



16 Landscape and Visual

16.1 Overview

This chapter provides an assessment of the landscape and visual impacts associated with the construction and operation of Melbourne Metro. The chapter is based on the impact assessments presented in Technical Appendix L *Landscape and Visual* and Technical Appendices R and S *Arboriculture*. All relevant references are provided in the technical appendices.

As noted throughout the EES, Melbourne Metro is to be developed within a highly urbanised landscape, most of which continues to be subject to significant changes and development. Once Melbourne Metro is operational, project elements would be visible at various locations, although the extent of these structures would be minimal compared to the overall footprint of the project.

While the majority of the Melbourne Metro alignment and works would be located underground, some locations within close proximity to above ground construction sites and activities would experience high level landscape and visual impacts during the project's construction phase. These temporary impacts would mainly be the result of overlooking construction work sites from elevated viewpoints or where views and sightlines would be obstructed by construction work sites, construction activities and the loss of canopy and screening trees.

Measures such as hoardings and sheds to screen construction activities would assist in reducing visual impacts at ground level. Views from sensitive elevated locations would be more difficult to screen. Elevated locations within proximity to the project are Verve Apartments (Precinct 5), the Westin Hotel at City Square (Precinct 6) and the Shrine of Remembrance Forecourt, Hallmark Apartments and Domain Towers (all in Precinct 7). The area of the construction work site and operational components visible from elevated locations would decrease progressively with increased elevation.

The primary residential areas of detached housing and medium density apartments in proximity to the project are located at the western and eastern portals, on the edge of the central city. Elevated locations within these areas would be unlikely to overlook the construction work sites. Construction activities would be visible from some locations and could result in impacts. Hoardings and construction sheds would be used to mitigate visual impacts at these locations.

Users of the Swanston Street retail spine of the Melbourne CBD, particularly tourists and visitors, would experience a high visual impact during construction. Views along Swanston Street to St Kilda Road and the Shrine of Remembrance would be blocked temporarily by construction activities.

Trees would need to be removed during Melbourne Metro's construction phase. Tree removal would be minimised to the extent practicable and existing trees retained and protected where possible. However, a significant number of mature (mostly exotic) trees would require removal during construction. This includes trees that make a significant contribution to landscape character and urban amenity, such as along a section of St Kilda Road (adjacent to the site of the Domain station) and Grattan Street (between Royal Parade and Leicester Street).

The recommended Environmental Performance Requirements for the project seek the reinstatement of trees to replace loss of canopy cover and achieve canopy size equal to (or greater than) typical mature examples of the species in Melbourne. A number of the trees requiring removal for Melbourne Metro are nearing the end of their useful life expectancy or in poor condition and would need to be replaced irrespective of the project to achieve this canopy coverage objective.

While the amenity and environmental values of mature trees could not be replaced immediately, these values would be reinstated over the longer term through tree replacement, improved soil and drainage, and well-designed landscaping of public spaces that would enhance green amenity, parklands and streetscapes. Trees and landscape character would be re-established in consultation with the relevant Councils, institutional stakeholders such as the University of Melbourne and other land and open space managers.

There would be potentially moderate to high visual impacts for recreational users of a number of open spaces and civic spaces during construction, including JJ Holland Park, University Square, Queen Victoria Gardens, Domain Parklands (western edge) and Fawkner Park.

The operational impacts of Melbourne Metro have been considered in the context of a modern and dynamic city for which change is commonplace, but where heritage values and important viewlines need to be respected. The Urban Design Strategy prepared specifically for Melbourne Metro would ensure a high standard and quality of design across all surface structures and stations and their adjacent localities. The strategy has a strong focus on enhancing and improving the public realm around the stations, making a positive contribution to local public spaces, improving multi-modal and pedestrian connectivity, and providing structures that are energy and water efficient and sustainable into the future.

Adopting a high quality, place-based design approach across the project would avoid most of the potential permanent adverse landscape and visual impacts with potential to arise during the project's operation – while also creating significant opportunities to improve the public domain and open spaces in a number of locations, including the Arden station precinct and the areas surrounding the tunnel entrances.

16.2 EES Objectives

The EES Scoping Requirements set the following draft evaluation objectives for the EES:

- *Landscape, visual and recreational values – To avoid or minimise adverse effects on landscape, visual amenity and recreational values as far as practicable.*

To meet this objective, an investigation was conducted to document existing landscape and visual conditions within the study area and identify potential risks and impacts associated with the construction and operation of Melbourne Metro.

In addition, two arboriculture assessments (one for land within the Cities of Melbourne, Port Phillip and Maribyrnong, and one for land within the City of Stonnington) were undertaken to identify the baseline condition of trees, as well as potential risks and impacts to trees within the study area.

Using this information, Environmental Performance Requirements and proposed mitigation measures have been recommended to manage temporary landscape and visual impacts during construction and to ensure that the permanent changes and surface structures associated with the project achieve the outcomes sought by the Urban Design Strategy and leave a positive project legacy.

The landscape and visual impact assessment also addressed the potential temporary and permanent landscape and visual impacts of Melbourne Metro on recreational values.

The assessments are complemented by:

- Chapter 9 and Technical Appendix E *Land Use and Planning*, which examine the potential impacts on areas zoned for recreation such as open parkland and City Square
- Chapter 10 and Technical Appendix F *Social and Community*, which examine the impacts on users of recreational facilities
- Chapter 14 and Technical Appendix J *Historic Cultural Heritage*, which review the potential impacts of the project on historical heritage places, including buildings and structures, precincts, landscapes and archaeological sites.

An Urban Design Strategy has been prepared for Melbourne Metro to support the delivery of a consistent, high quality approach to architectural, landscape and visual design across the project. The strategy is presented in Technical Appendix M *Urban Design Strategy*.

16.3 Legislation and Policy

As discussed in Chapter 4 *EES Assessment Framework and Approach*, the landscape, visual and arboriculture aspects of Melbourne Metro would be managed and assessed in accordance with the relevant Commonwealth and Victorian planning objectives, policies standards and guidelines. The main laws and policies relevant to Melbourne Metro are set out below.

Table 16-1 Landscape, visual and arboriculture legislation and policy relevant to Melbourne Metro

Legislation	Policy / guideline	Comment
Commonwealth		
	Creating Places for People: An Urban Protocol for Australia (2012)	This protocol developed by the Australian Government sets out principles for achieving high quality, functional and active public spaces.
	Australian Standard 4970-2009 <i>Protection of Trees on Development Sites</i>	This standard provides guidance on the principles for protecting trees on land subject to development, including deciding which trees are appropriate for retention and the means of protecting these trees during construction works.
State		
<i>Planning and Environment Act 1987</i>	State Planning Policy Framework	<p>The State Planning Policy Framework seeks to ensure that the objectives of planning in Victoria (as set out in the <i>Planning and Environment Act 1987</i>) are fostered through appropriate land use and development planning policies and practices. Relevant clauses of the State Planning Policy Framework aim to:</p> <ul style="list-style-type: none"> • Protect areas of landscape value, particularly where these contribute to character and identity (Clause 12.04) • Protect areas with significant aesthetic value and protect and enhance landmarks, views and vistas (Clause 15.01) • Respond appropriately to the values, needs and aspirations of the community (Clause 15.01) • Coordinate public transport improvements with the ongoing development and redevelopment of urban areas and minimising disruption of residential communities and their amenity (Clause 18.01).
<i>Heritage Act 1995</i>	Victorian Heritage Register	Trees within a registered place may require permits for removal or for conducting works within their vicinity. Several places within the study area are included on the Victorian Heritage Register, including Royal Parade and the Shrine of Remembrance.

Legislation	Policy / guideline	Comment
	Good Design – Transport, Office of the Victorian Government Architect (2014)	This document provides guidance on approaches to provide quality urban outcomes while meeting specific, rail-related functional requirements.
	Station and Station Precinct Design Policy, PTV (2014)	This policy sets out guidelines on the functional and maintenance requirements for train stations and their surrounds.
Local		
<i>Planning and Environment Act 1987</i>	Melbourne, Port Phillip, Stonnington and Maribyrnong Planning Schemes, inclusive of the Municipal Strategic Statements and Local Planning Policies	<p>Section 12A of the <i>Planning and Environment Act 1987</i> requires councils to prepare Municipal Strategic Statements to further the objectives of planning in Victoria within their municipalities. In managing and minimising adverse landscape and visual impacts, Melbourne Metro would consider the Municipal Strategic Statements of the Melbourne, Port Phillip, Stonnington and Maribyrnong Planning Schemes. These statements address a range of matters including:</p> <ul style="list-style-type: none"> • Identifying places, buildings, structures, vistas and views that have heritage, local character or some other distinctive significance • Retaining and increasing street tree planting • Protecting parks and gardens and open spaces • Creating and maintaining walking and cycling networks • Maintaining the streetscapes and ‘boulevard’ character of major avenues such as St Kilda Road, Royal Parade, Swanston Street and Elizabeth Street • Protecting the distinctive character of neighbourhoods.
	Urban Forest Strategy, City of Melbourne (2012) and Greening Port Phillip – an Urban Forest Approach, City of Port Phillip (2010)	These strategies aim to manage Melbourne’s urban forests: the trees and other vegetation – and the soil and water that support them – within each municipality. They include priorities, principles and policies to increase canopy cover and urban forest diversity, protect existing trees, improve vegetation health and improve soil moisture and water quality.
	Street Tree Strategy, City of Stonnington	This strategy guides species selection for street tree planting within the City of Stonnington.

16.4 Methodology

16.4.1 Study area

The study area for the landscape and visual impact assessment includes all potentially sensitive land use areas that fall within the visual catchment of the Melbourne Metro. These land uses range from those likely to be highly sensitive to visual impacts (such as houses and parks in close proximity to project activities and/or infrastructure) to those likely to have a low or very low sensitivity (such as industrial areas located further away).

16.4.2 Assessment Approach

The study comprised a number of elements:

- Reviewing the relevant planning objectives and policies
- Identifying the quality of the existing landscape and visual settings in which the Melbourne Metro would operate
- Confirming the location and number of sensitive viewing locations that could potentially be impacted by Melbourne Metro's construction and operation
- Assessing the visual modification to existing settings that would occur as a result of the project. The visual modification level of a proposed development is a measure of the visual contrast between the development and the existing visual environment. The level of visual modification generally decreases as the distance from the development to various viewpoints increases. For low-rise built form in an urban context, the greatest visual impacts would typically be within 500 m of the surface structures and would mainly occur where views are possible along roads and other visually open corridors. Within high density urban areas with tall built forms, ground level visual impacts are likely to be reduced due to the screening influence of buildings. However, views from elevated locations could extend up to 1,000 m from the surface structures
- Assessing the visual sensitivity of viewers to the level of visual modification caused by Melbourne Metro. Visual sensitivity is a measure of how critically a change to the existing landscape would be viewed from various land use areas, with different activities and uses having different sensitivity levels. Highly sensitive receptors include residences, parks, hospitals and educational facilities close to visible components of the project. Visual sensitivity also decreases with distance from a development. Determining how much of the temporary and permanent works and structures would be visible from particular viewpoints. This aspect of the study included identifying representative viewpoints within each precinct and conducting site inspections at these viewpoints

- Identifying proposed mitigation measures that are consistent with the Melbourne Metro Urban Design Strategy to ensure that the project would not result in a degradation of the landscape character of the surrounding areas or significant adverse visual impacts to adjacent sensitive user groups.

The study also included:

- Consultation with key stakeholders, including (but not limited to) the Cities of Melbourne, Port Phillip and Stonnington, University of Melbourne, RMIT, Heritage Victoria, Office of the Victorian Government Architect and the Metropolitan Planning Authority
- A review of feedback from community information sessions conducted by MMRA.

Further details of the methods adopted in the assessment are provided in Section 3 of Technical Appendix L *Landscape and Visual*.

Arboriculture impact assessments were also undertaken for each tree or tree group within the proposed project boundary. The ground-based, visual tree assessment included collection of size data (diameter of trunk at breast height, tree height and width) and condition data (health and structure), as well as an estimate of the anticipated useful life expectancy of each tree. These assessments have contributed to identifying the adverse effects on native terrestrial flora and fauna, as well as the potential landscape and visual impacts of tree removal.

16.5 Existing Conditions

Melbourne Metro is located wholly within the existing inner and central urban areas of Melbourne. The built form along the alignment reflects the adjacent industrial, residential, retail and commercial land uses, with building height and density increasing with proximity to the CBD and St Kilda Road corridor.

The urban environment along and adjoining the Melbourne Metro alignment is highly diverse and includes the dense CBD and St Kilda Road corridor, large industrial and commercial areas (including North Melbourne), civic health and education precincts (such as Parkville) and iconic parklands and structures (such as the Domain Parklands and the Shrine of Remembrance). Some of the areas through which Melbourne Metro would pass are subject to medium to long term urban renewal, such as the Arden precinct.

Melbourne is renowned for its many heritage buildings, tree lined streets and public parks and open spaces. Melbourne Metro would traverse each of these aspects at various points along the alignment.

At the western end of the alignment, the western portal precinct in Kensington is located at the transition from railway- and port-related uses to a residential area. Much of the housing stock in the area dates from the late Victorian era and is characterised by narrow grid blocks, high quality streetscapes (with interlinking tree canopies) and a number of well-preserved heritage areas – all of which contribute to the area's high level of urban amenity. JJ Holland Park is a well-used feature of the local landscape, which also provides a visual separation between a large proportion of the residential area and the existing rail yards to the south.

The Arden station precinct is located within a largely industrial area that was developed as a manufacturing and warehouse hub servicing Melbourne's port and railway facilities. The precinct and surrounding area maintains much of this industrial heritage, with a substantial amount of land still used for these purposes.

The precinct's built form is mostly low-scale, with a few exceptions such as the public housing complex east of Boundary Road and the wheat silos on Munster Terrace (a prominent local feature that represents the area's industrial heritage).

Broad streets lined with small workers' cottages and a strong heritage character contributes to visual amenity in residential parts of the precinct. CityLink is a dominating visual element to the west.

Urban renewal has commenced in the area, with a number of existing buildings being converted to mixed use or boutique business accommodation.

Figure 16-1 Some key features along the Melbourne Metro alignment: Precincts 2, 3 and 4



Top to bottom: JJ Holland Park (Precinct 2 - Western portal), w heat silos (Precinct 3 - Arden station), Royal Parade (Precinct 4 - Parkville station)

The Parkville station precinct is located within Melbourne’s premier education and medical treatment and research zone, which houses the University of Melbourne, Royal Melbourne Hospital, Royal Children’s Hospital, Walter and Eliza Hall Institute of Medical Research, Grattan Institute and Victorian Comprehensive Cancer Centre. The contrast between recent high quality contemporary architecture (for example, at Royal Children’s Hospital, Royal Melbourne Hospital and Victorian Comprehensive Cancer Centre) and the classical sandstone architecture of the University of Melbourne – along with visually significant street tree plantings – gives the area a unique and high quality urban character.

The wide boulevards, particularly the Victorian Heritage Register listed Royal Parade (with its double avenue of mature elm trees planted in the verge and median strips), also make an important contribution to the visual amenity of the area. Views south along Royal Parade to the Haymarket roundabout create a significant northern gateway to Melbourne’s CBD.

The CBD North and South station precincts are located at either end of Swanston Street, which is the main civic spine of the city and a strong feature in Melbourne’s identity. A key function of the public spaces in these precincts is to provide the opportunity for people to experience a sense of civic pride and ownership.

Figure 16-2 Some key features along the Melbourne Metro alignment: Precincts 5, 6 and 7



Top to bottom: RMIT (Precinct 5 - CBD North station), State Library forecourt (Precinct 5 - CBD North station), Swanston Street view to the Shrine of Remembrance (Precinct 6 - CBD South station), Flinders Street Station (Precinct 6 - CBD South station), Shrine of Remembrance (Precinct 7 - Domain station)

Beyond Swanston Street, a finer grained network of accessible streets, lanes and public and private spaces form a vibrant, bustling part of the city for students, shoppers and visitors.

At the northern end of the street, the area contains a number of major city institutions and heritage listed buildings (such as the State Library of Victoria and the City Baths). The State Library forecourt is one of the most highly used urban spaces in the northern CBD, and it is valued for its open aspect and grassed area. The cutting edge contemporary architecture of RMIT University buildings combined with heritage architecture creates a vibrant streetscape of contrasting, yet cohesive character.

At the southern end of Swanston Street, the area contains Flinders Street Station (Victoria's most used railway station) and heritage listed buildings such as Manchester Unity, Melbourne Town Hall, Nicholas Building, St Paul's Cathedral and Young and Jackson Hotel. The contemporary Federation Square provides a visual counterpoint to these buildings. The area is the gateway to Southbank and major sporting facilities at Melbourne Park, Olympic Park, AAMI Park Stadium and the MCG, the Arts Centre precinct in St Kilda Road and the Domain Parklands.

The Domain station precinct is located at the interface between the St Kilda Road commercial and residential precinct and the Domain Parklands. The precinct is characterised by wide streets that provide views, particularly along the tree-lined St Kilda Road.

Of note in this area is the Shrine of Remembrance, which is located on higher ground to the east of St Kilda Road within the Domain Parklands. Fawkner Park to the east and Albert Park to the west are some of Melbourne's most significant green spaces. The Albert Road Reserve is surrounded by mature elm trees, contains the South African Soldiers Memorial and provides open space and shade that attracts workers from nearby office buildings during lunch time.

In recent years, major developments have taken place in the Albert Road area which now contains a dense mix of residential and commercial multi-storey buildings.

The eastern portal precinct in South Yarra is located in an area characterised generally by a fine grain urban pattern of low rise residential land use, strategically located close to the Toorak Neighbourhood Activity Centre and the Prahran/South Yarra Centre. There are also areas of high rise and density residential and mixed use development around the South Yarra station in the Forrest Hill precinct to the north of Toorak Road, which are progressively being transformed from industrial uses.

Toorak Road is a popular commercial and retail shopping strip that connects the suburbs of South Yarra and Toorak. A Heritage Overlay affects Toorak Road in the vicinity of the precinct, protecting street views and shop facades including the facades on either side of the South Yarra station.

The street trees and residential context provide a high quality public realm in most streets within the precinct. While South Yarra Siding Reserve is an important open space for the local community and is surrounded by residential uses, the reserve is only accessible from William Street.

16.6 Risk Assessment

An Environmental Risk Assessment has been completed for the landscape and visual impacts of the Melbourne Metro. Further information about the risk assessment approach adopted for the Melbourne Metro is included in Chapter 4 *EES Assessment Framework and Approach*.

Impact assessment must be informed by risk assessment so that the level of mitigation action relates to the magnitude and likelihood of an adverse impact occurring.

Given the urbanised nature of the area through which Melbourne Metro would run, a number of high initial risk ratings were identified for landscape and visual risks. As a result of the impact assessment, project-specific Environmental Performance Requirements which specify the outcome to be achieved – combined with the implementation of proposed mitigation measures (project-wide and at specific locations) – have been recommended to reduce the identified impacts.

While achieving these requirements would be expected to reduce the residual risk ratings of a number of potential events to medium or low, a number of potential events would continue to have a high residual risk rating during construction. These relate to the potential for temporary impacts during construction on views from the Shrine of Remembrance surrounds; views from places and buildings overlooking the project; views along Swanston Street to the Shrine of Remembrance; and the removal of trees in the Parkville and Domain station precincts.

Landscape, visual and arboriculture risks associated with Melbourne Metro with a residual risk rating of medium or above are shown in Table 16-2 and Table 16-3. As these tables indicate, these risks are confined to the project's construction phase. A full list of these risks, showing the initial and residual risk rating of each risk, is provided in Technical Appendix B *Environmental Risk Assessment Report*, Technical Appendix L *Landscape and Visual* and Technical Appendices R and S *Arboriculture*.

The recommended Environmental Performance Requirements are listed in Section 16.17.

Table 16-2 Landscape and visual risks

Impact pathway		Project phase	Precincts	Residual risk rating
Category	Potential event			
Construction activities – non-elevated park – recreation	Potential for impact on visual and landscape values – JJ Holland Park, Queen Victoria Gardens, Domain Parklands and the outer perimeter of the Shrine Reserve and Fawkner Park	Construction	1 - Tunnels 2 - Western Portal 7 - Domain station	Medium
Construction activities – elevated park – recreation	Potential for impact on visual and landscape values – Shrine of Remembrance	Construction	7 - Domain Station	Medium
	Potential for impact on visual and landscape values – South Yarra Siding Reserve		8 - Eastern Portal	High
Construction activities – parks – urban plazas	Potential for impact on visual and landscape values – University Square (southern section), City Square	Construction	4 - Parkville station 6 - CBD South station	High
	Potential for impact on visual and landscape values – State Library forecourt, Federation Square		5 - CBD North station 6 - CBD South station	Medium
Construction activities – non-elevated residential / accommodation	Potential for impact on visual and landscape values – residences in Kensington (Western Portal), Queensberry Street (Arden)	Construction	2 - Western Portal 3 - Arden station	Medium
	Potential for impact on visual and landscape values – residences in William and Osborne Streets (Eastern Portal)		8 - Eastern Portal	High
Construction activities – mid-level elevated residential / accommodation (levels 2 and above)	Potential for overlooking impact on visual and landscape values – apartments in Kensington, Westin Hotel	Construction	2 - Western Portal 6 - CBD South station	Medium
	Potential for overlooking impact on visual and landscape values – Domain Towers, Hallmark Apartments		7 - Domain station	High

Impact pathway		Project phase	Precincts	Residual risk rating
Category	Potential event			
Construction activities – retail uses (assumes primarily non-elevated)	Potential for impact on visual and landscape values – Melbourne Central, Swanston Street	Construction	5 - CBD North station 6 - CBD South station	Medium
Construction activities – health, education and community facility uses (assumes primarily elevated)	Potential for overlooking impact on visual and landscape values – Victorian Comprehensive Cancer Centre, Royal Melbourne Hospital, University of Melbourne, RMIT	Construction	4 - Parkville station 5 - CBD North station	Medium
Construction activities – Royal Parade	Potential for impact on visual and landscape values along Royal Parade boulevard	Construction	4 - Parkville station	High

Table 16-3 Arboriculture risks

Impact pathway		Project phase	Precincts	Residual risk rating
Category	Potential event			
Construction of portals, station boxes and entries, access shafts and associated construction zones	Removal of trees from the public realm. Damage to trees on periphery of excavation (crown, trunk and roots)	Construction	4 - Parkville station 7 - Domain station	High
	Removal of trees from within the public realm. Damage to trees on periphery of excavation (crown, trunk and roots)		8 - Eastern Portal	High*
	Removal of trees from within the public realm. Damage to trees on periphery of excavation (crown, trunk and roots)		1 - Tunnels 2 - Western Portal 3 - Arden station 5 - CBD North station 6 - CBD South station	Medium
Soil grout injection/soil mixing for soil stabilisation over shallow tunnel alignments	Removal of trees from Domain Parklands	Construction	1 - Tunnels	High

* Note: successful landscape design and replanting may reduce the residual risk to low.

16.7 Impact Assessment

The main landscape and visual impacts expected from the Melbourne Metro would be temporary impacts associated with the construction of the above ground components (including the stations). These impacts are summarised below. Sections 16.8 to 16.16 describe these impacts where they are relevant to each of the Melbourne Metro precincts.

16.7.1 Construction

Impacts on Trees

During construction, a number of significant trees would require removal from the public realm at various locations across the Melbourne Metro alignment. While none of these are remnant vegetation, a number of these trees such as those along St Kilda Road and Grattan Street, are highly significant in terms of their contribution to landscape character and urban amenity.

The recommended Environmental Performance Requirements specify the outcomes to be achieved and the proposed mitigation measures that would apply across all precincts and would help to mitigate the impacts of tree removal. While a number of these trees are nearing the end of their useful life expectancy and would require replacement in the future, there would still be a high residual impact during construction in the Parkville and Domain station precincts, and a medium residual impact in all other precincts. However, it is likely that a lesser number of trees would need to be removed when detailed design for the project is undertaken.

Impacts on Landscape and Sensitive Viewpoints

Construction activities that would generate adverse landscape and visual impacts are those that would be visible from sensitive land uses such as parks and recreation areas, residential and retail areas, and health, education and community facilities. These activities would include works associated with the above ground components of Melbourne Metro (such as station entrances, portals and vent and access shafts), works required to relocate existing services and utilities, and works staging areas and construction work sites.

Impacts from these activities would be temporary and localised. The contractor's CEMP would implement Environmental Performance Requirements by including measure to avoid, minimise, and mitigate these impacts. Depending upon the anticipated impacts in each precinct, proposed mitigation measures could include:

- Providing attractive, well-placed temporary hoardings to screen temporary construction work sites, as well as temporary and, where possible, permanent legacy plantings

- Minimising the extent of cuttings and retaining structures, and using high quality materials and finishes for retaining walls
- Minimising light spill from construction work sites through appropriate siting and baffling of lighting
- Providing viewing areas and information along paths adjacent to construction work sites to inform the community about the Melbourne Metro and the activities being conducted on the pertinent site or within the broader precinct
- Providing temporary directional signage and, if required, alternative access for businesses and properties that may be obscured by construction activities
- Supporting local events to sustain activity in affected areas, such as temporary activation of spaces, parks, outdoor dining areas, pop-up markets and community arts or music events
- Providing alternative locations for events and activities normally undertaken within areas affected by construction activities.

Figure 16-3 Examples of potential mitigation measures for construction



Example of a hoarding being used as a project information board



Example of temporary activation of space



Example of temporary green wall

16.7.2 Operation

The main landscape and visual impacts during the operation of the Melbourne Metro would be associated with changes to view lines and landscape character caused by the permanent above ground structures (the portals, emergency access shafts and station entrances). Measures to mitigate these impacts would be adopted primarily during the detailed design phase and include:

- Ensuring that sensitive view lines are considered during the siting, and ultimate design and landscaping, of above ground structures
- Ensuring that the design process is responsive to site character, respects sensitive heritage elements and is consistent with the Councils' (or other relevant agencies') long-term strategic aspirations for the specific site or the area
- Ensuring that above ground infrastructure is well-integrated into the local setting, has an overall neutral or preferably positive effect on the visual amenity and functionality of the place and does not obstruct views, building frontages and important pedestrian pathways
- Providing high quality architectural treatments to structures to ensure they are attractive features and do not present inactive and blank walls to public spaces
- Considering and adopting opportunities for structures to provide other benefits or act as catalysts for activities, such as the narrowing of roads to allow improvements to pedestrian routes, spaces and facilities, greening of streets and the provision of information points or arts features

Urban design vision for the Melbourne Metro stations

The design of the new Melbourne Metro stations would aim to create inviting, safe and comfortable places that support use of the station before and during any wider redevelopment of the site. Elements to be incorporated into the station designs include:

- Buildings and open spaces of high design quality that set a benchmark and act as a catalyst for surrounding future development
- Integration with surrounding areas, ensuring high levels of accessibility between the station and nearby land uses
- Protection of the heritage qualities of nearby buildings and spaces
- Protection of the stations from flooding
- Prioritisation of integrated, safe and high quality pedestrian routes
- Enhancement and increase of green open space
- Incorporation of water sensitive urban design initiatives and energy efficient technologies
- Integration of public art to enrich the experience for people using the spaces and contribute to the cultural richness of the urban environment
- Use of lighting that contributes to amenity, way finding, visual comfort, road safety and personal security.

The Urban Design Strategy includes precinct-specific objectives and criteria to guide the design and development of the stations. Details are provided in Technical Appendix M.

- Promptly undertaking post-construction landscaping, including the reinstatement of mature trees where feasible, to reduce the raw appearance of permanent structures immediately post-construction
- Where the opportunity exists, using canopy plantings as part of the construction hoarding strategy in locations where these plantings can be retained post-construction to assist in advancing the reinstatement of the landscape character and urban setting.

Figure 16-4 Examples of integrated operational elements



Example of a station entry incorporated into the public realm (left); and of a station entry at the ground level of a building (right)

16.7.3 Benefits and Opportunities from High Quality Urban Design

The Urban Design Strategy developed for the Melbourne Metro aims to ensure a high standard and quality of design across the project structures and stations. The strategy:

- Identifies the strategic design direction for precincts and places
- Provides high level principles to guide urban design outcomes associated with the project
- Articulates the design outcomes and quality expected for the project

- Sets precinct-specific criteria that need to be met to achieve the urban design vision
- Ensures Melbourne Metro would be integrated with, and contribute to, the urban fabric of Melbourne.

The Urban Design Strategy would ensure that Melbourne Metro achieves urban design excellence that benefits the entire metropolitan transport network (including the network's users and the communities and places it passes through), maximises opportunities to improve and enhance the amenity of all areas impacted by the project and delivers a lasting legacy renowned for design excellence.

The strategy has a strong focus on improving the public realm around stations and making a positive contribution to local public spaces.

Adopting a high quality, place-based design approach across Melbourne Metro would avoid or minimise many of the adverse landscape and visual impacts anticipated during the project's construction and operation. It would deliver benefits in the form of attractive new structures and public spaces, as well as opening up opportunities for further development and urban renewal.

Urban Design Principles

The Melbourne Metro Urban Design Strategy includes best practice urban design principles drawn from themes identified in national and Victorian policies, including Infrastructure Australia's Urban Design Protocol for Australian Cities, the Urban Design Charter for Victoria and the Good Design + Transport design guidelines developed by the Office of the Victorian Government Architect. The application of these principles from the outset of the project would ensure its successful integration with local areas in terms of land use, built form, connectivity, design character and amenity.

The strategy sets out six key design directions for Melbourne Metro:

- **Make new and improved connections** – ensuring that stations are easy to access and well-connected to the surrounding precinct, with adjacent streets and other access ways that are comfortable, attractive and safe places
- **Make great public places** – providing a high calibre, activated and people-oriented public realm that supports engaging experiences and creates welcoming, inclusive, attractive and safe places
- **Balance line-wide consistency with site responsiveness** – balancing the integration of Melbourne Metro as part of the wider transport system with designs that respond to local context and character and that address the specific needs of commuters at each location
- **Support integrated site redevelopment** – maximising opportunities for land use and transport integration, contributing to local economic vitality and making provision for future development opportunities (including over-site redevelopment at stations)
- **Design to help manage construction impacts** – managing construction activities to ensure the urban amenity, vibrancy, economic activity and accessibility of the surrounding city; minimise interference with ongoing uses of nearby buildings, spaces and travel routes; and protect valued features such as trees and monuments
- **Design for the future** – accommodating population growth, responding to climate change, ensuring that infrastructure and spaces are durable and easy to maintain, and minimising any long-term constraints on the use, layout and character of spaces above the Melbourne Metro tunnels.

16.8 Precinct 1: Tunnels

16.8.1 Construction

The construction activities that would generate landscape and visual impacts in the Tunnels precinct are the construction of the emergency access shafts in Queen Victoria Gardens (Linlithgow Avenue) and Fawkner Park. The use of attractive, well-placed temporary hoardings and acoustic sheds to screen the construction work site would be determined at detailed design.

Construction of the shallow tunnelled section above the CityLink tunnels could result in the removal of trees from the Domain Parklands as a result of ground stabilisation works (rather than as a direct result of tunnel boring), with consequential landscape and visual impacts.

Impacts on Trees

Around 60 trees would require removal from the Fawkner Park construction area. These trees are juvenile specimens and their canopies do not significantly contribute to the character and quality of the landscape and public realm. Four potentially impacted large palms within the precinct would be temporarily relocated and reinstated at the end of works. The potential to retain and protect a substantial lemon-scented gum on the east side of the Fawkner Park construction work site has been recommended for investigation, as this is a notable specimen within the area. (Note that Fawkner Park would only be used as a TBM launch site in conjunction with Domain.)

A limited number of trees would potentially require removal for the emergency access shafts: seven trees in Fawkner Park and five trees in Queen Victoria Gardens. Mature palms at these locations would be temporarily relocated and reinstated post-construction.

The majority of the potentially removed trees are located within the parkland, with mature canopy street trees around the perimeter of the parkland being retained. As a result, impacts on the landscape would typically be confined to the internal area of the parkland and the setting of the Police Memorial (for tree removal associated with the potential ground improvement works). Impacts on the St Kilda Road streetscape and Domain Parklands east of Linlithgow Avenue would be minimal.

The recommended Environmental Performance Requirements would require trees to be re-established in accordance with the City of Melbourne's *Urban Forest Strategy* and the Fawkner Park Master Plan.

Impacts on Landscape and Sensitive Viewpoints

Fawkner Park is a large, highly valued open space that provides for sport and recreation activities. During construction, there would be temporary visual and landscape impacts on park users and residents adjacent to the park (to the north and west) as a result of the removal of existing vegetation. Hoardings and other measures (such as those described in Section 16.7.1) would be used to mitigate these impacts. The landscape would be reinstated to an appropriate standard.

In Queen Victoria Gardens, key sensitive users and viewing locations include users of footpaths (including the well-used 'Tan'), users of the parkland (particularly views from adjacent to St Kilda Road across the floral clock to the King Edward VII Memorial) and vehicular users of Linlithgow Avenue, particularly tourists. However, these views are transitory – very short term for vehicles, short term for walkers and cyclists, and medium term for picnickers. In addition, for movements east west and vice versa along Southbank Boulevard and Linlithgow Avenue, viewlines of the shaft construction site would be offset to the south from the direct line of sight.

There would be a medium to high residual visual and landscape impact on users of Fawkner Park and Queen Victoria Gardens during construction. However, while park users would be in close proximity to the works area during construction, the duration of impact would typically be short, given the majority of users are traversing the area and mitigation measures such as construction hoardings would assist in ameliorating adverse impacts.

16.8.2 Operation

The visible above ground component of the emergency access shafts would be a structure with a square footprint of approximately 12 m x 12 m and a height of approximately 4.6 m. The walls of the structure would contain louvres for ventilation fans and an emergency access door. Both shafts would be located adjacent to sites of existing public toilet blocks. These blocks would be demolished and replaced adjacent to the new shafts.

While no architectural form or façade treatments have been finalised for the shafts, the recommended Environmental Performance Requirements (reflecting the Urban Design Strategy) would require these structures to provide high quality architectural treatments and not present inactive and blank walls to the public realm. This includes integrating the structures into the surrounding built form and taking advantage of opportunities to relate to the local setting.

Consistent with the Urban Design Strategy, the design guidelines for these permanent structures include:

- Minimising the height and bulk of above ground structures, particularly any elements that are higher than ground level adjacent to the King Edward VII Memorial (if the emergency access shaft is located near the memorial)

- Respecting the character and cultural significance of, and views to, existing memorials and creating a form that presents well when viewed in the round (if the emergency access shaft is located in Tom's Block).
- Minimising the visual impact of above ground structures through the use of recessive materials and colours.

Overall, there would be a low residual landscape and visual impact associated with the operation of the Melbourne Metro tunnels, as replanted canopy trees, paths, grass and recreational assets would be returned to pre-construction condition.

Alternative Design Options – Construction and Operation

From a landscape and visual impact perspective, the alternative design options include above ground components, both during the construction and operation phases, within the alternative emergency access shaft locations.

The first of these options would use the location of the potential TBM launch site in Fawkner Park. This site would only be used if this part of Fawkner Park were used for the TBM launch site (in association with Domain). The site is in the north western corner of the park within an existing clearing surrounded by tall, mature vegetation, which would be retained. The permanent above ground shaft structure would create visual impacts on residents to the north of Toorak Road West and users of the park. The construction activities would result in a low landscape and visual impact on recreational and residential uses due to the works being incorporated within an existing construction work site. The operational residual landscape and visual impact following completion of mitigation measures would be low.

This option would result in fewer mature trees being removed from Fawkner Park than required for the Concept Design, as it would concentrate works within a single zone where other construction activities would already require the removal of trees for the TBM launch site.

The alternative design option for the second shaft is Tom's Block, which is part of the broader Domain Parklands and contains a number of monuments and memorials. The permanent above ground shaft structure would create visual impacts on park users and tourists. Similar issues apply to this location as to the Concept Design location in Queen Victoria Gardens (see Section 16.8.1). From a landscape and visual impact perspective, this is a less sensitive location than the Concept Design location in Queen Victoria Gardens.

The number of trees requiring removal at Tom's Block would be confirmed at the detailed design phase of Melbourne Metro. A total of 55 trees (including up to 30 mature trees) could potentially require removal due to the ground stabilisation works at the shallow tunnelled section above the CityLink tunnel. There may be some difficulties in planting new trees in this locality as there would be a need to provide a hard stand permanent access to the shaft site from Linlithgow Avenue.

This option would have a high landscape and visual impact during construction. At operation, Melbourne Metro would have a low residual landscape and visual impact, as replanted trees, paths, grass and recreational assets would be returned to pre-construction condition.

16.9 Precinct 2: Western Portal (Kensington)

16.9.1 Construction

Construction activities with the potential to generate landscape and visual impacts in this precinct are the relocation of two high voltage transmission towers, the construction of the decline structure, cut and cover tunnelling works, the TBM retrieval box and the establishment of work sites. The use of attractive, well-placed, temporary hoardings and acoustic sheds to screen the construction work site would be determined at detailed design.

Impacts on Trees

Approximately 50 trees and one row of large callistemon shrubs would need to be removed in this precinct, mainly along the south side of Childers Street and at the south east end of Ormond Street. Only nine of these have been identified as Medium and Long Term Viability trees. Trees would be replaced in accordance with the City of Melbourne's *Urban Forest Strategy 2012–2032*.

Impacts on Landscape and Sensitive Viewpoints

The bulk of the works would be located in Childers Street and the existing railway embankment to the south of Childers Street, as well as on the nine properties to be acquired and demolished. There would be views towards the construction work site from all areas, including from the north and east across JJ Holland Park and from residences at the southern ends of Kensington and Hobsons Roads and Tennyson and Ormond Streets. The views from the north across the park towards the construction works would be partially screened by existing vegetation within and on the perimeter of the park. The construction works would also be viewed in the context of an existing modified setting with the immediate background of the construction activities defined by existing power lines and rail infrastructure.

Aesthetically designed hoardings and other measures (see Section 16.7.1) would be used to manage and mitigate impacts. After taking these measures into account, the temporary residual visual impact during construction would be moderate to high for users of JJ Holland Park and for some residences along Tennyson Street, Hobsons Road, Kensington Road and Ormond and Altona Streets).

The residual landscape impact would be low during construction.

16.9.2 Operation

Consistent with the Urban Design Strategy, the design guidelines at the western portal include:

- Architecturally integrating Melbourne Metro structures in the area with the entry to South Kensington station and contributing to visibility of the station entry without dominating views from JJ Holland Park or visually overwhelming the scale of nearby houses
- Providing canopy tree planting along the frontage to the rail corridor east of the station entry, to provide shade and visual screening
- Minimising the physical encroachment of new rail infrastructure into Childers Street (for example, by using vertical retaining walls to support the Melbourne Metro tracks where on a raised embankment and in a cutting). The design of retaining walls and screens should prioritise the preservation of space for greening and for various travel modes along Childers Street over any decorative effects that increase the bulk of the structure
- Designing walls, fencing and acoustic screens facing JJ Holland Park to be visually recessive, to present a high quality finish and to deter graffiti
- Providing planted screening of railway infrastructure south of Childers Street.

The relocation of the high voltage power lines to the south of the rail lines would significantly improve the visual amenity experienced from JJ Holland Park and surrounding residential housing. Combined with improvements to South Kensington station, the construction of a feature retaining wall and acoustic barrier, and landscape treatments, there would be an overall low level of visual modification in the area.

Substantial areas would be reclaimed as public space in this precinct, including much of the Kensington station forecourt and the incorporation of the southern end of Ormond Street within an expanded JJ Holland Park.

The residual landscape and visual impact in this precinct during the operation of the Melbourne Metro would be low.

16.10 Precinct 3: Arden Station

16.10.1 Construction

Construction activities with the potential to generate landscape and visual impacts in this precinct are the establishment of the main construction work site for the northern section of the Melbourne Metro, tunnels excavation and TBM launch, and station entrance works. The use of attractive, well-placed temporary hoardings and acoustic sheds to screen the construction work site would be determined at detailed design.

The setting of the construction works is defined by existing industrial land uses. The proposed construction works would be viewed within this heavily modified context and the road infrastructure of CityLink

Impacts on Trees

Approximately 120 trees would require removal from the publicly owned (VicTrack) land on the west side of Laurens Street. These trees predominantly include pepper corn trees and various gums.

Where the opportunity exists, canopy plantings could be used as part of the construction hoarding strategy in locations where they can be retained post-construction to assist with advancing the reinstatement of the landscape character and urban setting.

Impacts on Landscape and Sensitive Viewpoints

The key view to the construction work site would be from the elevated section of Queensberry Street near Dryburgh Street. As noted above, the setting of the construction works is highly modified and defined by existing industrial and transport land uses. The site and its surrounds will be subject to significant redevelopment over time and the view is already back-dropped by industrial uses that would progressively transition to mixed use development. Accordingly, the ability of the setting to accommodate the temporary construction work site and the permanent changes that would occur as a result of the station entrances is high.

Aesthetically designed hoardings and other measures (see Section 16.7.1) would be used to mitigate visual impacts. Combined with the existing industrial character of the setting, this would result in a low residual visual impact during construction (mainly from the elevated residential areas along Queensberry Street).

16.10.2 Operation

The setting around the new Arden station would be transformed as a result of the change in land use and the improvement to the public realm through a high quality, well-designed station entrance and other elements that would complement the urban character of the area. The operational elements of Melbourne Metro would result in an improved visual setting within the urban landscape.

The new station would service part of North Melbourne as well as support and facilitate urban renewal within the Arden-Macaulay precinct. Melbourne Metro would be a catalyst for the transformation of Arden to provide a range of commercial and housing types with a mix of upgraded heritage industrial, residential and warehouse buildings. Safety and amenity for pedestrians and cyclists would be an important feature, along with increasing the provision of open space and canopy tree planting.

Consistent with the Urban Design Strategy, the design guidelines for the new station would include:

- Creating a station building and associated open space that integrates with and serves as a benchmark for surrounding development
- Integrating the station and the redevelopment of the publicly owned (Vic Track) land with surrounding areas, ensuring high levels of accessibility between the station and nearby land uses
- Upgrading Barwise Street and Laurens Street between Queensberry Street and Arden Street to provide pedestrian friendly environments and improved access to the new station
- Providing a high degree of visual prominence for the station and its public realm to assist with wayfinding.

The residual landscape and visual impact levels as a result of the above ground station entrances would be low (beneficial).

16.11 Precinct 4: Parkville Station

16.11.1 Construction

The construction activities that would be likely to generate landscape and visual impacts in this precinct are the cut and cover construction of the station and platforms, station entrance works, surface works associated with the construction of the underground pedestrian access between the station and Grattan Street west of Royal Parade, a temporary construction work site at the City Ford site and the removal of trees in Grattan Street. The use of attractive, well-placed temporary hoardings and acoustic sheds to screen the construction work site would be determined at detailed design.

Impacts on Trees

There would be a high residual impact on trees in this precinct as a result of construction activities. The large elms located within the Royal Parade and Grattan Street road reserves are of late 19th and early 20th century origin and are a visually dominant public realm landscape feature in the precinct.

Tree removal along Royal Parade would be minimised during construction. However, 22 trees within the Grattan Street road reserve between Royal Parade and Leicester Street would need to be removed to facilitate the cut and cover construction of the station box. Nine of these trees are large elms identified as Medium and Long Term Viability trees. Ten elms would require removal from the Victorian Heritage Register listed Royal Parade immediately north and south of the Grattan Street intersection (although only three of these are Medium and Long Term Viability trees).

The City of Melbourne has undertaken tree condition surveys in Grattan Street. Most of the existing trees have a Useful Life Expectancy of less than 20 years, with some of the trees having a Useful Life Expectancy of less than 10 years.

A further 39 trees within the southern boundary of the University of Melbourne and 73 trees in the northern end of University Square would also potentially require removal, 59 of which are Medium and Long Term Viability trees. The University Square trees have been identified as Medium and Long Term Viability trees due to their assessed Useful Life Expectancy and age; however, the plantings within University Square are modestly scaled and many have performed poorly. Subject to detailed design, it is likely that the number of potentially affected trees would be reduced.

Proposed mitigation measures would be implemented to replant trees, restore the continuity of the tree-lined avenues within the precinct and re-establish canopy cover and restore landscape values as quickly as possible in accordance with the City of Melbourne's *Urban Forest Strategy*. The recommended Environmental Performance Requirements for historical cultural heritage would require the replacement of removed Elm trees in Royal Parade and the re-establishment of the boulevard formation to the satisfaction of Heritage Victoria (see to Section 14.18 *Historical Cultural Heritage*).

A reconfigured road layout, including widened central medians at the Elizabeth Street north interface with the Haymarket roundabout, would allow for the planting of new trees in Royal Parade. Post-construction landscaping and tree replanting would restore and improve Grattan Street as an attractive, pedestrian-friendly zone. Where the opportunity exists, canopy plantings could be used as part of the hoarding strategy during construction.

The recommended Environmental Performance Requirements require the replacement of lost canopy cover and the restoration of landscape values in accordance with the City of Melbourne's *Urban Forestry Strategy* and the preferred future character of the University of Melbourne.

Impacts on Landscape and Sensitive Viewpoints

The construction area in this precinct would be located in a high quality urban setting and activities would generate significant visual impacts at a number of sensitive receptors. The key view with the potential to be impacted during construction is along Royal Parade, particularly when looking south towards the Haymarket roundabout. Specific sensitive receptors include the University of Melbourne, Victorian Comprehensive Cancer Centre, University Square and the Royal Melbourne Hospital.

Aesthetically designed hoardings and other measures (see Section 16.7.1) would provide some mitigation of visual impacts during construction. While these measures would be likely to be effective for ground level views, the residual landscape and visual impact during construction would be high from multi-level health and education facilities. These impacts would be temporary, but would extend post-construction until the replacement landscape was established along Royal Parade and Grattan Street.

The project would be a catalyst for some Council projects in this area, such as the redevelopment of University Square, which would also assist with the post-construction mitigation of these impacts.

16.11.2 Operation

The Parkville station would create a new northern transport gateway to the CBD, as well as improve public transport access to the Parkville health and education precinct.

The setting for the station is highly developed and includes contemporary and heritage architecture set within an established and highly vegetated streetscape setting. Built form in the area has been and is currently subject to change as a result of the development of the new hospitals and new buildings associated with the University of Melbourne in Grattan Street. The University has also advised of a future plan to redevelop the Medical Building on the corner of Grattan Street and Royal Parade. Therefore, the setting is not immune from change and has the ability to accommodate change that is appropriately designed and managed.

Station entrances would be relatively minor, small scale insertions within the overall built form and landscape of the area. Consistent with the Urban Design Strategy, key features of the new station would include:

- Retention and protection of the existing trees along Royal Parade as far as practically possible and where tree removal is unavoidable, planting new trees in the same locations
- A design that respects the historic Gatekeeper's Cottage and Vice Chancellors House within University of Melbourne, including their landscape settings
- A design that allows for future redevelopment of the University's 'Royal Parade Biosciences Zone' to the northeast of the Royal Parade/Grattan Street intersection and between the two station entrances
- Station entrances that are key entries to the University of Melbourne campus and that provide high quality arrival experiences and meeting places
- Integration of above ground Melbourne Metro structures with the proposed design for University Square, Barry Street and Leicester Street
- Integration with the tram superstop in Royal Parade.

The high visual sensitivity of land uses in the precinct, combined with a low to moderate visual modification level, would result in an initial moderate to high impact on visual and landscape values. Over time, as the canopy trees re-establish, the residual landscape impacts of the project would reduce progressively to low.

16.11.3 Alternative Design Option

The landscape and visual impacts of the alternative option for the construction of the station would be the same as for the Concept Design.

16.12 Precinct 5: CBD North Station

16.12.1 Construction

The construction activities that would generate landscape and visual impacts in this precinct are building demolitions, station entrance works, surface works associated with the excavated connection to Melbourne Central Station from CBD North station, the establishment of a number of construction work sites and the restoration of Swanston, A'Beckett and Franklin Streets post-construction. The use of attractive, well-placed temporary hoardings and acoustic sheds to screen the construction work sites would be determined at detailed design.

The setting for the station is highly developed and comprised of contemporary and heritage architecture set within a streetscape setting that has undergone recent enhancement works. The location contains a number of major city institutions and is the northern gateway to the CBD grid, as well as a significant shopping destination. The setting has been and is currently subject to change as a result of the development of contemporary new buildings associated with RMIT University and high density apartment developments of up to 80 levels.

Impacts on Trees

The proposal to use a mined construction technique for CBD North station would significantly limit the potential impact to trees within this precinct. No trees would be removed along Swanston Street. A total of 40 street trees would be removed in the Franklin Street road reserve (for a construction zone) and at the eastern ender of A'Beckett Street and six street trees on the corner of Swanston and La Trobe Streets (for station entrances).

Trees would be reinstated in accordance with the City of Melbourne's *Urban Forest Strategy*.

Impacts on Landscape and Sensitive Viewpoints

The key view that would potentially be impacted is the view from the north end of Swanston Street, which is slightly elevated and provides distant views to the south along Swanston Street and St Kilda Road to the Shrine of Remembrance – one of the most important view lines within the CBD. From street level, construction works would be noticeable and these works could partly obstruct views along Swanston Street.

Elevated viewpoints at the northern end of Swanston Street would overlook the construction area, with specific sensitive receptors including Verve Apartments, RMIT, State Library forecourt, City Baths, Melbourne Central and strip retail areas.

Views to the State Library façade and forecourt may also be partly obstructed during construction.

Aesthetically designed hoardings and other measures (see Section 16.7.1) would be used to mitigate visual impacts. However, these could also block non-elevated views. Even after adopting these measures, there would be a high residual visual impact from elevated locations (apartments and hotels) that overlook construction areas and on views down Swanston Street to the Shrine of Remembrance. There would also be a high visual impact on users of the area during construction. However, these impacts should be considered in the context of a changing precinct where construction activities are part of the visual experience of Melbourne and something to which city users are accustomed.

There would be low to medium residual impact on landscape values during construction.

16.12.2 Operation

The setting for the station is highly developed and includes contemporary and heritage architecture in a streetscape that has been subject to significant building works over the last few years. The area continues to be subject to change as a result of the development of new buildings associated with RMIT, redevelopment of the former brewery site and high density student accommodation in the block bound by Swanston, La Trobe, Elizabeth and Franklin Streets. Accordingly, this locality can accommodate changes that are appropriately designed and managed.

Consistent with the Urban Design Strategy, features of the new station would include:

- A main station entrance at La Trobe and Swanston Streets that is integrated with the precinct built form and makes a positive civic architectural contribution to one of Melbourne's most important civic precincts
- A design that distributes pedestrian traffic safely around the station

- A redesign of Franklin Street as an activated, people-oriented street that connects RMIT and CBD North station to the Queen Victoria Market area, including plantings of new canopy trees and upgraded street lighting
- Creation of a public plaza in A'Beckett Street.

The above ground elements of the maintenance access and vent structure would be minimised in plan area and visual bulk, have a high standard of architectural detailing and integrate with other streetscape elements, such as lighting and signage, to minimise clutter in the street space.

The project would be a catalyst for some Council projects in this area, such as improved pedestrian access to the Queen Victoria Market, which would also assist with the post-construction mitigation of these impacts.

Following the restoration of Swanston Street post-construction, the residual landscape impacts from Melbourne Metro above ground components and station entrances would reduce progressively from low to moderate to low as tree re-plantings mature and canopy trees re-establish. The project components would be generally like-for-like insertions into the fabric of the streetscape and built form. When developed in accordance with the directions of the Urban Design Strategy, visual elements in this precinct – particularly the station entry at the corner of La Trobe and Swanston Streets – would make a positive contribution to the urban landscape, reducing the visual impact.

There would be no post-construction impacts on views down Swanston Street towards the Shrine of Remembrance.

16.13 Precinct 6: CBD South Station

16.13.1 Construction

Construction activities with potential landscape and visual impacts in this precinct are building demolitions fronting Swanston Street and Flinders Street, station entrance works, surface works associated with the excavated connection to Flinders Street station and Federation Square from CBD South station, the establishment of a number of construction work sites and the restoration of Swanston Street after construction is complete. The use of attractive, carefully placed temporary hoardings and acoustic sheds to screen the construction work sites would be determined at detailed design.

The setting of the proposed station is highly developed and comprised primarily of heritage architecture set within a high quality streetscape setting. The quality of built-form along Flinders and Swanston Streets is variable, with State-listed heritage buildings such as the Manchester Unity building, the Melbourne Town Hall, St Paul's Cathedral, Young and Jackson Hotel, Flinders Street Station and the Nicholas building. The setting has been subject to considerable change over time as a result of the development of Federation Square and City Square, and has the ability to accommodate change that is appropriately designed and managed.

Impacts on Trees

The proposal to use a mined construction technique for CBD South station would significantly limit the potential impact to trees within this precinct. While all the trees within City Square would be removed to allow for a construction work site, only five trees would need to be removed on the west side of Swanston Street and station entrance to allow the construction of vehicle access. Twenty-one of the total of 24 trees to be removed (mostly plane trees) are Medium and Long Term Viability trees. However, subject to detailed design, it is possible that this number could be reduced.

Trees would be replaced in consultation with the City of Melbourne and in accordance with Council's *Urban Forest Strategy*. Where the opportunity exists, legacy plantings would be used as part of the hoarding strategy during construction.

Impacts on Landscape and Sensitive Viewpoints

A number of key views and specific receptors have the potential to be obstructed during construction:

- Views north and south along Swanston Streets and Princes Bridge/ St Kilda Road
- Elevated views west from Collins Street near Russell Street to the Swanston and Collins Street intersection
- Views to St Paul's Cathedral from the south and also from the City Square
- Views to heritage buildings – Young and Jackson Hotel, the Nicholas Building, St Pauls Cathedral and Melbourne Town Hall
- Views to Flinders Street Station
- Views to Federation Square
- Elevated views over the project from the Westin Hotel.

Aesthetically designed hoardings and other measures (see Section 16.7.1) would be used to mitigate these impacts. However, these measures would also block non-elevated views. The high quality urban setting and public spaces in this precinct mean that the residual visual impact would be high from the lower levels of elevated locations (such as the Westin Hotel and other apartments) that overlook the construction work sites. There would be a high residual visual impact on views towards and from City Square. However, these impacts should be considered in the context of construction activities being part of the visual experience of Melbourne and something to which city users are accustomed.

There would be low to medium residual impact on landscape values during construction.

16.13.2 Operation

The CBD South station would be located in an area that contains some of Melbourne's most iconic and historic buildings and is the heart of the city's civic and ceremonial life. The station design would be highly sensitive to these functions and to the significance of the Swanston Street and Flinders Street intersection as a key gateway to the CBD and a landmark corner. This would include respecting and not obstructing views to the Shrine of Remembrance and to the heritage buildings in this precinct.

Station entrances would be moderately scaled insertions within the overall streetscape and built form of the area. When developed in accordance with the directions of the Urban Design Strategy, visual elements in this precinct (particularly the station entrance wrapping around the Young and Jackson Hotel) would make a positive contribution to the urban landscape.

Consistent with the Urban Design Strategy, features of the new station would include:

- A design that makes a high quality positive architectural contribution to one of Melbourne's most important and recognisable precincts
- A design that ensures the respectful integration of new structures with Flinders Street and Swanston Street streetscapes, St Paul's Cathedral and the Federation Square design
- A new design for the City Square that maintains the Square's existing valued qualities and features, minimises any net loss and fragmentation of public open space and creates a high quality civic open space.

The Urban Design Strategy would also require the project to maintain a generous shaded pedestrian promenade along Swanston Street, including a double row of plane trees along the street.

There would be no post-construction impacts on the Swanston Street visual axis to the Shrine of Remembrance.

Overall, the residual visual impacts from the Melbourne Metro's above ground components and station entrances would progressively reduce following the reinstatement of Swanston Street post-construction and the establishment of street trees. The residual landscape impacts would progressively reduce from low to medium to low.

16.14 Precinct 7: Domain Station

16.14.1 Construction

Construction activities with potential landscape and visual impacts in this precinct are the establishment of temporary construction work sites, TBM operations, cut and cover construction of the station, station entrance works, the relocation and removal of tram stops and car parking spaces along St Kilda Road and the restoration of St Kilda Road and the adjoining parklands. The use of attractive, carefully placed temporary hoardings and acoustic sheds to screen the construction work site would be determined at detailed design.

The setting for the station is in a high quality streetscape and parkland with landscape and buildings of State heritage significance. While change has been occurring along the western side of St Kilda Road and in Albert Road (in the form of high rise residential and commercial development), the eastern side of St Kilda Road – which includes the Domain Parklands, the Shrine of Remembrance and Melbourne Grammar School – has been subject to very limited change over the years. The setting of the eastern side of St Kilda Road is very sensitive to change and the ability to accommodate change is limited. This means that any change needs to be well considered and well designed.

Impacts on Trees

There would be a high residual impact on trees in this precinct as a result of construction activities. Based on the Concept Design, a total of 223 trees would potentially require removal, with almost half identified as Medium and Long Term Viability trees. However, subject to detailed design, it is possible that this number could be reduced.

All trees within the St Kilda Road construction zone would be removed. This includes mature plane trees within the central median of St Kilda Road between Park Street and Toorak Road, as well as trees within part of the Shrine of Remembrance Reserve and the Albert Road Reserve. Trees in the central median of Albert Road, south of the Albert Road Reserve, would also require removal as part of the construction zone.

Two trees on the southern boundary of the Edmund Herring Oval would require removal to provide construction vehicle access.

There may be scope to limit the removal of Medium and Long Term Viability trees from the Shrine of Remembrance Reserve to the west of the Edmund Herring Oval by using the east side of the oval to Dallas Brooks Drive for construction vehicle access. The removal of the juvenile trees in this location would have a significantly lower impact on visual amenity and these trees can be readily replaced with new specimens.

Impacts on Landscape and Sensitive Viewpoints

Key views that have the potential to be impacted during construction are:

- From St Kilda Road north to the city
- From the Shrine of Remembrance reserve north towards the city along St Kilda Road and south to the Domain station site
- Filtered views from St Kilda Road and from Albert Road to the Shrine of Remembrance, located on its high point within the Domain Parklands
- Overlooking from elevated residential apartments on St Kilda and Albert Roads.

Specific sensitive receptor sites include the Shrine of Remembrance, the South African Soldiers Memorial, the Domain Parklands (including Edmund Herring Oval), Melbourne Grammar School and high density residential apartments.

While aesthetically designed hoardings and other measures (see Section 16.7.1) would be used to mitigate these impacts, the high quality streetscape, iconic landmarks and extensive parklands in the precinct mean that the residual visual impact would be high from a number of surrounding viewpoints during construction. The residual visual impact would also be high from the upper levels of Domain Towers and Hallmark Apartments.

There would also be high residual impact on landscape values during construction.

16.14.2 Operation

Given station entrances would be sited in the grounds of the Shrine of Remembrance Reserve, in the tram interchange of St Kilda Road and in the Albert Road Reserve, they would be designed to be small scale, minimalist insertions that respect the heritage character of the parklands and the importance of St Kilda Road and its viewlines.

Consistent with the Urban Design Strategy, the Shrine of Remembrance Reserve would be carefully protected from incursions and visual impacts, while the new station entrance in the Shrine Reserve would contribute to an important new visitor access route to the Shrine, the Royal Botanic Gardens and other destinations in the vicinity.

The station design would ensure that the view to the Shrine from St Kilda Road between Domain Road and Park Street would be kept as clear of structures as possible.

Mitigation measures would focus on re-establishing tree canopy coverage in accordance with the City of Melbourne's *Urban Forest Strategy* and the City of Port Phillip's *Greening Port Phillip* guidelines. The recommended Environmental Performance Requirements for historical cultural heritage would require trees along St Kilda Road to be re-established in the boulevard formation to the satisfaction of the City of Melbourne or Heritage Victoria (refer to Section 14.18 of Chapter 14 *Historical Cultural Heritage*).

The Albert Road Reserve would be redesigned to include a station entrance and open space for the community and office workers, with the memorial relocated and oriented towards St Kilda Road. MMRA is working with the City of Port Phillip to determine the future location of the memorial and the layout of this public open space.

Existing intervening trees would provide some screening of the Melbourne Metro structures from elevated locations. Accordingly, the visual impacts from above ground structures would be low to moderate following the reinstatement of St Kilda Road, boulevard tree replanting and the re-vegetation of the Albert Road Reserve.

The Urban Design Strategy would also require:

- Protecting and enhancing St Kilda Road's character as one of Melbourne's iconic, tree-lined formal boulevards, with the new tram interchange making a positive civic contribution to this setting
- Locating and designing vent shafts to minimise their impacts on important views (particularly the Shrine of Remembrance vista) and complement the formal design character of St Kilda Road
- Maintaining the South African Soldiers Memorial's formal links to St Kilda Road and the Shrine of Remembrance
- Creating high quality open spaces and facilities to support passive and social recreational activities for local residents and office workers.

The high sensitivity of the Shrine of Remembrance surrounds, combined with a moderate level of visual modification, would result in an initial medium to high visual impact at this site. Over time, as the canopy trees re-establish, the residual landscape impact of the project would reduce progressively to low.

16.15 Precinct 8: Eastern Portal (South Yarra)

16.15.1 Construction

Construction activities with the potential to generate landscape and visual impacts in this precinct are demolition of dwellings in William Street, the demolition and subsequent reinstatement of the William Street bridge, the establishment of work sites in South Yarra Siding Reserve, Osborne Street Reserve and Lovers Walk, the widening of the existing rail corridor and construction of retaining walls and other structures, and the construction of an emergency access shaft and the TBM retrieval shaft in the Osborne Street Reserve. The use of attractive, carefully placed temporary hoardings and acoustic sheds to screen the construction work sites would be determined at detailed design.

The setting for the eastern portal is relatively undeveloped parkland, which provides opportunities for post-construction improvements. The surrounding residential and mixed used interfaces have been subject to minimal change. As a result, the setting is very sensitive to change and the ability to accommodate permanent change is limited. However, the broader setting is subject to change in the neighbouring Prahran/South Yarra Activity Centre and the Toorak Neighbourhood Activity Centre, which includes Toorak Road and the Forrest Hill Precinct.

Impacts on Trees

The construction process would potentially require the removal of 218 trees in this precinct of a variety of species and sizes. Subject to detailed design, it is possible that this number could be reduced.

Approximately 100 of these trees have relatively short life spans and would possibly require removal in the near future irrespective of the construction of Melbourne Metro, while 81 trees are Medium and Long Term Viability trees. The most significant of these are a mature palm (which could be transplanted) and a sugar gum (which should be retained and protected) in the northern part of the South Yarra Siding Reserve.

While tree removals would result in loss of amenity to the neighbourhood, these impacts would be temporary as suitable replanting would follow the end of the construction phase.

Impacts on Landscape and Sensitive Viewpoints

Viewlines in proximity to the Melbourne Metro's construction work sites would be generally confined areas as most viewpoints would be screened by buildings. Where more extensive views into these areas are afforded – for example, from Toorak Road to the south along Osborne Street and from William Street – these are of an existing railway corridor landscape.

Specific sensitive receptors in the precinct are residences on Osborne and William Streets adjacent to the portal, users of South Yarra Siding Reserve and retail activities in Toorak Road.

Aesthetically designed hoardings and other measures, such as using high quality materials and finishes for retaining walls, (see Section 16.7.1) would be used to mitigate these impacts. The residual visual impact would be high from the section of Toorak Road where the road bridge crosses the rail cutting and at some non-elevated locations in close proximity to construction activities.

There would be medium residual impact on landscape values during construction.

16.15.2 Operation

The Urban Design Strategy would require the project to:

- Maximise the amount of permanent usable public open space in the precinct and maximise the area of green, landscaped open space
- Provide a design response that facilitates a connection from the South Yarra Siding Reserve to a future public plaza on Toorak Road
- Provide and improve shared use paths along the rail corridor, and improve walking and cycling access across the rail lines – including adopting a high quality integrated architectural and structural engineering design for the new William Street bridge
- Design retaining walls and backfill to provide generous soil depths to support the growth of trees.

Opportunities exist for replanting street trees along Osborne Street and there are also opportunities to improve the landscape quality, amenity and tree canopy cover of both the linear reserve along Osborne Street and the South Yarra Siding Reserve.

Post-construction, both the South Yarra Siding Reserve and Osborne Street Reserve would be returned to a condition that is equal to or better than their existing conditions. Vertical retaining walls would be constructed along the rail corridor at alignments and to heights that allow the South Yarra Siding Reserve and areas along Lovers Walk to be brought to a more level and usable surface grade. Lovers Walk would be widened (where possible) and improved. As a result, the visual modification level for all viewpoints in this precinct would progressively reduce from high to low as the replacement landscape establishes.

The recommended Environmental Performance Requirements would require compliance with the Councils planting strategies.

When developed in accordance with the directions of the Urban Design Strategy, visual elements in this precinct would make a positive contribution to the urban landscape, particularly the pedestrian bridge over the Sandringham railway line and the return of parkland to a better condition than presently exists. Over time, as the canopy trees re-establish, the residual landscape impacts of the project would reduce progressively from moderate to low.

16.16 Precinct 9: Western Turnback (West Footscray)

16.16.1 Construction and Operation

The construction of a new platform at West Footscray station and new track and turnouts would be carried out in a location within an existing rail reserve adjacent to a commercial and industrial area to the south and residential areas and recreation facilities (including the Whitten Oval) to the north. As the existing setting is dominated by the rail infrastructure, the visual impact from the Melbourne Metro's construction and operation phases would be low.

16.17 Environmental Performance Requirements

A range of measures are available to avoid or minimise landscape and visual impacts during construction and operation of the Melbourne Metro. The following table shows the recommended Environmental Performance Requirements for Melbourne Metro and proposed mitigation measures in relation to landscape and visual impacts. The recommended Environmental Performance Requirements have been developed with a view to encouraging appropriate development as reflected in the Urban Design Strategy.

The risk numbers listed in the final column align with the list of landscape and visual risks provided in Technical Appendix B *Environmental Risk Assessment Report*.

Table 16-4 Landscape and Visual Environmental Performance Requirements

Draft EES evaluation objective	Environmental Performance Requirements	Proposed mitigation measures	Precinct	Timing	Risk No.
<p>Landscape, visual and recreational values – To avoid or minimise adverse effects on landscape, visual amenity and recreational values as far as practicable.</p>	<p>Design permanent and temporary works in consultation with local councils and the Office of Victorian Government Architect to comply with the Melbourne Metro Urban Design Strategy. The design shall avoid or minimise visual impacts on sensitive receptors and maintain broader landscape character values, particularly in relation to:</p> <ul style="list-style-type: none"> • Tunnels: Queen Victoria Gardens, Fawkner Park • Western portal: JJ Holland Park • Parkville station: University of Melbourne, Victorian Comprehensive Cancer Centre, Royal Melbourne Hospital, University Square • CBD North station: Royal Melbourne Institute of Technology, the State Library • CBD South station: St Paul’s Cathedral, Federation Square, City Square and Flinders Street Station • Domain station: The Shrine of Remembrance, Albert Road Reserve, Domain Parklands • Eastern portal: South Yarra Siding Reserve. <p>Develop and implement a plan in consultation with the Office of Victorian Government Architect, local Councils and other land managers to comply with the Melbourne Metro Urban Design Strategy to re-establish public open space, recreation reserves and other valued places disturbed by temporary works.</p> <p>The plan must include, but not be limited to, a methodology for storage, reinstatement or replacement of existing public art, monuments and public infrastructure such as poles, bins and other street furniture.</p>	<p>Detailed specific measures for places in each precinct are described in the relevant sections of Technical Appendix L <i>Landscape and Visual</i>. Broadly, these include measures to:</p> <ul style="list-style-type: none"> • Consider the use of temporary hoardings, fencings, screens and plantings of fast-growing trees to define future building sites and to shelter public spaces • Minimise the height, bulk and visual impact of above ground structures • Use a high standard of architectural detailing to ensure above ground structures present well to nearby pedestrians and are durable and easy to maintain in good condition • Consider the potential integration of above ground structures with other streetscape elements, such as lighting and signage, in order to minimise clutter in the street space • Minimise impacts on important views, in particular to and from the Shrine of Remembrance, and on culturally significant features and fabric • Provide a high quality architectural and landscape architectural response to all sensitive interfaces • After construction, reinstate construction work sites to existing or improved conditions • Design walls, fencing and acoustic screens to be visually recessive, present a high quality finish and deter graffiti • Provide expanded pedestrian spaces with enhanced amenity • Integrate over-site development with the station and associated infrastructure 	All	Construction / Operation	LV001 to LV050

Draft EES evaluation objective	Environmental Performance Requirements	Proposed mitigation measures	Precinct	Timing	Risk No.
	Develop and implement measures to minimise light spillage during construction to protect the amenity of adjacent neighbourhoods, parks and community facilities.		All	Construction	LV001 to LV025
	<p>Re-establish trees to replace loss of canopy cover and achieve canopy size equal to (or greater than) typical 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-establish trees and valued landscape character include:</p> <ul style="list-style-type: none"> • The City of Melbourne’s Tree Retention and Removal Policy and Urban Forest Strategy • The City of Port Phillip’s Community Amenity Local Law No. 1 and Greening Port Phillip – An Urban Forest Approach • The City of Stonnington’s General Local Law 2008 (No 1) and City of Stonnington Street Tree Strategy • Any associated precinct plans • Specific policies of the Domain Parklands Conservation Management Plan (CMP), for trees within Domain Parklands • Shrine of Remembrance: Shrine of Remembrance CMP (Lovell Chen, 2010) or any future review and the Shrine of Remembrance Landscape Improvement Plan (rush Wright Associates, 2010) • South African Soldiers Memorial: Any relevant CMP for the South African Soldiers Memorial 	<p>Reinstatement of trees to align with Council urban forestry strategies regarding species selection to achieve enhanced diversification; use of quality tree stock from accredited suppliers; and use of advanced or super-advanced trees at selected locations</p> <p>Prepare a detailed reinstatement and revegetation plan to the satisfaction of MMRA</p> <p><i>Precinct 3 – Arden station</i> Investigate opportunities for additional street tree plantings to Laurens Street</p> <p><i>Precinct 4 – Parkville station</i> Plant new trees to replace previously removed elms in central portion of Elizabeth Street north, within widened central median</p> <p>Investigate the opportunity to undertake a block replacement program for all trees in the southern section of Royal Parade which would secure the long-term viability of an important urban tree plantation</p> <p><i>Precinct 7 – Domain station</i> Develop an integrated replanting response to both municipal areas of St Kilda Road as part of a long-term replacement strategy for the boulevard</p>	All	Pre-construction	AR001 TE002 TE004 TE005 TE006
Further Environmental Performance Requirements relating to arboriculture are set out in Chapter 21 Biodiversity. Refer also to the recommended Environmental Performance Requirements in relation to land use and planning, social and community, and historical cultural heritage impacts. These requirements and proposed mitigation measures are provided in Chapters 9, 10 and 14 respectively.					

16.18 Conclusion

The landscape and visual impact assessment found that, following the adoption of mitigation measures, a number of locations across the Melbourne Metro alignment would experience temporary moderate to high visual impacts during the construction phase. These impacts would be mitigated through a range of management measures taken during construction and through the approaches outlined in the Urban Design Strategy. The changes to landscape brought about by Melbourne Metro need to be understood in the context of Melbourne being a dynamic city that will continue to undergo development and change. Construction activity has been and will continue to be a noticeable component of Melbourne's urban landscape.

The residual landscape and visual impacts of Melbourne Metro during the operational phase have been determined based on outcomes being achieved through well considered design solutions that are consistent with the Urban Design Strategy. The architectural and public realm components of Melbourne Metro would be new elements within the fabric of the city, but would be of a form and scale similar to those that regularly appear as part of a new building or public realm and streetscape upgrades. The implementation of the Urban Design Strategy would ensure that these components protect and enhance the character and form of the public realm, including buildings, within and adjacent to the project alignment.

The potential impacts to trees would be minimised by detailed design, the choice of construction methods, by taking action to retain and protect trees where feasible and by replacing trees removed from the public realm as a result of Melbourne Metro in accordance with the tree protection policies and urban forest strategies of the City of Melbourne, City of Port Phillip and City of Stonnington. Tree removals would be limited to discrete sites, with the main impacts occurring at the Parkville and Domain station sites. There would be an opportunity in the Domain station precinct to achieve a cohesive replanting strategy for St Kilda Road, where the management of the road reserve is shared between the City of Melbourne and the City of Port Phillip. There would also be opportunities to improve the landscape quality, amenity and tree canopy cover of a number of parks and reserves across the Melbourne Metro alignment.

Accordingly, the impact assessment found that the Melbourne Metro would meet the draft EES evaluation objectives as it would avoid or minimise, as far as practicable, adverse effects on landscape, visual amenity and recreational values.