the precinct for customers. - Increased foot-traffic for retailers near station entrances.	None identified

12.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Early Works

Early works are not expected to impact businesses in the proposed CBD North Station precinct as interruptions to utility services are not anticipated. However, utilities are essential for business

operations and if works unexpectedly cause any interruption to services this may suspend business activity until services are returned. It is assumed that any disruption would be short-term in nature and therefore would have a negligible impact on businesses. This risk could be mitigated by informing businesses of the timing and duration of works (Risk #B001).

Construction Phase

Acquisition Impacts

The construction phase is likely to require the acquisition of commercial property which would force some businesses in the precinct to relocate (Risk #B006).

The acquisition of this property would lead to an estimated reduction of 37 businesses, 385 jobs and $60 million in GVA, as set out in Table 56.

TABLE 56. ESTIMATED DIRECT FALL IN BUSINESS ACTIVITY DUE TO ACQUISITION, CBD NORTH STATION

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	0	0	0
Electricity, Gas, Water and Waste Services	0	0	0
Construction	0	0	0
Wholesale Trade	0	0	0
Retail Trade	8	46	7
Transport, Postal and Storage	0	0	0
Information Media and Telecommunications	0	0	0
Finance and Insurance	0	0	0
Rental and Hiring Services	0	0	0
Real Estate Services	1	6	1
Business Services	5	28	3
Admin and Support Services	2	50	16
Public Administration and Safety	1	3	0
Education and Training	1	57	20
Health Care and Social	2	4	0
Arts and Recreation Services	1	3	0
Other Services	7	19	2
Accommodation	0	0	0
Food and Beverage Services	9	169	11
Total	37	385	60

Source: Census of Land Use and Employment data, City of Melbourne, SGS Economics and Planning

Whilst it is possible these businesses could relocate in the precinct, or have their activity shifted to other businesses in the precinct, for the purposes of the impact assessment it was assumed the worst case scenario of business activity being lost from the precinct. Even using this conservative approach, this activity is not anticipated to be lost from the CBD, but redirected to adjoining streets and laneways.

The impact to these businesses could be mitigated through compensation entitlements provided through the *Land Acquisition and Compensation Act 1986*, assistance to find suitable alternate premises, early engagement and sufficient notification of acquisition.

The reduction in commercial space and the number of businesses located in the proposed CBD North Station precinct may have secondary effects such as changes in commercial rents and/or activity for the

remaining businesses in the vicinity. Considering the number of businesses acquired relative to the number of businesses in the precinct and beyond, any impact would be inframarginal.

In addition, 49 dwellings are proposed to be acquired to enable construction of the project. This would relocate households and in turn reduce demand for goods and services sold by businesses within the precinct. In order to quantify this impact, the following was assumed:

- 49 dwellings would be acquired, with 100 per cent occupancy rate
- Given the location of the dwellings, the majority of occupants are students
- The net worth of affected tenants is in line with the lowest quintile
- These households spend $50,000 per year on goods and services[27]
- 20 per cent of this spending is constrained within the precinct.[28]

These assumptions resulted in a decrease of $490,000 in spending from the CBD North Station precinct. Whilst lost from the precinct, this expenditure would not be lost from the Melbourne economy, assuming people relocate elsewhere in the area or within Melbourne. Using the ratio between sales and gross value added, the reduced household expenditure was converted into a reduction in gross value added for retail and food service industries with the precinct.[29] This is a reduction of approximately $100,000 in Gross Value Added.

Non-acquisition Impacts

Vibration from construction activities are anticipated to impact on sensitive equipment at RMIT University (Risk #B001). The University has facilities, operates equipment and runs experiments that are highly susceptible to construction impacts, particularly from noise and vibration. As in the proposed Parkville Station precinct, the Technical Appendix I *Noise and Vibration* shows that, even with mitigation, construction activity would impact the operation of sensitive equipment, meaning they may not be able to be used, or their use would be limited during the construction period.

The long time frames for some research that uses this equipment may mean that impacts extend from well before and after the actual construction phase. For example, research scheduled to start in 2016, with a duration that extends into the construction period, would likely not occur in the precinct. Consultation with RMIT University to negotiate the most suitable times for disruptive activity would enable them to plan for the restricted use or shut down of these facilities. However, vibration may possibly result in a reduction in business activity in the precinct.

It is unlikely that some of this activity would be able to be redistributed to other locations in Melbourne as the facilities are highly specialised and have no alternative locations. It is therefore possible that some of this activity would be lost to metropolitan Melbourne. Whilst it is unlikely to affect the overall numbers of students and staff at RMIT University it may impact the university's ability to appeal to research staff and students attracted by those specialised facilities.

The construction phase has the potential to create disruptions to some business activity in the proposed CBD North precinct due to changed amenity from noise, dust and vibration (Risk #B001). This could reduce demand for the goods and services sold by businesses in proximity to the construction work, though, overtime, demand is expected to be redirected, to some extent, to businesses located elsewhere in the precinct and other streets and laneways in the CBD.

Whilst identified as a possible risk, the Technical Appendix H *Air Quality* indicates that, with mitigation, air quality can be contained within State Environment Protection Policy criteria. Technical Appendix I *Noise and Vibration* identifies that there is likely to be some impact from vibration and ground borne noise in the precinct, even after mitigation.

[27] The latest official data from the Household Expenditure Survey, Australia: Summary of Results (2009–10) indicated that Victorian households in the lowest net worth quintile spent $44, 078 per annum on goods and services. This was adjusted for 2014-15 prices.

[28] This assumes that close to 70 per cent of spending on 'Food and non-alcoholic beverages', 'Alcoholic beverages', 'Tobacco products', 'Clothing and footwear', 'Household furnishings and equipment', is done within the precinct.

[29] This was done by using the ratio of sales income and gross value added for the Australian retail sector provided by the Australian Bureau of Statistics in '8155.0 - Australian Industry, 2013-14'

To understand how pedestrian flows might be impacted by construction related to the project, previous construction projects have been considered. Consultation with businesses and local government provided an insight into impacts of previous construction projects.

The total number of trips for all purposes including journey to work, journey to education and retail/food services, were also modelled for each hour of the day. This modelling was calibrated with the City of Melbourne's pedestrian count data. This modelling provides a detailed understand of the movement of pedestrian, by purpose and by time of day.

This was combined with a review of a selection of major projects which have taken place across the study area. For example, the Hoddle Grid is subject to ongoing major construction projects which have impacted on pedestrian flows and amenity of the surrounding area. Some of the projects considered are listed below:

- Swanston Street redevelopment (2011–2013)
- Myer Emporium development (2012–2014)
- RMIT Swanston Academic Building (2010–2012)
- RMIT Capital Works Program (2007–2016)
- Tram Super Stops (CBD) (2011–2012)
- State Library of Victoria (six major stages 1986–2006)
- Southern Cross Station (2002–2007)
- Melbourne Central (2000–2003)

The potential impacts on this precinct would come from construction impacts (loss of amenity, truck movements, noise and vibration, and changes to pedestrian and vehicle access) and customers perceptions about the how the different areas would function during the construction phase. If customers have perceptions that the precincts is 'closed for business' they may not travel to the CBD at all.

The construction impact can be informed by the assessment from other technical streams, while the customer's perceptions are based on a more qualitative assessment drawing on previous construction projects.

Amenity impacts are expected to particularly impact the operation of food and beverage businesses, especially those with outdoor seating, and service businesses where the customer experience is crucial to attracting customers. This includes retail and accommodation businesses, particularly in close proximity to the proposed construction work sites on Franklin Street, A'Beckett Street and the corner of LaTrobe and Swanston Streets (Risk #B003). For example, the Oxford Scholar has outdoor seating along A'Beckett Street which would not be able to be utilised for the duration of the construction phase. Any residual reduction in business activity would not be lost from the CBD but would be redirected to other businesses in the precinct or in the surrounding streets and laneways.

There would be changes road and pedestrian networks during the construction phase with Franklin Street closed to pedestrians between Swanston Street and Victoria Street and A'Beckett Street closed between Swanston Street and Stewart Street (Risk #B004). The known impacts to pedestrian networks are shown in Figure 47. This has been adapted from Technical Appendix D *Transport* and shows the areas where pedestrian movements would be restricted.

These changes would impact access for staff, students, customers and deliveries to businesses in the area. In particular, this is likely to impact staff and students at RMIT University as Franklin Street runs alongside the side of the campus. This could also impact RMIT operations as vehicle access to Building 14 is via Franklin Street. Businesses along A'Beckett Street, particularly those that rely on passing trade accessing their premises from Swanston Street, would also likely be impacted.

The impact to businesses from changed access and amenity could be managed through a combination of tools including consultation and communication with businesses and the community, precinct parking plans, maintenance of access and traffic management plans, ensuring key access routes for businesses are maintained, marketing activities and signage. Despite these measures, however, it is anticipated that there would be a resulting decline in passing trade along some streets in the precinct from these amenity impacts.

There would be truck movements in the precinct as well as movements from construction worker vehicles. The Transport Impact Assessment, however, does not identify any significant congestion impacts relative to current traffic levels. Construction worker vehicles would also increase demand for street parking which may further impact access for staff and customers to surrounding businesses.

Access changes can largely be mitigated through a precinct parking plan, maintenance of access for staff, customers and deliveries, and traffic management plans to enable businesses to continue to operate during the construction period. Again, any residual reduction in business activity from changes to access would not be lost from the CBD but would be redirected to other businesses in the precinct or in the surrounding streets and laneways.

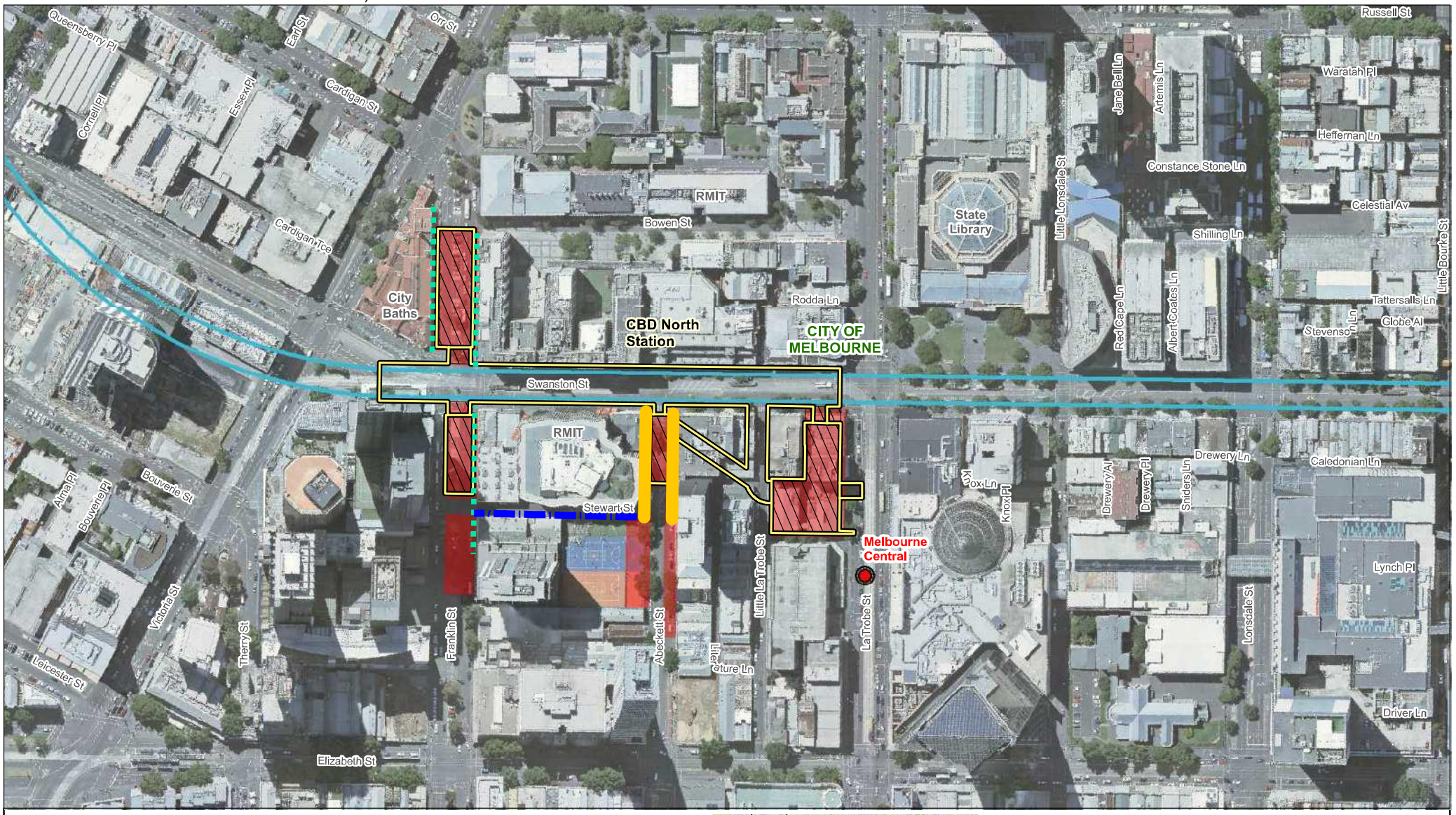
Changes to access and proximity to construction work may increase the difficulty of renting commercial property in the precinct. However, the ability to mitigate traffic and parking impacts, and the negligible impact to amenity, means it would likely only add slightly to the time it takes to rent a premises. The impact would therefore be inframarginal.

The large number of workers located in the precinct during the construction phase would result in demand for goods and services which may benefit some business types, particularly food and beverage. The construction phase of the tunnel would also increase demand for construction-related services. This would, in turn, increase demand for a range of goods and services that are used as inputs into the tunnel's construction including, for example, legal and financial services. This would provide opportunities for businesses located within the precinct.

As with early works, disruptions to utilities are not anticipated, however, any unexpected disruption would impact the ability of businesses to operate. The assumed short-term nature of disruptions would have a negligible impact on business activity. This risk could be mitigated by informing businesses of the timing and duration of works. There may be cumulative impacts due to consecutive and concurrent construction activities for other projects (for example, residential building and construction at RMIT University).

The construction phase is expected to affect traffic congestion due to the closure of Franklin Street and the use of trucks and vehicles related to construction work. While this congestion, in and of itself, may not cause significant disruptions to business practices, if the congestion occurs concurrently with other road works, the cumulative impact may be more severe. TABLE 57 summarises the key assumptions underlying the quantification of the potential residual business impacts of the project in the CBD North Station precinct.

FIGURE 47. CHANGES TO PEDESTRIAN NETWORKS, CONSTRUCTION



Legend

- Existing Rail Station

Pedestrian Routes

- Footpath Closure
- Construction Hoarding
- Re-opens to Pedestrians
- Proposed Station Footprint
- Proposed Alignment
- Proposed Construction Area
- Proposed Excavation Area
- Local Government Area (LGA)

Map 2 of 5

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Matt MacDonald in association with AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
Pedestrian routes impacted by construction phase

Drawing Number:			Revision:
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Drawn By:	Approved By:	Date:	Map Size:
A. Davy	K. Blaylock	13/04/2016	A4

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TABLE 57. KEY ASSUMPTIONS UNDERLYING QUANTIFICATION OF RESIDUAL BUSINESS IMPACTS, CBD NORTH STATION

Buildings with street frontage	Change in foot-traffic (%)	Description
Swanston Street	-15	Due to reduced access from St Kilda Road Domain site, and noise and amenity issues around the construction work site on Flinders street and City Square.
Victoria Street	-5	Modest reduction due to the reduced access of the CBD.
Franklin Street (western section)	-5	Impact only from hoardings.
La Trobe Street	20	Pedestrians redistributed from A'Beckett Street.
A'Beckett Street	-80	Path closure for part of the construction period.
Little La Trobe	40	Pedestrians redistributed from A'Beckett Street.
Elizabeth Street	10	Pedestrians redistributed from Swanston Street.
Demand elasticity of foot-traffic	**Elasticity**	**Description**
Retail	0.40	Retail businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Food services	0.40	Food service businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Accommodation	0.10	Accommodation businesses are expected to be influenced more modestly by foot-traffic than other retail and foot-traffic businesses as bookings are generally made in advance.
All other industries	0.00	Changes in foot-traffic are not expected to impact the business activity of other businesses. This was confirmed by consultation.
Specific issues	**Additional change in activity**	**Description**
RMIT University	Modest	RMIT University operate equipment and run experiments that are highly susceptible to construction impacts, particularly from noise and vibration.
Construction workers	**Time period**	**Spending per worker per day**
Peak number of 314 in 2020	2018 - 2025	$20 / 80 per cent within the precinct.

Source: SGS Economics and Planning

Table 58 summarises the value of the residual business impact identified for the CBD North Station precinct in 2020.

TABLE 58. ESTIMATED RESIDUAL BUSINESS IMPACTS, CBD NORTH STATION, 2020

Buildings with street frontage	Gross value added ($m)	Comments
Business acquisition	-60	- Within the precinct, this activity is likely to be replaced by other businesses that attempt to capture the customers of those businesses being acquired. - More broadly, this activity is not likely to be lost to Melbourne, as these businesses relocate to other parts of the City/State.
Residential acquisition	-0.1	- Residential acquisition is expected to result in the relocation of households and in turn reduce demand for goods and services sold by businesses within the precinct.
Reduction in foot-traffic (from footpath closures and amenity impacts)	-10.6	- This activity is likely to be redistributed to other streets/precincts across Melbourne such as Elizabeth and Russell Street.
Spending by construction workers	+0.3	- Overall spending by construction workers is expected to be a modest offset for the fall in foot-traffic.
Specific noise, amenity and access issues	-1.0	- Overall fall in gross value added for RMIT and cafes / restaurants with outdoor seating.
Total	-71.4	- As outlined above, a large share of this activity is expected to be redistributed outside the precinct and across the broader Melbourne area.

Source: SGS Economics and Planning

Table 59 sets out a time profile showing the various levels of impacts in the proposed Tunnels precinct from 2017 to 2024. This profile is based on the proposed construction works, but without a very detailed construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 59. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
CBD North Station	50%	100%	100%	100%	65%	65%	65%	65%

Source: SGS Economics and Planning

Operational Phase

The boundary of the CBD is not a fixed line: it has expanded over time in response to structural economic changes, infrastructure investments, rezoning and evolving property market dynamics. As the size of the CBD grows it has the capacity to house more jobs and resident increases.

Previous urban renewal projects in Melbourne (for example, City Loop, Southbank and Docklands) have expanded the footprint of Melbourne's CBD beyond the Hoddle Grid. This has provided a highly central location for more and more firms to locate in the CBD. It also has meant that rents are more affordable than in a highly constrained CBD, for example the Sydney CBD. It has also meant there is still capacity for

ongoing development in the Hoddle Grid as historically development has gone to Southbank and Docklands.

The without project case has a tremendous amount of residential development and employment growth locating in the Hoddle Grid. This growth is drawn to the Hoddle Grid due to its very high levels of transport accessibility.

With the new Arden station some commercial and residential development would be attracted from the Hoddle Grid to Arden due to the increase in relative accessibility and relatively lower market values. Some development which is in search of a site for campus style commercial building could be drawn to the large land parcels at Arden. This type of development has been common place in Docklands over the past decade. The availability of developable sites in Docklands is likely to be limited by the mid-2020s. With the development unlocked by the new Arden station, some employment growth maybe attracted from Docklands to Arden. Arden may also attract employment growth from other locations surrounding the Hoddle Grid, including Southbank, South Melbourne, Collingwood and North Melbourne. During the operational phase, while the total number of jobs in the expanded CBD would be unchanged, the distribution of the jobs would be shifted by the addition of new stations into the rail network.

The project also enables an increase in trains coming to the Hoddle Grid increasing passing trade in the vicinity of the station entrances. This would particularly benefit some business types including retail and food and beverage.

The maintenance and operation of the proposed tunnels would be expected to require a range of goods and services from the private sector including, for example, building materials and surveyors. This, in turn, is likely to increase demand for a range of goods and services that are used as inputs.

Table 60 summarises the change in annual Gross Value Added that would be expected to occur in 2041 based on the:

- Increase in population and employment projected
- Structural change in employment.

As outlined above in the methodology section, the operation of the tunnels is expected to generate a rise in labour productivity due to a range of agglomeration benefits such as greater access to potential labour. These productivity improvements were quantified by:

- Calculating the number of workers from each sector as indicated in the Table 60 below
- Estimating the number of hours worked
- Applying the estimated change in labour productivity based on the methodology outlined above
- Aggregating the increase in productivity for each worker within the precinct.

Based on this methodology, these productivity benefits are estimated to generate additional annual production of close to $1.5 million for the proposed CBD North Station precinct, as set out in Table 60.

TABLE 60. ESTIMATED CHANGE IN BUSINESS ACTIVITY OPERATION PHASE, CBD NORTH STATION, 2041

	Without project case		With project case	
Industry	Staff numbers (No.)	Gross Value Added ($m)	Staff numbers (No.)	Gross Value Added ($m)
Agriculture and Mining	0	0	0	0
Manufacturing	56	6.3	56	6.3
Electricity, Gas, Water and Waste Services	0	0.0	0	0.0
Construction	66	10.1	66	10.1
Wholesale Trade	21	4.5	21	4.5
Retail Trade	3985	253.1	3855	244.8
Transport, Postal and Storage	116	18.6	116	18.6

	Without project case		With project case	
Information Media and Telecommunications	432	99.4	432	99.4
Finance and Insurance	56	27.1	52	25.2
Rental and Hiring Services	49	11.7	44	10.5
Real Estate Services	72	16.9	64	15.1
Business Services	1195	280.3	1195	280.3
Admin and Support Services	95	5.9	95	5.9
Public Administration and Safety	27	3.3	27	3.3
Education and Training	5901	693.6	5901	693.6
Health Care and Social Assistance	631	64.8	631	64.8
Arts and Recreation Services	246	24.4	246	24.4
Other Services	349	25.0	349	25.0
Accommodation	43	2.5	43	2.5
Food and Beverage Services	715	41.8	715	41.7
Total	14 057	1 589.4	13 909	1 576.1

Assessment Against Draft EES Evaluation Objectives

The Concept Design is consistent with the draft EES Evaluation objective for social, community, land use and business as construction activities are largely contained in existing road reserves with only limited business acquisition likely to be required. However, the highly specialised and sensitive nature of the facilities at RMIT mean construction activity could be particularly disruptive to business activity in the precinct.

12.6 Summary Precinct 5: CBD North Station

The most significant impact on businesses in the proposed CBD North Station precinct during construction would be through acquisition and displacement of businesses, and also through a reduction in foot traffic and amenity impacting on retail and food and beverage businesses. Whilst this impact would be experienced by individual businesses, it is unlikely the business activity would be lost to Melbourne, as these businesses would be likely to relocate to other parts of the CBD. Another potential impact of relevance during construction is the disruption of research activities at RMIT due to the impact of vibration on sensitive equipment.

During the operation phase, it is expected that total employment numbers would be slightly lower than in the non-project case, as employment growth is distributed more broadly across Inner Melbourne. However, this would allow structural changes in employment and agglomeration effects that would facilitate higher labour productivity in the precinct. Furthermore, an increase in foot traffic associated with the new station is likely to benefit surrounding retail and food and beverage businesses.

12.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during construction of the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

13 PRECINCT 6: CBD SOUTH STATION

The proposed CBD South Station precinct, similar to the CBD North Station precinct, contains a significant concentration of businesses due to its central location, including retail, office, education and accommodation uses as well as significant landmarks such as Federation Square, Flinders Street Station, St Paul's Cathedral, City Square and Melbourne Town Hall.

Construction would likely require the acquisition of eight commercial property titles to enable construction of the proposed station entrances (as informed by assessments from other technical streams). Again, like for proposed CBD North Station precinct, the majority of the negative impacts during construction are expected to be related to displacement and acquisition of businesses and changes to pedestrian flow and amenity. This would impact significantly on individual businesses and locations during the construction phase, but overall this business activity is not expected to be lost to Melbourne.

13.1 Project Components

Infrastructure

The proposed CBD South station is located at the southern edge of the CBD, directly beneath Swanston Street running between, and partially under, Flinders and Collins Streets.

The proposed key features of the CBD South station design include:

- An entrance at Collins Street at the northern end of the City Square, with the potential to include 65 and 67 Swanston Street
- An entrance at Flinders Street facing both Swanston Street and Flinders Street with opportunities for later development over the station, with new connections to Flinders Street Station and the inner city laneway network
- An entrance with underground connection to Melbourne Visitors Centre at Federation Square
- A pedestrian link running under Flinders Street directly to the main concourse at Flinders Street Station.

Construction

Acquisition of eight commercial property titles is proposed to enable construction of the station entrances. This includes several properties at the southern end of Swanston including several fast food outlets and retail outlets. On Flinders Street, Port Phillip Arcade (228–236 Flinders Street) would likely be acquired as would three leases at Flinders Street Station (Suite 302, Lot 304 and Lot 304). At City Square Brunetti City Square (214 Flinders Lane) would likely be acquired. There is also potential for 67–73 Swanston Street) and 65 Swanston Street to be acquired.

Construction works are proposed to include:

- Mined construction of the station under Swanston Street
- Cut and cover construction of the Flinders Street underpass
- Mined construction of the public entrance access from Federation Square.

The proposed CBD South Station precinct would have three construction work site(s). A construction work site would be located at City Square, currently occupied by a public plaza and a café and a car park in the basement below. Another site would be located on Swanston and Flinders Streets (the site of the

future station entrance), currently occupied by retail outlets and commercial space. The third construction work site would be located at Federation Square.

The construction footprint and method would result in changes to surrounding traffic movements including the temporary closure of Flinders Street.

There are likely to be 150 average truck movements each day for 48 months with truck access and movement occurring 24 hours a day, seven days per week (upon placement of acoustic sheds). Whilst this would see an increase in the movement of trucks in the CBD, in the context of current CBD traffic levels, this does not represent a significant increase in CBD traffic. Proposed construction vehicle routes are shown in Figure 48.

Shafts and Entrances are expected to be completed from 2017 to 2020, from Monday to Friday 07:00-24:00 and Saturday 08:00-15:00. Cavern and mined tunnels are expected to be constructed from 2017 to 2021 with works occurring 24 hours per day, seven days per week. The station fit-out is expected to occur from 2019 to 2023 from Monday to Friday 07:00-24:00 and Saturday 08:00-15:00.

Early Works

Early works in the CBD South Station precinct would involve the replacement or relocation of some utility infrastructure including electricity, gas, sewer, telecommunications, and water and storm water drainage assets.

13.2 Existing Conditions

The CBD South station is located under Swanston Street, extending from Flinders Street to Collins Street. The station footprint covers open space, retail premises, and an office building and extends into Flinders Street Station and Federation Square. The broader precinct includes Federation Square, Flinders Street Station, St Paul's Cathedral, City Square, Melbourne Town Hall as well as retail, office, education and accommodation uses. Land uses in proximity to the precinct include the above as well as the Forum Theatre, Regent Theatre and a childcare centre.

Tram routes run along Swanston, Flinders and Collins Streets. Flinders Street Station is located at the southern end of the precinct and was historically the terminus for all suburban railway lines prior to the opening of the City Loop.

Census of Land Use and Employment data was used to estimate the number of businesses, jobs and Gross Value Added in the precinct. Figure 49 shows the boundary of the proposed CBD South Station precinct.

Census of Land Use and Employment data of the number of employees in 2012 within the Precinct, and labour productivity in 2011 were extrapolated using historical trends to produce a 2015 estimate.

Census of Land Use and Employment data indicates there were 733 businesses located within the proposed CBD South Station precinct in 2015, employing 6 273 staff. Overall, these businesses are estimated to produce $734 million in gross value added in 2015, as set out in Table 61. Close to:

- Thirty per cent of employment is within the retail and food and beverage sector located along Swanston Street
- A wide distribution of jobs within the precinct across business and professional services located in buildings along Swanston Street.[30]

[30] The large number of manufacturing jobs in CBD South represents Jewellers and manufacturing office jobs.

FIGURE 48. CONSTRUCTION VEHICLE ACCESS ROUTES, CBD SOUTH

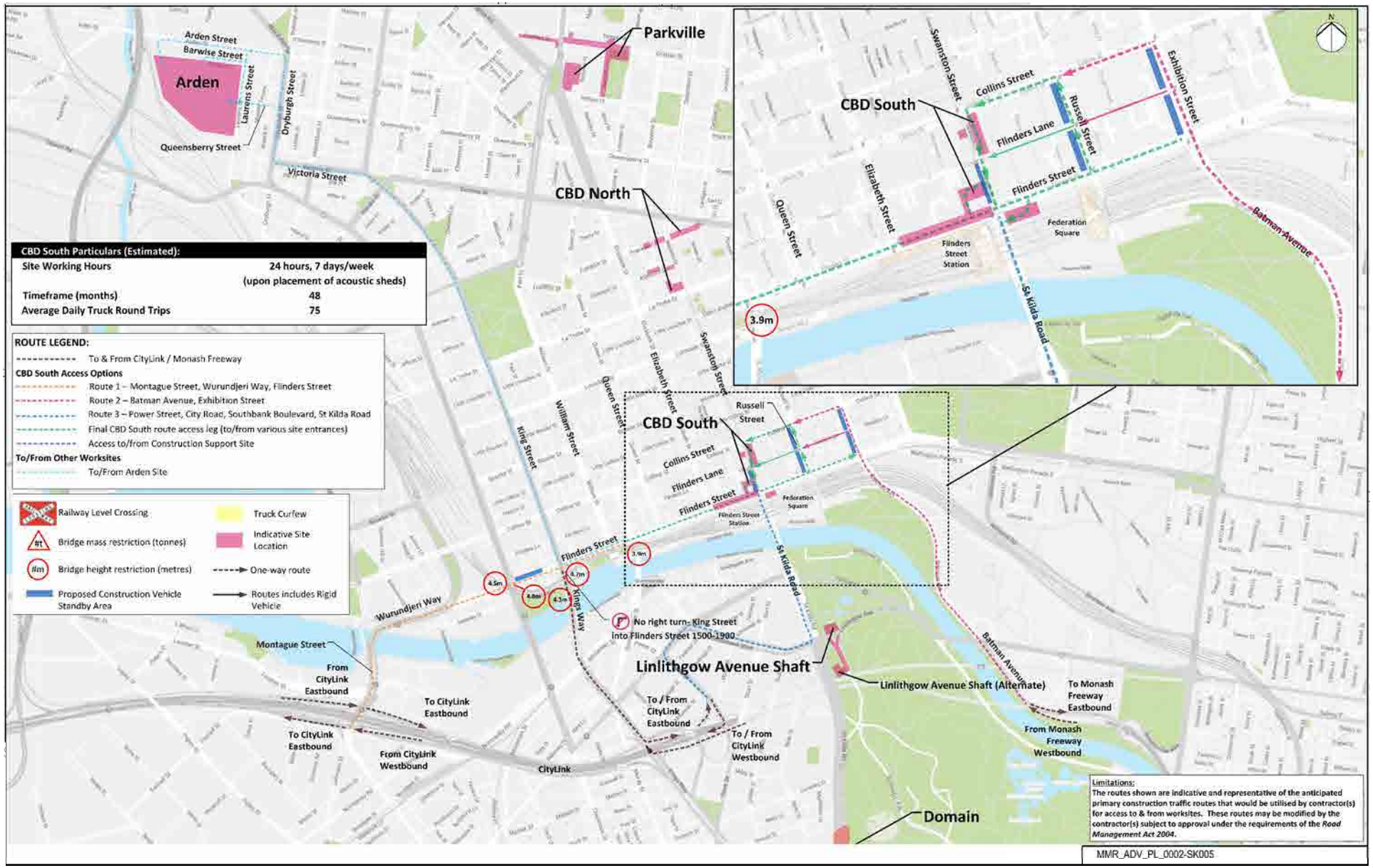


TABLE 61. ESTIMATED BASELINE ACTIVITY, CBD SOUTH STATION, 2015

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	1	13	3
Manufacturing	125	159	14
Electricity, Gas, Water and Waste Services	0	0	0
Construction	2	4	0
Wholesale Trade	50	208	25
Retail Trade	142	963	86
Transport, Postal and Storage	8	208	25
Information Media and Telecommunications	11	90	40
Finance and Insurance	18	582	221
Rental and Hiring Services	1	8	3
Real Estate Services	11	78	25
Business Services	83	522	58
Admin and Support Services	29	109	26
Public Administration and Safety	8	325	30
Education and Training	30	314	35
Health Care and Social Assistance	29	323	19
Arts and Recreation Services	35	568	21
Other Services	58	221	19
Accommodation	8	437	23
Food and Beverage Services	84	1143	60
Total	733	6 273	734

Source: City of Melbourne 2015

Figure 50 shows the total number and location of businesses in the proposed CBD South Station precinct in relation to the proposed locations of construction work sites and project infrastructure. Figure 51 shows food and accommodation businesses. Figure 52 shows retail businesses. Figure 53 shows health and education businesses.

The following features were noted during the site visit:

- There are approximately six food service businesses that operate within Flinders Street Station that have street frontage
- There are approximately five bars that operate along the Yarra River, next to Princes Bridge and below the Princes Walk Path, which may have restricted access and reduced amenity during construction.

FIGURE 49. PRECINCT BOUNDARY, CBD SOUTH STATION PRECINCT

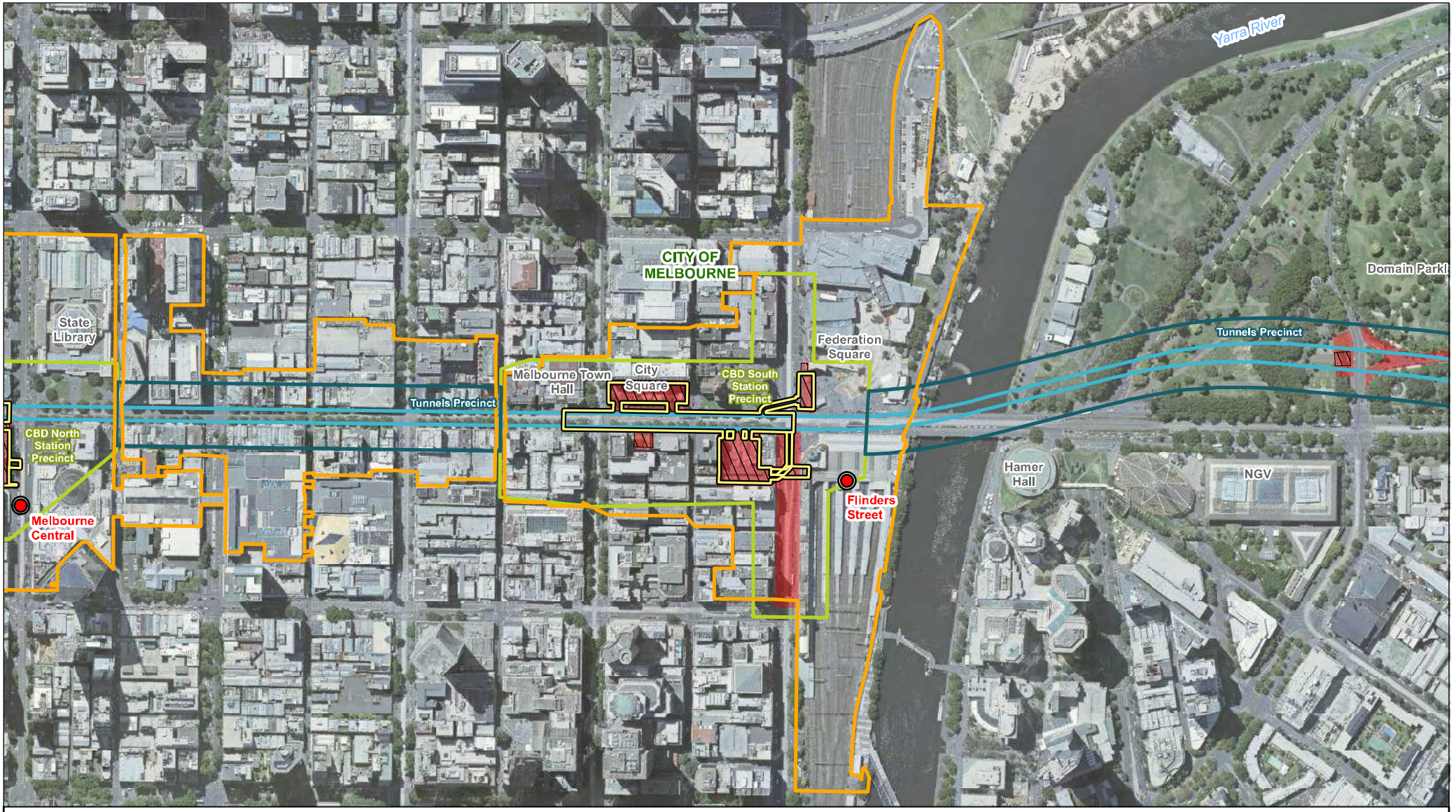
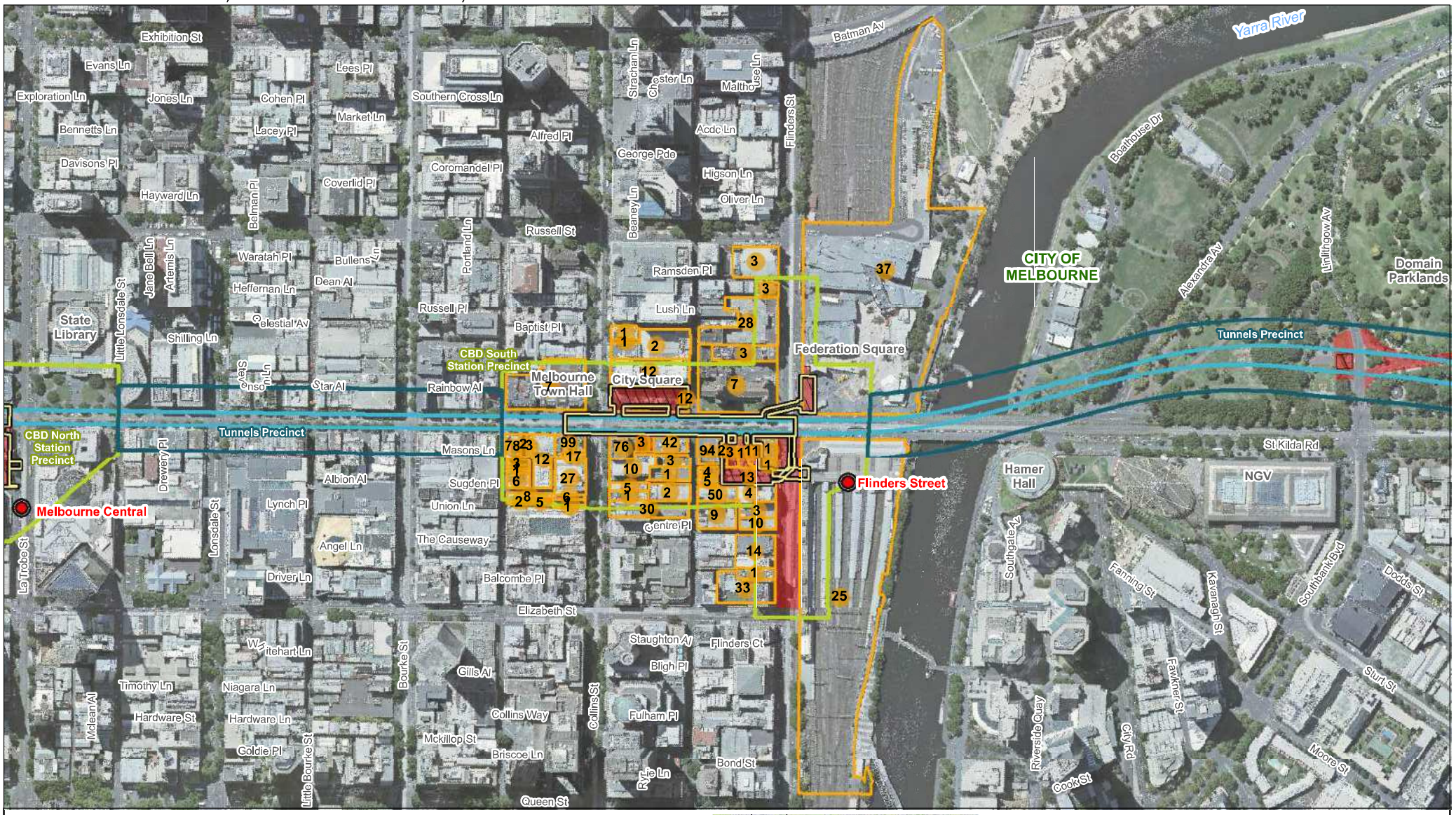


FIGURE 50. TOTAL BUSINESSES, CBD SOUTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more businesses (59 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 7 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

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Melbourne Metro Rail Project

Title:
CLUE 2012 Total Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500327			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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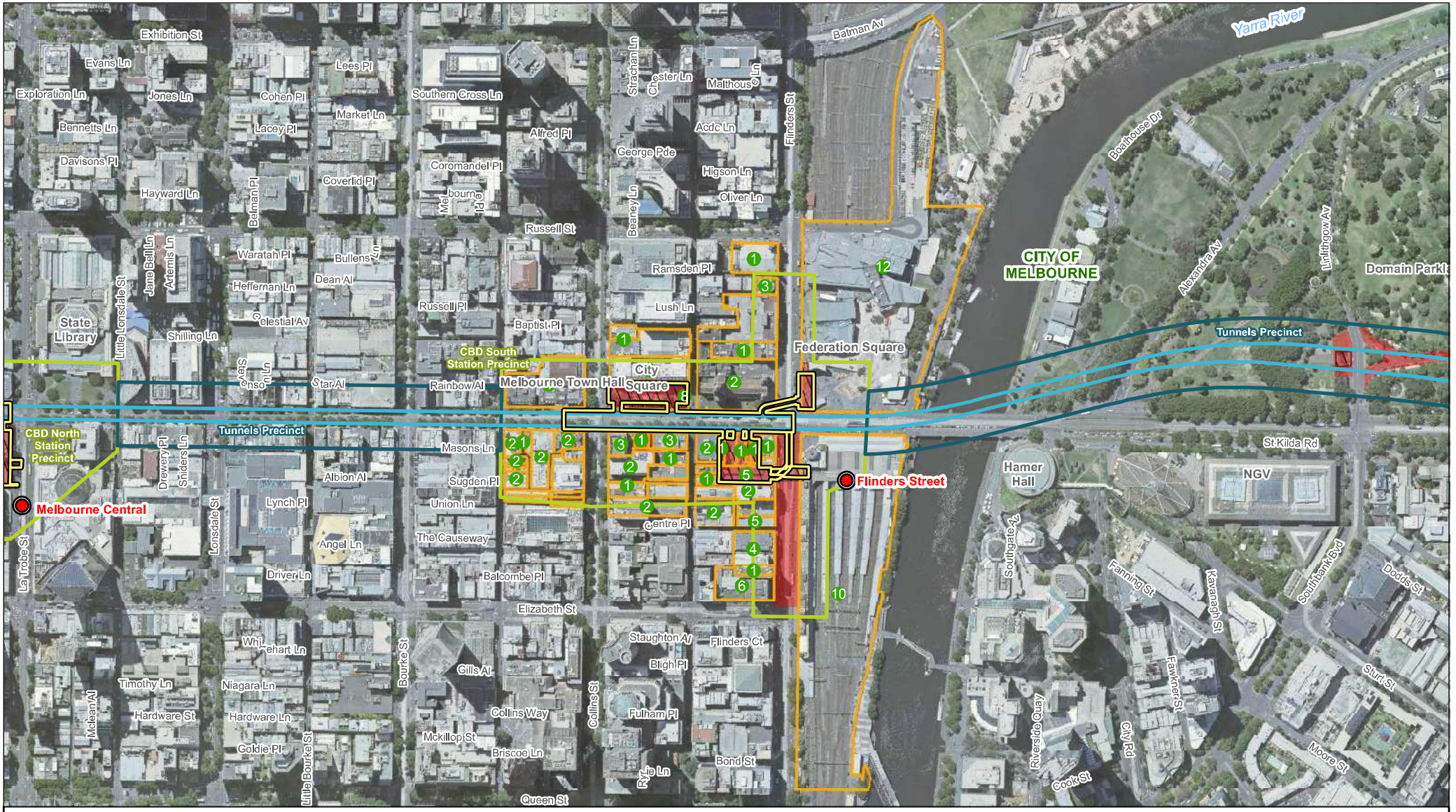
FIGURE 51. FOOD AND ACCOMMODATION BUSINESSES, CBD SOUTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more food and accommodation businesses (36 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 7 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

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Melbourne Metro Rail Project

Title:
CLUE 2012 Food and Accommodation Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500325			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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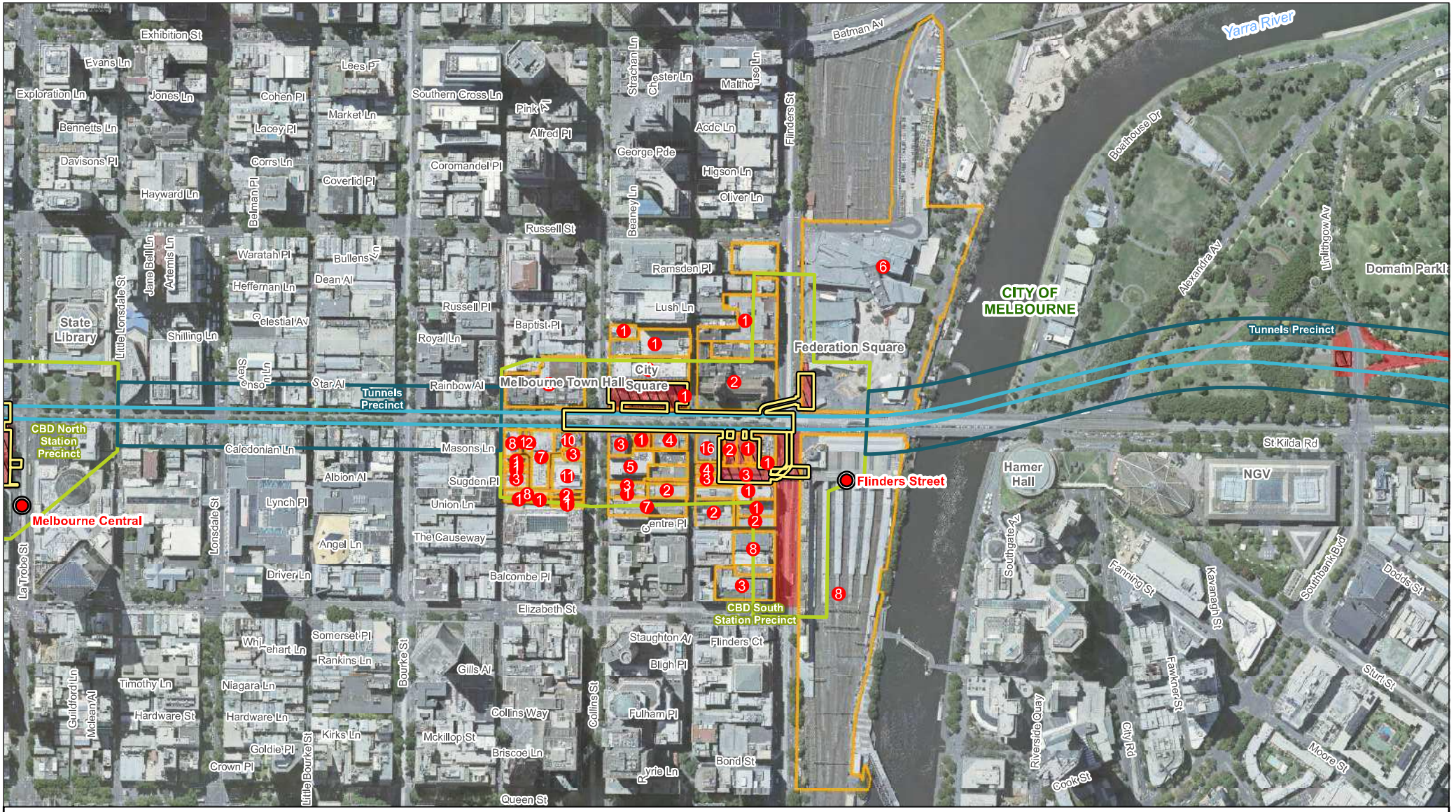
FIGURE 52. RETAIL BUSINESSES, CBD SOUTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more retail businesses (47 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Local Government Area (LGA)
- Proposed Excavation Area
- Proposed Construction Area
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 7 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Retail Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500324			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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Metres

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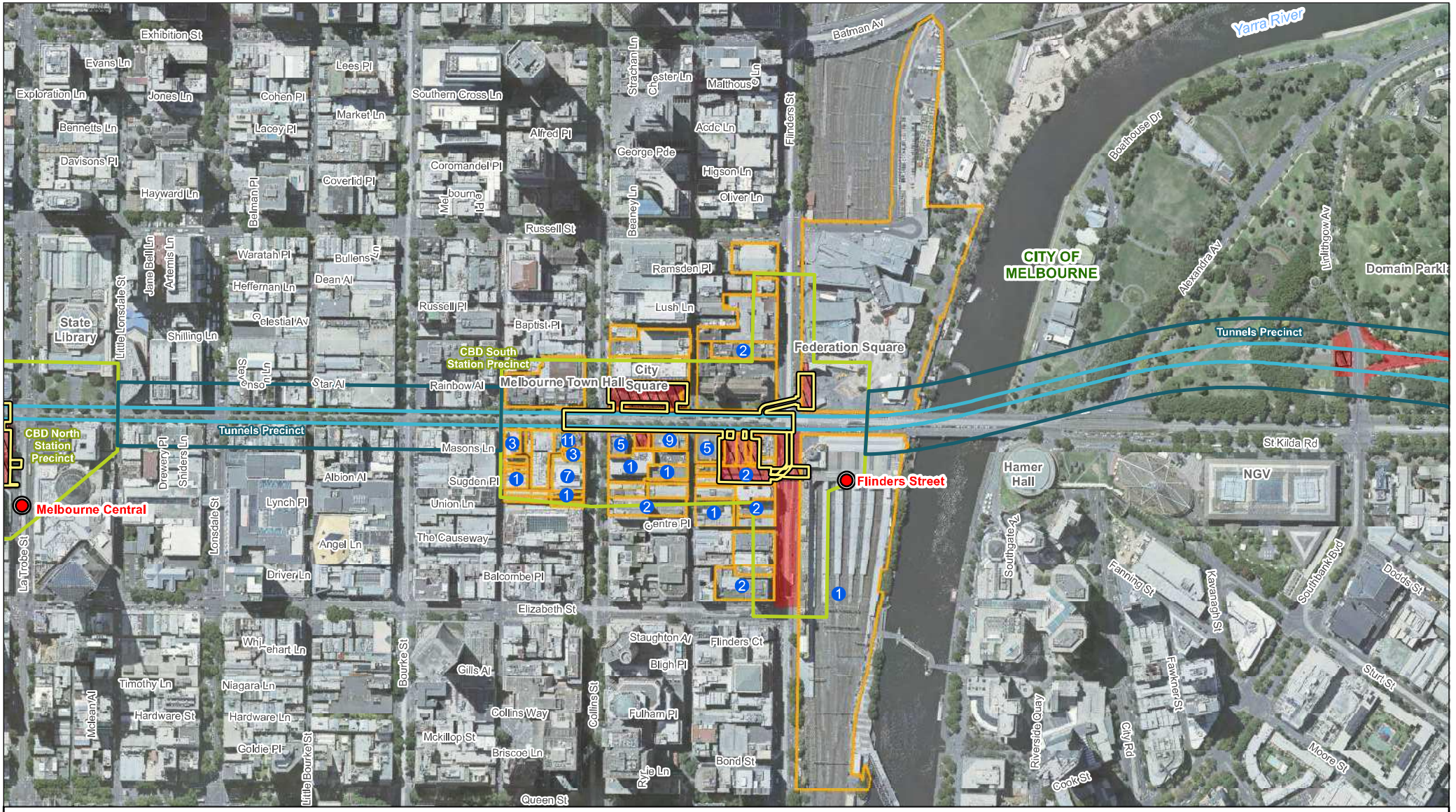
FIGURE 53. HEALTH AND EDUCATION BUSINESSES, CBD SOUTH STATION PRECINCT, 2012



Legend

- Properties with 1 or more health and education businesses (18 in map view)
- Existing Rail Station
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 7 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

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AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Health and Education Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500326			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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13.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 62.

TABLE 62. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Acquisition of commercial property impacting business activity in the precinct.	No
Vibration and ground borne noise affecting business operations above.	Potentially
Construction noise, dust and decreased amenity impacting on the productivity and output of local businesses.	Potentially
Vibration, noise, dust and decreased amenity from activities at the site impacting on the staging of events.	Potentially
Occupation of City Square for construction activities displacing events.	No
Difficulty renting commercial property due to poor amenity and access constraints.	Potentially
Disruption to utilities impacting on the productivity and output of local businesses.	Potentially
Truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians.	Potentially
Truck movements causing traffic congestion affecting business operations.	Potentially
Construction activity impacting pedestrian movement and access to businesses.	Potentially
Increased parking demand generated by workers at the construction work site impacting access for staff and customers of surrounding businesses.	Potentially
Cumulative impacts due to consecutive and concurrent construction activities.	Potentially
CBD South is a prime locations for tourist and business traveller which customers would be drawn to and unlikely to be deterred by additional noise and vibrations level. However, accommodation business may be impacted if noise and vibration exceeds human comfort levels for long periods of time.	Potentially

13.4 Benefits and Opportunities

Table 63 summarises the potential benefits and opportunities associated with the Concept Design. Another potential benefit that may arise after the construction phase is the unlocking of development potential above the station 'box'. To a large extent the employment benefits from this opportunity would be dependent on the scale of development that is possible and also the nature of the development. For instance, a residential building may only bring employment benefits during the construction period, whereas an office building would also bring a larger workforce to the precinct once completed. These potential benefits have not been explicitly estimated at this stage, as there is not enough detail in terms of the scale and nature of development that may be possible.

TABLE 63. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, CBD SOUTH STATION

Concept Design	Benefits	Opportunities
Located under Swanston Street, between Collins and Flinders Streets. Collins Street entrance at City Square (*potential to include 65 and 67 Swanston Street). Flinders Street entrance including Port Phillip Arcade with underground connection to Flinders Street Station. Underground entrance connection to Federation Square.	**Construction**	
	- Demand for local goods and services by workers.	None identified.
	Operation	
	- Productivity benefits including greater access to labour. - Improved access to businesses in the precinct for customers. - Increased foot-traffic for retailers near station entrances.	Improvements to the amenity along Swanston Street.

13.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Early Works

Early works are not expected to impact businesses in the proposed CBD South Station precinct as interruptions to utility services are not anticipated. However, utilities are essential for business operations and if works unexpectedly cause any interruption to services this may suspend business activity until services are returned. It is assumed that any disruption would be short-term in nature and

therefore would have a negligible impact on businesses. This risk could be mitigated by informing businesses of the timing and duration of works.

Construction phase

Acquisition Impacts

The construction phase would likely require acquisition of commercial property which would force some businesses in the precinct to relocate (Risk #B006).

This would lead to a reduction in 32 businesses, 278 jobs and $24 million in Gross Value Added as set out in Table 64.

TABLE 64. ESTIMATED DIRECT FALL IN BUSINESS ACTIVITY DUE TO ACQUISITION, CBD SOUTH STATION

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	1	2	0
Electricity, Gas, Water and Waste Services	0	0	0
Construction	0	0	0
Wholesale Trade	0	0	0
Retail Trade	5	20	2
Transport, Postal and Storage	0	0	0
Information Media and Telecommunications	0	0	0
Finance and Insurance	2	14	5
Rental and Hiring Services	0	0	0
Real Estate Services	0	0	0
Business Services	1	3	0
Admin and Support Services	0	0	0
Public Administration and Safety	0	0	0
Education and Training	2	41	4
Health Care and Social	0	0	0
Arts and Recreation Services	0	0	0
Other Services	4	5	1
Accommodation	1	3	1
Food and Beverage Services	16	190	11
Total	32	278	24

Source: SGS Economics and Planning 2015

Whilst it is possible these businesses could relocate in the precinct, or their activity shifted to other businesses in the precinct, for the purposes of the impact assessment the worst case scenario has been assumed that this business activity would be lost from the precinct. Even using this conservative approach, this activity is not anticipated to be lost from CBD, but redirected to adjoining streets and laneways.

The impact to these businesses could be mitigated through compensation entitlements provided through the *Land Acquisition and Compensation Act 1986*, assistance to find suitable alternate premises, early engagement and sufficient notification of acquisition.

The reduction in commercial space and the number of businesses located in the proposed CBD South Station precinct may have secondary effects such as changes in commercial rents and/or activity for the remaining businesses in the vicinity. Considering the number of businesses acquired relative to the number of businesses in the precinct and beyond, any impact would be inframarginal.

Non-acquisition Impacts

There would be construction work sites within the proposed CBD South Station precinct with businesses located in close proximity that would not be acquired but would be anticipated to experience significant impact during construction works:

- City Square
- Along Swanston Street near the corner of Flinders Street.

Because of the small scale of the construction footprint at Federation Square impacts are not anticipated to be as severe as at these construction work sites. The impacts at Federation Square are considered in the following discussion.

To understand how pedestrian flows might be impacted by construction related to the project, previous construction projects have been considered (Risk #B004). Consultation with businesses and local government provided an insight into impacts of previous construction projects.

The total number of trips for all purposes including journey to work, journey to education and retail/food services, were also modelled for each hour of the day. This modelling was calibrated with the City of Melbourne's pedestrian count data. This modelling provides a detailed understand the movement of pedestrian, by purpose and by time of day.

This was combined with a review of a selection of major projects which have taken place across the study area. For example, the Hoddle Grid is subject to ongoing major construction projects which have impacted on pedestrian flows and amenity of the surrounding area. Some of the projects considered include:

- Swanston Street redevelopment (2011–2013)
- Tram Super Stops (CBD) (2011–2012)
- State Library of Victoria (six major stages, 1986–2006)
- City Square (1997–2000)
- Federation Square (1998–2002)
- Southern Cross Station (2002–2007).

Potential impact on the project in the proposed CBD South Station precinct would come from construction impacts (loss of amenity, truck movements, noise and vibration, and changes to pedestrian and vehicle access) and customers perceptions about the how the different areas would function during the construction phase. If customers have perceptions that the precinct is 'closed for business' they may not travel to the CBD at all.

The construction impact can be informed by the assessment from other technical streams, while the customer's perceptions are based on a more qualitative assessment drawing on previous construction projects.

City Square

The temporary occupation of the City Square would be likely to have a significant impact on businesses:

- Throughout the station precinct
- Located within City Square
- That have City Square frontage.

A number of businesses operate within City Square or have frontage onto the Square including a range of cafes, bars and other retail outlets. The contribution of these businesses to activity within the precinct would be expected to be either lost entirely or significantly reduced during the temporary occupation of the Square. This is especially due to the location of the construction work site directly in front of their businesses, and the associated visual and other amenity impacts; changes to access; and the importance of passing trade to the operation of these businesses (Risk #B001).

The western side of The Westin Melbourne overlooks the City Square. Facilities along this side of the building including the Lobby Lounge, Allegro Restaurant and banquet and meeting rooms as well hotel rooms. The guests in these rooms, using these facilities are likely to face reduced amenity and/or increased noise levels (Risk #B001). Whilst identified as a possible risk, the Technical Appendix H *Air Quality* indicates that, with mitigation, air quality can be contained within State Environment Protection

Policy criteria. The Technical Appendix I *Noise and Vibration* identifies there is likely to be some impact from vibration and ground borne noise in the precinct, even after mitigation. This may require the hotel to change its operations to manage the impacts resulting from construction. This could include closing some hotel rooms and conference spaces during the construction period and compensating guests due to amenity changes. The gym and pool are located in the basement levels and may need to be relocated during the construction phase if the vibration impacts their operation and guest comfort.

The Westin Hotel also owns the tenancies below the hotel that face City Square and are leased to the businesses discussed above. In addition to the businesses being significantly impacted during construction, the Westin Hotel would likely receive reduced or no rental income for the duration of the construction phase.

Construction works and changes to access could also impact the hotel's operation. For example, the hotel's sewerage pits and grease traps are located in and accessed from the car park. These are serviced approximately every six months, however, access needs to be maintained at all times in case emergency works are required. Any changes to access of this infrastructure would impact the hotel's ability to operate.

Whilst the impacts to businesses facing the City Square are likely to be significant and would reduce in a decline in business activity in the precinct, it is anticipated that activity would not be lost from the CBD. Rather it would be redirected to other businesses in the precinct or in the surrounding streets and laneways.

The City Square hosted a number of public events over recent years that have helped to attract local people and tourists to the precinct. These include:

- The Christmas Square
- Melbourne Spring Fashion Week events
- The Mosaic Festival
- The Very Big Laugh Out.[31]

These events help attract people and spending to businesses within the station precinct, not only those located around the square, but those businesses located along the length of Swanston Street. The City Square is a unique events space in the CBD (Risk #B007). Events located here would be lost to the precinct and possibly the CBD, although it is unlikely they would be lost to metropolitan Melbourne.

Corner of Flinders Street and Swanston Street

The likely acquisition of Port Phillip Arcade for the project would create a dead end at Scott Alley for the duration of the construction period. Pedestrians who can currently walk from Flinders Street to Flinders Lane through the connection of Port Phillip Arcade and Scott Alley, would only be able to access Scott Alley from Flinders Lane (Risk #B004). The businesses in Scott Alley rely heavily on passing trade. The contribution of these businesses to activity within the proposed CBD South Station precinct is expected to be significantly reduced during the construction period, although this may be able to be mitigated to some extent with increased advertising and signage.

Young and Jackson Hotel on the corner of Swanston and Flinders Street would be surrounded by the construction work site with its trade also likely to be significantly impacted during the construction phase. Again, this could be mitigated to some extent with increased advertising, signage and the maintenance of pedestrian movements along Swanston and Flinders Streets.

As the businesses in the vicinity the two proposed construction work sites are not being proposed for acquisition they are not entitled to compensation under the *Land Acquisition and Compensation Act 1986*. However, in addition to consultation, communication, signage, advertising and other broader mitigation measures, in areas likely to experience such significant impacts, a business disruption strategy could be prepared that identifies ways to manage these impacts to non-acquired businesses.

The large number of workers located in the precinct during the construction phase would result in demand for goods and services which may benefit some business types, particularly food and beverage.

[31] For more information see: http://www.eventfinda.com.au/venue/city-square-melbourne

Other Locations in the Precinct

The construction phase would be expected to create disruptions to some business activity in the proposed CBD South Station precinct from changed amenity resulting from noise, dust and vibration. Whilst identified as a possible risk, the Technical Appendix H *Air Quality* indicates that, with mitigation, air quality can be contained within State Environmental Protection Policy criteria. The Technical Appendix I *Noise and Vibration* identifies there is likely to be some impact from vibration and ground borne noise in the precinct, even after mitigation. Amenity impacts would be expected to particularly impact the operation of food and beverage businesses, especially those with outdoor seating, and service businesses where the customer experience is crucial to attracting customers such as retail and accommodation businesses. This would be expected to firstly reduce demand for the goods and services sold by businesses in proximity to the construction work, though, overtime, demand is expected to be redirected, to some extent, to businesses located in nearby streets and/or alleyways.

There would be changes road and pedestrian networks during the construction phase. Short-term tram disruptions at Flinders Street are anticipated to install the cut and cover link to Flinders Street Station and Federation Square (Risk #B004). Some pedestrian networks would also be disrupted. The known impacts to pedestrian networks are shown in Figure 54. This has been adapted from Technical Appendix D *Transport* and shows the areas where pedestrian movements would be restricted.

There would be truck movements in the precinct as well as movements from construction worker vehicles. Technical Appendix D *Transport*, however, does not identify any significant congestion impacts relative to current traffic levels. Construction worker vehicles would also increase demand for street parking which may also impact access to surrounding businesses.

FIGURE 54. CHANGES TO PEDESTRIAN NETWORK, CONSTRUCTION

Legend

- Existing Rail Station
- **Pedestrian Routes**
- Footpath Closure
- Proposed Station Footprint
- Proposed Alignment
- Proposed Construction Area
- Proposed Excavation Area
- Local Government Area (LGA)

Map 3 of 5

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture GRIMSHAW — aurecon JACOBS Mott MacDonald

Melbourne Metro Rail Project

Title:
Pedestrian routes impacted by construction phase

Drawing Number:	Revision:
MMR-AJM-UGAA-MP-NB-500422	P1

Drawn By:	Approved By:	Date:	Map Size:
A. Davy	K. Blaylock	13/04/2016	A4

0 40 80
Metres

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The impact to businesses from changed access and amenity could be managed through a combination of tools including consultation and communication with businesses and the community, precinct parking plans, maintenance of access and traffic management plans, ensuring key access routes for businesses are maintained, marketing activities and signage. Despite these measures, however, it is anticipated there would be a resulting decline in passing trade along some streets in the precinct from these amenity impacts.

Changes to access and proximity to construction work may increase the difficulty of renting commercial property in the precinct. It is anticipated, however, that the impact would mostly be minimal, as it can be managed through measures such as offering short-term leases, or potentially reducing rental prices.

As with early works, disruptions to utilities are not anticipated, however, any unexpected disruption would impact the ability of businesses to operate. The assumed short-term nature of disruptions would have a negligible impact on business activity. This risk could be mitigated by informing businesses of the timing and duration of works.

Table 65 outlines the key assumptions underlying the quantification of the potential residual business impacts in the proposed CBD South Station precinct.

TABLE 65. KEY ASSUMPTIONS UNDERLYING QUANTIFICATION OF RESIDUAL BUSINESS IMPACTS, CBD SOUTH STATION

Buildings with street frontage	Change in foot-traffic (%)	Description
Swanston Street	-15	Due to reduced access from St Kilda Road Domain site, and noise and amenity issues around the construction work site on Flinders Street and City Square.
Flinders Street:		
West of Swanston Street	-15	Due to reduced access from St Kilda Road Domain site, and noise, amenity, and access issues around the construction work site on Flinders Street.
East of Swanston Street opposite Federation Square	+100	Redirection from Federation Square footpath.
East of Swanston Street on the same side to Federation Square	-100	Reduced due to construction.
Flinders Lane	-5	Modest reduction due to the reduced access of the CBD for visitors.
Collins Street	-5	Modest reduction due to the reduced access of the CBD for visitors.
Little Collins Street	-5	Modest reduction due to the reduced access of the CBD for visitors.

Demand elasticity of foot-traffic	Elasticity	Description
Retail	0.40	Retail businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.

Demand elasticity of foot-traffic	Elasticity	Description
Food services	0.40	Food service businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Accommodation	0.10	Accommodation businesses would be expected to be influenced more modestly by foot-traffic than other retail and foot-traffic businesses as bookings are generally made in advance. Consultation with the Westin provided an understanding of that hotels business model and clients.
All other industries	0.00	Changes in foot-traffic would not be expected to impact the business activity of other businesses. This was confirmed by consultation.
Specific issues	**Additional change in activity**	**Description**
The Westin Melbourne	Medium	The western side of The Westin Melbourne overlooks the City Square and guests staying on this side of the building would be likely to face reduced amenity and/or increased noise levels.
Business within City Square	Strong	A number of businesses operate within City Square or have frontage onto the Square including a range of cafes, bars and other retail outlets. The contribution of these businesses to activity within the station precinct would be expected to be significantly reduced during the temporary occupation of the Square (excluding Brunetti). Leasing agents for those businesses may have challenges in leasing out the tenancies for the duration of the construction period.
Young and Jackson Hotel	Medium	Young and Jackson Hotel on the corner of Swanston and Flinders Streets would be surrounded by the construction work site with its trade also likely to be significantly impacted during the construction phase.
Construction workers	**Time period**	**Spending per worker per day**
Peak number of 314 in 2020	2018 - 2025	$20 / 80 per cent within precinct.

Table 66 summarises the value of the residual business impact identified for the proposed CBD South station in 2020.

TABLE 66. ESTIMATED RESIDUAL BUSINESS IMPACTS, CBD SOUTH STATION, 2020

Buildings with street frontage	Gross Value Added ($m)	Comments
Business acquisition	-24.0	- Within the precinct, this activity would likely to be replaced by other businesses that attempt to capture the customers of those businesses being acquired. - More broadly, this activity would not likely to be lost to Melbourne, as these businesses relocate to other parts of the City/State.
Reduction in foot-traffic (from footpath closures and amenity impacts)	-11.2	- This activity would likely be redistributed to other streets/precinct across Melbourne such as Elizabeth and Russell Streets Street.
Spending by construction workers	+0.3	- Overall spending by construction workers is expected to be a modest offset for the fall in foot-traffic.
Specific noise, amenity and access issues	-1.3	- Overall fall in gross value added for the businesses within the precinct.
Total	-35.2	- As outlined above, a large share of this activity would be expected to be redistributed outside the precinct and across the broader Melbourne area.

Source: SGS Economics and Planning

Table 67 sets out a time profile showing the various levels of impacts in the proposed construction works, but without a very detailed construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 67. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
CBD South Station	75%	100%	100%	100%	65%	65%	65%	65%

Source: SGS Economics and Planning

The construction phase would be expected to affect traffic congestion through the closure of some segments of Melbourne's streets and the use of trucks and vehicles related to construction work. While this congestion, in and of itself, may not cause significant disruptions to business practices, if the congestion occurs concurrently with other road works, the cumulative impact may be more severe.

Operational Phase

The boundary of the CBD is not a fixed line: it has expanded over time in response to structural economic changes, infrastructure investments, rezoning and evolving property market dynamics. As the size of the CBD grows it has the capacity to house more jobs and residents increases.

Previous urban renewal projects in Melbourne (for example, City Loop, Southbank and Docklands) have expanded the footprint of Melbourne's CBD beyond the Hoddle Grid. This has provided a highly central location for more and more firms to locate in the CBD. It also has meant that rents are more affordable than in a highly constrained CBD, for example the Sydney CBD. It has also meant there is still capacity for ongoing development in the Hoddle Grid as historically development has gone to Southbank and Docklands.

The without project case has a tremendous amount of residential development and employment growth locating in the Hoddle Grid. This growth is drawn to the Hoddle Grid due to its very high levels of transport accessibility.

With the new Arden station some commercial and residential development would be attracted from the Hoddle Grid to Arden due to the increase in relative accessibility and relatively lower market values. Some development which in search of a site for campus style commercial building could be drawn to the large land parcels at Arden. This type of development has been common place in Docklands over the past decade. The availability of developable sites in Docklands is likely to be limited by the mid-2020s. With the development unlocked by the Arden station, some employment growth maybe attracted from Docklands to Arden. Arden may also attract employment growth from other locations surrounding the Hoddle Grid, including Southbank, South Melbourne, Collingwood and North Melbourne.

During the operational phase, while the total number of jobs in the expanded CBD would be unchanged, the distribution of the jobs would be shifted with the addition of new stations into the rail network.

The project also enables an increase in trains coming to the CBD thus increasing passing trade in the vicinity of the station entrances. This would particularly benefit some business types including retail and food and beverage.

The maintenance and operation of the proposed tunnels would be expected to require a range of goods and services from the private sector including, such as, building materials and surveyors. This, in turn, would likely increase demand for a range of goods and services that are used as inputs.

Table 68 sets out the change in annual Gross Value Added that would be expected to occur in 2041 based on the:

- Increase in population and employment projected, and
- Structural change in employment.

As outlined above in the methodology section, the operation of the tunnels is expected to generate an increase in labour productivity due to a range of agglomeration benefits such as greater access to potential labour. These productivity improvements were quantified by:

- Calculating the number of workers from each sector as indicated in the table below
- Estimating the number of hours worked
- Applying the estimated change in labour productivity based on the methodology outlined above
- Aggregating the increase in productivity for each worker within the precinct.

TABLE 68. ESTIMATED CHANGE IN BUSINESS ACTIVITY IN OPERATION PHASE, CBD SOUTH STATION, 2041

	Without project case		With project case	
Industry	Staff numbers (No.)	Gross Value Added ($m)	Staff numbers (No.)	Gross Value Added ($m)
Agriculture and Mining	12	1.6	12	1.6
Manufacturing	247	27.7	247	27.7
Electricity, Gas, Water	0	0.0	0	0.0
Construction	14	2.2	14	2.2
Wholesale Trade	321	68.0	321	68.0
Retail Trade	2331	148.0	2225	141.3
Transport, Postal and	265	42.6	265	42.6
Information Media and	103	23.7	103	23.7
Finance and Insurance	795	383.9	729	352.1
Rental and Hiring Services	17	4.0	14	3.3
Real Estate Services	169	39.7	140	32.8
Business Services	1249	293.1	1249	293.1
Admin and Support	163	10.2	163	10.2
Public Administration and	405	49.8	405	49.8

Industry	Without project case		With project case	
	Staff numbers (No.)	Gross Value Added ($m)	Staff numbers (No.)	Gross Value Added ($m)
Education and Training	1170	137.5	1170	137.5
Health Care and Social	654	67.2	654	67.2
Arts and Recreation	725	71.7	725	71.7
Other Services	540	38.7	540	38.7
Accommodation	731	42.7	731	42.7
Food and Beverage	1 916	111.8	1916	111.8
Total	11 828	1 564.0	11 624	1 517.8

Source: SGS Economics and Planning

The operation of the tunnels would be expected to increase the connectivity of the city and increase household access to the city. This, in turn, would be expected to result in a range of agglomeration benefits such as greater access to potential labour.

Based on the number and composition of employees expected in the precinct at 2041, and the change in labour productivity, it is estimated these productivity benefits would lead to an increase gross value added of $1.8 million per annum for the proposed CBD Station precinct.

Assessment Against Draft EES Objectives

The Concept Design is consistent with the draft EES evaluation objective for social, community, land use and business as construction activities are largely contained in existing property boundaries with only limited business acquisition likely to be required. However, there are quite significant business impacts in and around City Square, on the corner of Swanston and Flinders Street and in Scott Alley, which may compromise their ability to trade.

13.6 Summary Precinct 5: CBD South Station

The most significant impact on businesses in the proposed CBD South Station precinct during construction would be through acquisition and displacement of businesses, and also through a reduction in foot traffic and amenity impacting on retail and food and beverage businesses. In particular, it is expected that businesses located in areas within the precinct, such as City Square, would be severely impacted. However once again, this business activity is not expected to be lost to the CBD, as businesses relocate to less affected parts of the city.

The Westin Hotel would be impacted during construction works, particularly from vibration and ground borne noise, which cannot be completely mitigated. This may require the hotel to change its operations to manage the impacts resulting from Melbourne Metro.

During the operation phase, it is expected that total employment numbers would be slightly lower than in the non-project case, as employment growth is distributed more broadly across Inner Melbourne. However this would allow structural changes in employment and agglomeration effects that would facilitate higher labour productivity in the precinct. Furthermore, an increase in foot traffic associated with the new station would likely benefit surrounding retail and food and beverage businesses.

13.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during the construction of the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

14 PRECINCT 7: DOMAIN STATION

The proposed Domain precinct extends along St Kilda Road and includes a number of buildings containing residential, retail and office uses, open space and Melbourne Grammar School. The assessment is based on construction impacts (loss of amenity, truck movements, noise and vibration, and changes to pedestrian and vehicle access). The construction would impact on pedestrian routes, existing tram services that operate along St Kilda Road and the traffic flow along the road.

14.1 Project Components

Infrastructure

The proposed Domain station would be located under St Kilda Road, adjacent to Albert and Domain Roads.

Key features of the proposed Domain station design include:

- Three station entrances: one to the east into the Shrine Parklands, one to the west into the triangular park located on the corner of Albert Road and St Kilda Road, and one entrance to the Domain tram interchange in the centre of St Kilda Road
- A connection under St Kilda Road linking both sides.

Construction

Construction works are proposed to include:

- Cut and cover construction method proposed for the station
- Relocation and removal of traffic islands, tram stops and car parking spaces along St Kilda Road.

Two construction work sites are proposed, one on each side of St Kilda Road, for site offices, amenities, equipment storage and materials laydown. The parklands immediately adjacent to the station entrances are the proposed locations for these sites. Specifically, part of the Shrine Parklands and Edmund Herring Oval adjacent to the proposed eastern station entrance and the South African Soldiers Memorial Reserve adjacent to the western entrance.

The construction footprint and method would result in changes to surrounding traffic movements. This includes:

- The closure of Domain Road which would result in number 8 tram being diverted along a new route along Toorak Road, extending to the west from Park Street to connect to the existing tram network along St Kilda Road
- St Kilda Road traffic to be diverted three times, meaning the temporary removal of street furniture, tram stops, parking spaces and mature trees in the vicinity of the proposed station box
- One tram track, one bike lane and one traffic lane as a minimum is to be provided in each direction along St Kilda Road during construction.

Works are likely to generate 100 average daily truck movements each day for 48 months. Proposed construction vehicle access routes are shown in Figure 55.

Tunnelling operations are expected to run from 2018 to 2023, 24 hours per day, seven days per week. The station box is proposed to be constructed from 2017 to 2021 from Monday to Friday 07:00-24:00 and Saturday 08:00-15:00. The station fit out is expected to occur from 2019 to 2024 from Monday to

Friday 07:00-24:00 and Saturday 08:00-15:00. It is expected that once the roof is on and acoustic treatment provided that some components of the work would be carried out on a 24 hour basis.

Early Works

Early works in the proposed Domain Station precinct would involve the replacement or relocation of some utility infrastructure including sewer, telecommunications and water assets.

14.2 Existing Conditions

The proposed Domain station footprint would extend along St Kilda Road, encompassing the open space south of St Kilda Road along Albert Street, and encroaching on open space to the west of St Kilda Road. The broader precinct includes Melbourne Grammar School, open space and a number of buildings containing residential, retail and office uses. The footprint also underlies existing tram services that operate along St Kilda Road. Land adjacent to the precinct includes Melbourne Grammar School and MacRobertson Girls' High School, office and residential buildings, ground floor retail uses and significant tracts of open space.

St Kilda Road is an important arterial road corridor and a major connecting route for trams, buses, other motor vehicles and cyclists. Non-segregated bicycle lanes are provided on St Kilda Road.

The precinct includes land in both the City of Melbourne and the City of Port Phillip. Census of Land Use and Employment data has been used to understand business activity in the City of Melbourne and the land use audit conducted by the AJM JV Land Use and Planning Team was used to provide an estimate of the number of office buildings. Figure 56 shows the boundary of the proposed Domain Station precinct.

Census of Land Use and Employment data was used to estimate business activity on the east side of St Kilda Road (located in the City of Melbourne) in 2015. This was done by extrapolating:

- The number of employees recorded in 2014 by Census of Land Use and Employment data using historical trends to produce a 2015 estimate
- Estimates of labour productivity in 2011 from SGS' small area Gross Domestic Product databases.

Census of Land Use and Employment data suggests there were 44 businesses located to the east of St Kilda Road in the proposed Domain Station precinct in 2015, employing 788 staff. Overall, these businesses are estimated to produce $74 million in gross value added in 2015, as set out in Table 69. Close to 50 per cent of businesses are within the food service and retail trade sectors, while the remaining businesses are largely made up of businesses from the education and training and accommodation sectors.

FIGURE 55. CONSTRUCTION VEHICLE ACCESS ROUTES, DOMAIN STATION

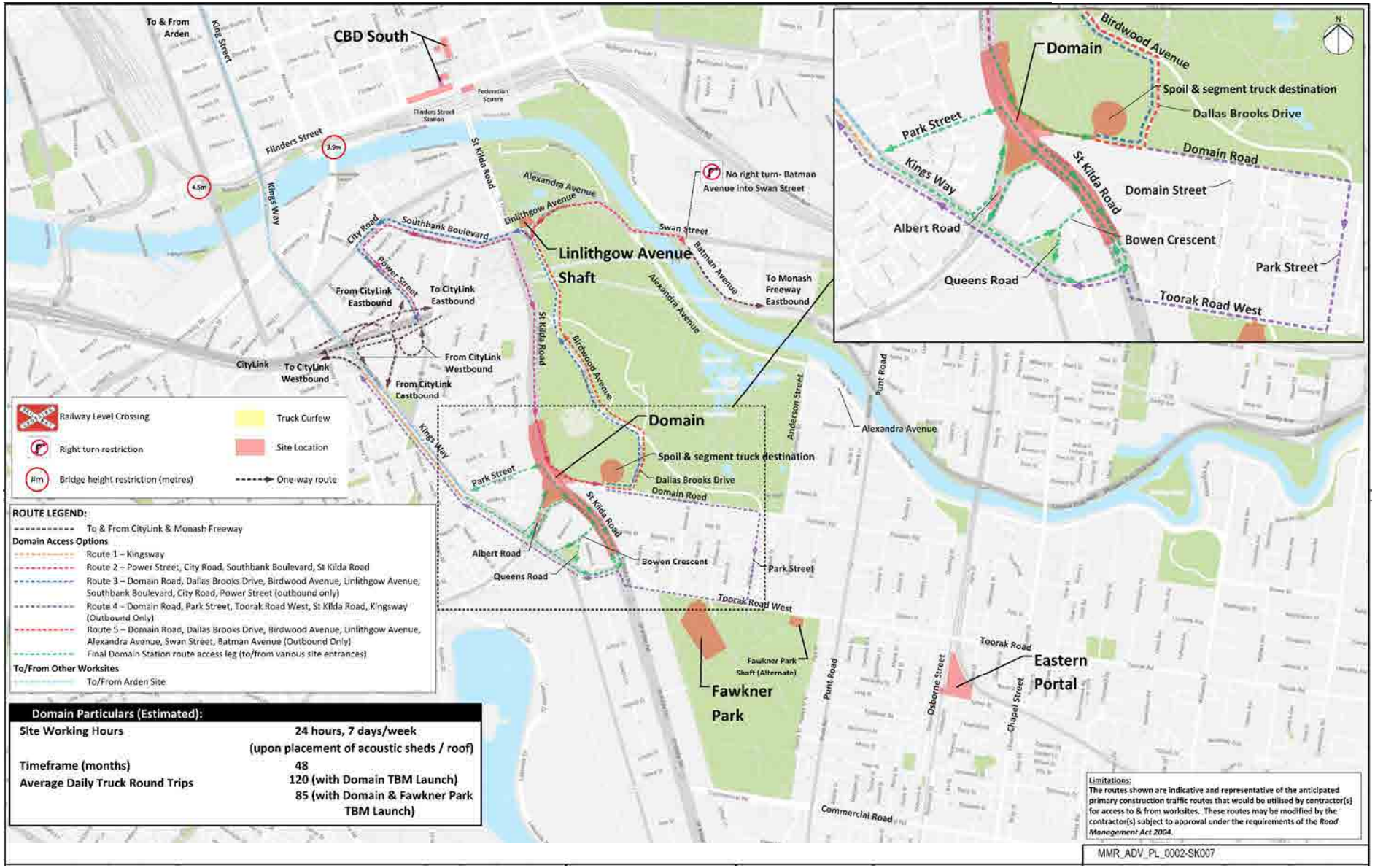


TABLE 69. ESTIMATED BASELINE ACTIVITY, DOMAIN STATION, CENSUS OF LAND USE AND EMPLOYMENT, 2015

Industry	Businesses (No.)	Staff numbers (No.)	Annual gross value added ($m)
Agriculture and Mining	0	0	0
Manufacturing	0	0	0
Electricity, Gas, Water and Waste Services	0	0	0
Construction	0	0	0
Wholesale Trade	0	0	0
Retail Trade	9	41	4
Transport, Postal and Storage	1	2	0
Information Media and Telecommunications	0	0	0
Finance and Insurance	1	34	14
Rental and Hiring Services	0	0	0
Real Estate Services	0	0	0
Business Services	0	0	0
Admin and Support Services	0	0	0
Public Administration and Safety	0	0	0
Education and Training	7	297	34
Health Care and Social Assistance	3	31	2
Arts and Recreation Services	1	1	0
Other Services	2	8	1
Accommodation	6	139	7
Food and Beverage Services	14	234	13
Total	44	788	74

Source: City of Melbourne 2015

The land use audit undertaken for the project was used to understand existing business activity on the west side of St Kilda Road (located in the City of Port Phillip). The land use audit data suggests that to the west of St Kilda Road:

- There are 306 floors of commercial, retail and educational space
- If we assume that there are close to 20 people per floor of commercial space[32], this represents close to 6,000 employees across the precinct as set out in Table 70.

TABLE 70. BASELINE ACTIVITY, DOMAIN STATION, LAND USE AUDIT, 2015

Industry	Land use	Number of stories
101/420 St Kilda Road	Office	8
11/66 Albert Road South	Office	6
116/24-26 Albert Road South	Office	11
1-1a Bowen Crescent	Office	6
2 Bowen Crescent	Others	7
28-32 Albert Road	Office	5

[32] This estimate was derived by examining similar buildings located in the City of Melbourne for which we knew the number of employees from Census of Land Use and Employment data and the number of floors. While broad land use categories were supplied by the land use audit, this doesn't allow SGS to make accurate assumptions about the industry of businesses located in these buildings. As a result, we have not provided Gross Value Added estimates.

Industry	Land use	Number of stories
312 St Kilda Road	Office	7
31-33 Albert Road	Office	1
332 St Kilda Road	Office	7
336-340 St Kilda Road	Education Centre	1
344 St Kilda Road	Office	4
346 St Kilda Road	Office	2
376-384 St Kilda Road	Office	7
387-389 St Kilda Road	Office	4
39 Albert Road	Education Centre	2
390 St Kilda Road	Office	24
391 St Kilda Road	Office	3
4/40 Albert Road	Office	5
403 St Kilda Road	Office	1
407a St Kilda Road	Retail Premises	1
407b St Kilda Road	Retail Premises	1
409 St Kilda Road	Office	15
412 St Kilda Road	Others	17
417 St Kilda Road	Office	10
4-5 Queens Road	Office	24
4-6 Bowen Crescent	Office	15
52-54 Albert Road	Office	7
55 Bromby Street	Office	1
60 Albert Road	Office	20
744/1 Queens Road	Office	15
7-8 Bowen Crescent	Office	6
9/3 Bowen Crescent	Office	11
426 St Kilda Road	Office	15
7 Park Street	Other	1
9 Park Street	Office	1
11-13 Park Street	Office	2
1-7 Palmerston Crescent	Office	4
9-11 Palmerston Crescent	Office	2
2/13-21 Palmerston Crescent	Other	6
23 Palmerston Crescent	Office	2
2/25 Palmerston Crescent	Office	1
2/27 Palmerston Crescent	Office	1
29-33 Palmerston Crescent	Office	5
35-43 Palmerston Crescent	Other	BP Petrol station fronting Kingsway.
20-22 Albert Road	Office	11
355 St Kilda Road	Education Centre	1

Source: AJM JV 2015

Figure 57 shows the total number and location of businesses in the proposed Domain Station precinct in relation to proposed location of construction sites and project infrastructure. Figure 58 shows food and accommodation businesses. Figure 59 maps retail businesses.

Figure 60 maps health and education businesses.

The following features were noted during the site visit:

- The western side of St Kilda Road that falls outside of the Census of Land Use and Employment block boundaries (as it is located in the City of Port Phillip) is largely occupied by high density commercial buildings with a limited number of dwellings and accommodation options
- While some food service businesses are located on the ground floor of these buildings, these businesses may not be impacted significantly by the project given they are likely to serve workers in the local area and are less reliant on foot-traffic.

14.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 71.

TABLE 71. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Vibration and ground borne noise affecting business operations above.	No
Construction noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses.	No
Disruption to utilities impacting on the productivity and output of local businesses.	No
Occupation of traffic lanes, tram realignment works and truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians.	Potentially
Truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians.	Potentially
Disruption to travel flow reducing access along St Kilda Road.	Potentially
Acquisition of car parks on St Kilda Road impacting access for staff and customers of surrounding businesses.	Yes
Increased demand for remaining on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses.	Potentially
Access for students to MacRobertson Girls' High School[33] & Melbourne Grammar.	Yes
Vibration, noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses and the staging of events.	Potentially
Cumulative impacts due to consecutive and concurrent construction activities.	Yes

[33] For MacRobertson Girls' High School students, the student pedestrian route will be modified - there will be far more student traffic crossing Kings Way at the top of Queens Road. MacRob has suggested, for student safety, a 40 km/hr School Zone on Kings Way, reaching from the top of Queens Road through to the Albert Road intersection. Along with bright electronic light signals that flash the new speed - the traffic along Queens Road can travel quite fast and the intersection with Kings Way is complex and requires greater concentration to navigate in peak period/school times.

FIGURE 56. PRECINCT BOUNDARY, DOMAIN STATION PRECINCT

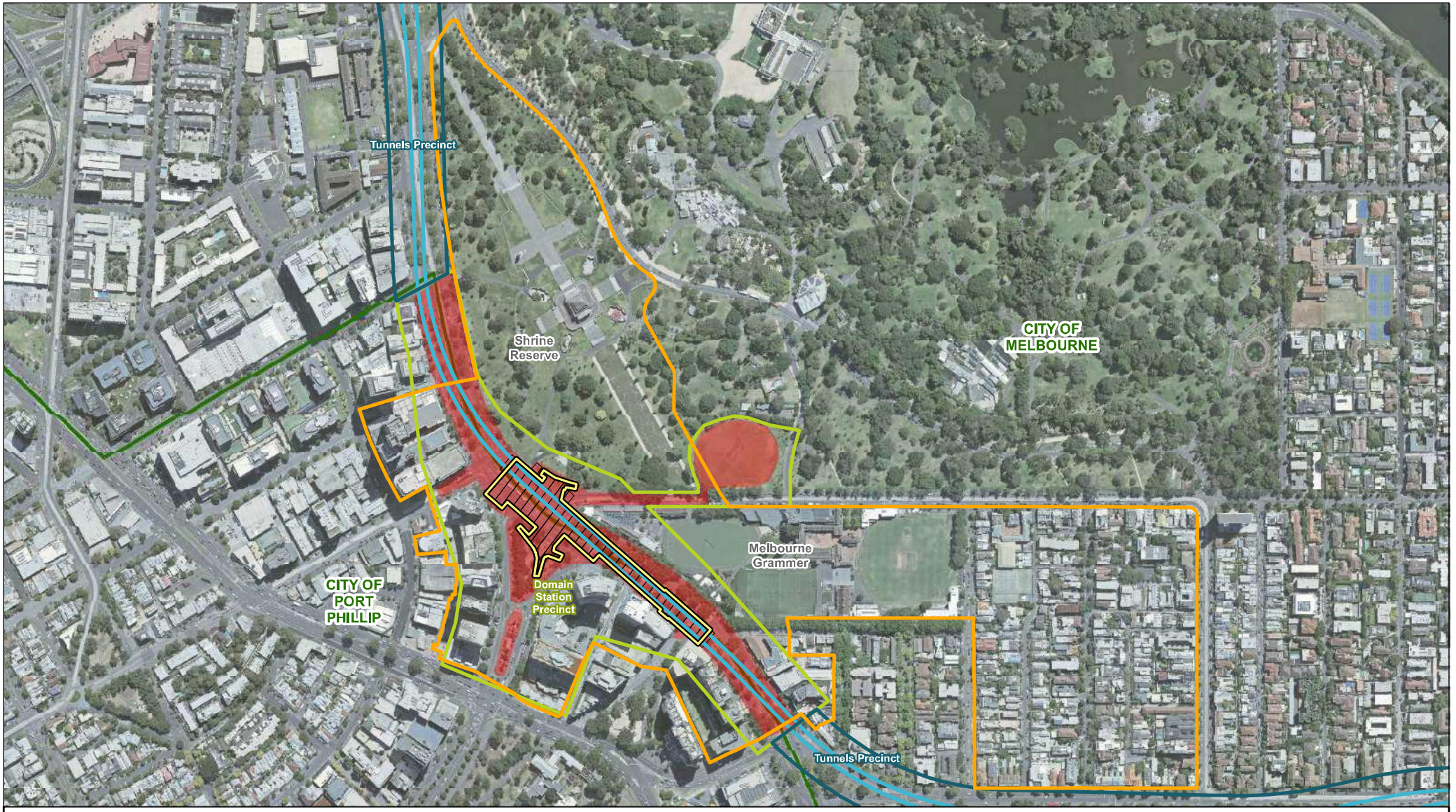
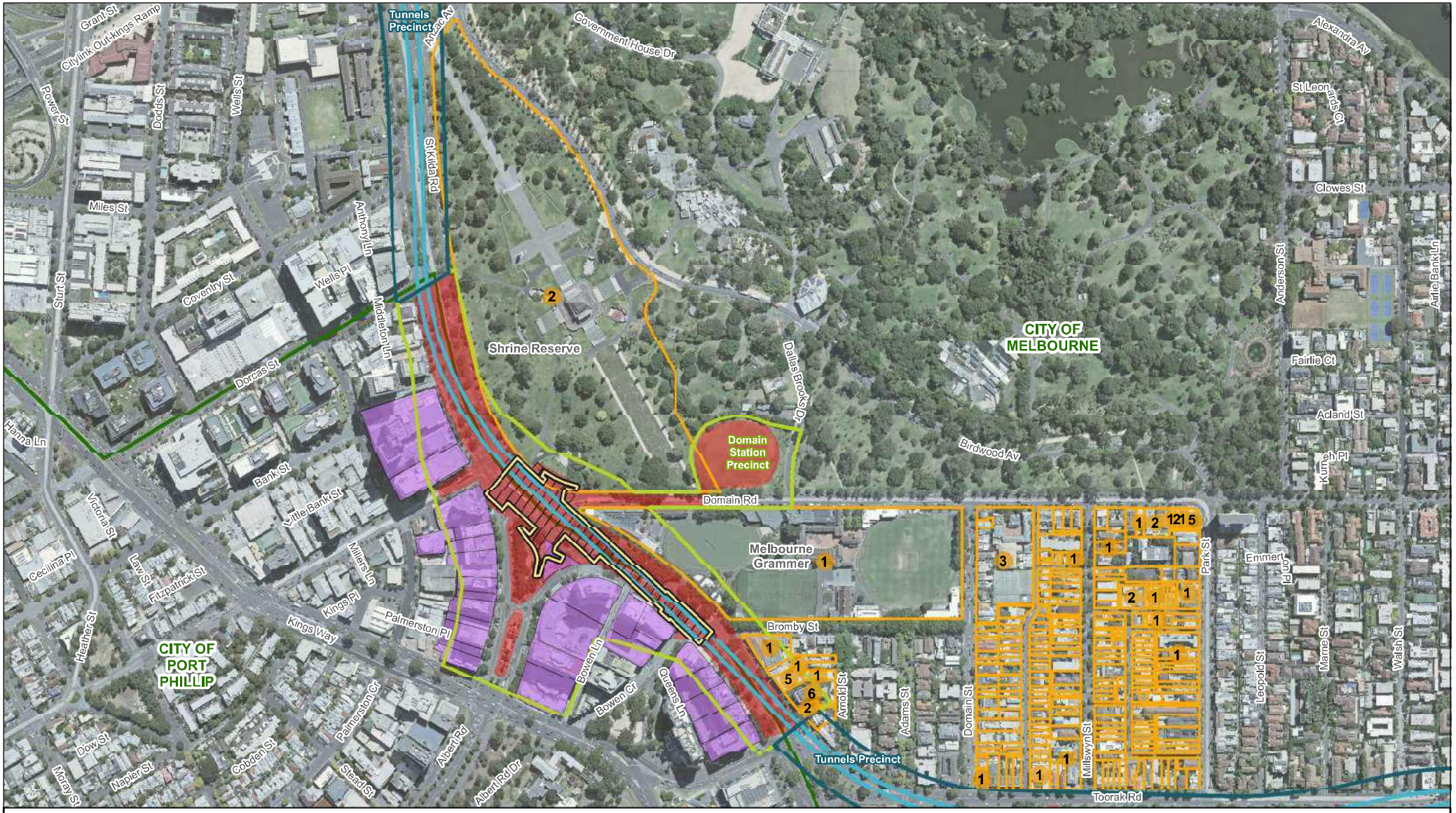


FIGURE 57. TOTAL BUSINESSES, DOMAIN STATION PRECINCT, 2012



Legend

- Properties with 1 or more businesses (25 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks
- Properties based on SGS Estimates

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

Map 9 of 10

MELBOURNE METRO RAIL AUTHORITY

AJM Joint Venture GRIMSHAW
aurecon JACOBS Mott MacDonald

Melbourne Metro Rail Project

Title:
CLUE 2012 Total Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500327			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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Metres

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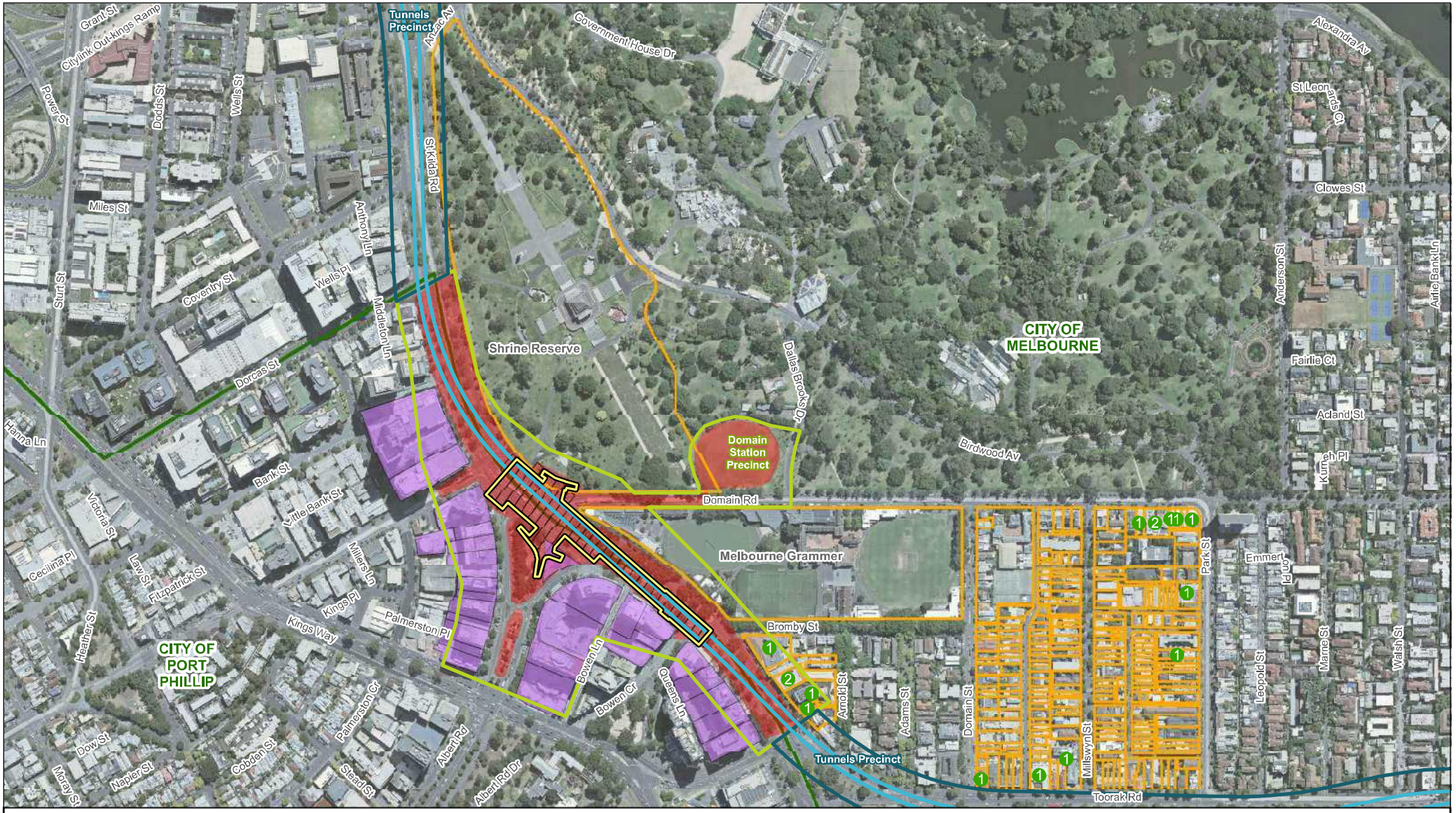
FIGURE 58. FOOD AND ACCOMMODATION BUSINESSES, DOMAIN STATION PRECINCT, 2012



Legend

- Properties with 1 or more food and accommodation businesses (14 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks
- Properties based on SGS Estimates

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

Map 9 of 10

MELBOURNE METRO RAIL AUTHORITY

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AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Food and Accommodation Businesses

Drawing Number: MMR-AJM-UGAA-MP-NB-500325
Revision: P1

Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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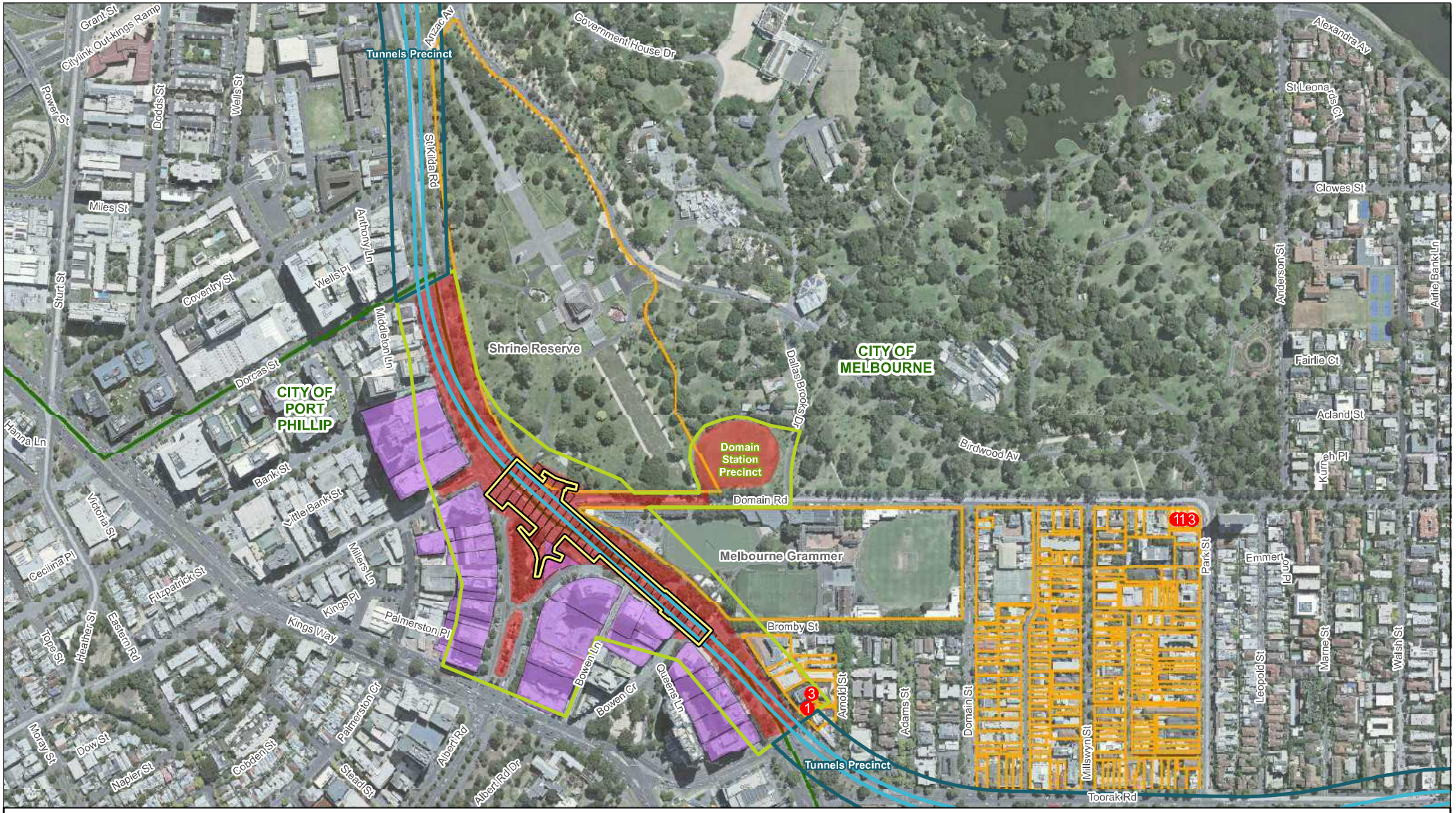
FIGURE 59. RETAIL BUSINESSES, DOMAIN STATION PRECINCT, 2012



Legend

- Properties with 1 or more retail businesses (5 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Local Government Area (LGA)
- Proposed Excavation Area
- Proposed Construction Area
- CLUE 2012 Blocks
- Properties based on SGS Estimates

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Map 9 of 10

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Retail Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500324			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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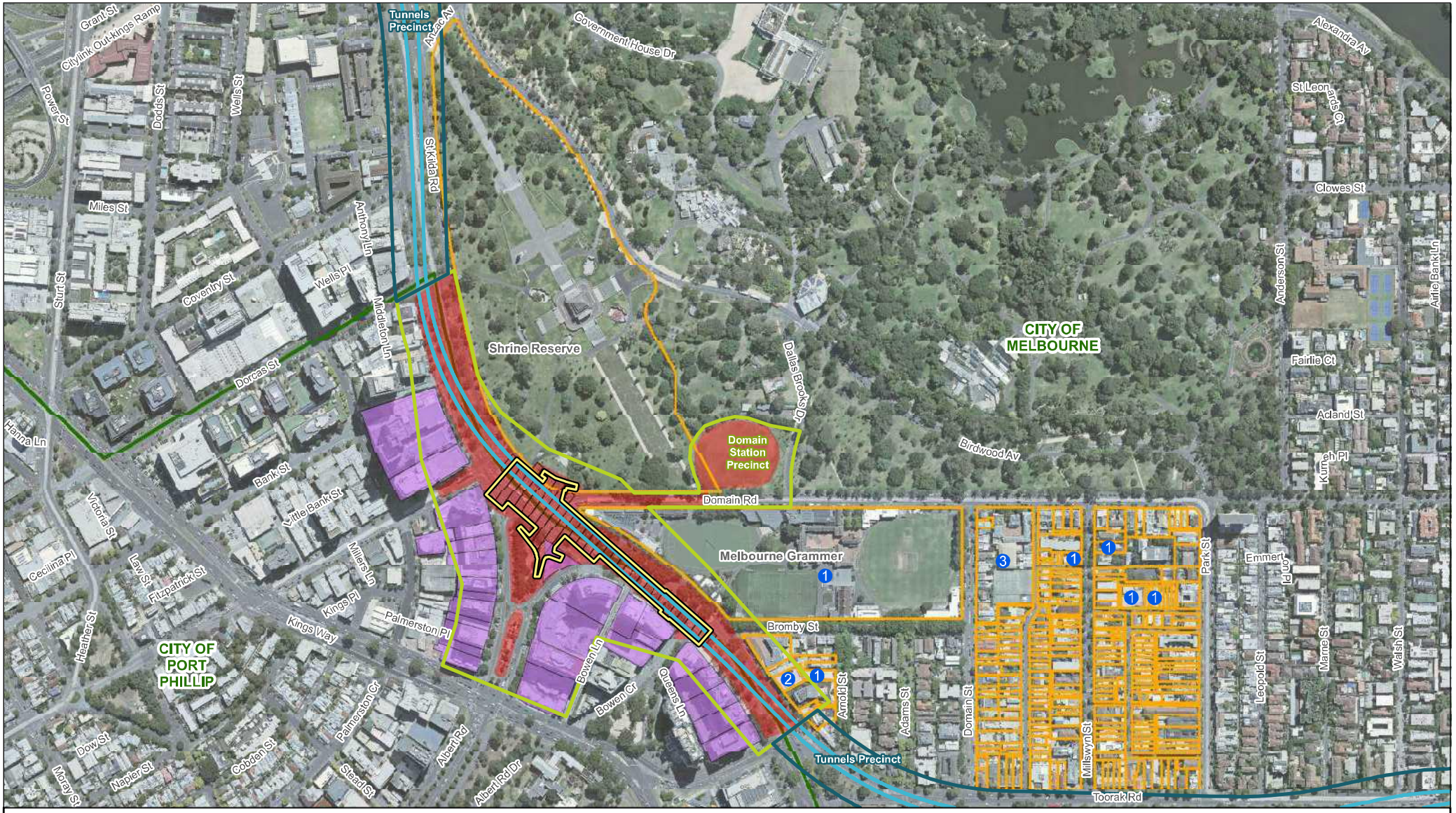
FIGURE 60. HEALTH AND EDUCATION BUSINESSES, DOMAIN STATION PRECINCT, 2012



Legend

- Properties with 1 or more health and education businesses (8 in map view)
- Proposed Station Footprint
- Proposed Alignment
- Proposed Excavation Area
- Proposed Construction Area
- Local Government Area (LGA)
- CLUE 2012 Blocks
- Properties based on SGS Estimates

Environmental and Planning Precincts

- Station Precinct
- Tunnel Precinct

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
© State of Victoria 2015
CLUE data: SGS Economics and Planning 2015
Aerial photo (DELWP, February 2015)

Map 9 of 10

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
CLUE 2012 Health and Education Businesses

Drawing Number:			Revision:
MMR-AJM-UGAA-MP-NB-500326			P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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Metres

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14.4 Benefits and Opportunities

Table 72 summarises the potential benefits and opportunities associated with the Concept Design.

TABLE 72. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, DOMAIN STATION

Concept Design	Benefits	Opportunities
Located under St Kilda Road, adjacent to Albert Road	**Construction**	
	- Demand for local goods and services by construction workers.	None identified.
	Operation	
	- Productivity benefits including greater access to labour. - Improved access to businesses in the precinct. - Improved access for tourists and locals to the Shrine, Myer Music Bowl, Botanical Gardens and Albert Park Lake.	None identified.

14.5 Impact Assessment

The following draft EES draft evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through

Draft EES evaluation objectives	Assessment criteria
	changed transport and pedestrian traffic patterns.

Early Works

Early works are not expected to impact businesses in the proposed Domain Station precinct as interruptions to utility services are not anticipated. However, utilities are essential for business operations and if works unexpectedly cause any interruption to services this may suspend business activity until services are returned. It is assumed that any disruption would be short-term in nature and therefore would have a negligible impact on businesses. This risk could be mitigated by informing businesses of the timing and duration of works.

Construction Phase

Acquisition Impacts

Part of the parkland surrounding the Shrine of Remembrance would be acquired and some temporarily occupied to enable construction in the precinct. The small reserve on Albert Road, at the intersection of St Kilda Road, would also be acquired. This may have some impact on the ability to stage events in the precinct.

Construction work in the road reserve would also displace events which currently utilise St Kilda Road (Risk #B007). This includes:

- Melbourne Marathon
- Run Melbourne
- City to Sea.

The displacement of events from the precinct would affect the trade of surrounding businesses, particularly food and beverage and retail. The Domain tram interchange is also one of the major access points for the Australian Grand Prix located in Albert Park. Construction works may deter people from using this route to access the Grand Prix, potentially affecting trade of surrounding food and beverage and retail businesses. It is anticipated that these impacts can largely be mitigated to the extent that they would not result in a reduction in business activity during the construction phase. This could be through a range of tools that communicate any changes in access, alternative access paths, and duration of disruptions.

Non-acquisition Impacts

The proposed Domain Station precinct presents a different urban form due to the major parkland and commercial development within the precinct. Previous projects considered when assessing the potential impacts of the project in the Domain Station precinct are:

- Fitzroy Gardens Stormwater Harvesting System (2013)
- Melbourne Museum (1998-2000)
- Melbourne Sports and Aquatic Centre (1996-1997)
- Previous tram rerouting (Routes 30, Route 70, Route 86 and Route 48).

The construction phase of the project has the potential to create disruptions to some business activity in the proposed Domain Station precinct from changed amenity due to noise, dust and vibration (Risk #B001). Amenity impacts would be expected to particularly impact the operation of food and beverage businesses, especially those with outdoor seating, and service businesses where the customer experience is crucial to attracting trade including retail and accommodation businesses. This is expected to, firstly, reduce demand for the goods and services sold by businesses in proximity to the construction work, though, over time, demand would be expected to be redirected, to some extent, to businesses located in surrounding streets.

Whilst identified as a possible risk, Technical Appendix H Air Quality indicates that, with mitigation, air quality can be contained within State Environment Protection Policy criteria. Technical Appendix I *Noise and Vibration* that there is likely to be some impact from vibration and ground borne noise in the precinct, even after mitigation.

Whilst food and beverage and retail businesses are anticipated to be most susceptible to these impacts, they are identified as having a very local catchment servicing local workers and residents. As there is not anticipated to be a decline in workers and residents during the construction period, impacts from reduced amenity are likely to be minimal. As accommodation businesses would likely serve a larger catchment, they may be more susceptible to impacts from amenity changes.

The construction phase would be expected to affect traffic congestion through the reduction of St Kilda Road to one lane in each direction for vehicles and the use of trucks and vehicles related to construction work (Risk #B004). There is also anticipated to be a reduction in on street car parking from the precinct and an increased demand for the remaining on street parking from construction workers' vehicles.

Pedestrian access would also be impacted with some paths closed to pedestrians and covered hoardings along other pedestrian routes (Risk #B004). The known impacts to pedestrian networks are shown in Figure 61. This has been adapted from the Technical Appendix D *Transport* and shows the areas where pedestrian movements would be restricted. No changes to cycling routes are anticipated.

Changes to access from the realignment of the number 8 tram from Domain Road and Park Street would also impact business activity for businesses along these streets, particularly those that rely on passing trade (Risk #B004). Impacts are anticipated to be minimal, due largely to the local catchment of these businesses.

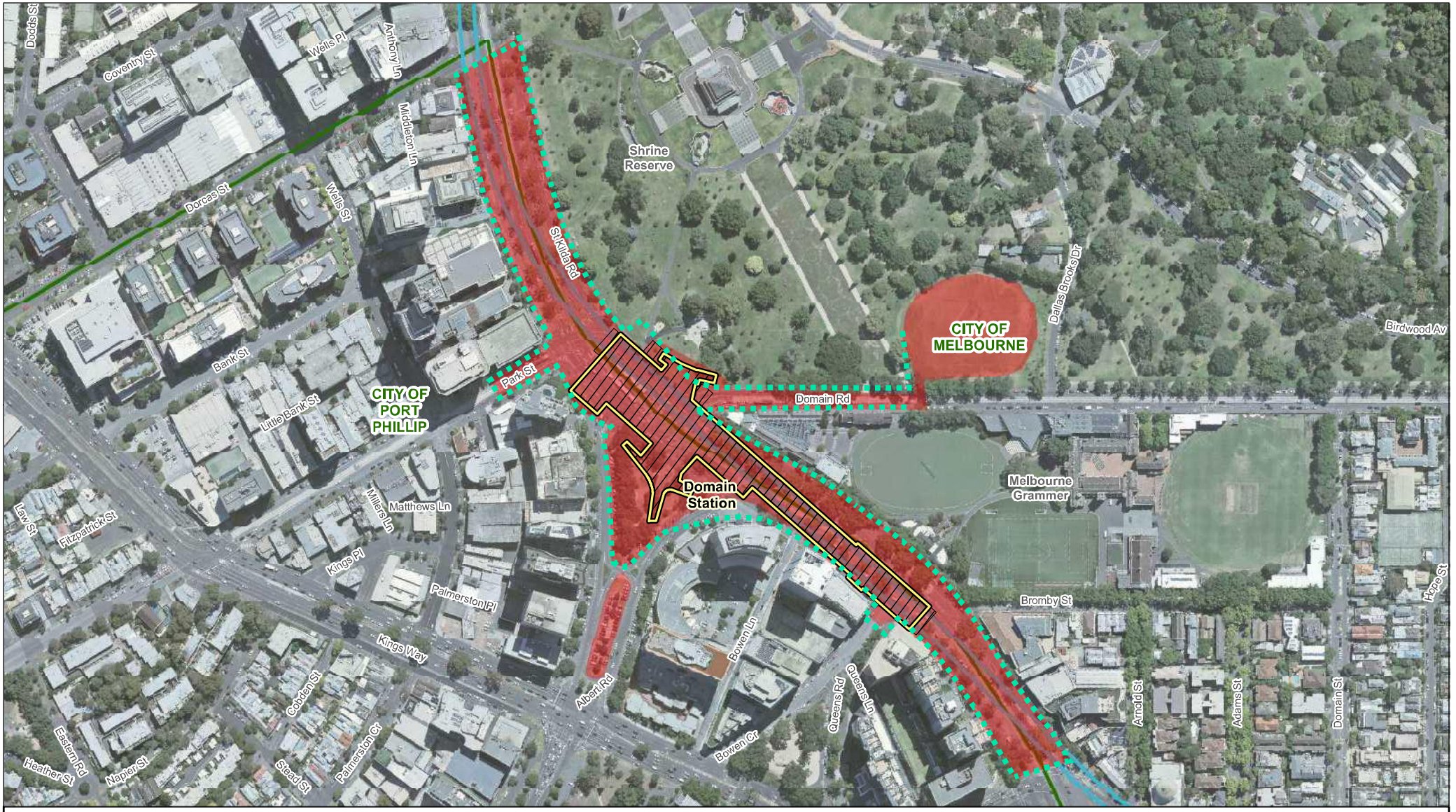
The impact from changes to access could be mitigated through precinct parking plans, maintenance of access to businesses, traffic management plans, and information and signage of access changes and timeframes undertaken and delivered in consultation with impacted businesses.

As with early works, disruptions to utilities are not anticipated, however, any unexpected disruption would impact the ability of businesses to operate. The assumed short-term nature of disruptions would have a negligible impact on business activity. This risk could be mitigated by informing businesses of the timing and duration of works.

The large number of workers located in the precinct during the construction phase would result in demand for goods and services which may benefit some business types, particularly food and beverage.

Construction would be occurring concurrently with other road works, so the cumulative impact may be more severe than what is discussed here (Risk #B009).

FIGURE 61. CHANGES TO PEDESTRIAN NETWORKS, CONSTRUCTION



Legend

Pedestrian Routes

- Construction Hoarding
- Proposed Station Footprint
- Proposed Alignment
- Proposed Construction Area
- Proposed Excavation Area
- Local Government Area (LGA)

Map 4 of 5

Data Sources:
Proposed Infrastructure: AJM 2016
Contains Vicmap Information
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Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

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Melbourne Metro Rail Project

Title:
Pedestrian routes impacted by construction phase

Drawing Number:			Revision:
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A. Davy	K. Blaylock	13/04/2016	A4

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Table 73 summarises assumptions used to quantify the potential residual impacts during the construction phase of the project in the Domain Station precinct.

TABLE 73. KEY ASSUMPTIONS UNDERLYING QUANTIFICATION OF RESIDUAL BUSINESS IMPACTS, DOMAIN STATION

Buildings with street frontage	Change in foot-traffic (%)	Description
Domain Road (within precinct boundary)	-30	Hoarded area / tram re-route.
Park Street (within precinct boundary)	-30	Tram re-route.
Other streets	-	Foot traffic is largely driven by workers that are located within the precinct. These workers are assumed to be able to continue accessing their workplace during the construction phase.
Demand elasticity of foot-traffic	**Elasticity**	**Description**
Retail	0.40	Retail businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Food services	0.40	Food service businesses interviewed during the consultation phase emphasised the importance of foot-traffic for their sales.
Accommodation	0.10	Accommodation businesses would be expected to be influenced more modestly by foot-traffic than other retail and foot-traffic businesses as bookings are generally made in advance.
All other industries	0.00	Changes in foot-traffic would not be expected to impact the business activity of other businesses. This assumption was confirmed by consultation.
Construction workers	**Time period**	**Spending per worker per day**
Peak number of 420 in 2020	2018 - 2025	$20 / 80 per cent within precinct.

Table 74 summarises the value of the potential residual business impacts of the project in the Domain station precinct in 2020.

TABLE 74. ESTIMATED RESIDUAL BUSINESS IMPACTS, DOMAIN STATION, 2020

Buildings with street frontage	Gross value added ($m)	Comments
Business acquisition	0	- No businesses are proposed to be acquired.
Reduction in foot-traffic (from footpath closures and amenity impacts)	-1.2	- This activity would likely to be redistributed to other streets/precinct across Melbourne.

Buildings with street frontage	Gross value added ($m)	Comments
Spending by construction workers	+0.4	- Overall spending by construction workers is expected to be a modest offset for the fall in foot-traffic.
Total	-0.8	- As outlined above, a large share of this activity would be expected to be redistributed outside the precinct and across the broader Melbourne area.

Source: SGS Economics and Planning

Table 75 sets out a time profile showing the various levels of impacts in the proposed Domain Station project from 201 7 to 2024. This profile is based on the proposed construction works, but without a very detail construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 75. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
Domain Station	50%	100%	100%	100%	65%	50%	35%	15%

Source: SGS Economics and Planning

Operational Phase

There is expected to be limited opportunity for commercial development in the immediate vicinity of the proposed Domain station given the station is currently adjacent to a large area of parkland. Furthermore, anecdotal evidence suggests that residential property values in the vicinity are two to three times the commercial property values.

The station would, however, be expected to improve the accessibility and relative attractiveness of the precinct. In particular, the new station would ease congestion on the tram network that runs along St Kilda Road. This increase in accessibility is expected to result in a change in the property mix of the immediate area. That is, total floor space is expected to remain broadly unchanged, though a higher proportion of commercial offices and premises would now be expected close to the station, due to the improvement in accessibility and relative attractiveness of the area to businesses.

Due to improved accessibility the precinct surrounding the Domain Station may also attract some additional employment growth from the northern section of St Kilda Road which is not in easy reach of Flinders Street.
Table 76 sets out the change in annual Gross Value Added that would be expected to occur in 2041 based on the:

- Increase in population and employment projected
- Structural change in employment.

As outlined above in the methodology section, the operation of the proposed tunnels is expected to result in a rise in labour productivity due to a range of agglomeration benefits, such as greater access to potential labour. These productivity improvements were quantified by:

- Calculating the number of workers from each sector as indicated in the table below
- Estimating the number of hours worked
- Applying the estimated change in labour productivity based on the methodology outlined above
- Aggregating the increase in productivity for each worker within the precinct.

Based on this methodology, it is estimated these productivity benefits would lead to additional annual production of close to $2.0 million for the precinct.

TABLE 76. ESTIMATED CHANGE IN BUSINESS ACTIVITY OPERATION PHASE, DOMAIN STATION, 2041

	Without project case		With project case	
Industry	Staff numbers (No.)	Gross Value Added ($m)	Staff numbers (No.)	Gross Value Added ($m)
Agriculture and Mining	0	0.0	0	0.0
Manufacturing	32	3.6	32	3.6
Electricity, Gas, Water and Waste Services	0	0.0	0	0.0
Construction	351	53.8	351	53.8
Wholesale Trade	157	33.2	157	33.2
Retail Trade	222	14.1	289	18.4
Transport, Postal and Storage	160	25.7	160	25.7
Information Media and Telecommunications	50	11.5	50	11.5
Finance and Insurance	345	166.7	647	312.4
Rental and Hiring Services	201	47.8	278	66.0
Real Estate Services	201	47.3	278	65.3
Business Services	1149	269.6	1440	337.9
Admin and Support Services	482	30.0	482	30.0
Public Administration and Safety	1373	168.6	1373	168.6
Education and Training	840	98.7	840	98.7
Health Care and Social Assistance	1182	121.5	1182	121.5
Arts and Recreation Services	1231	121.7	1231	121.7
Other Services	86	6.1	86	6.1
Accommodation	384	22.4	384	22.4
Food and Beverage Services	384	22.4	384	22.4
Total	8830	1264.7	9643	1519.3

Source: SGS Economics and Planning

Assessment against draft EES objectives

The Concept Design is consistent with the draft EES evaluation objective for social, community, land use and business as:

- No business acquisition is likely to be required in the precinct
- The nature of the businesses along St Kilda Road means impacts would be more limited, however, the rerouting of the number 8 tram would have a significant impact for businesses along Domain Road that rely on passing trade.

14.6 Summary Precinct 6: Domain

Given the findings of the other technical reports property acquisition, transport (both vehicle and pedestrian), noise and vibration there would be minimal business impacts in the proposed Domain Station precinct. As much of the business is derived from local workers and are less reliant on foot-traffic, there would only be small loss in business activity due to changed pedestrian movement patterns.

This would include the impact on major events held in and around the precinct (e.g. the Australian Grand Prix, Melbourne Marathon, Run Melbourne). The spending of construction workers is expected to be a modest offset for the fall in foot-traffic.

14.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during construction of the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

15 PRECINCT 8: EASTERN PORTAL (SOUTH YARRA)

Potential impacts from the project in the Eastern Portal (South Yarra) precinct would come from construction impacts (loss of amenity, truck movements, noise and vibration, and changes to pedestrian and vehicle access) and loss of local expenditure due to the acquisition of residential properties. Customers perceptions about the how the precinct would be impacted during the construction phase was also be considered. The construction impact would be informed by the assessment from other technical streams, while the customer's perceptions are based on a more qualitative assessment drawing on previous construction projects.

15.1 Project Components

Infrastructure

The proposed Eastern Portal precinct connects the new Melbourne Metro rail lines to the existing Dandenong rail corridor just west of Chapel Street. The portal includes the approach to the tunnel and the tunnel works that connect to the proposed Tunnels precinct.

Construction

Acquisition of seven residential dwellings is likely to be required to enable construction works.

Proposed construction works in the Eastern Portal precinct would include:

- Cut and cover structure under the Sandringham line, Frankston line and freight and regional lines
- Construction of a decline structure to bring Melbourne Metro tracks to the same level as the existing rail corridor
- A TBM retrieval box located in the rail reserve adjacent to Osborne Street
- Construction of a tunnel ventilation shaft, emergency access shaft and an underground substation in Osborne Street Reserve.

The South Yarra Siding Reserve and Osborne Street Reserve, generally bordered by William Street to the east and Osborne Street to the west, would be occupied as major sites for the Eastern Portal construction. This area would house site offices, amenities, and materials laydown and equipment storage. An area in Osborne Street to the south of the portal site would also be required for materials laydown and manoeuvring of equipment.

The construction footprint and method would impact the surrounding traffic movements. The William Street Bridge, South Yarra Siding Reserve, Osborne Street and Lovers Walk would be impacted during construction and largely re-instated following construction. William Street Bridge would be closed to local traffic for the duration of the Eastern portal works. The narrow streets and limited entry and exist points to the South Yarra Sidings Park mean construction access would be very constrained. Traffic movements would likely be through Toorak Road and the connecting residential streets of Osborne Street, William Street and Arthur Street.

Construction would likely generate an average of 50 truck movements a day for 30 months. Proposed construction vehicle access routes are shown in Figure 62.

Early Works

Early works in the proposed Eastern portal precinct would involve the replacement or relocation of some utility infrastructure including electricity, gas, telecommunications and water drainage assets.

15.2 Existing Conditions

The proposed Eastern Portal precinct includes significant open space and residential development with offices, retail premises and shops along Toorak Road and Chapel Street. Existing transport connections in the area include Sandringham, Cranbourne/Pakenham and Frankston rail services at South Yarra Station, and tram services along Chapel St and Toorak Road. An existing tram line runs along Toorak Road (Route 8). The broader area (Chapel Street / Toorak Road) is experiencing a period of decline as customers are drawn to the CBD and Chadstone. In turn business are relocating to these locations from (Chapel Street / Toorak Road).

The land use audit conducted by the AJM JV Land Use and Planning Team was used to estimate the number of businesses, jobs and Gross Value Added in the precinct. Figure 63 shows the extent of the assessment area.

The audit suggests there are 31 businesses currently operating in the proposed Eastern Portal precinct, as set out in Table 77. For each of these businesses, the following assumptions were made:

- The number of staff is 10[34]
- The average number of hours worked per employee is 29 hours[35]
- Labour productivity is $60 per hour worked.[36]

Based on these assumptions, the Gross Value Added per business is assumed to be $0.8 million and the total Gross Value Added in the precinct in 2015 is assumed to be $25 million per annum.

[34] This assumption is consistent with the average number of retail employees per business in the CBD South (7), CBD North (8) and CBD Tunnels Precinct (11).

[35] SGS Small Area Gross Domestic Product Accounts suggest that the labour productivity of the wholesale trade and transport, storage, and warehousing sectors for the Statistical Local Area 'Melbourne – Remainder' was 66.0 in 2011. This estimate was projected to 2015.

[36] Our estimate for the average hours worked per employee is based on official data from: ABS, 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, Table 11. Employed persons by Industry division of main job (ANZSIC) and Hours actually worked in all jobs, 2015.

FIGURE 62. CONSTRUCTION VEHICLE ACCESS ROUTES, EASTERN PORTAL

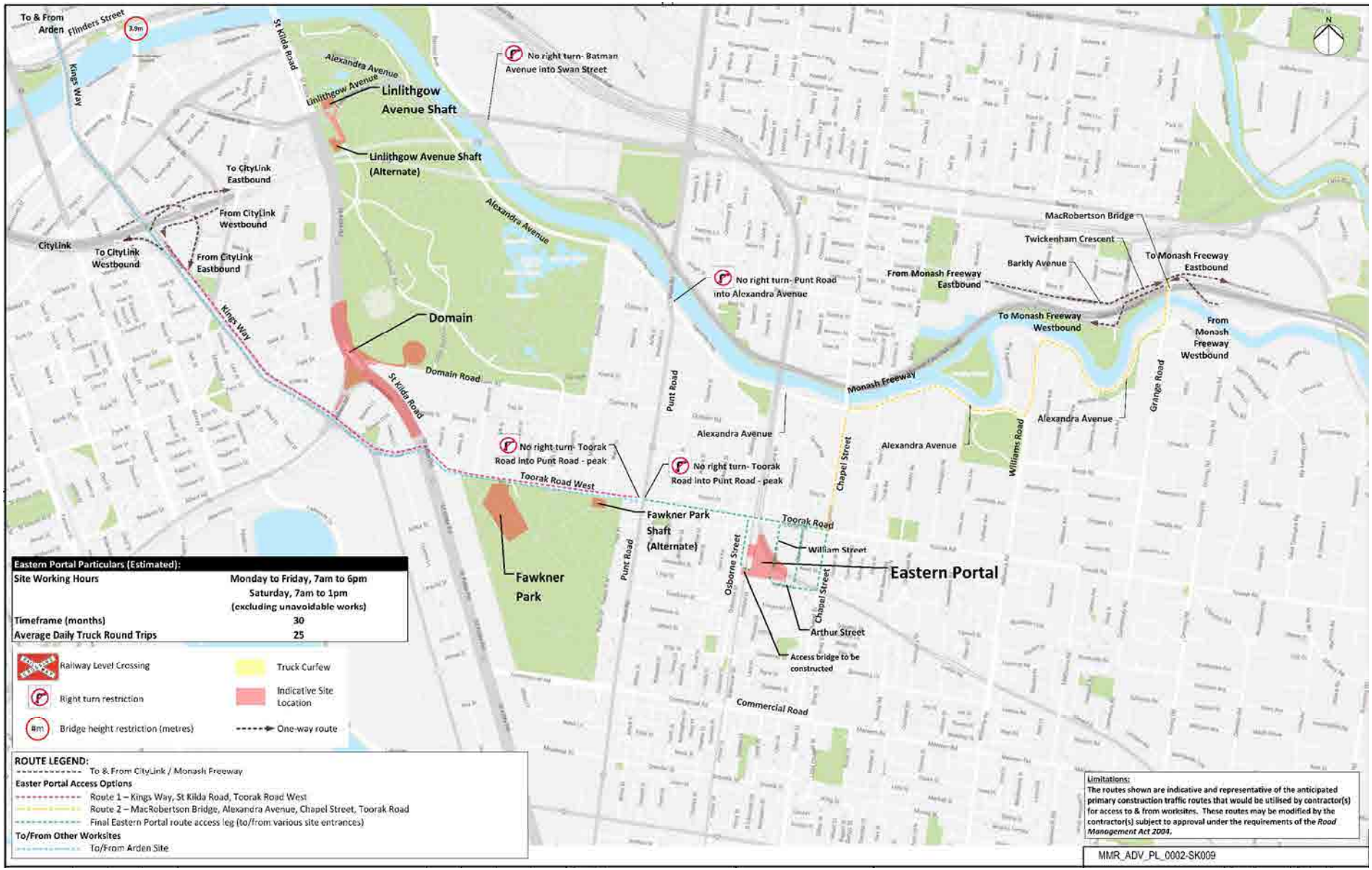
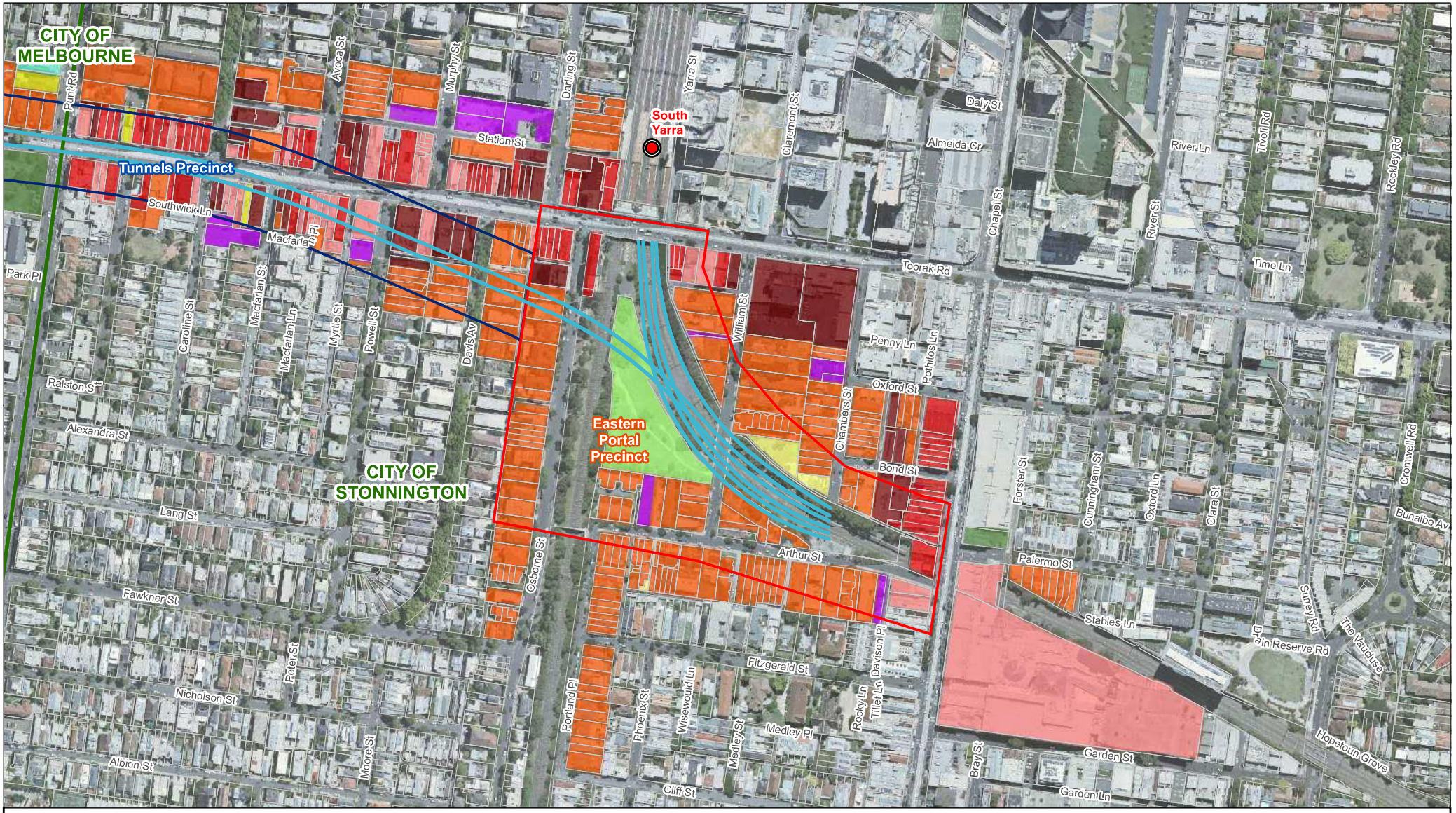


TABLE 77. BASELINE BUSINESS ACTIVITY, EASTERN PORTAL, 2015

Address	Land use description	Building structure
1/555 Chapel Street	Retail Premises	Single Storey
147 Osborne Street	Retail Premises	Two Storey
150 Toorak Road	Retail Premises	Two Storey
152 Toorak Road	Retail Premises	Two Storey
153a Toorak Road	Retail Premises	Two Storey
153a Toorak Road	Retail Premises	Two Storey
154 Toorak Road	Retail Premises	Two Storey
156 Toorak Road	Retail Premises	Two Storey
162 Toorak Road	Retail Premises	Three Storey
162 Toorak Road	Retail Premises	Three Storey
163 Toorak Road	Retail Premises	Two Storey
166 Toorak Road	Retail Premises	Two Storey
168-170 Toorak Road	Shop	Three Storey
172-174 Toorak Road	Shop	Single Storey
176 Toorak Road	Retail Premises	Three Storey
2/555 Chapel Street	Retail Premises	Single Storey
2-3/529 Chapel Street	Retail Premises	Three Storey
2b Bond Street	Retail Premises	Two Storey
512 Chapel Street	Shop	Two Storey
527 Chapel Street	Shop	Two Storey
539 Chapel Street	Retail Premises	Two Storey
541 Chapel Street	Retail Premises	Two Storey
543 Chapel Street	Retail Premises	Two Storey
545 Chapel Street	Retail Premises	Two Storey
547 Chapel Street	Retail Premises	Two Storey
553 Chapel Street	Retail Premises	Two Storey
559 Chapel Street	Retail Premises	Single Storey
561 Chapel Street	Retail Premises	Single Storey
563 Chapel Street	Retail Premises	Two Storey
8/500 Chapel Street	Shop	Four Storey
9-11 William Street	Leisure And Recreation	Vacant

Source: AJM JV Land Use Audit

FIGURE 63. LAND USE SURVEY BOUNDARIES, EASTERN PORTAL



Legend

- Proposed Station Footprint
- Proposed Alignment
- Local Government Area (LGA)
- Cadastre

Environmental/Planning Precinct

- Station Precinct
- Portal Precinct
- Tunnel Precinct
- Existing Rail Station
- Watercourse

Landuse

- Accomodation
- Education Centre
- Leisure And Recreation
- Office
- Others
- Place Of Assembly
- Retail Premises
- Shop
- Utility Installation
- Vacant

Map 7 of 7

Data Sources:
Proposed Infrastructure: AJM 2015
Contains Vicmap Information
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Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
Land Use Survey - Stations and Portals

Drawing Number:			Revision:
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Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

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15.3 Key Issues

The key potential issues associated with the Concept Design are summarised in Table 78.

TABLE 78. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Acquisition of residential property impacting business activity in the precinct.	No
Truck movements disrupting travel flow for vehicles, trams, buses, bicycles and pedestrians.	Potentially
Vibration, noise, dust and decreased amenity from activities at the site impacting on the productivity and output of local businesses.	Potentially
Increased demand for on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses.	Potentially

15.4 Benefits and Opportunities

Table 79 summarised the potential benefits and opportunities associated with the Concept Design.

TABLE 79. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, EASTERN PORTAL

Concept Design	Benefits	Opportunities
TBM shaft in the rail reserve between Osborne St and existing Sandringham Line	Construction	
	- Demand for local goods and services by construction workers.	None identified.
	Operation	
	None identified.	None identified.

15.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other

Draft EES evaluation objectives	Assessment criteria
construction phase.	projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Early Works

Early works of the project are not expected to impact businesses in the proposed Eastern Portal precinct as interruptions to utility services are not anticipated. However, utilities are essential for business operations and if works unexpectedly cause any interruption to services this may suspend business activity until services are returned. It is assumed that any disruption would be short-term in nature and therefore would have a negligible impact on businesses. This risk could be mitigated by informing businesses of the timing and duration of works.

Construction Phase

Acquisition Impacts

Seven dwellings are expected to be acquired to enable construction of the project. This would relocate households and in turn reduce demand for goods and services sold by businesses within the precinct (Risk #B006). To quantify this impact, it was assumed:

- 7 dwellings would be acquired, with 100 per cent occupancy rate
- Households spend $65,000 per year on goods and services[37]
- 20 per cent of this spending is constrained within the precinct.[38]

These assumptions resulted in a decrease of around $91,000 in spending from the proposed Eastern portal precinct. Whilst lost from the precinct, this expenditure would not be lost from the Melbourne economy, assuming people relocate elsewhere in the area or within Melbourne. This spending figure has been adjusted to an estimate of the reduction in gross value added of the retail and food services sectors within the precinct, as set out in Table 70.[39]

Non-acquisition Impacts

This decline in spending, however, may be offset by the large number of workers located in the precinct during the construction phase. This would result in demand for goods and services benefiting some business types, particularly food and beverage.

The William Street Bridge, South Yarra Siding Reserve, Osborne Street and Lovers Walk would be impacted during construction affecting access to businesses (Risk #B004). William Street Bridge would be closed for local traffic for the duration of the eastern portal works with Lovers Walk closed to pedestrian traffic. Construction traffic movements in constrained residential streets and along the area's major arterial roads for spoil removal and materials supply would also impact on access to businesses. There would also be increased demand for parking in the precinct generated by the construction workforce would also impact customer access to businesses in the precinct. After mitigation, however,

[37] The latest official data from the Household Expenditure Survey, Australia: Summary of Results (2009–10) indicated that households in the third income quintile spent $61,145 per annum on goods and services. This was adjusted for 2014-15 prices.

[38] This assumes that 70 per cent of spending on 'Food and non-alcoholic beverages', 'Alcoholic beverages', 'Tobacco products', 'Clothing and footwear', 'Household furnishings and equipment', is done within the precinct.

[39] This was done by using the ratio of sales income and gross value added for the Australian retail sector provided by the Australian Bureau of Statistics in '8155.0 - Australian Industry, 2013-14'

the Technical Appendix D *Transport* does not indicate that there would be a significant relative increase from the project.

The impact from changes to access could be mitigated through precinct parking plans, maintenance of access to businesses, traffic management plans, and information and signage of access changes and timeframes, undertaken and delivered in consultation with impacted businesses.

The construction phase has the potential to create disruptions to some business activity in the proposed Eastern Portal precinct from changed amenity due to noise, dust and vibration (Risk #B001). Amenity impacts would be expected to particularly impact the operation of food and beverage businesses, especially those with outdoor seating, and service businesses where the customer experience is crucial to attracting customers such as retail and accommodation businesses. Changes to amenity would reduce demand for the goods and services sold by businesses in proximity to the construction work, though, overtime, demand would be expected to be redirected, to some extent, to businesses located in nearby streets.

Whilst identified as a possible risk, the Technical Appendix H Air *Quality* indicates that, with mitigation, air quality can be contained within State Environment Protection Policy criteria. The Technical Appendix I *Noise and Vibration* identifies there is likely to be some impact from vibration and ground borne noise in the precinct, even after mitigation. It is therefore anticipated that there would be a resulting decline in passing trade along some streets in the precinct from these impacts, although this decline is not likely to be significant. Consultation with professional services businesses indicated that the residual noise and vibration would not impact their business operations.

As with early works, disruptions to utilities are not anticipated, however, any unexpected disruption would impact the ability of businesses to operate. The assumed short-term nature of disruptions would have a negligible impact on business activity. This risk could be mitigated by informing businesses of the timing and duration of works.

Table 80 summarises the value of the potential residual business impact for the proposed Eastern Portal precinct in 2020.

TABLE 80. ESTIMATED RESIDUAL BUSINESS IMPACTS, EASTERN PORTAL, 2020

Buildings with street frontage	Gross value added ($m)	Comments
Business acquisition.	-	No businesses are currently expected to be acquired.
Residential acquisition.	-0.1	The spending associated with the seven dwellings being acquired.
Reduction in foot-traffic (from footpath closures and amenity impacts).	-1.0	Assumes a 10 per cent reduction in foot-traffic along Toorak Road and Chapel Street due to increase traffic congestion, noise, amenity and access issues.
Spending by construction workers.	-	Given the limited number of food services within the precinct, spending by construction workers is expected to be close to zero.
Total	-1.1	As outlined above, a large share of this activity is expected to be redistributed outside the precinct and across the broader Melbourne area.

Source: SGS Economics and Planning

Table 81 sets out a time profile showing the various levels of impacts in the proposed Eastern Portal precinct from 2017 to 2024. This profile is based on the proposed construction works, but without a very detail construction plan a precise estimate is not possible, and hence the profile should be seen as indicative.

TABLE 81. TIME PROFILE OF IMPACT

Precinct	2017	2018	2019	2020	2021	2022	2023	2024
Eastern Portal	60%	100%	100%	100%	65%	50%	35%	15%

Source: SGS Economics and Planning

Operational Phase

The operational phase of the project is expected to have limited impact on the businesses within the proposed Eastern Portal:

- The project is not expected to alter business numbers within the precinct or local area and the change in population is minimal
- No new stations are planned for the precinct
- While the project is expected to increase productivity more broadly across Melbourne, the limited number of small retail businesses within the precinct suggests that minimal impact would be recorded during the operational phase.

Assessment Against Draft EES Evaluation Objectives

The Concept Design is consistent with the draft EES Evaluation objective for social, community, land use and business as:

- Construction is largely contained to the existing rail reserve and open space and set back from shopping strips
- Disruption to tram operations from works at the Domain station precinct would have some impact on business operations but are short-term in nature so impact would be limited.

15.6 Summary Precinct 7: Eastern Portal (South Yarra)

Given the findings of the other technical reports (air quality assessment, property acquisition, transport (both vehicle and pedestrian), noise and vibration) there would be limited business impact from the project in the proposed Eastern Portal precinct. However, the baseline analysis highlights that the precinct and the broader Chapel Street / Toorak Road area are experiencing a period of decline as customers are drawn to the CBD and Chadstone. This decline is likely to continue during the construction phase of the project and may influence the perceptions about its impact on the precinct.

15.7 Environmental Performance Requirements

The above considerations were taken into account in providing recommended Environmental Performance Measures to be targeted during construction of the project. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

16 PRECINCT 9: WESTERN TURNBACK

16.1 Project Components

Infrastructure

The western turnback would establish a third platform and track at West Footscray station, and modifications to the existing concourse.

Construction

Works would occur wholly within publicly owned (VicTrack) land with construction activities including realigning regional, suburban and freight rail lines; construction of new track and turnouts; and construction of a new passenger platform and alterations to the existing concourse.

Approximately 26 car parks would be temporarily lost due to construction activity.

16.2 Existing Conditions

The precinct is largely semi industrial, with some residential land to the east of Geelong Road. West Footscray station is located in the middle of the precinct. The Whitten Oval, which includes the head office and training ground for the Western Bulldogs AFL team, Western Region Football League offices and an indoor sports facility, is located to the north of the precinct. There are currently very few businesses operating within the Western Turnback precinct. A visual inspection of the area suggested the following businesses and business assets:

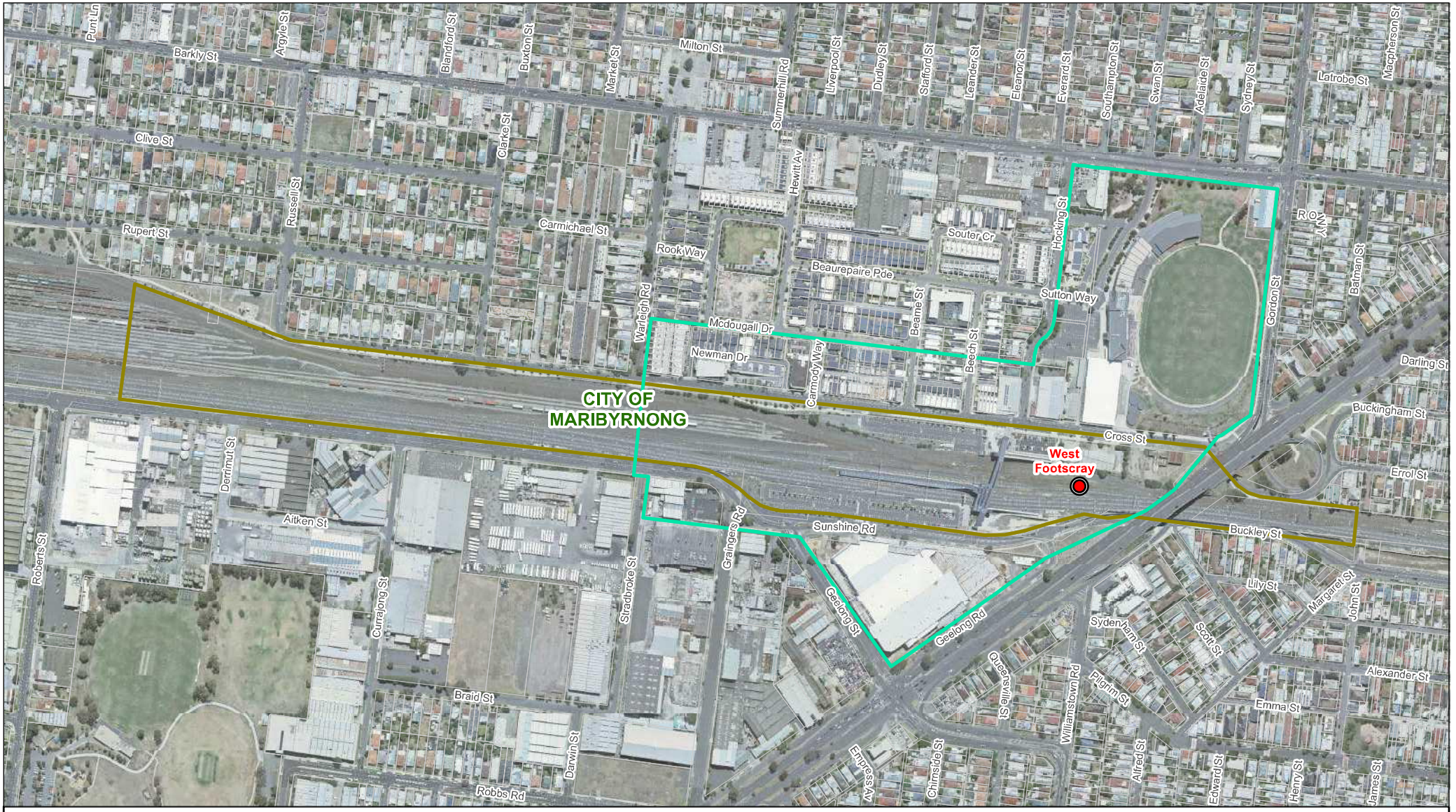
- Central Australia College
- A car park north of Bunnings Warehouse
- A car park south of Cross Street

Also two charity organisations:

- The Potter House, Christian Fellowship
- The Western Emergency Relief Network.

Figure 64 shows the geographic extent of the precinct.

FIGURE 64. PRECINCT BOUNDARY, WESTERN TURNBACK

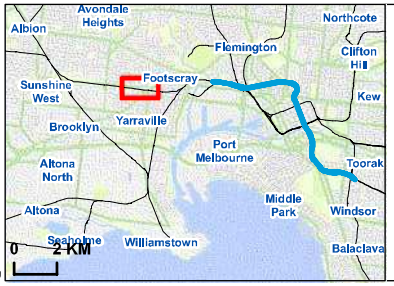


Legend

- Proposed Station Footprint
- Proposed Alignment
- Local Government Area (LGA)
- Business Impact Assessment Precinct
- Cadastre
- Existing Rail Station
- Watercourse

Environmental and Planning Precincts

- Western Turnback Precinct



Data Sources:
Proposed Infrastructure: AJM 2015
Contains Vicmap Information
© State of Victoria 2015
Aerial photo (DELWP, February 2015)

MELBOURNE METRO RAIL AUTHORITY

aurecon JACOBS Mott MacDonald

AJM Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Title:
Western Turnback Precinct

Drawing Number:		Revision:
MMR-AJM-UGAA-MP-NB-500246		P1
Drawn By:	Approved By:	Date:	Map Size:
A. Davy	C. Lill	13/04/2016	A4

0 100 200
Metres

G:\MMR-AJM\01_WIP\PW-1-AA-KG_GIS\640_Site_plans\MMR_0337_SGS_BusinessImpacts_EES\MMR_0337_EES_BusinessImpacts_WesternTurnback.mxd

16.3 Key Issues

The key potential issues associated with the Concept Design are identified in Table 82.

TABLE 82. KEY ISSUES ASSOCIATED WITH THE CONCEPT DESIGN

Issue	Is mitigation possible
Disruption to utilities impacting on the productivity and output of local businesses.	Potentially
Truck movements disrupting travel flow for vehicles, buses, bicycles and pedestrians.	Potentially
Vibration, noise and decreased amenity from activities at the site impacting on the productivity and output of local businesses.	Potentially
Increased demand for on street parking generated by workers at the construction work site impacting access for staff and customers of surrounding businesses.	Potentially

16.4 Benefits and Opportunities

Table 83 identifies the potential benefits and opportunities associated with the Concept Design.

TABLE 83. POTENTIAL BENEFITS AND OPPORTUNITIES ASSOCIATED WITH THE CONCEPT DESIGN, WESTERN TURNBACK

Concept Design	Benefits	Opportunities
Construction of the turnback at West Footscray.	Construction	
	- Demand for local goods and services by construction workers.	None identified.
	Operation	
	None identified.	None identified.

16.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment. To help make clear the link between the risk register and impact assessment, the risk number is presented in brackets (e.g. Risk #B001) when discussing some particular impacts.

Draft EES evaluation objectives	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects.

Draft EES evaluation objectives	Assessment criteria
	Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

Construction Phase

Non-acquisition Impacts

The construction of the third platform at West Footscray station would not involve a construction footprint that extends beyond the rail reserve. In addition, West Footscray station is not integrated with other businesses within the local area. For these reasons, we expect that the actual construction activity would have minimal impact on businesses in the precinct.

Approximately 26 car parks would be temporarily lost for the duration of the construction period potentially affecting access to surrounding businesses (Risk #B004). This could be exacerbated by an increase in demand for remaining off street from construction workers located at the site. Access to businesses could also be impacted by the vehicle movements associated with construction works. Vehicle movements and changes to parking are not anticipated to significantly impact business operations, however, as business types are largely light industrial and there is a significant amount of off street parking in the vicinity of the precinct.

Any impacts from changes to access due to congestion could be mitigated through precinct parking plans, maintenance of access to businesses, traffic management plans, information and signage of access changes and timeframes undertaken and delivered in consultation with impacted businesses.

The constrained work area means changes to amenity from increased noise, vibration and dust impacting on businesses is not anticipated (Risk #B001). Again, this is mainly due to the largely light industrial business types which are less susceptible to amenity impacts than other business types.

Disruptions to utilities are not anticipated, however, any unexpected disruption would impact the ability of businesses to operate. The assumed short-term nature of disruptions would have a negligible impact on business activity. This risk could be mitigated by informing businesses of the timing and duration of works.

Operational Phase

The operational phase of the project is expected to have limited impact on the businesses within the precinct:

- Melbourne Metro would not be expected to alter business numbers within the precinct or local area and the change in population is minimal
- No new stations are planned for the precinct
- While Melbourne Metro would be expected to increase the productivity more broadly across Melbourne, the limited number of small businesses within the precinct suggests that minimal impact would be recorded during the operational phase.

Assessment against draft EES evaluation objectives

The Concept Design is consistent with the draft EES Evaluation objective for social, community, land use and business as:

- Works would be contained in the existing rail reserve meaning no business acquisition is likely to be required and impacts to surrounding businesses would be minimal.

16.6 Environmental Performance Requirements

The above considerations have been taken into account in providing recommended Environmental Performance Measures to be targeted during the construction period. Section 17 provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment.

17 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

This section provides a comprehensive list of the Environmental Performance Requirements identified as a result of this impact assessment. Table 84 summarises the Environmental Performance Requirements and the precincts that they apply to. Table 85 provides more detail on the Environmental Performance Requirements, and links them to the draft EES evaluation objectives.

TABLE 84. ENVIRONMENTAL PERFORMANCE REQUIREMENTS SUMMARY

Environmental Performance Requirements (Summary)	**Precinct 1: Tunnels**	**Precinct 2: Western Portal**	**Precinct 3: Arden**	**Precinct 4: Parkville**	**Precinct 5: CBD North**	**Precinct 6: CBD South**	**Precinct 7: Domain**	**Precinct 8: Eastern Portal**	Precinct 9: Western Turnback
Reduce the disruption to businesses from direct acquisition or temporary occupation of land.	✓	✓	✓	✓	✓	✓			
Prepare a business disruption plan	✓	✓	✓	✓	✓	✓	✓	✓	✓
Prepare management plans to minimise dust, noise and vibration impacts during construction	✓	✓	✓	✓	✓	✓	✓	✓	✓
Maintain vehicular and pedestrian access to emergency departments at all times and to key to other key health and medical facilities where practicable				✓					
Develop a stop work contingency plan in consultation with institutions in the event that Melbourne Metro is required to cease operation				✓					

TABLE 85. ENVIRONMENTAL PERFORMANCE REQUIREMENTS

EES evaluation objective	Impact	Environmental Performance Requirements	Proposed management measure	Precinct	Timing	Risk no.
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Relocation causing a disruption to business activity.	Reduce the disruption to businesses from direct acquisition or temporary occupation of land, and work with business and land owners to endeavour to reach agreement on the terms for possession of the land.	- Early face-to-face engagement with acquired businesses (at least 6 to twelve months warning is preferable). - Businesses given a single point of contact including a contact name and direct phone number where they can direct all enquiries. - Where the program allows, businesses are given a minimum of six months notice of acquisition, but preferably at least twelve months. - Consider the early purchase of properties in consultation with businesses. - Facilitate business relocation through providing assistance in finding sites for relocation, the logistics of relocation, and advertising and other requirements arising from changed location. - Undertake business surveys before, during and after construction activity. - Trigger levels identified in the traffic impact assessment, noise and vibration impact assessment and air quality impact assessment to be utilised to identify if there are impacts beyond those anticipated that could trigger the assistance identified in the business disruption strategy.	Tunnels, Western Portal, Arden, Parkville, CBD North and South	Design	B006
	Construction activity impacting operations (i.e. from noise,	Prepare a business disruption plan to manage impacts to non-acquired businesses and to engage with business, property owners and the community throughout construction.	- Provide regular updates on the timing and duration of impacts to surrounding businesses. - Mitigate against impacts in accordance with mitigation measures identified in Air Quality	All	Construction	B001 B002 B004 B005 B007

EES evaluation objective	Impact	Environmental Performance Requirements	Proposed management measure	Precinct	Timing	Risk no.
	dust, vibration, construction materials).	The plan shall include: – Timely information on key project milestones – Changes to traffic conditions and duration of impact – A project construction schedule developed in coordination with transport authorities and local councils and in consultation with businesses to minimise cumulative impacts of this and other projects – Plans for notifying customers of proposed changes to business operations, including the setting of suitable timeframes for notification prior to commencement of works – Measures to ensure access to businesses is maintained for customers, delivery and waste removal unless there has been prior engagement with affected businesses (including mutually agreed mitigation measures as required). This could include the installation of directional and business signage to assist customers – Process for registering and	and Noise & Vibration Impact Assessments. - Develop 'way finding programs'[40] to establish pedestrian access patterns - Establish consultation group including all major health care and research institutions to meet at regular intervals as jointly agreed.			B008 B009

[40] Pedestrian way finding programs used by Optus following their move from North Sydney to Macquarie Park could be an example of this type of mitigation program.

EES evaluation objective	Impact	Environmental Performance Requirements	Proposed management measure	Precinct	Timing	Risk no.
		management of complaints from affected businesses.				
	Construction activity causing a reduction in amenity (i.e. from noise, dust, vibration).	Following consultation with potentially affected businesses and prior to main works or shaft construction commencing, prepare management plans to minimise dust, noise and vibration impacts during construction, as per Environmental Performance Requirements for air quality and noise and vibration.	- Provide regular updates on the timing and duration of impacts to surrounding businesses. - Develop 'way finding programs' to establish pedestrian access patterns Mitigate against impacts in accordance with mitigation measures identified in Air Quality and Noise & Vibration Impact Assessments. - Relocate the Fawkner Park Children's Centre and Kindergarten for the duration of the construction.	All	Construction	B003
	The day to day medical services provided could be compromised.	Maintain vehicular and pedestrian access to hospital emergency departments at all times during construction and to other key health and medical facilities where practicable.	- Consult with all major health care and research institutions.	Parkville	Design and Construction	B001 B004
	Their emergency response role in Class 1 emergencies41 could be compromised.	Develop a stop work contingency plan for Class 1 emergencies (as defined in the Emergency Management Act 2013) in consultation with medical institutions in the Parkville precinct in the event that Melbourne Metro construction works are required to cease.	- Consult with all major health care and research institutions.	Parkville	Design and Construction	B001 B004
Also refer to the following Environmental Performance Requirements for 'Business': T1, SC2, LU1, AQ1, NV1						

[41] For more info see: http://files.em.vic.gov.au/Doctrine/Found/Foundations-EMC1.pdf

18 CONCLUSION

This report assessed the anticipated impacts to businesses arising from the construction and operation of Melbourne Metro. Overall the project would benefit businesses in Melbourne primarily through businesses' improved accessibility to labour and customers and productivity benefits. The choice of tunnelling methods also minimises the impacts on businesses from acquisition and amenity impacts, as does the choice of parklands and road reserves as work sites. The construction methodology has been further refined through the assessment period to further reduce impacts. Other benefits to business from the project include:

- Demand for local goods and services by construction workers at work sites in each precinct
- Improved connectivity which would help stimulate urban renewal opportunities
- Increased foot-traffic for retailers near new station entrances.

The construction and operation of Melbourne Metro also presents opportunities in a number of precincts including:

- The possible employment of local business during the construction phase and for maintenance during the operation phase
- Improvements to east-west pedestrian movements across Royal Parade
- Improvements to north-south pedestrian movements across Grattan Street between Flemington Road and Swanston Street.

18.1 Relevant EES Objectives

The following draft EES evaluation objectives and assessment criteria (and indicates where relevant) are relevant to this assessment.

Draft EES evaluation objective	Assessment criteria
Social, community, land use and business: To manage the effects on the social fabric of the community in the area of the project, including with regard to land use changes, community cohesion, business functionality and access to services and facilities, especially during the construction phase.	Criterion: - Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects. Indicators: - Extent of impacts to businesses as a result of temporary construction impacts on businesses. - Extent of ongoing impacts on businesses through property acquisition. - Extent of impacts on businesses through changed transport and pedestrian traffic patterns.

The project is consistent with draft EES evaluation objectives as:

- The tunnelling method of construction minimises surface impacts and therefore minimises disruption to business activity during the construction phase
- Permanent surface works for the Tunnels Precinct are largely contained to parkland limiting impacts to businesses. Whilst this may have a small impact on the staging of public events, event impacts can be minimised with traffic management as well as consultation and engagement measures

- Impacts to businesses in the Western and Eastern Portal Precincts and Western Turnbacks are minimised by containing works in the existing rail reserves where possible, thereby limiting acquisition requirements
- Construction activity in the Arden Station precinct is largely contained within the publicly owned (VicTrack) land, thereby minimising the requirement to acquire commercial land. However, the project would displace two concrete batching plants. Considering the time sensitive nature of concrete batching activities, their proximity requirements to construction activity and their critical role in construction works, if the displaced facilities cannot find suitable alternative sites, there could be a risk of this business activity being negatively impacted. It is recommended that early assistance is provided to aid with finding suitable new sites for these plants
- Construction activities in the Parkville Precinct are largely contained within existing road reserves and open space limiting the need to acquire businesses. However, the highly specialised and sensitive nature of some research and medical facilities mean construction activity could be particularly disruptive to such business activity in the precinct and need to be managed accordingly
- Construction activities in the CBD North and South Precincts are largely contained in existing property boundaries with only limited business acquisition anticipated. However, the highly specialised and sensitive nature of the facilities at RMIT and businesses mean construction activity could be particularly disruptive to specialised business activity in the precinct
- The nature of the businesses along St Kilda Road for the Domain Precinct means impacts would be more limited. The rerouting of the number 8 tram would have a limited impact for businesses along Domain Road as they have a largely local catchment.

18.2 Impact Assessment Summary

The assessment addresses the specified EES Scoping Requirements and specifically evaluates potential impacts to businesses.

A risk assessment process was adopted that identified potential construction and operational hazards, impact pathways, consequences to business values and likelihood of impacts. Risk to values was determined as the combination of consequence and likelihood. Where possible, mitigation measures were identified to reduce risks.

There are a range of impacts, particularly during the construction of the project, which would need to be managed. The most significant impacts include:

- Disruption to business activity from the acquisition of commercial land and businesses
- Construction activity disrupting business operations, particularly for hospitals and research institutions with specialist and highly sensitive equipment
- Construction activity adversely affecting the surrounding amenity disrupting business activity, particularly for retail and food and beverage businesses
- Construction activity impacting access to businesses thereby disrupting their trade, particularly impacting businesses that rely on passing trade.

There are also anticipated to be cumulative impacts from other construction projects and from multiple work sites for the Melbourne Metro operating simultaneously, however for transport projects, such as the proposed Western Distributor these anticipated impacts are anticipated to be in the area of labour demand and increase in heavy vehicle movements along major roads. Labour demand impacts would be distributed across metropolitan Melbourne and heavy vehicle movements captured by transport assessments.

The impacts of the construction phase are summarised Table 86.

TABLE 86. SUMMARY CONSTRUCTION IMPACT

Precincts	Gross value added ($m)			
	Acquisition / temporary occupation impact	Non-acquisition impact	Total Impact	Redistributed[42]
Tunnels	-0.3	-12.4	-12.7	No
Western Portal	-23.0	0	-23.0	No
Arden station	-17.0	-0.4	-17.4	Yes, largely dispersed across north and west Melbourne.
Parkville station	-4.7	-12.4	-17.1	Some, largely from food and beverage, retail and accommodation, redistributed in the local area. Impacts to specialist research facilities unlikely to be redistributed.
CBD North station	-60.0	-11.4	-71.4	Majority redistributed in the CBD.
CBD South station	-24.0	-11.2	-35.2	Majority redistributed in the CBD.
Domain station	0	-0.8	-0.8	Yes, in the local area.
Eastern Portal	0	-1.1	-1.1	Yes, in the local area.
Western Turnback	0	0	0	NA

Once operational, Melbourne Metro is also likely to impact the businesses composition of some precincts with a shift from blue collar to white collar jobs likely particularly at the new Arden station.

Whilst there would be localised impacts around the project precincts, overall Melbourne Metro meets the project objectives, as most economic activity lost from the precincts during construction would not be lost from the Melbourne or Victorian economy, but rather displaced to other locations in Victoria. The exception is Parkville, due to the impact on highly sensitive equipment located at the hospitals and research centres.

Melbourne Metro also aligns with and helps to achieve stated government policy and guidelines as described in 3 Legislation, Policy and Guidelines. In particular, by helping to expand the central city, helping to create a city structure that drives productivity, and a transport system that better links people to jobs and services.

Performance measures were identified that in all instances, except Parkville, minimise impacts to businesses and on this basis all project risks to businesses are considered low. In Parkville the risk is medium.

[42] Only declines in Gross Value Added from non-acquisition impacts can be redistributed. Where there is zero or positive impact from non-acquisition impacts there will be no redistribution.

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APPENDIX A PEER REVIEW REPORT

17 April 2016

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Peer review of SGS assessment of business impact of the proposed Melbourne Metro Rail Project

This peer review was prepared by Marianne Stoettrup. The review is of the report *Melbourne Metro Rail Project, Business Impact Assessment DRAFT, 24 March 2016* prepared by SGS Economics & Planning (BIA).

Herbert Smith Freehills, on behalf of the Melbourne Metro Rail Authority, have instructed me to address the following matters in my peer review of the BIA:

(a) Review the BIA, including appendices, and the inputs into the assessments presented;

(b) Review and comment on the assumptions, methodology, assessment criteria and scope applied by SGS; and

(c) Advise whether there are any gaps or matters where you disagree with the assessment which in your view should be addressed.

This peer review follows on from a review I undertook of a previous iteration of the report. Following that review, I supported SGS in addressing some of my comments on the earlier draft report. The assistance was predominantly of an editorial nature to provide clarification. I did not have access to background research or data and did not amend any of the business impact findings in the report.

I note that most of the items raised in my previous review have been addressed in the current version of the BIA which is the subject of this peer review.

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1. EES Scoping Requirements

The scoping requirements document*, Environment Effects Act 1978 SCOPING REQUIREMENTS For MELBOURNE METRO RAIL PROJECT November 2015* as released by the Minister for Planning ('Scoping Requirements') sets out the requirements for the business impact assessment. Table 5 on page 13 of the BIA provides an extract of the Scoping Requirements that are considered relevant.

I am satisfied that overall the BIA addresses all the items that are listed as relevant in the Scoping Requirements, and that it provides a suitable basis for evaluating Melbourne Metro's impacts on business and a platform for designing appropriate Environmental Performance Requirements.

However, some gaps have been identified that I believe would ensure that the EES *"provides sufficient and appropriate information to allow the Minister to conduct an assessment of the environmental effects of the works under the EE Act"* as required in the Scoping Requirements.

1) The Scoping Requirements specify that the "*EES will need to identify relevant legislation, policies, guidelines and standards, and assess their specific requirements or implications for the project, particularly in relation to required approvals.*"[1] While Chapter 3 Legislation, Policy and Guidelines in the BIA sets out the legislation and policy, and identifies implications for the project, it does not provide a conclusion regarding how well the project meets these policy requirements, nor if there are instances where the project does not meet current relevant policies. I would recommend a conclusion be included on whether or not the project meets current relevant policies from a business impact perspective.

2) The Scoping Requirements state that *"The EES should document the process and results of the consultation undertaken during the preparation of the EES, including:*
   - *issues raised and suggestions made by stakeholders or members of the public"*[2]

   Consultation is described in Section 4.5 Stakeholder Engagement of the BIA. The section lists the matters discussed and issues raised through consultation with local councils and their departments as well as traders associations. However the section does not provide any detail on the concerns and issues raised by individual businesses that are likely to be impacted by the project. While some of these issues emerge in the precinct chapters, it would have been helpful with additional detail on individual business consultation. From *Table 20. Data Summary* (page 52) it appears that a site visit was undertaken to Western Turnback, Domain Station and Eastern Portal precincts. However, text through the report indicates that site visits were conducted to undertake business consultation and I recommend that Table 20 is amended to reflect this.

[1] Scoping Requirements section 3.4, Applicable legislation, policies and strategies, page 7
[2] Scoping Requirements section 3.5 Consultation, page 7

3) Finally, the Scoping Requirements state in Section 3.3. Project description and context (page 6) that *"The EES should describe the following aspects of the project, to the extent relevant and practicable: …*

- *Information about the project's expected construction timetabling and staging, and anticipated operational arrangements."*

As truck movements have a potential impact on business operation and access, it is important to understand whether truck movement for various activities in an area occur simultaneously or consecutively. The information about truck movements is somewhat ambiguous in the BIA, though I acknowledge may be addressed elsewhere in the EES more fulsomely.

2. Assessment Criteria

Impact assessment criteria in the BIA are as follows:

- *Minimise disruption to business activity during the construction phase (including due to any change in public events) and avoid cumulative impacts with other projects.*

Indicators for impact are as follows:

- *Extent of impacts to businesses as a result of temporary construction impacts on businesses*
- *Extent of ongoing impacts on businesses through property acquisition*
- *Extent of impacts on businesses through changed transport and pedestrian patterns.*

The assessment criteria's indicators for impact are adequate to assess business impacts.

3. Methodology

The methodology for assessing the business impacts is based on desktop analysis supplemented by audit data collected by the AJM JV Land Use and Planning Team. Impacts are assessed using average number of employees and average productivity by industry combined with transport modelling to establish job losses, productivity improvements, etc. The methodology used is generally a top-down approach for impact assessment, except for impacts on the tennis centre where detailed business information is available.

The data and the process for obtaining the data were appropriate to establish business impacts of the project at the aggregate and precinct level. In my opinion, this methodology is particularly useful for assessing the overall benefits to businesses of the project at the construction and operational stage, which is part of the Scoping Requirements.

The top-down approach is generally sound and very useful for economic analysis and understanding the overall impact of Melbourne Metro on businesses. I also acknowledge the challenges in undertaking a finer-grained analysis of business impacts given the scale of Melbourne Metro and the large number of businesses along its alignment, especially in the CBD. Nevertheless, a bottom-up approach to complement the desktop analysis would provide a finer-grained understanding of business impacts based on a greater number of individual business consultations. Consultation would aid with establishing precinct boundaries, with testing the validity of the data, and with the understanding of business impact issues. This would be particularly useful for issues relating to relocation, e.g. business planning horizon required, impacts to businesses in terms of staff turnover, relocation of production facilities and likelihood of reinvestment in the same kind of business, and would shape the impacts management and mitigation measures according to more detailed requirements. I recommend that such an analysis be conducted for the purpose designing the business impact mitigation and management techniques for Melbourne Metro.

Business impacts are assessed by precincts in the BIA, with each precinct surrounding a construction site except for the tunnels precinct where the construction site is mainly underground. However, the method used to define precinct boundaries is not clearly described. All the areas where immediate construction activity would occur are within the precincts. However, because the precincts appear to follow the construction activity boundaries quite closely, there is a small potential that some direct or secondary impacts to businesses immediately outside of the precincts are not adequately considered. Additional detail on how the precinct boundaries have been defined would be helpful and provide additional certainty that there are no businesses outside of the precinct boundaries that would suffer significant negative impacts.

4. Impact Assessment

The BIA's analysis of business impacts focusses on business acquisition impacts, residential acquisition impacts, reduction in foot traffic impacts, spending by construction workers and where identified, specific noise and amenity impacts. In my view, the BIA is of an appropriate standard to satisfy the requirements of the Scoping Requirements, and overall these methods were sufficient to capture most business impacts.

4.1. Pedestrian Modelling

Estimated changes in foot traffic is used as a tool to estimate impacts to businesses from a change in amenity for customers and staff from construction activity, business disruption from parking issues, utility outages, problems with deliveries etc. This is an appropriate tool for measuring impacts on businesses whose sales are sensitive to foot traffic.

However, assumptions about elasticity of foot traffic to sales means that amenity impacts only appear to have consequences for retail and food service businesses and for accommodation

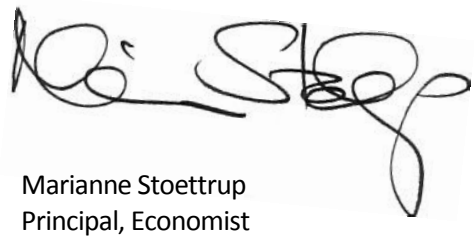
businesses. While I agree these classes of businesses are potentially vulnerable to changes in foot traffic and that it was appropriate to address them, focussing only on these businesses could potentially lead to an underestimation of impacts on other types of business unless these are examined systematically.

I could not verify the assumptions about elasticities of foot traffic to sales because the results of the consultation with businesses were not included in the BIA. Relevant earlier work needs to be available, so earlier findings could be used for comparison. The BIA's assumption that the elasticity of foot traffic of all other industries is 0 should be tested to make sure that the management and mitigation measures address all potential impacts, as there is insufficient information in the BIA about results of interviews with businesses in 'all other industries'.

5. Management Measures and Mitigation Measures

Chapter 17 of the BIA sets out suggested Environmental Performance Requirements. There are some proposed mitigation measures included under the heading 'Proposed management measure'. The list includes measures to keep businesses informed about construction activity, and about access arrangements, and management measures appear appropriate. In terms of mitigation measures, there does not appear to be any measures that will significantly mitigate the loss of sales revenue to retail and food service businesses where foot traffic is reduced or diverted for significant lengths of time. The residual impact on these individual businesses is therefore likely to be quite high, even though at a Melbourne wide or even CBD level, the risks to business arising from the construction and operation of Melbourne Metro are considered low. In my opinion, the significant impact this would have on the individual business owner should be considered when finalising the proposed Environmental Performance Requirements.

Yours sincerely,



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