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Melbourne Metro Rail Project

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Arboriculture Impact Assessment -
Precinct 8 – Eastern Portal (South Yarra)

Melbourne Metro Rail Authority

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Tree Data

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Tree Locations

Glossary and Abbreviations

Abbreviation	Term	Definition
COM	City of Melbourne	
COPP	City of Port Phillip	
DBH	Diameter at Breast Height	The diameter of a tree's stem typically measured with a diameter tape at 1.4 metres height.
EPBM	Earth Pressure Balancing Machine	
ISS	Intake Substation	
MLTV	Medium and Long Term Viability Tree	Semi-mature, mature and over-mature trees which are considered to be viable beyond the anticipated time frame of delivery of the project (10 years or more)
PRZ	Protected Root Zone	The area around a tree required to protect roots and ensure the on-going viability of the tree (City of Stonnington only).
TPP	Tree Protection Plan	A plan showing the location of any tree protection measures such as fencing and specifying the extent of such protection.
ULE	Useful Lifetime Expectancy (of a tree)	The expected timeframe from the present that a tree would contribute to the landscape while requiring a reasonable level of management inputs, as assessed by a consulting arborist.
VHR	Victorian Heritage Register	
VTA	Visual Tree Assessment	A method of assessing trees from the ground to determine tree health and structure and to identify hazards, as used by consulting arborists.

Executive Summary

This impact assessment provides an assessment of the potential impacts to trees associated with the construction and operation of the Melbourne Metro Rail Project (Melbourne Metro) in the City of Stonnington. The trees in the Cities of Melbourne, Port Phillip and Maribyrnong have been assessed by John Patrick Pty Ltd in a separate impact assessment which is contained in Technical Appendix R *Arboriculture*. Associated aspects, including terrestrial ecology, groundwater and the heritage value of trees and landscape, are covered in other impacts assessments, in particular:

- Technical Appendix J *Historical Cultural Heritage*
- Technical Appendix L *Landscape and Visual*
- Technical Appendix O *Groundwater*
- Technical Appendix R *Arboriculture*
- Technical Appendix T *Terrestrial Flora and Fauna*.

Arboriculture Context

The project includes a new rail tunnel entrance at South Yarra (Precinct 8: Eastern Portal). Within the precinct there are:

- Street trees along Osborne Street and in the reserve along the eastern side of Osborne Street
- Park trees within the public reserve (South Yarra Siding Reserve)
- Trees along both rail corridors.

This precinct is highly urbanised and comprises a diverse range of housing types, from low density detached housing to large-scale residential apartment blocks. The area borders one of Melbourne's busiest retail and entertainment precincts, centred around Toorak Road and Chapel Street.

Many of the trees within Precinct 8 are exotic species, and given the urban landscape context, have value and importance. Callery pears (*Pyrus calleryana*) along Osborne Street are typical for the size and location of the street, and are successfully performing their expected functions. The many mature native trees along the reserve to the east of Osborne Street are also typical of tree plantings of the 1970s era.

Within the South Yarra Siding Reserve, there is a mix of native and exotic plantings. There is no clear or pronounced landscape character that can be recognised or distinguished. The landscape became degraded some time ago, and improvements in the interim have been limited to some tree plantings.

Methodology

The character of the precinct is notably different from others within the project, and so the methodology has been adapted to fit this precinct. The methodology for this arboriculture impact assessment included:

- A desktop review of available tree data provided by the City of Stonnington, review of the Stonnington Planning Scheme and *Stonnington City Council General Local Law 2008 (No 1)*.
- A visual tree assessment was undertaken for trees to identify species, size and condition data for each tree (as contained in Appendix 1 to this impact assessment).

Risk Assessment

A risk assessment process was adopted that identified potential construction and operational hazards, impact pathways, consequences to arboriculture values and likelihood of impacts. Where possible, mitigation measures were identified to reduce risks.

We have assumed the worst case scenario, which is the removal of all vegetation within the eastern portal precinct. However, subject to detailed design, some of these trees may be able to be retained.

The impact assessment determined that up to 218 trees may require removal from the eastern portal precinct, 115 of these within the public realm. Of these, there are 72 medium- and long-term viability (MLTV) trees within the public realm. These are established (semi-mature and mature) trees, with medium or high landscape significance, and with Useful Life Expectancies (ULEs) beyond the anticipated project delivery timeframe. The amenity and environmental values of these trees would be difficult to replace immediately, but could be replaced in the long term. The loss of amenity and environmental benefits of the other 43 trees in the public realm could be replaced in the short term. The long-term outcome could not only avoid a net loss of tree canopy, but could also improve on the existing amenity by planting trees in a designed landscape that maximises benefits to the community.

However, during the project's construction phase, the impact on amenity for the local community may be significant and an appropriate tree protection plan should be prepared to manage and mitigate these impacts, followed by the replacement and re-landscaping of the affected public open spaces.

Benefits and Opportunities

The following benefits and opportunities are associated with the Concept Design:

- Improving the landscape in South Yarra Siding Reserve and along the reserve east side of Osborne Street
- Improving soil conditions for future landscaping and tree growth by removing waste and rehabilitation of soil in South Yarra Siding Reserve and the Osborne Street Reserve
- Undertaking tree plantings and other landscaping to provide sustainable landscape of long-term value that links with surrounding open space
- Improving the diversity of the tree population in the precinct to maximise its resilience to future threats
- Improving access to South Yarra Siding Reserve to enable enjoyment of the landscape
- Opportunities to improve landscaping along Lovers Walk.

Environmental Performance Requirements

The following Environmental Performance Requirements are recommended.

Environmental Performance Requirements

During detailed design, review potential tree impacts and provide for maximum tree retention where possible.

Prior to construction of main works develop and implement a plan in consultation with the relevant local council that identifies all trees in the project area which covers:

- Trees to be removed or retained
- Condition of the trees to be removed
- Options for temporary re-location of palms and reinstatement at their former location or another suitable location.

Reinstate quality soils to sufficient volumes to support long-term viable growth of replacement trees.

Re-establish trees to replace loss of canopy cover and achieve canopy size equal to (or greater than) healthy, mature examples of the species in Melbourne. Consult with the City of Stonnington, the Shrine of Remembrance and Shrine Trustees and Heritage Victoria as applicable. Policy documents that must be followed to re-establish trees and valued

Environmental Performance Requirements

landscape character include:

- The City of Stonnington's General Local Law 2008 (No 1) and City of Stonnington Street Tree Strategy
- Any associated precinct plans.

Prior to construction commencing of main works or shafts in affected areas, prepare and implement Tree Protection Plans for each Precinct in accordance with *AS4970-2009 Protection of Trees on Development Sites*, addressing the detailed design and construction methodology of the project.

1 Introduction

This impact assessment provides an assessment of the potential impacts of the Melbourne Metro Rail Project (Melbourne Metro) on trees in the City of Stonnington. Related issues including historical heritage, landscape and visual, arboriculture issues in the Cities of Melbourne, Port Phillip and Maribyrnong and terrestrial flora and fauna are addressed in the following impact assessments:

- Technical Appendix J *Historical Cultural Heritage*
- Technical Appendix L *Landscape and Visual*
- Technical Appendix O *Groundwater*
- Technical Appendix R *Arboriculture*
- Technical Appendix T *Terrestrial Flora and Fauna*.

1.1 Project Description

The Melbourne Metro comprises two nine-kilometre long rail tunnels from Kensington to South Yarra, travelling underneath Swanston Street in the Central Business District (CBD), as part of a new Sunbury to Cranbourne/Pakenham line to form the new Sunshine-Dandenong Line.

The infrastructure to be constructed as part of the 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 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.

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.

1.2 Purpose of the Impact Assessment

This study provides an assessment of potential impacts to trees within the Melbourne Metro boundary within the City of Stonnington.

Trees within the Cities of Melbourne, Port Phillip and Maribyrnong have been assessed by John Patrick Pty Ltd.

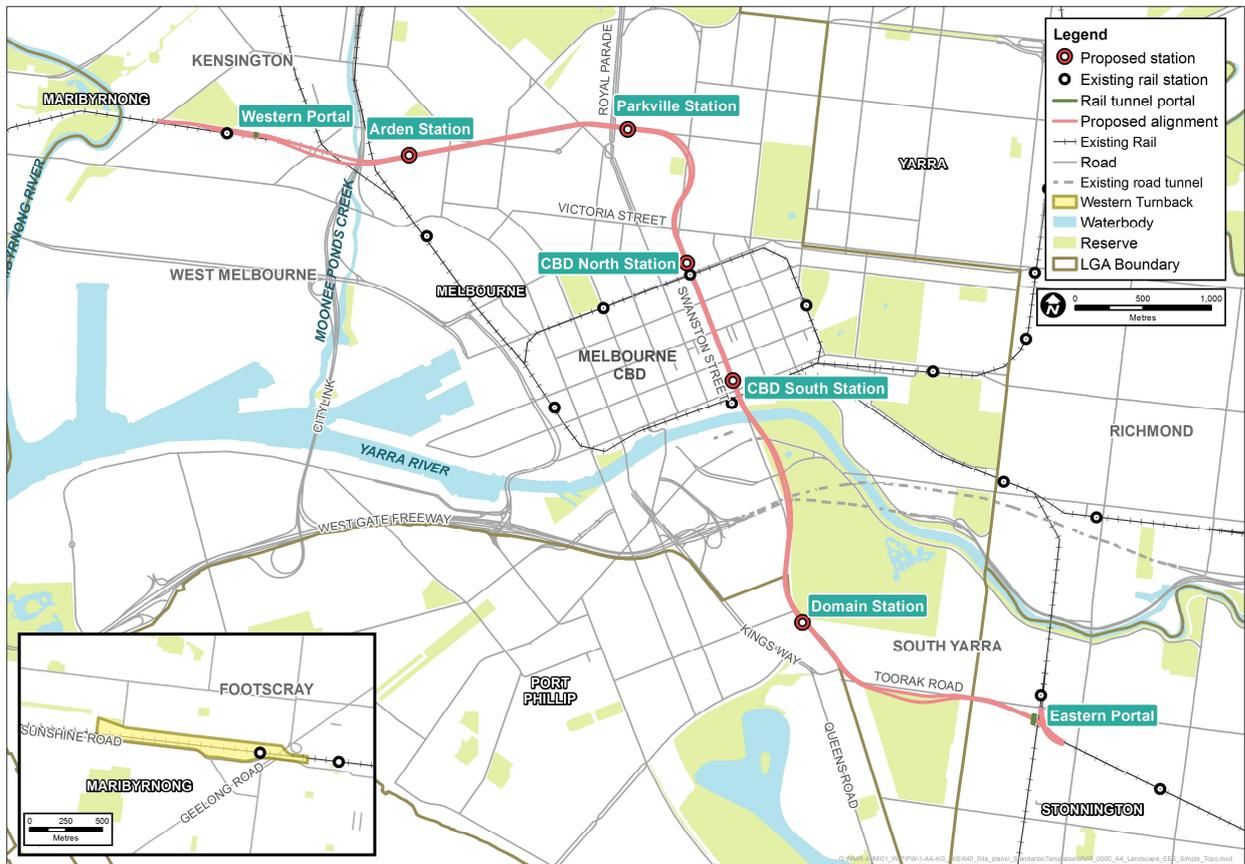


Figure 1-1 Map of the proposed Melbourne Metro alignment and five underground stations

1.3 Project Precincts

For assessment purposes, the project boundary has been divided into precincts as outlined below. The precincts have been defined based on the location of project components and required construction works, the potential impacts on local areas and the character of surrounding communities.

The precincts are:

- Precinct 1: Tunnels (outside other precincts)
- Precinct 2: Western Portal (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 nine precincts are shown in Figure 1-2.

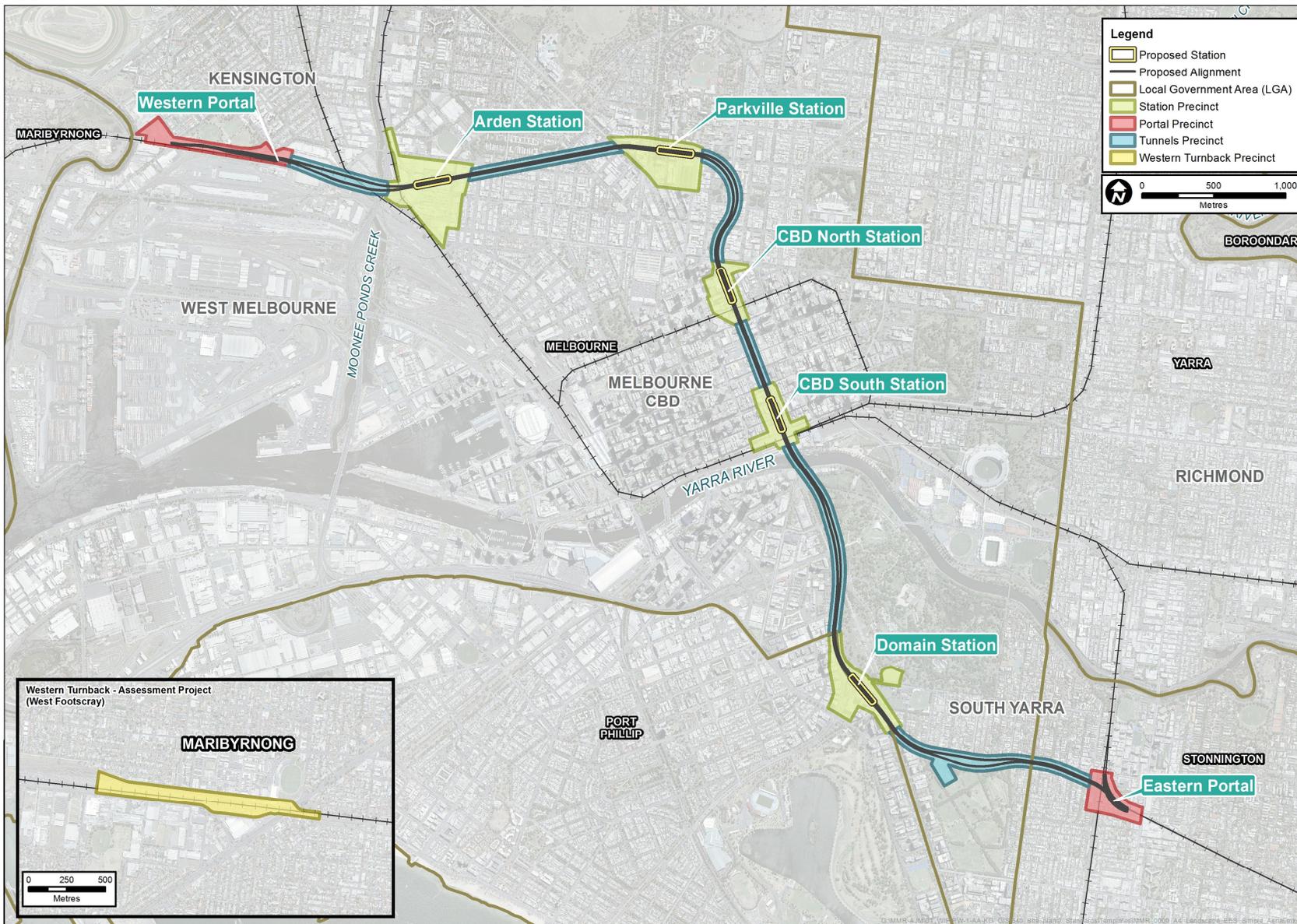


Figure 1-2 Map of the tunnel alignment and precincts

1.4 Study Area

The study area for this impact assessment is Precinct 8 – Eastern Portal (South Yarra), illustrated in Figure 1-3.

For the purposes of this impact assessment, the study area is divided into four sections (see Figure 1-4). Each section is described below.

- Section a – The western side of Osborne Street, from the southern boundary of 160 Osborne Street to the Arthur Street pedestrian bridge. This is an asset of the City of Stonnington and includes planted street trees
- Section b – The linear reserve on the eastern side of Osborne Street from the southern boundary of 160 Osborne Street to the Arthur Street pedestrian bridge. This land is owned by VicTrack with the trees managed by the City of Stonnington
- Section c – South Yarra Siding Reserve – this land is owned and managed by the City of Stonnington
- Section d – The rail corridor – trees within the rail corridors are under VicTrack's management. The southern rail corridor extends from Toorak Road to the Arthur Street pedestrian bridge. The eastern corridor extends from Toorak Road to buildings along the western side of Chapel Street
- Section e – Davis Avenue – street trees within the road reserve are managed by the City of Stonnington. While this located in Precinct 1 – Tunnels, the discussion has been included in Precinct 8 due to its limited area.

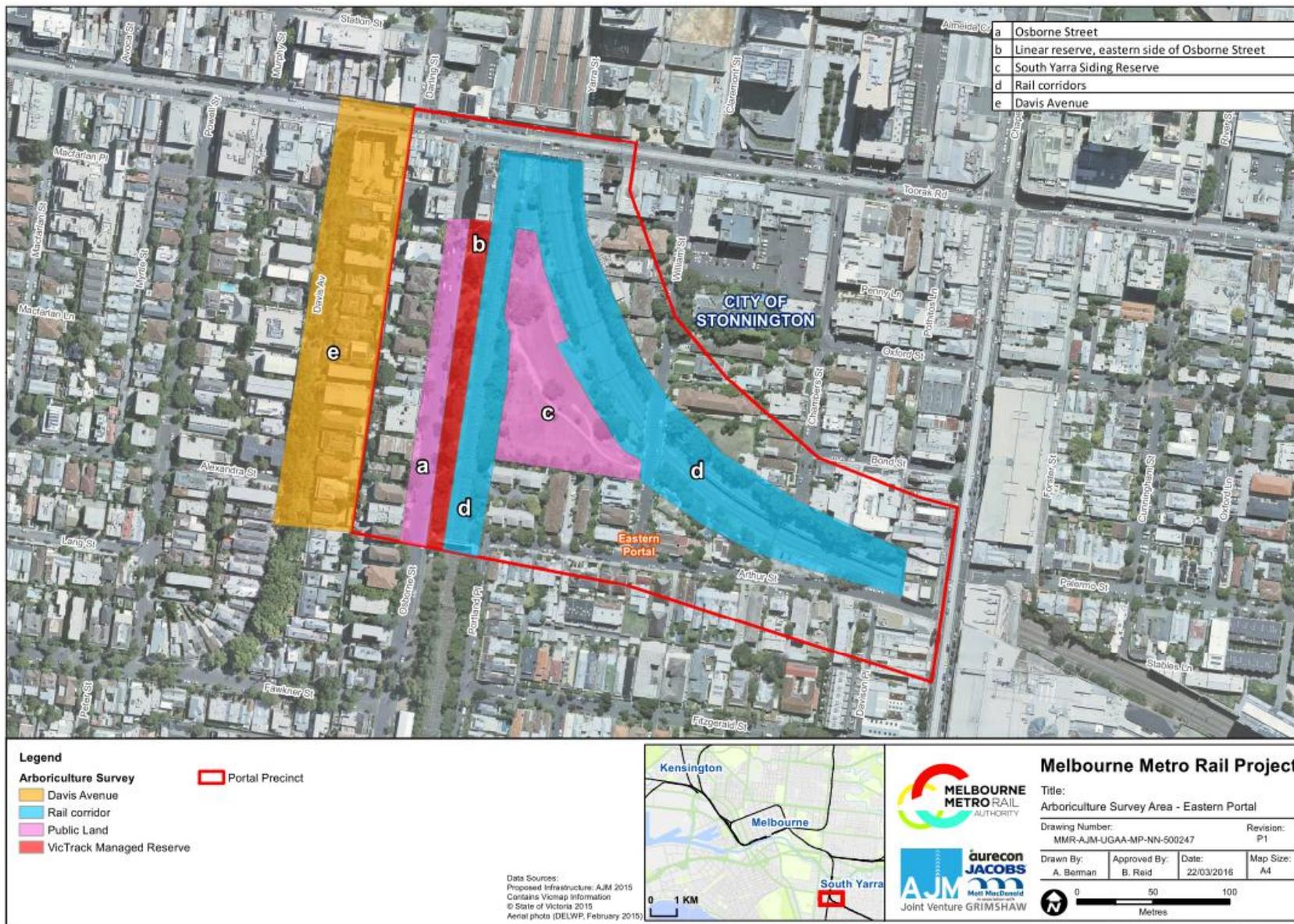


Figure 1-3 Study area for Precinct 8 – Eastern Portal (South Yarra)

2 Scoping Requirements

2.1 EES Objectives

The following draft EES evaluation objectives (Table 2-1) are relevant to arboriculture and identify the desired outcomes in the context of potential project effects. The draft EES evaluation objectives provide a framework to guide an integrated assessment of environmental *effects* of the project, in accordance with the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978*.

Table 2-1 Landscape, visual and recreational values

Draft EES evaluation objective	Key legislation
Landscape, visual and recreational values: To avoid or minimise adverse effects on landscape, visual amenity and recreational values as far as practicable.	<i>Planning and Environment Act 1987</i>

2.2 EES Scoping Requirements

The following extracts from the Scoping Requirements, issued by the Minister for Planning, are relevant to the landscape, visual and recreational values draft EES evaluation objective (Table 2-2).

Table 2-2 Scoping requirements for landscape, visual and recreation

Aspect	Relevant response
Key Issues	<ul style="list-style-type: none"> • Potential adverse effects on highly valued urban landscapes, resulting from construction phase works or inappropriate siting of permanent new works. • Potential temporary or permanent effects on public open space areas and recreational areas, affecting access to or enjoyment of recreational opportunities, especially during the construction phase.
Priorities for characterising the existing environment	<ul style="list-style-type: none"> • Identify key visual and landscape features and values in the area or broader vicinity of proposed project works. • Identify condition and uses of public open space and facilities which could be occupied or otherwise adversely affected by project construction works.
Design and mitigation measures	<ul style="list-style-type: none"> • Identify project design and construction management measures to avoid or minimise adverse effects on landscape character and visual values, especially with regard to long-term effects. • Identify project design and management measures to avoid or minimise adverse effects on recreational values resulting from the project, including during construction, and opportunities for recreational uses to be redirected to alternative sites (if relevant).
Assessment of likely effects	<ul style="list-style-type: none"> • Assess likely extent and duration of residual adverse effects on landscape and visual values, including use of photo-montages or other suitable methods for depicting predicted landscape changes, and available measures to manage or offset those effects. • Identify and assess likely residual effects on recreational activities, including with regard to public land to be used or occupied for project works.
Approach to manage performance	<ul style="list-style-type: none"> • Identify principles to be adopted to develop measures to monitor adverse effects on landscape and visual values and contingency measures to be implemented if required. • Describe the approach to identifying proposed methods to monitor effects on recreational opportunities and the effectiveness of mitigation measures that have been put in place.

3 Legislation, Policy and Guidelines

Table 3-1 below summarises the relevant primary legislation that applies to the project as well as the implications, enquired approvals and interdependencies and information requirements associated with obtaining approvals.

Table 3-2 Primary legislation and associated information

Legislation / policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies
Commonwealth				
None noted.				
State				
None noted.				
Local				
Stonnington Planning Scheme Heritage Overlay	Overlays within the planning scheme can include tree controls.	There are no planning overlays with tree controls applying to the site.	None	N/A
Stonnington Planning Scheme Clause 52.17 (Native Vegetation)	Clause 52.17 (Native Vegetation). Unless exemptions apply, planning approval would be required to remove, destroy or lop native vegetation. This would apply to any vegetation that is native to Victoria. Guidelines for assessing impacts of an application to clear native vegetation are contained in <i>Permitted clearing of native vegetation: Biodiversity assessment guidelines</i> (DEPI, 2013)	Within the eastern portal precinct there are 64 trees that are native to Victoria, indicated in the 'Origin' column of the tree data spreadsheet by 'V' (Victorian) or 'I' (indigenous to the site).	Unless exemptions apply (e.g. Planning Scheme Amendment), planning approval would be required to remove, destroy or lop 64 trees within the eastern portal precinct.	
AS4970 Protection of Trees on Development Sites	The Standard provides guidelines for protecting trees on development sites.	Planning permit conditions often require protection of trees according to AS4970. This typically involves a Tree Management Plan to guide protection of trees throughout a project.	As per any planning permit conditions.	

Legislation / policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies
<p>Stonnington City Council General Local Law 2008 (No 1)</p>	<p>Clause 719 of the Local Law states:</p> <p><i>(1) Unless in accordance with a Permit a person must not:</i></p> <p><i>(a) remove, damage, kill or destroy a Significant Tree;</i></p> <p><i>(b) carry out any works (including but not limited to trenching, digging, compaction, excavation, fill and storage of materials and equipment) within the Protected Root Zone of a Significant Tree;</i></p> <p><i>(c) prune, cut or trim a Significant Tree; or</i></p> <p><i>(d) direct, authorise or allow any of the above.</i></p> <p><i>(2) Sub-Clause (1) does not apply to:</i></p> <p><i>(a) a person whose actions are authorised under a planning permit under the Planning Scheme;</i></p> <p><i>(b) a person whose actions are required by any other legislation or by any other statutory authority; or</i></p> <p><i>(c) a person acting in accordance with an instruction or direction from an Authorised Officer.</i></p> <p>Diagrams indicate the methods for calculating the area of a Protected Root Zone.</p>	<p>Unless exemptions under sub-clause (2) apply, a permit is required for removing trees from the site and for doing works within Protected Root Zones of any trees retained within the site and of any neighbouring trees.</p> <p>Sub-clause (5) states:</p> <p><i>(5) In deciding whether to grant a Permit under this Clause the Council must take into consideration, to the extent it considers appropriate:</i></p> <p><i>(a) whether the tree is listed in the Significant Tree Register;</i></p> <p><i>(b) the condition of the tree, i.e. health and structural integrity;</i></p> <p><i>(c) whether the action is to be undertaken for reasons of health or safety;</i></p> <p><i>(d) whether the tree is causing property damage;</i></p> <p><i>(e) the effect of the action on the aesthetics of the neighbourhood; and</i></p> <p><i>(f) any other matter relevant to the circumstances of the application which is drawn to the Council's attention or of which the Council is aware.</i></p>	<p>Permit for tree removals.</p> <p>Permit for works within Protected Root Zones of retained site trees or of neighbouring trees.</p> <p>(Only if exemptions under sub-clause (2) do not apply.)</p>	<p>The <i>Major Transport Projects Facilitation Act 2009</i> provides that a local law permit is not required for Melbourne Metro.</p>
	<p>City of Stonnington Street Tree Strategy</p>	<p>This strategy guides species selection for street tree planting, so would be relevant for any replanting of trees required along Osborne Street.</p>	<p>n/a</p>	<p>n/a</p>

4 Methodology

4.1 Existing Conditions

4.1.1 Desktop Assessment

This precinct differs from others in its landscape character, and the methodology used varies accordingly. The following desktop assessment was undertaken:

- Review of data provided by City of Stonnington for trees within and around Precinct 8. Data was incomplete and outdated, requiring field assessment of all trees within the public realm in Precinct 8
- Review of the Stonnington Planning Scheme to determine tree controls
- Review of *Stonnington City Council General Local Law 2008 (No 1)*.

Stonnington City Council provided data in September 2015, including tree locations, dimensions and condition. However, data was not exhaustive as some trees within the eastern portal precinct were not included. Additionally, data fields were limited (e.g. species, height, stem diameter, age class, health and structure) and height was recorded as a range (6-10 m, 11-15 m, etc.) which was inappropriate for this assessment due to its imprecision. The age of the data could not be determined and field observations indicated that it was outdated. As such, the data was not used for the impact assessment. Instead, data for the assessment was collated through site investigations to ensure accuracy and currency.

4.1.2 Site Investigations

Tree assessments were carried out during September 2015 by a team of consulting arborists. All data were collected via field assessment – no external data were used.

A ground-based, visual tree assessment (VTA) was undertaken for each tree or tree group. This included size (diameter of trunk at breast height, tree height and width), condition (health and structure) and an estimate for the anticipated Useful Life Expectancy (ULE) of each tree. ULE is the predicted reasonable life expectancy of a tree from the present, based on the work of Barrell (1993).

Tree locations were plotted using hand-held GPS devices. Trees were identified to species level. Tree height was measured using laser equipment; tree width was estimated; stem diameter at breast height (DBH at 1.4 m) was measured with a diameter tape. Measurements and observations were recorded electronically on hand-held devices. No internal investigation or root excavation was undertaken.

The following information was collected for each tree or tree group and is included in the Tree Assessment Data tables included in Appendix A of this report:

- Taxon i.e. Genus, species, sub-specific identifiers (as applicable)
- Common Name, derived from taxon
- DBH (Diameter at breast height), by default measured, otherwise estimated
- Height, as measured with a laser rangefinder
- Width, estimated
- Age estimate
- Health
- Structure
- ULE.

Guidelines within *Stonnington City Council General Local Law 2008 (No 1)* were used to determine which trees would require a permit for removal, based on stem circumference and the radius of Root Protection Zones, based on stem diameters.

Within Precinct 8, there are many trees but only few trees of individual significance and with long life expectancies whose loss would be difficult to replace. Established trees with long ULEs were categorised as Medium and Long Term Viability (MLTV) trees. The overall canopy cover provided by trees within the precinct provides amenity, landscape value and environmental benefits. For further information see Section 7.2 of this report.

4.2 Risk and Impact Assessment

4.2.1 Overview

An Environmental Risk Assessment has been completed for impacts of 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 the impact relates to the likelihood of an adverse impact occurring and its ability to recover.

The overall risk assessment process adopted was based on AS/NZS ISO 31000:2009, as illustrated in Figure 4-1.

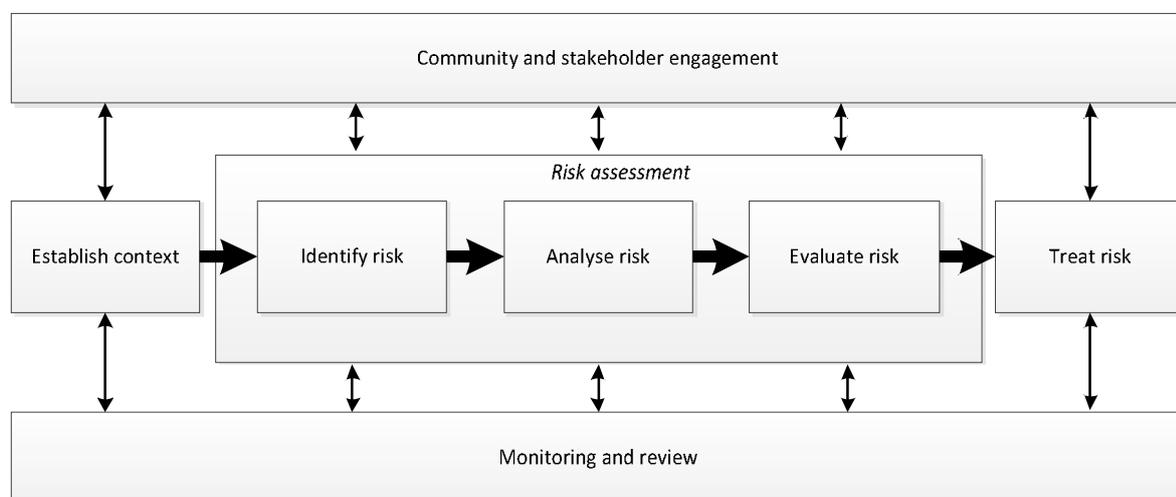


Figure 4-1 Overview of AS/NZS ISO 31000-2009 risk process

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 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*.

4.2.2 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 Melbourne Metro. The specific context for the arboricultural impact assessment is as follows:

The eastern portal precinct is characterised by street trees along Osborne Street and in the reserve along the eastern side of Osborne Street, park trees within the public reserve (South Yarra Siding Reserve) and trees along both rail corridors. All trees are managed by the Stonnington City Council, with the exception of the trees within the rail corridors which are managed by VicTrack. All trees are likely to appear to the community as public assets under public management and are part of the urban forest – the complex of trees on public and private land providing canopy cover across the landscape. Many of the trees are exotic species, and given the urban landscape context, have value and importance. Exotic tree species have long been integral to inner Melbourne’s streetscapes and contribute to local landscape character.

The likelihood rating criteria used in the risk assessment by all specialists is shown in Table 4-1.

Table 4-1 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 is almost certain to occur one or more times a year.

The consequence criteria framework used in the risk assessment follows. Each specialist has used this framework to develop criteria specifically for their assessment.

Table 4-2: 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.
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.

The consequence rating criteria used in the risk assessment specifically for the arboriculture impact assessment is shown in Table 4-3.

Table 4-3 Consequence rating criteria – Arboriculture (to minimise impacts on the urban forest)

Level of consequence	Consequence criteria
Negligible	Within a single precinct, no loss or significant disturbance to Mature Long Term Viable (MLTV) trees in the public realm.
Minor	Within a single precinct, limited removals or significant disturbance to MLTV trees in the public realm with scope within the affected project area to re-establish healthy replacement trees within 5 years of project completion.
Moderate	Within a single precinct, significant removals or disturbance to MLTV trees in the public realm with scope within the affected project area to re-establish healthy replacement trees within 5 years of project completion.
Major	Within a single precinct, significant removals or disturbance MLTV trees in the public realm with limited scope within the affected project area to re-establish healthy replacement trees within 5 years of project completion.
Severe	Within a single precinct, near complete removal or significant disturbance to MLTV trees in the public realm with significant permanent loss of canopy cover.

The environmental risk assessment matrix used by all specialists to determine levels of risk from the likelihood and consequence ratings is shown in Table 4-4.

Table 4-4 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 arboricultural risks assessed as part of the EES.

4.3 Assumptions

The assessment of the potential impact to trees in the urban environment by Melbourne Metro and outlined in this report has been undertaken at a high level and should not be construed as a complete arboricultural impact assessment as defined in *AS4970-2009 Protection of Trees on Development Sites*, which would ideally be undertaken with final detailed design drawings.

Based on the Concept Design, the following assumptions have been made in the preparation of this report:

- All trees located within construction areas (and shown in numbered plans in Appendix B to this report) are assumed to require removal
- Trees located in road reserves adjacent to, but outside construction areas, are assumed to be retained

- Methodologies for early works (services relocations) can be implemented using tree sensitive construction measures, such as horizontal boring for underground services
- No inspection has been undertaken of trees on private property
- The tunnels would be located at depths where construction would not impact tree growth.

4.4 Stakeholder Engagement

As part of this assessment, the following specific engagement with stakeholders was undertaken.

Table 4-5 Summary of stakeholder engagement

Activity	When	Matters discussed / issues raised	Consultation outcomes
Request for existing tree data from Stonnington City Council	14/9/15	Council provided existing trees data.	Comparison of Council data with AJM baseline assessment.
Provision of Council arborists' findings and recommendations	29/9/15	Council data insufficient for project outcomes.	All data collected via field assessment to ensure completeness and accuracy.

In addition to the specific agency and TRG engagement and the engagement listed in the table above, general engagement and consultation with the community was also conducted as part of this assessment. Written feedback was obtained through feedback forms and the online engagement platform, and face-to-face consultation occurred at the drop-in sessions (refer to Technical Appendix C *Community and Stakeholder Feedback Summary Report* for further information).

Feedback related to arboriculture focused primarily on the impact that removing trees would have on landscape values. In line with these concerns, the Environmental Performance Requirements would ensure that, where possible, trees would be replaced in accordance with local government guidelines. Additionally, Technical Appendix M *Melbourne Metro Urban Design Strategy* outlines a range of measures that incorporate local considerations and precinct specific guidance for maintenance or enhancement of landscape values.

4.5 Limitations

The limitations associated with this assessment are as follows:

- The arboricultural impact assessment is limited to documenting the existing baseline conditions for the trees, in terms of location, quantity, species, size, structure and health. It does not account for the heritage, environmental or ecological values of each tree
- This assessment is limited to Precinct 8 – Eastern Portal. Impacts within other precincts are covered by another report
- To comply with OH&S requirements, trees within railed corridors were assessed visually from adjacent public areas. Trees within the southern corridor were observed from Osborne Street, the Arthur Street pedestrian bridge and from within South Yarra Siding Reserve. Trees within the eastern corridor were observed from South Yarra Siding Reserve, Lovers Walk, the William Street bridge and Arthur Street. Therefore, the dimensions of these trees such as stem diameter were estimated rather than measured, and a visual assessment of health and structural condition was usually only available from a distance at only one side of the tree. Any observable structural defects and features were noted but it is likely that other defects and features were present that were not observed. It is possible that these trees are more hazardous than indicated in the data.

5 Regional Context

The eastern portal is located within the City of Stonnington. This precinct is highly urbanised and comprises a diverse range of housing types, from low density detached housing to large-scale residential apartment blocks. The area borders one of Melbourne's busiest retail and entertainment precincts, centred around Toorak Road and Chapel Street.

The narrow reserve along the eastern side of Osborne Street is owned by VicTrack but the assets, including trees, are managed by Stonnington. Trees within the rail corridors are managed by VicTrack. All trees are likely to appear to the community as public assets under public management and are part of the urban forest – the complex of trees on public and private land providing canopy cover across the landscape. The South Yarra Siding Reserve is managed by Council.

The urban forest is an integral component of the urban landscape. Streetscapes are improved by successful street tree plantings. Trees provide shade and contribute to local landscape character. At the broader scale, the extent of canopy cover in the urban environment plays a critical role in the maximum temperatures experienced during summer by mitigating the urban heat island effect. Therefore, while individual trees are important at the local landscape level, it is the extent and condition of the overall canopy cover that has the greatest environmental contribution.

Many of the trees within Precinct 8 are exotic species, and given the urban landscape context, have value and importance. Exotic tree species have long been integral to inner Melbourne's streetscapes and contribute to local landscape character. Native tree plantings similarly provide a distinctive landscape character suitable to selected locations.

Callery pears (*Pyrus calleryana*) along Osborne Street are typical for the size and location of the street, and are successfully performing their expected functions. The many mature native trees along the reserve to the east of Osborne Street are also typical of tree plantings of the 1970s era.

Within South Yarra Siding Reserve, there is a mix of native and exotic plantings. There is no clear or pronounced landscape character that can be recognised or distinguished. The landscape became degraded some time ago, and improvements in the interim have been limited to some tree plantings. This landscape could be improved with a landscape plan that includes appropriate tree planting.

Population density has recently increased in South Yarra and would continue to do so. Public reserves, such as South Yarra Siding Reserve, are important for the public open space they provide, especially as many local residents now live in apartments, with little private open space within their properties. The reserve provides an opportunity to create shaded areas of high amenity.

6 Risk Assessment

Table 6-1 presents the arboricultural risks associated with the project, based on a precinct basis. The environmental risk assessment methodology is outlined in Section 4.2.

Existing controls were identified to inform the assessment of initial risk ratings. These existing controls are based on statutory requirements, aspects that are inherent in the project design and standard requirements that are typically incorporated into construction contracts for rail projects. The potential impacts of the identified risks have been assessed, the findings of which are summarised in the subsequent chapters.

For the purposes of assessment, the level of consequence was rated for trees in the public realm that already contribute to the urban landscape (semi-mature, mature and over-mature trees) and which are considered to be viable beyond the anticipated time frame of delivery of the project, that is trees with an assessed useful life expectancy of 10 years or more. This category is described as medium and long-term viability (MLTV) trees. Conversely, removal of juvenile trees or those with very limited ULEs was assumed to have a low impact.

The potential risks are localised with the primary identified risks for the construction relating to the removal of trees within the eastern portal precinct. In this area the initial risk was assessed as high and the residual risk also remains high as the level of consequence, significant removal of MLTV trees within these precincts and replanting to re-establish 40 per cent canopy cover, cannot be further mitigated with Environmental Performance Requirements.

The residual risks for potential damage to trees to be retained on the periphery of construction areas is low, as these impacts can be managed within the scope of specific Tree Protection Plans prepared for each precinct.

As a result of the risk assessment, project-specific performance requirements (Environmental Performance Requirements) have been 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 8-1. All Environmental Performance Requirements are incorporated into the Environmental Management Framework for the project (Chapter 23).

For further details, refer to Technical Appendix B *Environmental Risk Assessment Report* which includes the full risk register, with existing controls and recommended Environmental Performance Requirements assigned to each risk.

Table 6-1 Risk Register for Impact Assessment

Impact pathway		Precinct	Initial risk			Residual risk			Risk no.
Category	Event		C	L	Risk	C	L	Risk	
Construction									
Construction of portals, station boxes, entries, access shafts and associated construction zones	Removal of trees from the public realm. Damage to trees on periphery of excavation (crown and roots). Loss of canopy cover.	8 - Eastern portal	Moderate	Almost Certain	High	Moderate	Almost Certain	High	AR001
Soil grout injection / soil mixing for soil stabilisation over shallow tunnel alignments	Removal of trees from Davis Avenue and surrounds	8 - Eastern portal	Moderate	Unlikely	Low	Moderate	Unlikely	Low	AR014
Removal and/or installation of underground services	Damage to tree roots resulting in reduced health, tree death or destabilisation.	8 - Eastern portal	Moderate	Possible	Medium	Moderate	Unlikely	Low	AR004
Chemical spill, including as a result of refuelling of construction equipment	Damage to trees resulting in reduced health or death.	8 - Eastern portal	Moderate	Possible	Medium	Minor	Possible	Low	AR005
Modification to adjacent soil profiles and modification to existing run-off	Drying and waterlogging damage to tree root zones resulting in reduced health or death.	8 - Eastern portal	Moderate	Possible	Medium	Minor	Possible	Low	AR007

Impact pathway		Precinct	Initial risk			Residual risk			Risk no.
Category	Event		C	L	Risk	C	L	Risk	
Installation of fill over root zones	Deoxygenation of soil and modification to water infiltration resulting in reduced health or death.	8 - Eastern portal	Moderate	Possible	Medium	Minor	Possible	Low	AR008
Vehicular and pedestrian access through parkland, including use of setdown areas	Soil compaction resulting in reduced tree health.	8 - Eastern portal	Moderate	Likely	Medium	Minor	Possible	Low	AR009
Piling / crane access / high load access within construction zones	Damage to tree crowns as a result of mechanical damage from machinery or loads.	8 - Eastern portal	Minor	Likely	Medium	Minor	Possible	Low	AR010
Vehicular access to construction areas	Damage to tree crowns as a result of mechanical damage from trucks or high loads	8 - Eastern portal	Minor	Likely	Medium	Minor	Possible	Low	AR011
Clearance pruning to tree crowns and installation of temporary aerial services	Damage to trees by poor pruning practices.	8 - Eastern portal	Minor	Possible	Low	Minor	Possible	Low	AR012
Station and tunnel ventilation	Desiccation of adjacent tree canopies resulting in leaf loss and reduced vigour.	8 - Eastern portal	Minor	Unlikely	Low	Minor	Unlikely	Low	AR013

7 Precinct 8: Eastern Portal (South Yarra)

7.1 Project Components

The relevant components of the Concept Design for this assessment are:

- The siting of a tunnel ventilation shaft, emergency access shaft and an underground substation in the Osborne Street Reserve (owned by VicTrack) as shown in the EES map book.

Construction

The relevant construction activities for this report are:

- The occupation of the South Yarra Siding Reserve and Osborne Street Reserve for the TBM retrieval (as shown in the EES map book)
- Establishment of construction work sites
- Advanced ground treatment to stabilise soils
- Construction of ventilation shaft, emergency access shaft, retrieval shaft and substation in Osborne Street Reserve.

Operation

The operation of the Melbourne Metro would not have an impact on arboriculture.

7.2 Existing Conditions

The asset values for the eastern portal precinct are described in Table 7-1.

Table 7-1 Asset values for the eastern portal precinct

Asset / value	Details
Trees along Osborne Street	Eighteen trees, mostly <i>Pyrus calleryana</i> that provide amenity. They could be replaced in the medium term. No street tree in Osborne Street is a 'Significant Tree' according to the General Local Law.
Trees in the reserve, east side of Osborne Street	Forty six trees, including some mature native trees that are of the greatest significance due to their size. Nine trees here are 'Significant Trees' according to the General Local Law and would require a permit for removal: EP070, EP071, EP072, EP080, EP084, EP095, EP099, EP102 and EP112. Three of these have ULEs of less than five years (EP070, EP071 & EP080), two of which pose a safety risk due to hazards within the trees (e.g. large branches likely to fail) (EP070 and EP080).
Trees in South Yarra Siding Reserve	Fifty one trees, mostly semi-mature native species that provide amenity but could be replaced in the medium term. Two trees are of high significance: a large, mature sugar gum (<i>Eucalyptus cladocalyx</i>) (EP013) with a ULE greater than 30 years; and a mature Canary Island date palm (<i>Phoenix canariensis</i>) (EP014). The <i>Phoenix canariensis</i> could be transplanted, but the amenity value of the <i>Eucalyptus cladocalyx</i> could not be replaced in the foreseeable future. One peppercorn (<i>Schinus areira</i>) in the reserve (EP029) poses a safety risk due to hazards within the tree.
Southern rail corridor	Ten trees, mostly mature or semi-mature <i>Eucalyptus</i> spp. and mature <i>Schinus areira</i> , as well as groups of weed species (<i>Ailanthus altissima</i> and <i>Acacia</i> spp.). Two of the significant trees (EP210 and EP211) are in fair or good condition with ULEs greater than 10 years, but the other two (EP209 and EP214) have ULEs less than five years. Tree EP209 poses a safety risk due to hazards within the tree.

Asset / value	Details
Eastern rail corridor	Ninety three trees, mostly mature or semi-mature <i>Eucalyptus</i> spp. and mature <i>Schinus areira</i> . Most of the significant trees are in fair or good condition with ULEs greater than 10 years. There are groups of elm (<i>Ulmus</i> sp.) and robinia (<i>Robinia</i> sp.) suckers of low value.
Davis Avenue surrounds	In the public realm, there are several mature plane trees along Davis Avenue above areas that may require grout injection. In the private realm, there are several exotic trees such as box elder and plane trees within private gardens above areas that may require grout injection.

Within the eastern portal precinct there are 218 trees. Existing canopy cover has not been quantified but appears to be less than 10 per cent. Trees within the various areas of the precinct are described below.

Throughout the eastern portal precinct, according to other reports, groundwater is approximately 5-8 m below ground level. Along Osborne Street, the embankments of the rail corridor and for the southern section of South Yarra Siding Reserve, trees are elevated and are unlikely to rely on groundwater. Ground level decreases toward the northern end of South Yarra Siding Reserve. Semi-mature trees here are unlikely to rely on groundwater, but the mature *Eucalyptus cladocalyx* (EP013) may have sinker roots that extend to groundwater.

As noted earlier, subject to detailed design, some of these trees may be able to be retained.

No tree within the project area is listed on Stonnington's Significant Tree Register or listed on the Victorian Heritage Register.

Osborne Street

Eighteen street trees along Osborne Street are mostly callery pears (*Pyrus calleryana* – 15 trees) with three trees of other species. Nearly all are less than 10 m tall. They are established trees forming a discontinuous avenue along the western side of the street. Loss of amenity if they are removed would take approximately 10 years to replace following replanting. Trees are planted at relatively regular spacings along the street and provide amenity to properties along the western side of the street, and improve the overall quality of the streetscape.



Figure 7-1 Street trees along Osborne Street



Figure 7-2 Street trees along Osborne Street

Osborne Street Linear Reserve

All trees planted along the linear reserve between Osborne Street and the rail corridor are Australian natives (46 trees). Mature trees from plantings dating from the 1970s are located closer to the rail corridor, while more recent plantings, including many *Angophora costata* (approximately 17 trees), are closer to Osborne Street.

Many of the mature trees have limited useful life expectancies (regardless of any changes to their environment) due to poor structural condition: eight have ULEs of 5 years or less; and four have ULEs of 6-10 years. Some of these now pose a safety risk due to hazards within the trees. For instance, of the six

eucalypts with a stem diameter of 50 cm or greater along this reserve, three have ULEs of less than five years: Trees EP070, EP071 and EP080. In particular, Trees EP070 and EP080 have fungal decay and poor branch unions that may result in large limb failures that could impact on the railway line at the bottom of the adjacent embankment. These trees are likely to be removed in the near future. Thirty four trees have ULEs of more than 10 years.

Depending on construction methods, some trees in the reserve may be retained to provide amenity and visual screening.



Figure 7-3 Linear reserve, east side of Osborne Street



Figure 7-4 Linear reserve, east side of Osborne Street



Figure 7-5 Tree EP080



Figure 7-6 Weak branch union with decay, Tree EP080

South Yarra Siding Reserve

Plantings of mostly native trees during the last 20 years have served to soften the landscape and provide some amenity. Several mature trees pre-date those plantings, most notably Tree EP013 (a large *Eucalyptus cladocalyx*), Tree EP014 (a mature *Phoenix canariensis*) and some *Schinus areira* (e.g. Trees EP007, EP010 and EP029). Most of these are in relatively good condition with long life expectancies. The *Eucalyptus cladocalyx* (Tree EP013) would be the most visually significant loss due to its prominence in the landscape – in its central location it can be viewed from the reserve, from Toorak Road and from Osborne Street.

Most of the 51 trees within the reserve are Australian native species. Twelve trees are exotic species, mostly *Schinus areira*.

Depending on construction methods, some trees in the reserve may be retained to provide amenity and visual screening.



Figure 7-7 The mature *Eucalyptus cladocalyx* (Tree EP013) in South Yarra Siding Reserve



Figure 7-8 More recent plantings of native trees along the southern edge of the South Yarra Siding Reserve



Figure 7-9 The mature *Phoenix canariensis* near the northern end of the South Yarra Siding Reserve



Figure 7-10 View toward the south-western corner of South Yarra Siding Reserve

Southern Rail Corridor

Trees growing along the embankments of the rail corridors are predominantly self-sown. Along the southern rail corridor are two *Schinus areira*, five *Eucalyptus* spp., a *Fraxinus* sp. and areas of *Ailanthus altissima*, an environmental weed species. A tree near the Arthur Street pedestrian overpass is structurally poor and poses a safety risk due to hazards within the trees: Tree EP209 (*Eucalyptus robusta*) has dieback and decay present. Trees such as this have short ULEs regardless of potential changes in their environments, and require removal in the near future. Only two trees in this section have ULEs greater than 10 years. The remaining trees all have ULEs of less than five years.



Figure 7-11 *Eucalyptus robusta* (tree EP209) adjacent to Arthur Street overpass



Figure 7-12 *Ailanthus altissima* growing along eastern side of the southern rail corridor

Eastern Rail Corridor

Nintey three trees are within the eastern rail corridor. East of William Street there are nine mature native trees, mostly *Eucalyptus botryoides*, and 13 mature *Schinus areira*, three or four of which are likely to be greater than 80 years old. Most of these trees have reasonable ULEs of greater than 10 years, but many require management due to risk to railway lines posed by hazardous limbs. West of William Street are numerous suckers of elms and robinia. In all, 23 trees in this section have ULEs greater than 10 years.



Figure 7-13 Mature *Eucalyptus botryoides* along the eastern rail corridor



Figure 7-14 *Schinus areira* and others along the eastern rail corridor east of William Street



Figure 7-15 Elm and robinia suckers along the eastern rail corridor west of William Street
Davis Avenue surrounds

In the public realm, there are several mature plane trees along Davis Avenue above areas that may require grout injection. In the private realm there are several exotic trees such as box elder and plane trees within private gardens above areas that may require grout injection. As with most trees in urban environments, all of these trees are likely to have 90 per cent or more of their roots in the upper one metre of soil.



Figure 7-16 Street trees along Davis Avenue



Figure 7-17 Trees in private gardens in the vicinity of Davis Avenue

Summary

MLTV trees and ULEs of other trees that may require removal within the public realm in this precinct are indicated in Figure 7-18.

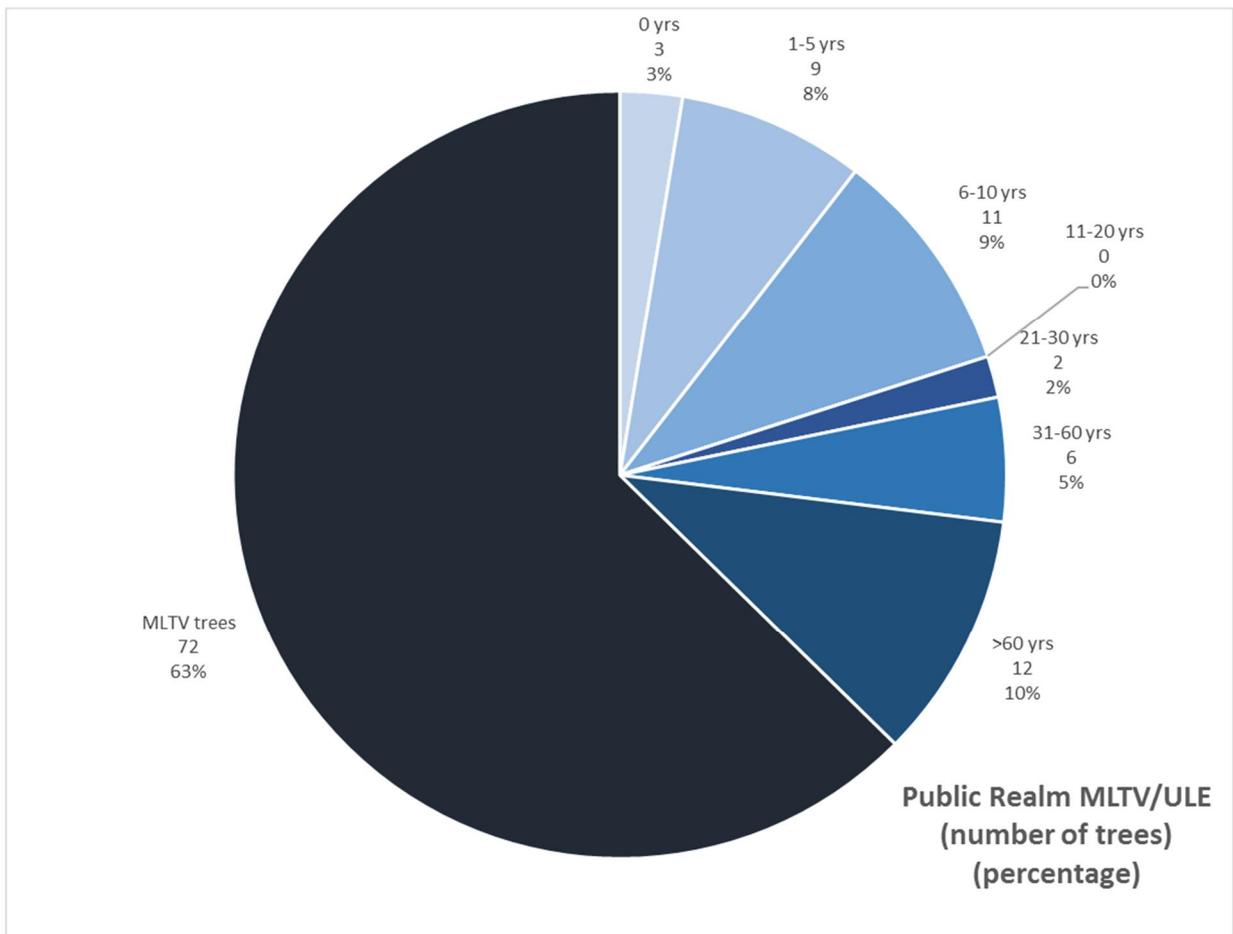


Figure 7-18 Trees that may require removal from the public realm

Full data on assessed trees is included as Appendix A of this report. Tree locations are shown on aerial images included as Appendix B of this report.

7.3 Key Issues

The key issues associated with the Concept Design are tree removal, loss of tree canopy cover and amenity and impacts on adjacent trees' crown and roots.

7.4 Benefits and Opportunities

The following benefits and opportunities are associated with the Concept Design:

- Improving the landscape in South Yarra Siding Reserve and along the reserve east side of Osborne Street
- Improving soil conditions for future landscaping and tree growth by removing waste and rehabilitation of soil in South Yarra Siding Reserve and the Osborne Street Reserve
- Undertaking tree plantings and other landscaping to provide sustainable landscape of long-term value that links with surrounding open space
- Improving the diversity of the tree population in the precinct to maximise its resilience to future threats
- Improving access to South Yarra Siding Reserve to enable enjoyment of the landscape
- Opportunities to improve landscaping along Lovers Walk.

7.5 Impact Assessment

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment (Table 7-2).

Table 7-2 Draft EES evaluation objectives and assessment criteria

Draft EES evaluation objectives	Assessment criteria
Landscape, visual and recreational values: To avoid or minimise adverse effects on landscape, visual amenity and recreational values as far as practicable.	Assess likely extent and duration of visual impacts on broader landscape character values and local amenity.
	Minimise impacts on valued places, including public open space and recreation reserves.

Up to 218 trees across five landscape zones may be removed to facilitate construction works at the eastern portal precinct. This would result in immediate loss of amenity to the neighbourhood and a reduction in canopy cover within the City of Stonnington. Final numbers of trees to be removed are to be determined as subject to detailed design, some of these trees may be able to be retained. The trees are listed in Appendix A of this report.

One hundred and one of the trees have relatively short ULEs (less than 10 years) and may require removal in the near future regardless of changes within their growing environment. Seventy one trees have been planted in the last few decades and their amenity value could be replaced within a relatively short period with suitable replanting. Seventy two MLTV trees are present within the public realm: established trees in good condition, with medium or long ULEs (greater than 10 years) that cannot be replaced within a short period. The most significant of these are a large *Eucalyptus cladocalyx* and a *Phoenix canariensis*, both toward the northern part of South Yarra Siding Reserve. The *Phoenix canariensis* could be transplanted. The *Eucalyptus cladocalyx* is worthy of retention and protection. It may depend on existing groundwater, but other trees are unlikely to rely on groundwater.

Removal of trees identified within the nominated construction footprint would result in loss of amenity to the neighbourhood and a reduction of tree canopy cover within the City of Stonnington. Removal of trees that are already well established in the landscape and have ULEs greater than 10 years would result in the greatest impact to amenity that could not be immediately replaced. There are 72 such trees within the eastern portal precinct (**Risks #AR001 - #AR013**). Benefits provided by the remaining trees could be replaced in the short term with successful replanting.

The impacts may only be temporary if suitable replanting follows construction. Opportunities would exist for replanting street trees along Osborne Street. There are significant opportunities to improve the landscape amenity of both the linear reserve along Osborne Street and the large open space that is South Yarra Siding Reserve, however some permanent loss of open space would occur in the Osborne Street linear reserve due to the TBM retrieval and ventilation shaft (**Risks #AR001 - #AR013**). The landscape quality and tree canopy cover of both these areas could be significantly improved upon. Successful design and replanting should result in no residual loss of either landscape quality or tree canopy cover within 20-30 years, with amenity improvements beginning immediately with landscaping and replanting.

As well as the immediate impact of tree removals to facilitate construction, there would be longer term impacts on the urban forest as juvenile replacement trees grow before re-establishing a high level of amenity to the public realm. The 6-7 year period during construction would have the greatest amenity impact on the urban landscape (**Risks #AR001 - #AR013**). At the conclusion of works, new tree plantings would be undertaken as part of landscaping and detailed urban design.

Appropriate management of replacement tree plantings, especially during the initial two year establishment period, would be necessary to ensure the future amenity of replacement trees can be secured. Contract propagation and nursery establishment should be undertaken to ensure a ready supply of replacement trees that meet accepted standards, such as AS2303:2015 *Tree Stock for Landscape*, can be provided as part of Project delivery.

The period from replanting to reestablishment of a high quality amenity landscape is difficult to quantify and would be dependent upon a number of factors including:

- Species selection
- Rainfall, drought and summer heat events
- Competition from established trees in the vicinity of replacement specimens
- Soil type and use of structured soils
- Provision of irrigation
- Size of planting stock.

As an estimate, it is considered that within 20-30 years following planting, a high quality semi-mature canopy with high amenity impact can be established.

Trees adjacent to the construction area may be affected by work activities:

- Machinery and vehicle movement compacting soil or directly damaging nearby trees
- Construction damage to trees on adjacent properties
- Trenching or boring damaging roots on adjacent properties
- Changes to soil levels affecting trees on adjacent properties
- Installation of temporary aerial services impacting crowns of trees on adjacent properties
- Pruning for clearance impacting crowns of trees on adjacent properties.

Impacts could be avoided or minimised by adhering to a Tree Protection Plan (TPP), which should be developed prior to construction. The TPP would indicate areas to be protected around trees near works - the Tree Protection Zones (TPZs) - and specify all protection measures required throughout the construction stage, such as fencing, mulch, irrigation and prohibited activities within the TPZs, in accordance with AS4970-2009 *Protection of Trees on Development Sites*.

Trees in and around Davis Avenue are unlikely to be affected by any grout injection works. Most roots of these trees are likely to be located in the upper layer of soil, with few roots found below a depth of one metre. Potential grouting works are at greater depths than this and would not significantly affect trees in this area (**Risk #AR013**). It has been assumed that the grouting technique is from within the tunnel, not from the surface.

7.6 Environmental Performance Requirements

The recommended Environmental Performance Requirements and proposed mitigation measures for the precinct Section 8.

8 Environmental Performance Requirements

This section provides a comprehensive list of the recommended Environmental Performance Requirements and proposed mitigation measures identified as a result of this impact assessment. Table 8-1 provides the Environmental Performance Requirements which apply across the project and on a precinct basis, linked to the draft EES evaluation objective.

Table 8-1 Environmental Performance Requirements for this precinct

Draft EES evaluation objective	Impact	Environmental Performance Requirements	Proposed mitigation measure	Precinct	Timing	Risk no,
Landscape, visual and recreational values: To minimise adverse effects on landscape, visual amenity and recreational values as far as practicable.	Removal of trees, notably the removal of 81 MLTV trees.	During detailed design, review potential tree impacts and provide for maximum tree retention where possible. Prior to construction of main works develop and implement a plan in consultation with the relevant local council that identifies all trees in the project area which covers: <ul style="list-style-type: none"> Trees to be removed or retained Condition of the trees to be removed Options for temporary re-location of palms and reinstatement at their former location or another suitable location. 		Eastern portal	Design / Pre construction	AR001 AR004 AR014
		Reinstate quality soils to sufficient volumes to support long-term viable growth of replacement trees.				
		Re-establish trees to replace loss of canopy cover and achieve canopy size equal to (or greater than) healthy, mature examples of the species in Melbourne. Consult with the City of Melbourne, the City of Port Phillip, the City of Stonnington, the Shrine of Remembrance and Shrine Trustees and Heritage Victoria as applicable. Policy documents that must be followed to re-	Development of Tree Replacement Landscape Plan.	Eastern portal	Construction	AR001

Draft EES evaluation objective	Impact	Environmental Performance Requirements	Proposed mitigation measure	Precinct	Timing	Risk no,
		establish trees and valued landscape character include: <ul style="list-style-type: none"> The City of Stonnington's General Local Law 2008 (No 1) and City of Stonnington Street Tree Strategy Any associated precinct plans. 				
	Damage to trees in the vicinity of construction areas.	Prior to construction commencing of main works or shafts in affected areas, prepare and implement Tree Protection Plans for each Precinct in accordance with AS4970-2009 Protection of Trees on Development Sites, addressing the detailed design and construction methodology of the project.	Development of a TPP in accordance with the Precinct Construction Management Plan to ensure low level details are considered. Construction methodology would ensure that: <ul style="list-style-type: none"> Construction footprint and surface disturbance of temporary and permanent works to be minimised Protected areas and no go zones for protected vegetation to be defined and fenced Tree evaluations to be undertaken for the project alignment A tree protection plan would be undertaken to the satisfaction of MMRA A detailed reinstatement and revegetation plan would be prepared to the satisfaction of MMRA. Development of Tree Replacement Landscape Plan. 	Eastern portal	Construction	AR001 AR004 AR005 AR007 AR008 AR009 AR010 AR011 AR012 AR013 AR014

9 Conclusion

This report documents the outcomes of an assessment of the risks to trees in the City of Stonnington from activities associated with construction and operation of the Melbourne Metro.

The focus for the assessment is trees located at discrete locations where works at ground level surfaces would occur, which could be impacts from construction works and the eastern portal resulting in loss or damage to trees. Associated aspects, including terrestrial ecology, groundwater and the heritage value of trees and landscape, are covered in other impacts assessments, in particular:

- Technical Appendix J *Historical Cultural Heritage*
- Technical Appendix L *Landscape and Visual*
- Technical Appendix O *Groundwater*
- Technical Appendix R *Arboriculture*
- Technical Appendix T *Terrestrial Flora and Fauna*.

9.1 Relevant EES Objectives

The following draft EES evaluation objectives and assessment criteria (and indicators where relevant) are relevant to this assessment.

Draft EES evaluation objective	Assessment criteria
Landscape, visual and recreational values: To avoid or minimise adverse effects on landscape, visual amenity and recreational values as far as practicable.	Assess likely extent and duration of residual adverse effects on landscape values and available measures to manage or offset those effects.
	Minimise impacts on valued places, including public open space and recreation reserves.

The project is consistent with the draft EES evaluation objective as the construction methodology of bored tunnels limits potential impacts to well separated, discrete, ground level activities within the Project Boundary, rather than a potential, regional impact. The loss of trees from the public realm can be mitigated against so that canopy cover, where removed, can be re-established, and trees peripheral to construction activities, can be managed and protected to ensure their ongoing viability.

9.2 Risk Assessment Summary

The assessment addresses the specified EES Scoping Requirements and specifically evaluates potential impacts to trees in the City of Stonnington based on the assessment criteria.

A risk assessment process was adopted that identified potential construction and operational hazards, impact pathways, consequences to values (arboriculture) 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.

To inform the risk assessment, an arboricultural impact assessment was undertaken for each tree or tree group within the nominated study area. A ground-based, visual tree assessment (VTA) was undertaken for each tree or tree group. This included size (diameter of trunk at breast height, tree height and width) and condition (health and structure) data, and an estimate for the anticipated useful life expectancy of each tree.

9.3 Impact Assessment Summary

Construction of the Precinct 8: Eastern Portal may require the removal of up to 218 trees from five distinct landscape zones, as identified in Table 9-1. Within the public realm this includes 72 MLTV trees. However subject to detailed design, some of these trees may be able to be retained.

Table 9-2 Trees that may require removal within the construction footprint at the eastern portal, by landscape zone

Zone	Number of trees
Osborne Street	Up to 18 (13 MLTV trees)
Linear reserve, east side of Osborne Street	Up to 46 (23 MLTV trees)
South Yarra Siding Reserve	Up to 51 (36 MLTV trees)
Southern rail corridor	Up to 10
Eastern rail corridor	Up to 93
Total	Up to 218

One hundred and one of the trees have relatively short ULEs (less than 10 years) and may require removal in the near future regardless of changes within their growing environment. Seventy one trees (includes some of those with short ULEs) have been planted in the last few decades and their value could be replaced within a relatively short period with suitable replanting. Up to seventy two MLTV trees within the public realm may be removed. These are established trees in good condition with long ULEs, and cannot be replaced within a short period. The most significant of these are a large *Eucalyptus cladocalyx* and a *Phoenix canariensis*, both toward the northern part of South Yarra Siding Reserve. The *Phoenix canariensis* could be transplanted. The *Eucalyptus cladocalyx* is worthy of retention and protection, if possible. It may depend on existing groundwater, but other trees are unlikely to rely on groundwater.

Loss of trees within the nominated construction footprint would result in loss of amenity to the neighbourhood and a reduction of tree canopy cover within the City of Stonnington. The impacts may only be temporary if suitable replanting follows construction. Opportunities would exist for replanting street trees along Osborne Street. There are significant opportunities to improve the landscape amenity of both the linear reserve along Osborne Street and the large open space that is South Yarra Siding Reserve. The landscape quality and tree canopy cover of both these areas could be significantly improved upon.

Trees on land adjacent to the works may be affected by construction activities. Development of a TPP would avoid or minimise any potential impacts. Tunnelling beneath Toorak Road would not be at a depth that would affect street trees. Mitigation of the impacts of tree removal from the public realm elsewhere within the project boundary would be achieved by re-establishment of tree cover in accordance with City of Stonnington strategy and guidelines.

Potential grouting works in the area of Davis Avenue would not significantly affect trees in either the public or private realms.

References

Barrell, J. (1993) *Pre-planning tree surveys: SULE is the Natural Progression*. *Arboricultural Journal* 17, 33–46.

Department of Environment and Primary Industries (DEPI) (2013) *Permitted clearing of native vegetation: Biodiversity assessment guidelines*.

Standards Australia (2007) AS 4373 Pruning of amenity trees

Standards Australia (2009) AS 4970 Protection of trees on development sites

Standards Australia (2015) AS2303:2015 *Tree Stock for Landscape*

Appendices



Appendix A

Tree Data

Legend

Origin	I	Locally indigenous
	V	Native to Victoria but not locally indigenous
	A	Native to Australia but not to Victoria
	E	Exotic
DBH		Diameter at Breast Height (1.4 metres)
Maturity	I	Immature
	S	Semi-mature
	M	Mature
	O	Overmature
ULE		Useful Life Expectancy in years
Significance		Environmental and landscape significance
RPZ		Root Protection Zone radius in metres
MLTV Public Realm		Medium and Long Term Viability trees within the public realm



Latitude	Longitude	Location	Tree #	Species	Common Name	Origin	Height (m)	Spread N-S (m)	Spread E-W (m)	DBH (cm)	Stem 1	Stem 2	Stem 3	Stem 4	Maturity	Health	Structure	ULU	Significance	Comments	Permit required for removal?	RPZ	MLTV	Public Realm
-37.840960	144.992789	SY Siding Reserve	EP001	<i>Cedrus atlantica</i> 'Glauca'	Blue Atlas Cedar	E	3	3	2	8					I	Good	Good	>60	Low			0.8		
-37.840755	144.992718	SY Siding Reserve	EP002	<i>Fraxinus</i> sp.	Ash	E	8	9	13	42	18	20	20	25	S	Good	Good	21-30	Low		Yes	4.2	MLTV	
-37.840773	144.992623	SY Siding Reserve	EP003	<i>Ficus macrophylla</i>	Moreton Bay Fig	A	9	11	9	39	39				S	Good	Good	>60	Medium			3.9	MLTV	
-37.840773	144.992600	SY Siding Reserve	EP004	<i>Ficus macrophylla</i>	Moreton Bay Fig	A	8	13	11	46	37	27			S	Good	Good	>60	Medium		Yes	4.6	MLTV	
-37.840774	144.992589	SY Siding Reserve	EP005	<i>Ficus macrophylla</i>	Moreton Bay Fig	A	8	10	7	33	33				S	Good	Good	>60	Medium			3.3	MLTV	
-37.840749	144.992436	SY Siding Reserve	EP006	<i>Ficus macrophylla</i>	Moreton Bay Fig	A	3	3	4	12	12				I	Good	Good	>60	Low			1.2		
-37.840595	144.992575	SY Siding Reserve	EP007	<i>Schinus areira</i>	Peppercorn Tree	E	8	9	11	50	40	30			M	Good	Good	>60	Medium		Yes	5.0	MLTV	
-37.840683	144.992214	SY Siding Reserve	EP008	<i>Melia azedarach</i>	White Cedar	A	3	3	3	11	11				I	Good	Good	>60	Medium			1.1		
-37.840639	144.992270	SY Siding Reserve	EP009	<i>Schinus areira</i>	Peppercorn Tree	E	3	2	3	9	9				I	Good	Good	>60	Low			0.9		
-37.840529	144.992214	SY Siding Reserve	EP010	<i>Schinus areira</i>	Peppercorn Tree	E	8	11	12	83	27	33	39	60	M	Good	Good	31-60	Low		Yes	8.3	MLTV	
-37.840047	144.992096	SY Siding Reserve	EP011	<i>Schinus areira</i>	Peppercorn Tree	E	6	9	9	40	33	23			S	Good	Good	>60	Medium	some trunk damage	Yes	4.0	MLTV	
-37.840033	144.992061	SY Siding Reserve	EP012	<i>Schinus areira</i>	Peppercorn Tree	E	6	7	6	22	22				S	Good	Good	>60	Medium	some trunk damage		2.2	MLTV	
-37.840019	144.992025	SY Siding Reserve	EP013	<i>Eucalyptus cladocalyx</i>	Sugar Gum	A	18	25	25	116	116				M	Good	Good	31-60	High	some wounds	Yes	11.6	MLTV	
-37.839418	144.992096	SY Siding Reserve	EP014	<i>Phoenix canariensis</i>	Canary Islands Date Palm	E	11	7	7	61	61				M	Good	Good	31-60	High	This palm could be transplanted	Yes	6.1	MLTV	
-37.839599	144.992096	SY Siding Reserve	EP015	<i>Corymbia maculata</i>	Spotted Gum	V	10	4	4	18	18				S	Good	Good	31-60	Medium			1.8	MLTV	
-37.839613	144.992096	SY Siding Reserve	EP016	<i>Corymbia maculata</i>	Spotted Gum	V	15	11	13	58	58				M	Good	Good	31-60	Medium	stem wound	Yes	5.8	MLTV	
-37.839641	144.992025	SY Siding Reserve	EP017	<i>Corymbia citriodora</i>	Lemon-scented Gum	A	9	5	6	18	18				S	Fair	Good	21-30	Low	stem wound		1.8	MLTV	
-37.839683	144.992025	SY Siding Reserve	EP018	<i>Corymbia citriodora</i>	Lemon-scented Gum	A	11	7	9	30	30				S	Fair	Fair	21-30	Medium	stem wound		3.0	MLTV	
-37.839739	144.991990	SY Siding Reserve	EP019	<i>Corymbia maculata</i>	Spotted Gum	V	5	4	3	13	8	10			I	Fair	Fair	21-30	Medium			1.3		
-37.839963	144.991990	SY Siding Reserve	EP020	<i>Corymbia citriodora</i>	Lemon-scented Gum	A	7	5	6	20	20				S	Fair	Fair	21-30	Low			2.0	MLTV	
-37.839991	144.991884	SY Siding Reserve	EP021	<i>Acacia pycnantha</i>	Golden Wattle	V	5	6	5	20	20				M	Fair	Fair	6-10	Low			2.0		
-37.840005	144.991884	SY Siding Reserve	EP022	<i>Acacia pycnantha</i>	Golden Wattle	V	5	4	4	11	11				M	Poor	Poor	1-5	Low			1.1		
-37.840033	144.991884	SY Siding Reserve	EP023	<i>Acacia pycnantha</i>	Golden Wattle	V	4	3	5	19	19				M	Fair	Fair	6-10	Low			1.9		
-37.840061	144.991884	SY Siding Reserve	EP024	<i>Acacia pycnantha</i>	Golden Wattle	V	6	4	5	16	16				M	Fair	Fair	6-10	Low			1.6		
-37.840089	144.991884	SY Siding Reserve	EP025	<i>Acacia pycnantha</i>	Golden Wattle	V	7	6	7	19	19				M	Poor	Fair	1-5	Low			1.9		
-37.840103	144.991848	SY Siding Reserve	EP026	<i>Schinus areira</i>	Peppercorn Tree	E	6	9	8	35	35				S	Fair	Fair	21-30	Medium			3.5	MLTV	
-37.840368	144.991884	SY Siding Reserve	EP027	<i>Eucalyptus leucoxylon</i>	Yellow Gum	V	7	6	7	23	18	14			S	Good	Fair	21-30	Low			2.3	MLTV	
-37.840396	144.991884	SY Siding Reserve	EP028	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	5	4	3	11	11				S	Good	Good	>60	Low			1.1	MLTV	
-37.840424	144.991848	SY Siding Reserve	EP029	<i>Schinus areira</i>	Peppercorn Tree	E	7	17	14	100	100				M	Good	Poor	6-10	Hazard	hollow in stem, splitting branches	Yes	10.0		
-37.840760	144.991848	SY Siding Reserve	EP030	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	7	5	5	25	25				S	Good	Fair	>60	Medium			2.5	MLTV	
-37.840844	144.991813	SY Siding Reserve	EP031	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	5	8	47	47				S	Fair	Fair	>60	Medium	borer	Yes	4.7	MLTV	
-37.840914	144.991848	SY Siding Reserve	EP032	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	6	8	42	42				S	Good	Poor	6-10	Medium	stem wound		4.2		
-37.840921	144.991895	SY Siding Reserve	EP033	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	6	6	31	31				S	Good	Fair	>60	Medium			3.1	MLTV	
-37.840900	144.991954	SY Siding Reserve	EP034	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	8	7	39	39				S	Good	Fair	>60	Medium			3.9	MLTV	
-37.840927	144.991990	SY Siding Reserve	EP035	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	8	6	7	29	29				S	Good	Fair	>60	Medium			2.9	MLTV	
-37.840914	144.992061	SY Siding Reserve	EP036	<i>Angophora costata</i>	Smooth-barked Apple	A	6	6	5	21	21				S	Good	Good	>60	Medium			2.1	MLTV	
-37.840927	144.992096	SY Siding Reserve	EP037	<i>Eucalyptus melliodora</i>	Yellow Box	I	8	5	7	28	28				S	Good	Good	>60	Medium			2.8	MLTV	
-37.840927	144.992167	SY Siding Reserve	EP038	<i>Angophora costata</i>	Smooth-barked Apple	A	6	5	5	19	19				S	Good	Good	>60	Medium			1.9	MLTV	
-37.840970	144.992173	SY Siding Reserve	EP039	<i>Eucalyptus melliodora</i>	Yellow Box	I	9	8	10	28	28				S	Good	Good	>60	Medium			2.8	MLTV	
-37.840953	144.992216	SY Siding Reserve	EP040	<i>Eucalyptus melliodora</i>	Yellow Box	I	4	2	2	8	6	5			I	Good	Good	>60	Low			0.8		
-37.840970	144.992301	SY Siding Reserve	EP041	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	8	8	7	45	45				S	Good	Good	>60	Medium		Yes	4.5	MLTV	
-37.840987	144.992409	SY Siding Reserve	EP042	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	8	5	5	31	31				S	Good	Fair	31-60	Medium			3.1	MLTV	
-37.840953	144.992452	SY Siding Reserve	EP043	<i>Ficus</i> sp.	Fig	A	4	8	7	25	25				S	Good	Good	>60	Medium			2.5	MLTV	
-37.840987	144.992495	SY Siding Reserve	EP044	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	6	6	32	32				S	Good	Good	>60	Medium			3.2	MLTV	
-37.841021	144.992580	SY Siding Reserve	EP045	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	6	6	32	32				S	Good	Good	>60	Medium			3.2	MLTV	
-37.841021	144.992623	SY Siding Reserve	EP046	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	7	8	28	28				S	Good	Fair	>60	Medium			2.8	MLTV	
-37.841021	144.992666	SY Siding Reserve	EP047	<i>Eucalyptus sideroxylon</i>	Red Ironbark	V	9	7	6	36	36				S	Good	Good	>60	Medium			3.6	MLTV	
-37.840987	144.992645	SY Siding Reserve	EP048	<i>Pittosporum</i> sp.	Pittosporum	E	5	2	2	6	6				S	Good	Good	6-10	Low			0.6		
-37.841038	144.992752	SY Siding Reserve	EP049	<i>Acacia implexa</i>	Lightwood	I	4	3	3	9	9				I	Fair	Fair	21-30	Low			0.9		
-37.841021	144.992795	SY Siding Reserve	EP050	<i>Brachychiton acerifolius</i>	Illawarra Flame Tree	A	6	4	4	22	22				S	Good	Good	>60	Medium			2.2	MLTV	
-37.841021	144.992859	SY Siding Reserve	EP051	<i>Pyrus calleryana</i>	Callery Pear	E	7	3	3	16	16				S	Good	Fair	31-60	Medium			1.6	MLTV	
-37.841123	144.991164	Osborne Street	EP052	<i>Pyrus calleryana</i>	Callery Pear	E	4	1	0.5	3	3				I	Good	Fair	31-60	Low			0.3		
-37.841004	144.991186	Osborne Street	EP053	<i>Pyrus calleryana</i>	Callery Pear	E	7	6	6	24	24				M	Good	Fair	31-60	Medium			2.4	MLTV	
-37.840699	144.991250	Osborne Street	EP054	<i>Pyrus calleryana</i>	Callery Pear	E	7	10	9	26	26				M	Good	Fair	31-60	Medium			2.6	MLTV	
-37.840580	144.991271	Osborne Street	EP055	<i>Pyrus calleryana</i>	Callery Pear	E	5	5	3	17	17				M	Poor	Fair	1-5	Medium			1.7		

Latitude	Longitude	Location	Tree #	Species	Common Name	Origin	Height (m)	Spread N-S (m)	Spread E-W (m)	DBH (cm)	Stem 1	Stem 2	Stem 3	Stem 4	Maturity	Health	Structure	ULE	Significance	Comments	Permit required for removal?	RPZ	MLTV	Public Realm
-37.840479	144.991293	Osborne Street	EP056	<i>Pyrus calleryana</i>	Callery Pear	E	8	9	7	33	33				M	Good	Fair	31-60	Medium			3.3	MLTV	
-37.840292	144.991336	Osborne Street	EP057	<i>Pyrus calleryana</i> 'Capital'	Callery Pear 'Capital'	E	6	2	2	11	11				M	Good	Fair	31-60	Medium			1.1	MLTV	
-37.840225	144.991357	Osborne Street	EP058	<i>Pyrus calleryana</i>	Callery Pear	E	8	9	10	28	28				M	Good	Fair	31-60	Medium			2.8	MLTV	
-37.840140	144.991379	Osborne Street	EP059	<i>Pyrus calleryana</i>	Callery Pear	E	7	8	6	26	26				M	Good	Fair	31-60	Medium			2.6	MLTV	
-37.840055	144.991379	Osborne Street	EP060	<i>Pyrus calleryana</i>	Callery Pear	E	7	9	7	24	24				M	Good	Fair	31-60	Medium			2.4	MLTV	
-37.839953	144.991400	Osborne Street	EP061	<i>Pyrus calleryana</i>	Callery Pear	E	6	7	6	22	22				M	Good	Fair	31-60	Medium			2.2	MLTV	
-37.839869	144.991422	Osborne Street	EP062	<i>Pyrus calleryana</i>	Callery Pear	E	7	6	8	21	21				M	Good	Fair	31-60	Medium			2.1	MLTV	
-37.839767	144.991443	Osborne Street	EP063	<i>Pyrus calleryana</i>	Callery Pear	E	7	7	7	24	24				M	Good	Fair	31-60	Medium			2.4	MLTV	
-37.839682	144.991465	Osborne Street	EP064	<i>Pyrus calleryana</i>	Callery Pear	E	7	7	6	2	2				I	Good	Fair	31-60	Low			0.2		
-37.839615	144.991465	Osborne Street	EP065	<i>Pyrus calleryana</i>	Callery Pear	E	7	5	5	19	19				M	Good	Fair	31-60	Medium			1.9	MLTV	
-37.839496	144.991529	Osborne Street	EP066	<i>Pyrus calleryana</i>	Callery Pear	E	6	8	6	26	26				M	Good	Fair	31-60	Medium			2.6	MLTV	
-37.839564	144.991550	Osborne Street	EP067	<i>Platanus orientalis</i> 'Digitata'	Cyprian Plane	E	8	7	6	22	22				S	Good	Good	>60	Medium			2.2	MLTV	
-37.839547	144.991615	Osborne Street	EP068	<i>Acer negundo</i>	Box Elder	E	6	3	4	15	15				S	Fair	Poor	1-5	Medium	stem damage		1.5		
-37.839648	144.991572	Osborne Street	EP069	<i>Fraxinus angustifolia</i> 'Raywood'	Claret Ash	E	8	8	9	26	26				M	Good	Fair	6-10	Medium			2.6		
-37.839547	144.991765	Osborne St Reserve	EP070	<i>Eucalyptus globulus</i> ssp. <i>globulus</i>	Blue Gum	V	15	8	13	96	96				M	Fair	Poor	1-5	Hazard	wound with fungal decay	Yes	9.6		
-37.839581	144.991765	Osborne St Reserve	EP071	<i>Eucalyptus globulus</i> ssp. <i>globulus</i>	Blue Gum	V	8	10	10	50	50				M	Fair	Poor	1-5	Medium		Yes	5.0		
-37.839615	144.991765	Osborne St Reserve	EP072	<i>Eucalyptus mannifera</i>	Red Spotted Gum	V	12	8	13	45	45				M	Good	Good	>60	Medium		Yes	4.5	MLTV	
-37.839665	144.991636	Osborne St Reserve	EP073	<i>Angophora costata</i>	Smooth-barked Apple	A	5	2	2	8	8				I	Good	Good	>60	Low			0.8		
-37.839767	144.991636	Osborne St Reserve	EP074	<i>Angophora costata</i>	Smooth-barked Apple	A	5	4	3	18	18				I	Good	Good	>60	Low			1.8		
-37.839852	144.991615	Osborne St Reserve	EP075	<i>Angophora costata</i>	Smooth-barked Apple	A	4	1	1	7	7				I	Good	Good	>60	Low			0.7		
-37.839937	144.991593	Osborne St Reserve	EP076	<i>Angophora costata</i>	Smooth-barked Apple	A	5	3	3	14	14				I	Good	Good	>60	Low			1.4		
-37.840021	144.991572	Osborne St Reserve	EP077	<i>Angophora costata</i>	Smooth-barked Apple	A	3	1	1	4	4				I	Good	Good	>60	Low			0.4		
-37.840106	144.991550	Osborne St Reserve	EP078	<i>Angophora costata</i>	Smooth-barked Apple	A	4	2	1	9	9				I	Good	Good	>60	Low			0.9		
-37.839784	144.991701	Osborne St Reserve	EP079	<i>Eucalyptus robusta</i>	Swamp Mahogany	A	7	3	5	21	15	14			S	Fair	Fair	6-10	Medium			2.1		
-37.839818	144.991701	Osborne St Reserve	EP080	<i>Eucalyptus mannifera</i>	Red Spotted Gum	V	14	14	16	66	66				M	Good	Poor	0	Hazard	decay in main fork, dw	Yes	6.6		
-37.840176	144.991632	Osborne St Reserve	EP081	<i>Eucalyptus globulus</i> ssp. <i>bicostata</i>	Eurabbie	V	12	8	12	42	42				M	Good	Fair	21-30	Medium			4.2	MLTV	
-37.840176	144.991565	Osborne St Reserve	EP082	<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	A	8	7	6	31	31				M	Good	Fair	21-30	Medium			3.1	MLTV	
-37.840194	144.991565	Osborne St Reserve	EP083	<i>Eucalyptus globulus</i> ssp. <i>globulus</i>	Blue Gum	V	13	10	5	37	37				M	Fair	Poor	1-5	Medium	stem damage		3.7		
-37.840211	144.991610	Osborne St Reserve	EP084	<i>Eucalyptus globulus</i> ssp. <i>globulus</i>	Blue Gum	V	14	11	8	55	55				M	Good	Fair	6-10	Medium	leans over rail lines	Yes	5.5		
-37.840211	144.991565	Osborne St Reserve	EP085	<i>Eucalyptus</i> sp.	Eucalypt	A	4	0.5	0.5	17	17				S	Poor	Poor	0	Hazard	broken stem		1.7		
-37.840229	144.991587	Osborne St Reserve	EP086	<i>Eucalyptus globulus</i> ssp. <i>globulus</i>	Blue Gum	V	14	7	7	39	39				M	Poor	Fair	6-10	Medium	in decline		3.9		
-37.840352	144.991576	Osborne St Reserve	EP087	<i>Eucalyptus stellulata</i>	Black Sallee	V	8	7	7	21	21				M	Fair	Fair	11-20	Medium			2.1	MLTV	
-37.840368	144.991596	Osborne St Reserve	EP088	<i>Eucalyptus stellulata</i>	Black Sallee	V	8	5	5	20	20				M	Fair	Fair	11-20	Medium			2.0	MLTV	
-37.840360	144.991572	Osborne St Reserve	EP089	<i>Eucalyptus stellulata</i>	Black Sallee	V	8	7	7	26	26				M	Fair	Fair	11-20	Medium			2.6	MLTV	
-37.840385	144.991577	Osborne St Reserve	EP090	<i>Grevillea robusta</i>	Silky Oak	A	9	5	5	26	26				S	Fair	Fair	31-60	Low			2.6	MLTV	
-37.840403	144.991577	Osborne St Reserve	EP091	<i>Grevillea robusta</i>	Silky Oak	A	12	11	11	40	40				M	Fair	Fair	31-60	Medium			4.0	MLTV	
-37.840393	144.991520	Osborne St Reserve	EP092	<i>Angophora costata</i>	Smooth-barked Apple	A	4	2	2	10	10				I	Good	Fair	31-60	Low			1.0		
-37.840428	144.991572	Osborne St Reserve	EP093	<i>Eucalyptus robusta</i>	Swamp Mahogany	A	7	4	3	27	27				S	Poor	Fair	1-5	Medium			2.7		
-37.840520	144.991560	Osborne St Reserve	EP094	<i>Acacia floribunda</i>	Gossamer Wattle	V	7	5	6	20	20				M	Good	Fair	0	Weed			2.0		
-37.840600	144.991540	Osborne St Reserve	EP095	<i>Eucalyptus mannifera</i>	Red Spotted Gum	V	12	12	14	59	59				M	Good	Good	>60	Medium		Yes	5.9	MLTV	
-37.840663	144.991459	Osborne St Reserve	EP096	<i>Angophora costata</i>	Smooth-barked Apple	A	4	2	2	7	7				I	Good	Good	>60	Low			0.7		
-37.840735	144.991502	Osborne St Reserve	EP097	<i>Eucalyptus</i> sp.	Eucalypt	A	12	10	11	41	41				M	Fair	Fair	21-30	Medium	wounds		4.1	MLTV	
-37.840760	144.991502	Osborne St Reserve	EP098	<i>Eucalyptus stellulata</i>	Black Sallee	V	5	4	6	12	12				M	Fair	Fair	11-20	Low			1.2	MLTV	
-37.840787	144.991485	Osborne St Reserve	EP099	<i>Grevillea robusta</i>	Silky Oak	A	12	12	10	45	45				M	Fair	Poor	6-10	Medium	bifurcated	Yes	4.5		
-37.840847	144.991461	Osborne St Reserve	EP100	<i>Melaleuca linariifolia</i>	Snow-in-Summer	A	3	3	4	17	17				M	Good	Fair	31-60	Low			1.7	MLTV	
-37.840877	144.991455	Osborne St Reserve	EP101	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	A	6	5	5	26	26				M	Good	Fair	21-30	Medium			2.6	MLTV	
-37.840898	144.991450	Osborne St Reserve	EP102	<i>Eucalyptus robusta</i>	Swamp Mahogany	A	13	11	12	59	59				M	Fair	Fair	11-20	Medium		Yes	5.9	MLTV	
-37.840933	144.991443	Osborne St Reserve	EP103	<i>Eucalyptus stellulata</i>	Black Sallee	V	7	5	4	16	16				M	Fair	Fair	11-20	Medium			1.6	MLTV	
-37.840878	144.991400	Osborne St Reserve	EP104	<i>Angophora costata</i>	Smooth-barked Apple	A	5	3	3	9	9				I	Fair	Good	31-60	Low			0.9		
-37.840978	144.991375	Osborne St Reserve	EP105	<i>Angophora costata</i>	Smooth-barked Apple	A	3	1	1	4	4				I	Good	Good	31-60	Low			0.4		
-37.840997	144.991425	Osborne St Reserve	EP106	<i>Eucalyptus mannifera</i>	Red Spotted Gum	V	10	8	9	38	38				M	Good	Good	31-60	Medium			3.8	MLTV	
-37.841034	144.991417	Osborne St Reserve	EP107	<i>Eucalyptus stellulata</i>	Black Sallee	V	13	7	10	39	39				M	Fair	Poor	1-5	Medium	narrow forks		3.9		
-37.841072	144.991400	Osborne St Reserve	EP108	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	A	5	6	6	30	30				M	Good	Fair	21-30	Medium			3.0	MLTV	
-37.841123	144.991400	Osborne St Reserve	EP109	<i>Grevillea robusta</i>	Silky Oak	A	13	9	9	41	41				M	Fair	Fair	21-30	Medium			4.1	MLTV	
-37.841157	144.991379	Osborne St Reserve	EP110	<i>Eucalyptus</i> sp.	Eucalypt	A	8	10	12	29	29				M	Fair	Fair	21-30	Medium			2.9	MLTV	

Latitude	Longitude	Location	Tree #	Species	Common Name	Origin	Height (m)	Spread N-S (m)	Spread E-W (m)	DBH (cm)	Stem 1	Stem 2	Stem 3	Stem 4	Maturity	Health	Structure	ULE	Significance	Comments	Permit required for removal?	RPZ	MLTV Public Realm	
-37.841173	144.991387	Osborne St Reserve	EP111	<i>Eucalyptus</i> sp.	Eucalypt	A	12	8	12	32	32				M Good	Good	31-60	Medium				3.2	MLTV	
-37.841250	144.991421	Osborne St Reserve	EP112	<i>Grevillea robusta</i>	Silky Oak	A	13	9	10	48	48				M Fair	Fair	21-30	Medium			Yes	4.8	MLTV	
-37.841294	144.991393	Osborne St Reserve	EP113	<i>Eucalyptus robusta</i>	Swamp Mahogany	A	6	9	9	42	42				M Good	Fair	21-30	Medium					4.2	MLTV
-37.841206	144.991338	Osborne St Reserve	EP114	<i>Angophora costata</i>	Smooth-barked Apple	A	3	1	1	6	6				I Good	Good	31-60	Low					0.6	
-37.841263	144.991321	Osborne St Reserve	EP115	<i>Melaleuca linariifolia</i>	Snow-in-Summer	A	3	5	3	22	22				M Good	Fair	21-30	Medium					2.2	MLTV
-37.840731	144.993129	Eastern rail corridor	EP116	<i>Eucalyptus botryoides</i>	Southern Mahogany	V	18	13		75	75				M Good	Fair	21-30	Medium			Yes		7.5	
-37.840819	144.993261	Eastern rail corridor	EP117	<i>Eucalyptus botryoides</i>	Southern Mahogany	V	12	11		30	30				S Fair	Fair	6-10	Medium					3.0	
-37.840854	144.993306	Eastern rail corridor	EP118	<i>Eucalyptus botryoides</i>	Southern Mahogany	V	14	16		50	50				M Good	Fair	21-30	Medium			Yes		5.0	
-37.840906	144.993350	Eastern rail corridor	EP119	<i>Schinus areira</i>	Peppercorn Tree	E	9	10		45	45				M Fair	Fair	31-60	Medium			Yes		4.5	
-37.840959	144.993438	Eastern rail corridor	EP120	<i>Schinus areira</i>	Peppercorn Tree	E	10	12		60	60				M Fair	Fair	31-60	Medium			Yes		6.0	
-37.840993	144.993505	Eastern rail corridor	EP121	<i>Grevillea robusta</i>	Silky Oak	A	13	12		30	30				M Fair	Fair	21-30	Medium					3.0	
-37.841063	144.993593	Eastern rail corridor	EP122	<i>Fraxinus angustifolia</i> ssp. <i>angustifolia</i>	Desert Ash	E	7	7		20	20				S Fair	Fair	0	Weed					2.0	
-37.841133	144.993726	Eastern rail corridor	EP123	<i>Schinus areira</i>	Peppercorn Tree	E	8	12		50	50				M Fair	Fair	31-60	Medium			Yes		5.0	
-37.841168	144.993770	Eastern rail corridor	EP124	<i>Schinus areira</i>	Peppercorn Tree	E	7	10		40	40				M Fair	Fair	31-60	Medium					4.0	
-37.841186	144.993837	Eastern rail corridor	EP125	<i>Schinus areira</i>	Peppercorn Tree	E	7	10		60	60				M Fair	Fair	31-60	Medium			Yes		6.0	
-37.841203	144.993903	Eastern rail corridor	EP126	<i>Eucalyptus botryoides</i>	Southern Mahogany	V	14	13		60	60				M Fair	Good	31-60	Medium			Yes		6.0	
-37.841221	144.993925	Eastern rail corridor	EP127	<i>Schinus areira</i>	Peppercorn Tree	E	7	10		40	40				M Fair	Fair	31-60	Medium					4.0	
-37.841247	144.993965	Eastern rail corridor	EP128	<i>Schinus areira</i>	Peppercorn Tree	E	5	7		20	20				M Fair	Fair	31-60	Medium					2.0	
-37.841282	144.994084	Eastern rail corridor	EP129	<i>Schinus areira</i>	Peppercorn Tree	E	10	14		100	100				M Fair	Fair	21-30	High			Yes		10.0	
-37.841328	144.994230	Eastern rail corridor	EP130	<i>Eucalyptus botryoides</i>	Southern Mahogany	V	15	14		70	70				M Fair	Fair	31-60	Medium			Yes		7.0	
-37.841363	144.994317	Eastern rail corridor	EP131	<i>Eucalyptus botryoides</i>	Southern Mahogany	V	18	14		70	70				M Fair	Fair	31-60	Medium			Yes		7.0	
-37.841397	144.994405	Eastern rail corridor	EP132	<i>Eucalyptus botryoides</i>	Southern Mahogany	V	17	13		60	60				M Fair	Fair	31-60	Medium			Yes		6.0	
-37.841489	144.994637	Eastern rail corridor	EP133	<i>Schinus areira</i>	Peppercorn Tree	E	10	15		80	80				M Fair	Fair	31-60	High			Yes		8.0	
-37.841685	144.994463	Eastern rail corridor	EP134	<i>Schinus areira</i>	Peppercorn Tree	E	8	14		80	80				M Fair	Fair	31-60	Medium			Yes		8.0	
-37.841662	144.994375	Eastern rail corridor	EP135	<i>Eucalyptus spathulata</i>	Swamp Mallet	A	6	10		25	25				M Fair	Poor	1-5	Medium					2.5	
-37.841647	144.994297	Eastern rail corridor	EP136	<i>Eucalyptus spathulata</i>	Swamp Mallet	A	7	10		40	40				M Fair	Poor	1-5	Medium					4.0	
-37.841498	144.993785	Eastern rail corridor	EP137	<i>Schinus areira</i>	Peppercorn Tree	E	7	12		40	40				M Good	Good	31-60	Medium					4.0	
-37.841479	144.993660	Eastern rail corridor	EP138	<i>Eucalyptus</i> sp.	Eucalypt	A	9	8		20	20				S Good	Fair	21-30	Low					2.0	
-37.841400	144.993660	Eastern rail corridor	EP139	<i>Eucalyptus</i> sp.	Eucalypt	A	9	8		25	25				S Good	Good	21-30	Low					2.5	
-37.841104	144.993135	Eastern rail corridor	EP140	<i>Schinus areira</i>	Peppercorn Tree	E	9	9		30	30				M Good	Fair	31-60	Medium					3.0	
-37.841044	144.993035	Eastern rail corridor	EP141	<i>Schinus areira</i>	Peppercorn Tree	E	9	15		70	70				M Good	Fair	31-60	Medium			Yes		7.0	
-37.840464	144.992897	Eastern rail corridor	EP142	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Poor	0	Low					2.5	
		Eastern rail corridor	EP143	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Poor	0	Low					2.5	
		Eastern rail corridor	EP144	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Poor	0	Low					2.5	
		Eastern rail corridor	EP145	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Poor	0	Low					2.5	
		Eastern rail corridor	EP146	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Poor	0	Low					2.5	
		Eastern rail corridor	EP147	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Poor	0	Low					2.5	
-37.840377	144.992816	Eastern rail corridor	EP148	<i>Robinia</i> sp.	Locust suckers	E	7	7		30	30				S Good	Fair	0	Low					3.0	
		Eastern rail corridor	EP149	<i>Robinia</i> sp.	Locust suckers	E	7	7		30	30				S Good	Fair	0	Low					3.0	
		Eastern rail corridor	EP150	<i>Robinia</i> sp.	Locust suckers	E	7	7		30	30				S Good	Fair	0	Low					3.0	
		Eastern rail corridor	EP151	<i>Robinia</i> sp.	Locust suckers	E	7	7		30	30				S Good	Fair	0	Low					3.0	
-37.840275	144.992774	Eastern rail corridor	EP152	<i>Schinus areira</i>	Peppercorn Tree	E	7	14		75	40	40	50		M Good	Fair	31-60	Medium			Yes		7.5	
-37.840106	144.992666	Eastern rail corridor	EP153	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP154	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP155	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP156	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP157	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP158	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP159	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP160	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP161	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
		Eastern rail corridor	EP162	<i>Ulmus</i> sp.	Elm suckers	E	7	7		25	25				S Fair	Fair	0	Low					2.5	
-37.839872	144.992533	Eastern rail corridor	EP163	<i>Robinia</i> sp.	Locust suckers	E	7	7		30	30				S Fair	Fair	0	Low					3.0	
		Eastern rail corridor	EP164	<i>Robinia</i> sp.	Locust suckers	E	7	7		30	30				S Fair	Fair	0	Low					3.0	
		Eastern rail corridor	EP165	<i>Robinia</i> sp.	Locust suckers	E	7	7		30	30				S Fair	Fair	0	Low					3.0	

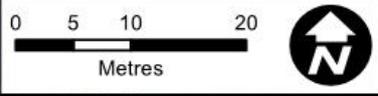
Latitude	Longitude	Location	Tree #	Species	Common Name	Origin	Height (m)	Spread N-S (m)	Spread E-W (m)	DBH (cm)	Stem 1	Stem 2	Stem 3	Stem 4	Maturity	Health	Structure	ULE	Significance	Comments	Permit required for removal?	RPZ	MLTV Public Realm
		Eastern rail corridor	EP166	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP167	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP168	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP169	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP170	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP171	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP172	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP173	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP174	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP175	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP176	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP177	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP178	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP179	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP180	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP181	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP182	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP183	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP184	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP185	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP186	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP187	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP188	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP189	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP190	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP191	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP192	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP193	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP194	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP195	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP196	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP197	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP198	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP199	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP200	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP201	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP202	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP203	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP204	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP205	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP206	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP207	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
		Eastern rail corridor	EP208	<i>Robinia sp.</i>	Locust suckers	E	7	7	30	30					S	Fair	Fair	0	Low			3.0	
-37.841361	144.991607	Southern rail corridor	EP209	<i>Eucalyptus robusta</i>	Swamp Mahogany	A	12	14	70	70					M	Poor	Poor	0	Hazard	dieback decay	Yes	7.0	
-37.841561	144.991374	Southern rail corridor	EP210	<i>Schinus areira</i>	Peppercorn Tree	E	10	14	60	60					M	Good	Fair	31-60	Medium		Yes	6.0	
-37.840944	144.991691	Southern rail corridor	EP211	<i>Eucalyptus mannifera</i>	Red Spotted Gum	V	10	8	42	30	30				M	Good	Fair	31-60	Medium		Yes	4.2	
-37.840911	144.991522	Southern rail corridor	EP212	<i>Eucalyptus sp.</i>	Eucalypt	A	6	5	10	10					S	Good	Fair	1-5	Low	will grow on lean over rail, hazard		1.0	
-37.840877	144.991522	Southern rail corridor	EP213	<i>Eucalyptus sp.</i>	Eucalypt	A	6	5	10	10					S	Good	Fair	1-5	Low			1.0	
-37.840510	144.991776	Southern rail corridor	EP214	<i>Schinus areira</i>	Peppercorn Tree	E	10	15	100	100					M	Fair	Fair	1-5	High	down near rail, leaning up bank	Yes	10.0	
-37.840294	144.991628	Southern rail corridor	EP215	<i>Eucalyptus globulus ssp. globulus</i>	Blue Gum	V	10	8	20	20					S	Good	Good	1-5	Hazard	close to rails, hazard		2.0	
-37.839217	144.991908	Southern rail corridor	EP216	<i>Fraxinus angustifolia ssp. angustifolia</i>	Desert Ash	E	10	8	30	30					M	Good	Fair	1-5	Low	near toorak rd		3.0	
-37.841030	144.991660	Southern rail corridor	EP217	<i>Ailanthus altissima</i>	Tree of Heaven	E	10	5	20	20					S			0	Weed	approximately 50 trees		2.0	
-37.840290	144.991830	Southern rail corridor	EP218	<i>Acacia spp.</i>	Wattles	A	5	4	20	20					M			0	Weed	approximately 40 trees		2.0	

Appendix B

Tree Locations







- EP208
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