

## 9 Meeting our obligations

### 9.1 Introduction

Through the EES process, the Western Distributor Authority has undertaken impact assessments across 17 technical disciplines to demonstrate that the project would:

- Deliver significant benefits for Melbourne and Victoria
- Meet the evaluation objectives set out in the Scoping Requirements prepared by the Minister for Planning
- Meet the project objectives
- Align with the principles and objectives of the *Transport Integration Act 2010*
- Achieve acceptable environmental, social and economic outcomes following the implementation of the EPRs to avoid, manage or mitigate adverse impacts.

This chapter summarises how the EES has determined that the project would meet major legislative and other obligations.

### 9.2 Project design

Chapter 5 *Project description* details the design developed by CPB John Holland Joint Venture in response to the competitive tender process conducted for the design and construction of the West Gate Tunnel Project. This design – which was informed by the Reference Design developed jointly by the Victorian Government and Transurban (refer to Chapter 3 *Project development*) – provided the basis for assessing the potential benefits and impacts of the West Gate Tunnel Project.

The project is expected to deliver significant benefits, as outlined in Chapter 2 *Project rationale*. Adverse impacts have been identified and are discussed in Volumes 2, 3 and 4 of the EES in relation to each of the three project components: West Gate Freeway, tunnels and port, CityLink and city connections. EPRs to avoid, manage and mitigate these impacts have been identified. These EPRs would form part of the West Gate Tunnel's EMF, which is set out in Chapter 8 *Environmental Management Framework*.

As the detailed design of the project is developed, further refinements may be required to achieve design-related EPRs and meet the requirements of regulatory authorities. These refinements would be contained within the project boundary, comply with the EPRs and align with the project objectives (set out in section 1.4 of Chapter 1 *Introduction*). Such refinements are contemplated by the EES and the EPRs. While further environmental assessment may occur during detailed design and construction, this assessment would not involve further EES process..

### 9.3 Meeting the evaluation objectives

The design for the West Gate Tunnel Project has been assessed against the evaluation objectives set out in the EES Scoping Requirements. These objectives identify the desired outcomes to be achieved in managing the potential impacts of constructing and operating the project.

A summary of the assessment of the project against the evaluation objectives is provided in the following sections. The assessment found that, after the implementation of the EPRs, the project would meet the evaluation objectives.

### 9.3.1 Transport capacity, connectivity and traffic management

*To increase transport capacity and improve connectivity to and from the west of Melbourne and, in particular, to increase freight movement via the freeway network instead of local and arterial roads, while adequately managing effects of the works on the existing broader and local transport networks, including road, public transport, cycling and pedestrian transport networks*

The West Gate Tunnel Project would improve the reliability, resilience and efficiency of the M1 corridor west of the Yarra River, reducing reliance on the West Gate Bridge and connecting two major components of the city's freeway network. This significant step-up in improved connectivity and accessibility would have positive flow-on impacts across Melbourne's western region, the central city and Victoria more broadly.

The project would deliver immediate transport benefits as a stand-alone road project and in the longer term as part of an integrated response to addressing transport issues in Melbourne's west. Information about these benefits is provided in Chapter 2 *Project rationale*. Key transport benefits delivered by the project include:

- Reducing reliance on the M1 corridor by offering an alternative to the West Gate Bridge, with more than 8,000 trucks diverted away from the bridge each day
- Significantly improving peak hour capacity across the Maribyrnong River and Yarra River, and relieving pressure on all four existing river crossings (the West Gate Bridge, Shepherd Bridge, Hopetoun Bridge and Lynchs Bridge),
- Reducing peak period travel times across the city's primary western road corridor
- Providing direct freeway access to the Port of Melbourne for freight movements and improving travel times to the port from Melbourne's west and Geelong
- Providing a central city bypass (through the Wurundjeri Way extension) that would remove through traffic from congested streets in the CBD grid
- Enabling the removal of up to 9,300 trucks a day from local roads in the inner west, with full-time truck bans applying to sections of Francis Street, Somerville Road, Buckley Street and Moore Street, and partial bans applying to Hudsons Road and Douglas Parade
- Reducing congestion on the road network
- Delivering over 14 kilometres of new and upgraded walking and cycling links, including the extension of the Federation Trail and a new 'veloway' suspended between the elevated road structures along Footscray Road.

Construction activities would potentially disrupt traffic movements along the West Gate Freeway, Footscray Road and the arterial and local road network surrounding the project. Measures would be adopted to minimise disruption, provide safe routes for construction traffic and maintain traffic flows, connectivity and the performance of key intersections.

The West Gate Freeway upgrade works would be undertaken in sections to minimise disruption to freeway users and adjacent communities. Maintaining traffic capacity and performance along the freeway would be a critical component of the project's construction: all lanes within the freeway would be kept open during peak periods and traffic monitoring would maintain freeway performance during any temporary lane narrowing or lane closures outside of these periods.

Construction along Footscray Road would also be undertaken in sections, with reduced speed limits, narrower lanes and changed lane configurations occurring along the road as the works progress. All lanes on Footscray Road (or the equivalent number of lanes) would be kept open during peak periods. Right turning lanes would be maintained at all intersections along the road and access to the port via MacKenzie Road and Appleton Dock Road would be maintained. Temporary lane closures outside peak periods would be undertaken in a way that would not compromise the road's performance.

Current capacity (number of lanes) during peak periods would also be maintained along the Princes Freeway, M80 Ring Road, Wurundjeri Way, Dudley Street, Williamstown Road, Millers Road and Grieve Parade.

A Traffic Management Liaison Group would be formed before construction commences, comprising representatives from the State, VicRoads, Project Co and other relevant agencies as required. This group would identify traffic management issues likely to arise during construction and potential actions to manage these issues.

Project Co would be required to prepare and implement a Traffic Management Plan (TMP) supported by traffic volume data and traffic engineering assessments. The TMP would set out arrangements to minimise disruption to road traffic, parking, public transport and walking and cycling movements during construction.

The EPRs for the project would also require Project Co to:

- Restrict the number of local roads used by construction-related traffic
- Minimise disruption to public transport services, routes and infrastructure during construction
- Minimise disruption to bicycle and pedestrian movements during construction
- Implement a communications strategy to advise road users, nearby communities and the relevant road authorities of any changes to transport conditions
- Provide suitable parking arrangements to accommodate the construction workforce, including preventing construction-related parking on local roads
- Reduce pressure on the local road network during construction by using the freeway or arterial road network for haulage of bulk material.

The implementation of the EPRs, including the adoption of the TMP, would enable temporary traffic and transport impacts associated with the project's construction to be managed adequately and safely, as required by the evaluation objective in the Scoping Requirements.

The operation of the West Gate Tunnel Project would lead to a redistribution of traffic on the road network. Significant decreases in daily traffic volumes would occur on the West Gate Bridge and the Bolte Bridge along with decreases on Dudley Street, and truck numbers would reduce substantially along inner west streets such as Francis Street, Somerville Road, Moore Street and Buckley Street.

Traffic volumes are predicted to increase on the M80 Ring Road, West Gate Freeway, Millers Road, Dynon Road, Dryburgh Street and Victoria Street. Truck volumes would increase on Hyde Street south of Francis Street as fuel tanker trips are redistributed to the local oil refineries and would also potentially increase along Millers Road as trucks seek to avoid the tolling point between Grieve Parade and Millers Road. There would be a small increase in traffic volumes on the North and West Melbourne road network of around 100 vehicles an hour outside peak periods. The network has sufficient spare capacity to accommodate this increase and it would not result in significant delays to tram services.

Heavy freight vehicles would be discouraged from using arterial and local roads rather than the West Gate Tunnel Project by a combination of:

- Designing all freeway sections and intersections to accommodate future traffic flows and meet required level of service standards
- Monitoring of traffic performance in selected streets for up to two years after construction ends (in consultation with the relevant local council), with mitigating measures investigated and implemented where adverse impacts are identified.

These measures and the extensive detours – and considerably longer travel times – required to avoid tolls would reduce the incentive for drivers to divert to the surrounding road network.

Overall, the operation of the West Gate Tunnel Project would meet the evaluation objective of increasing transport capacity and improving connectivity to and from the west of Melbourne and increasing the movement of freight via the freeway network instead of local and arterial roads.

### 9.3.2 Built environment

*To protect and enhance the function and character of the evolving urban environment including built form and public realm within the immediate and broader context of the project works*

While the West Gate Tunnel Project would be set in a highly urbanised and densely developed area, construction works and new infrastructure (including ramps, bridges, pedestrian overpasses and noise barriers) would be located largely within the existing road reserve and designated transport use zones. This would limit amenity impacts to the immediate surrounds and result in localised impacts on the existing built form of existing land uses. The use of high quality urban design, extensive landscaping and revegetation would further assist in integrating these structures with the urban environment over time.

The greatest impacts to existing built form would occur:

- In the immediate vicinity of the northern tunnel portals in Footscray, where new structures would be taller than existing buildings and several industrial warehouses and storage areas would be demolished, altering the industrial character of the land. These changes would not have a negative effect on existing built form given the industrial character of the area and the conversion of land to public open space proposed by the project
- Around the western bank of the Maribyrnong River, above Moonee Ponds Creek and along Footscray Road. The industrial character of these locations, the presence of existing elevated structures and a backdrop of port and rail infrastructure means that the West Gate Tunnel Project's structures would integrate with the surrounding urban environment and built form (although views would change from some spaces in close proximity to elevated structures).

The EPRs would require the preparation and implementation of a Construction Environmental Management Plan (CEMP) by Project Co. The CEMP would incorporate measures to protect uses and assets along the project corridor (such as business premises, community facilities, heritage assets and public open spaces), including controls to avoid or minimise impacts due to vibration and ground movement.

The urban design concept for the project requires a high quality design and finish for permanent structures, such as bridges and noise barriers, and incorporates patterns, motifs and colours that would enable the integration of these structures with existing road infrastructure and minimise their visual impacts. The project design also features significant improvements to the existing public realm, including the creation of almost nine hectares of new public open space (including three new landscaped parks and a permanent wetland), upgrades to existing open spaces and extensive landscaping including along the Maribyrnong River waterfront.

The project would not prevent future planning strategies for the evolving urban environment from proceeding. Planning for the project has sought to minimise impacts on sites identified for future development and urban renewal adjacent to the project alignment. While there is uncertainty about the plans for these areas, the project design would not preclude their redevelopment. Suitable planning and design responses at these sites would reduce the project's impacts, and new public open spaces and improved walking and cycling connections would enhance some sites, potentially making them more attractive to prospective residents and investors.

### 9.3.3 Health, amenity and environmental quality

*To minimise adverse air quality, noise and vibration effects on the health and amenity of nearby residents, local communities and road users during both construction and operation of the project.*

The West Gate Tunnel Project has been designed to minimise impacts to human health and amenity. The EES sets out the results of detailed technical assessments of potential air quality, noise and vibration impacts from the construction and operation of the project on different receptors, including residential areas, businesses, open spaces and community and recreational facilities.

The project's construction would impact these receptors in a range of ways, depending upon factors such as distance from project works and structures, the nature of activities being carried out and individual experiences and sensitivities. These impacts would be temporary and would be managed and mitigated through compliance with recognised standards and regulatory thresholds, and the adoption of well-tested construction methods.

During the project's operation, impacts would be managed by adhering to regulatory thresholds and by setting and meeting stringent, project-specific objectives and limits. Compliance with these thresholds and limits would be monitored and engagement would continue throughout operation with local councils, residents, businesses, users of community and recreational facilities, and other stakeholders.

The assessments conducted for the EES demonstrate that the project can be constructed and operated in compliance with the relevant regulatory thresholds, industry standards and best practice guidelines. The EPRs would require the adoption of well-tested measures and good environmental practices to meet project-specific air quality, noise and vibration limits. Overall, with the implementation of the EPRs, the project would achieve the health and amenity evaluation objective of the Scoping Requirements.

#### Air quality

Construction activities have the potential to generate dust and odour impacts which would be localised, of short duration and intermittent in nature. These would be managed in accordance with EPA Victoria's *Guidelines for Major Construction Sites* and by adopting standard construction practices (such as dust suppression measures), which would be detailed in the CEMP. An Air Quality Management and Monitoring Plan would be implemented during construction. These measures would maintain air quality to a standard that would not prejudice the health and amenity of nearby residents, open spaces and community facilities.

The project's tunnel ventilation system would be designed to best practice criteria, to comply with the EPA Victoria Works Approval and would be required to achieve zero portal emissions. This approach means there would not be any significant degradation of air quality detectable around the operating tunnels.

Overall, local air quality in inner west residential locations would improve due to the redistribution of traffic and reduced truck volumes along a number of streets including Buckley Street, Francis Street, Hyde Street, Whitehall Street and Williamstown Road. Air quality modelling has demonstrated that the maximum ambient concentrations for most pollutants would be less than the thresholds set by guidelines and regulations. The exception is particulate matter (PM). While the project would make a negligible contribution to the concentration levels of this pollutant, occasional exceedances would occur due to existing high background concentrations that would be elevated even without the project. These exceedances are predicted to occur on no more than one day a year at the worst affected receptors.

## Noise and vibration

The nature of construction activities in a highly developed urban environment means that higher noise levels would be unavoidable across most of the project corridor. These temporary increases would occur against a background of existing noise levels that already exceed assessment thresholds in many places. Noise impacts would be minimised through a combination of measures, including requiring Project Co to meet construction noise objectives. A range of measures would be used to achieve this as appropriate under the CNVMP, for example installing noise barriers, scheduling noisy construction work at less sensitive times, providing respite periods for particularly noisy activities and establishing a complaints system. Project Co would consult regularly with potentially affected sensitive receptors (such as kindergartens, schools, community facilities and churches) and take action to minimise noise impacts if required.

Once the project starts operating, the primary noise effects would be traffic noise from vehicles using the road network. Project-specific operational traffic noise objectives have been adopted (and set by the EPRs), including a requirement for the design to achieve a noise level at residential buildings adjacent to the freeway at or below 63 dB(A) between 6am and midnight. This would apply to noise from the West Gate Freeway, the new motorway (including the bridge over the Maribyrnong River and Footscray Road), new roads (the Hyde Street ramps, Dynon Road extension and the Wurundjeri Way extension) and to residential and community buildings up to 100 metres from the freeway on major interchange roads. As the 63 dB(A) level is well below the current VicRoads limit of up to 68 dB(A) for freeway retrofitting, this would result in a reduction in noise levels at a number of residential locations. The vast majority of residents along the West Gate Freeway would be better off.

New and upgraded noise barriers would be provided for areas in close proximity to the West Gate Freeway. Specific noise mitigation treatments may be required at some locations to achieve the 63 dB(A) level, for example architectural treatment of residences.

Noise levels on parallel traffic routes to the West Gate Tunnel Project are predicted to increase by no more than 2 dB(A) as a result of the project's operation. These increases are considered to be indiscernible. The redistribution of traffic away from some surface roads would contribute to a reduction in traffic noise on parallel routes through the inner west; for example, a reduction of around 2 dB(A) is predicted for Francis Street.

Noise monitoring would be undertaken after construction of the project is complete to confirm compliance with the levels set for the project. Should these levels be exceeded, mitigation measures would be reviewed and implemented to achieve the required thresholds.

While the type of TBM proposed for the project is effective in minimising vibration, construction of the tunnels and portals would generate elevated levels of vibration and regenerated noise that would be perceptible at locations immediately above the tunnels and up to 50 metres on either side. These impacts would be of short duration: around three to nine days at a time as the TBMs move along the tunnel alignment.

The project would be required to comply with local and international standards that have been shown to be protective of amenity, buildings and infrastructure. Meeting these limits would reduce vibration and regenerated noise to levels that are acceptable to the majority of people and ensure a very low likelihood of vibration-induced damage to property and other infrastructure. Vibration at particularly sensitive locations would be monitored and contingency measures taken should the limits be exceeded. These measures could include operating the TBM for shorter periods of time, reducing the intensity of machinery use or offering short-term relocation (expected to be limited to less than one week) for occupants at the worst-affected locations.

## Human health

A specific human health risk assessment was undertaken to evaluate how the project may impact or benefit the health and wellbeing of the local community. The assessment considered the overall health impact of potential changes to traffic conditions, air quality, noise and community assets. It also considered the potential health effects of cumulative changes at specific locations.

With the implementation of the EPRs – such as those requiring Project Co to meet noise and air quality limits, manage vibration from construction activities, restore areas used for construction purposes and maintain access to community facilities – all risks to human health associated with the project would be minimised and managed.

The health risk assessment found there would be no measurable changes to the health of the community because of the West Gate Tunnel Project. No local areas or locations were identified where the combined impact from changes in noise and air quality would be significant or unacceptable. Changes that occur as a result of the redistribution of traffic associated with the project would mean that some places experience increases in noise and air quality impacts, while others experience decreases. The assessment of these changes found that even where especially sensitive receptors may be present, such as within childcare centres or aged care facilities, there would be no health impacts that would unfairly disadvantage these populations.

### 9.3.4 Social, business, land use, public safety and infrastructure

*To minimise adverse effects on the social fabric of the community, including with regard to community cohesion, access to community services and facilities, business functionality, changes to land use, public safety and access to infrastructure*

Generally, social, business and land use impacts are a result of physical impacts such as changes in noise levels, air quality, access to and use of community facilities and valued places. Minimising these physical impacts has the flow-on effect of minimising impacts on community facilities, local businesses and land uses.

Overall, social and business impacts would be reduced through a combination of actions: project design, robust mitigation and management measures, and a commitment to community involvement throughout detailed design and construction. The protocols set out in the CEMP would cover matters such as protecting community and commercial buildings from damage and retaining access to businesses and community facilities. Where the operation of community facilities would be affected by the project, mitigation and management measures would be identified and undertaken in consultation with the appropriate stakeholders.

The EPRs would also require Project Co to develop a Communications and Community Engagement Plan (CCEP) that must address matters of interest and concern to potentially affected residents and businesses, councils, community groups, sporting clubs and public facilities. Project Co would also establish a system for managing complaints about the project's impacts. The Community Liaison Group established by the Victorian Government would continue to be a forum for identifying resolving issues of community concern during detailed design and construction.

Once the West Gate Tunnel Project is operating, the benefits of removing a large number of trucks from local streets in the inner west would be likely to improve community cohesion and connectivity.

## Community facilities

Community facilities close to construction works and permanent project structures would experience some social impacts due to changed traffic conditions, amenity and access.

Continued access to community facilities during construction would be managed through the TMP, CEMP and consultation with local councils and community groups. However, the use of some facilities would be affected, including:

- Sporting and recreational activities could be disrupted at Yarraville Gardens and Hanmer Reserve in Yarraville due to construction noise. Temporary noise barriers would be erected around the northern portal work areas to reduce these impacts
- Increased noise levels could temporarily disrupt community enjoyment of Grimes Reserve, Tannery Reserve and the Maribyrnong River waterfront in Yarraville and Footscray
- The Federation Trail would need to be diverted at Millers Road during the project's construction. The proposed diversion would make the route longer and would be in place for an extended period, which could potentially reduce commuter use during this time. Social activities related to bicycle clubs and networks would be unlikely to be affected as alternative routes would be available
- Access may be restricted temporarily to and through waterfront recreational areas and shared use paths along Moonee Ponds Creek due to the construction of elevated structures. Alternate routes would be provided for users of the Moonee Ponds Trail.

During construction of the bridge over the Maribyrnong River, Project Co would be required to maintain navigation clearance requirements and provide sufficient navigational width for river traffic and a clear navigation channel along the river. This would keep the river open to recreational water-based activities.

The CCEP developed for the project would include consultation with the owners, managers and users of community and council facilities affected by the project's construction or operation.

## Land use

The West Gate Tunnel Project would not have a significant impact on existing or planned land uses as most of the project's construction works and permanent structures would be located within the existing road reserve or zones designated for transport uses. While changes to built form around the northern portals in Footscray and along the Maribyrnong River, Moonee Ponds Creek and Footscray Road may have impacts on the character of surrounding areas, existing land uses could continue in accordance with strategic policies and zoning.

During detailed design, Project Co would endeavour to reduce disruption to current uses of public and council land as a result of temporary occupation, and minimise the permanent footprint of the project to reduce adverse impacts on potentially affected land uses.

The project corridor contains several planned urban renewal areas that are important for accommodating the city's growing population and establishing new employment zones. While there is uncertainty about these areas, planning for the West Gate Tunnel Project has sought to minimise impacts on them and to keep open options for suitable planning and design responses where these areas would interface with project infrastructure.

In the West Gate Freeway component, small sections of land would be permanently acquired in the southern corner of the Bradmill site (Yarraville) and along the northern boundary of the Precinct 15 site (Altona North). The option of a road connection between the two sites would not be precluded and these sites would continue to be suitable for redevelopment. Walking and cycling connections between these sites would be improved by a new shared use path and public open spaces.

The north-west corner of the 20-hectare E-Gate precinct in West Melbourne would be occupied during construction and 1.5 hectares would be acquired permanently along the north-western edge of the precinct. This would still leave a large and consolidated site available for future redevelopment.

Project Co would be required to manage impacts on future development at Railway Place and Miller Street Reserve in West Melbourne and Digital Harbour (Docklands) in consultation with the City of Melbourne and the landowner/developer respectively. The project would not preclude opportunities for future pedestrian connections between Digital Harbour and West Melbourne and from North and West Melbourne, E-Gate and Docklands to Moonee Ponds Creek.

More broadly, improvements in accessibility and local amenity would support the strategic land use outcomes that are anticipated by the *Plan Melbourne 2017-2050* Metropolitan Planning Strategy.

## Land requirements

In developing and assessing options for the West Gate Tunnel Project, a core principle was to avoid the acquisition of residences. As such, impacts on residential properties would be limited to creating or varying existing easements on eight properties associated with the 220kV transmission line and the acquisition of a small strip of land already encumbered with an existing transmission tower and easement. There would be no acquisition of any existing residence and the relocation of transmission towers may result in a reduction of existing easements over residential land subject to detailed design.

A total of 65 properties would be impacted by permanent land acquisition, 61 of which only require partial acquisition and four would require acquisition of the whole property.

Across these properties, 34 are occupied by 39 commercial leasehold interests. At the time of preparing the EES, seven of these commercial leasehold interests would need to be relocated. The remaining 32 would be able to continue to operate, although they could be affected by some aspects of the project's construction works (such as changed amenity or access).

A further 20 properties would need to be occupied temporarily. This includes one commercial property, being the Port of Melbourne. The remaining properties include Crown land, council freehold, VicRoads freehold and other public authority (government-owned) freehold.

Compensation for parties with an interest in land required for the project would be provided in accordance with the *Land Acquisition and Compensation Act 1986*.

In addition to surface property acquisition, underground strata would need to be acquired where the project's tunnels pass under properties. The land at surface level is not required in this type of acquisition.

## Business

During construction, disruptions to businesses may be caused by changes to access, amenity impacts such as construction dust and noise and loss of passing trade. In addition to the EPRs identified for traffic, air quality, noise, vibration and human health, further EPRs require providing and restoring access to businesses and commercial facilities, screening construction work sites that adjoin commercial properties and minimising disruption to businesses from the temporary occupation of land.

The CCEP developed for the project would include consultation with the Port of Melbourne and freight companies to manage impacts on port-related traffic, operations and access.

Maintaining business functionality would be a primary concern of the project and a Business Involvement Plan would be developed and implemented ahead of construction commencing. Affected businesses would be updated on the progress of construction activities, potential impacts, mitigation measures, changed traffic conditions and other matters of interest or concern to them. This would be especially important for businesses with time-sensitive supply chains.

During operation, changes to traffic patterns – along with the introduction of tolls and truck curfews – would be likely to benefit some businesses and negatively affect others. Adverse impacts would be minimised through the implementation of the recommended transport EPRs. Businesses would also be provided with sufficient notice of proposed curfew and tolling arrangements to enable them to make any necessary changes to their operations.

## Public safety

All design options considered during the development of the West Gate Tunnel Project were evaluated for safety, including issues related to traffic weaving, road gradients, access for emergency vehicles, pedestrian and cyclist safety, and fire and life safety (FLS) requirements. The identification of a significant safety issue in relation to any option under consideration meant that the option was not progressed.

Potential transport-related public safety issues during construction (such as those associated with increased heavy vehicle traffic and busier intersections) would be managed through the TMP and through regular communication with local communities, councils, residents and road users. The CEMP would incorporate measures to protect public safety during construction, such as securely fencing all construction compounds.

The urban design concept for the project has a strong focus on enhancing amenity and safety in public spaces and the EPRs would require Project Co to implement the principles of Crime Prevention Through Environmental Design.

Protocols set out in the project's CEMP would cover procedures for managing extreme weather events (such as storms and floods), the handling and storage of hazardous materials and the prevention and management of emergencies.

### 9.3.5 Landscape, visual and recreational values

*To minimise adverse effects on landscape, visual amenity and recreational and open space values and to maximise the enhancement of these values where opportunities exist.*

Open spaces and recreational facilities close to construction activities would experience landscape and visual impacts. The EPRs would require Project Co to minimise impacts on users of these spaces and facilities, including by screening construction work sites and compounds. Access to recreational facilities would be retained and alternative arrangements put in place should construction works restrict usual access routes.

While the visual impacts of major new transport infrastructure cannot be avoided completely, the urban design concept for the West Gate Tunnel Project sets out an integrated approach to architectural, landscape and infrastructure design across the project. The concept seeks to incorporate a high degree of visual compatibility with the existing built form and aims to create attractive structures that integrate with their settings. Large scale structures are intended to be attractive, iconic features that reference Indigenous elements and regional themes.

There would be visual impacts from the removal of trees during construction, particularly along the West Gate Freeway and Footscray Road. These trees would be replaced in accordance with a project-wide Landscaping Plan which would be developed in consultation with the relevant local councils, and having regard to local tree replacement, streetscape planting and urban forest strategies. The plan would incorporate the project commitment for a tree replacement ratio of 3:1 and include vegetation screening for visually impacted residential areas, community facilities and public open spaces; however, this planted vegetation would take time to establish. In total, around 3,370 planted trees would need to be removed, and around 4,000 advanced trees and 13,500 tubestock trees would be planted.

Open space is recognised as being a scarce resource in the inner west and the West Gate Tunnel Project has been designed to minimise impacts on public open space. The project would cause temporary disruption to the recreational use of some public open space areas; however, there would be opportunities to improve these spaces when they are restored to their former uses post-construction.

Specific key impacts would include:

- Locations along the West Gate Freeway – Some residential streets and open spaces adjacent to the freeway in Brooklyn, Altona North, South Kingsville, Spotswood and Yarraville would have changed views due to the replacement of existing noise barriers, the removal of planted vegetation from the freeway reserve, changes to electricity towers, new freeway light poles and the presence of the westbound southern portal and ventilation structure. The design of new structures and noise barriers, along with replacement plantings and screenings, would mitigate these visual impacts.
- WLJ Crofts Reserve (Altona North) – A small strip of land along the northern border would be required permanently for the project. The EPRs would require consultation with Hobsons Bay City Council to identify appropriate alternatives/compensation for the loss of this public open space. The existing noise barrier would be replaced and planted vegetation would be removed for freeway widening works. Visual impacts would be reduced by planting new vegetation screening along the northern boundary. Open space values would be enhanced by new noise barriers extended along part of the reserve to achieve the project noise objective at nearby residences.
- West Gate Golf Course (Spotswood) – A small section of the course would be used as a construction compound and an even smaller strip of land (less than one per cent of the total course area) would be acquired permanently. Some changes to the golf course may be required. Temporary visual and noise impacts during construction would be mitigated by using barriers and screening.

- Donald McLean Reserve (Spotswood) – A small strip of land along the reserve’s north-east perimeter would be acquired permanently for the Hyde Street on-ramp, which would be visible from the reserve. The cricket nets in the reserve may need to be relocated. Visual and noise impacts during construction would be mitigated by noise barriers and screenings, and by retaining trees and vegetation where possible. Open space values would be enhanced by noise barriers installed to achieve the noise objective at nearby residences.
- Hyde Street Reserve (Yarraville) – A small section of the reserve would be occupied temporarily during construction. Views from the reserve would change due to the new road and shared use path ramps and the removal of vegetation. These impacts would be mitigated by the green vertical fin balustrading used on the ramps, planting of canopy trees and riparian vegetation, and the removal of the high voltage powerlines and associated tower.
- Yarraville Gardens and Hanmer Reserve – The new northern portal, ventilation structure and shared use path overpass of Whitehall Street would be seen from these open spaces, which already have views of stacked shipping containers and cranes. Providing the new shared use path along Harris and Hyde streets may impact on the northern edge and entrance structures of Hanmer Reserve.
- Maribyrnong River and Moonee Ponds Creek – There would be high visual impacts on spaces and walking and cycling links along these waterways from the new bridge, ramps and elevated structures. While these waterways are already crossed by a number of bridges and the users of nearby spaces are accustomed to the presence of infrastructure, Project Co’s urban design concept seeks to deliver positive outcomes for users of these spaces. The design includes extensive landscaping along the Maribyrnong River waterfront and a new park on the west bank of Moonee Ponds Creek. Revegetation would reduce impacts over time and Project Co would explore opportunities in conjunction with the City of Melbourne and Maribyrnong City Council to further improve these areas.

During detailed design, further consideration would be given to minimising landscape and visual impacts, reducing adverse impacts on parks, reserves and recreational facilities, and maximising opportunities for enhancing public amenity and spaces.

Provision of new public open space and upgrades to existing open spaces would have highly positive landscape, visual and social impacts. Recreational and open space values would be enhanced by improved walking and cycling connectivity, including the upgraded Federation Trail, upgraded pedestrian crossings over the West Gate Freeway, the shared use path adjacent to the new park at the westbound southern portal and the new boardwalk linking Yarraville Gardens and the Maribyrnong River waterfront. These features would create a strong community legacy, delivering long-term benefits for residents.

### 9.3.6 Land stability

*To avoid or minimise adverse effects on land and river bed or bank geomorphic stability from project activities, including tunnel construction and crossings of the Maribyrnong River, Kororoit Creek, Stony Creek and Moonee Ponds Creek.*

The design for the West Gate Tunnel Project has been informed by geotechnical investigation and modelling that examined the potential for ground movement and identified areas of land known to be soft and compressible. Generally, the project’s tunnels would be driven through volcanic rock, which would minimise the potential for ground movement.

Project Co would be required to undertake further geotechnical investigations at a number of localised sites to inform the project’s final detailed design and determine the appropriate engineering responses to ground movement risks at these sites. Using sound engineering measures, ground movement would be unlikely to occur and the potential for impacts on buildings, land, infrastructure or river beds and banks receptors would be low.

Where structures could be affected – most likely in a small industrial and commercial area around the northern portals – the worst impacts would be superficial or cosmetic damage only, and any damage would be temporary and readily repairable. Further assessment of some buildings, infrastructure and services would be undertaken to determine their resilience to ground movement and set appropriate settlement criteria. The condition of these structures would be recorded prior to and at the conclusion of construction.

Ground movement would be monitored during deep excavation works and appropriate mitigating solutions adopted should the settlement criteria be exceeded. Project Co would be required to establish an independent mediation process for the assessment of claims for property and infrastructure damage. Subsidence and lateral movement would be monitored during operation to manage any potential impacts to infrastructure and services.

Construction activities would include reshaping discrete sections of the banks at the Maribyrnong River and Moonee Ponds Creek. Measures would be adopted in the CEMP (to the satisfaction of Melbourne Water and in consultation with the relevant local councils) to maintain riverbank stability and minimise the potential for instream erosion.

With the application of the EPRs, potential ground movement impacts on receptors within and around the project corridor would be consistent with the evaluation objective, as adverse effects on land and river bed or bank stability would be minimised.

### 9.3.7 Hydrology and water quality

*To avoid or minimise adverse effects on surface water and groundwater quality and hydrology in particular resulting from the disturbance of contaminated or acid-forming materials, and to maintain functions and values of floodplain environments.*

#### Surface water

The most significant surface water issue for the project would be the management of flooding risk, with temporary and permanent structures in the floodplains of Kororoit Creek, Stony Creek, the Maribyrnong River and Moonee Ponds Creek having the potential to divert or obstruct flood flow paths and affect flood levels. There would not be project infrastructure within the permanent waterways of Kororoit Creek or Stony Creek.

While the likelihood of a large scale flood event during the construction of the West Gate Tunnel Project would be very low, the potential impacts of such an event would be managed by requiring the project to maintain existing flood storage capacities, flow paths and drainage lines. In addition, the project's CEMP would consider scheduling works during times of the year that are less susceptible to floods, and require the implementation of a flood emergency management plan specifying actions to be taken in the event of an oncoming flood.

Flood modelling of the project's detailed design would ensure that new permanent structures do not increase flood levels above the criteria specified by Melbourne Water.

Protecting the project's tunnels from inundation during a major flood event is a fundamental design requirement, given the critical importance of maintaining the integrity and function of a major piece of infrastructure and protecting the safety of the motorists using it. While the likelihood of such an event is rare, further flood modelling during detailed design would ensure that the tunnel portals are constructed above and/or protected from a probable maximum flood event (including climate change considerations); that flood warning systems are installed on the approaches to the tunnels; and that a flood emergency management plan is prepared.

Any impacts on water quality in Kororoit Creek, Stony Creek, the Maribyrnong River, Moonee Ponds Creek or the Yarra River would be minimised during construction. Good practice environmental management measures – including erosion and sediment controls, bunding, stormwater treatment systems and water quality audits and monitoring – would be adopted at construction sites to minimise the potential for runoff to affect local waterways and drainage lines. These measures would be detailed in the CEMP.

As the project would create new paved surfaces, there may be an increase in the concentration of pollutants in stormwater runoff that could potentially affect waterway health if discharged to the stormwater drainage system. Water Sensitive Road Design (WSRD) has been incorporated into the project design with the objective of meeting EPA Victoria and VicRoads water quality targets for urban stormwater. With WSRD treatment measures in place, the project would meet pollutant reduction targets for drainage lines, but would fall short of the targets for Kororoit Creek, Stony Creek, the Maribyrnong River and Moonee Ponds Creek. Potential stormwater impacts would be offset in consultation with Melbourne Water to mitigate water quality impacts in the relevant catchment. As a result, there would be no impact on water quality in these waterways (or the Yarra River) due to the project's operation.

With the implementation of the EPRs, the project's surface water impacts would be consistent with the evaluation objective in the Scoping Requirements, as appropriate and well-tested controls would be used to avoid or minimise adverse effects on surface water quality and hydrology and to maintain the functions and values of floodplain environments.

## Groundwater

All construction projects involving excavation works have the potential to encounter groundwater. Seepage or inflow of groundwater into the tunnels and other deep excavations during construction or operation - and the use of 'dewatering' measures to keep work areas dry and safe – has the potential to lower surrounding groundwater levels. This may alter groundwater quality and present risks to human health, ecological receptors, buildings and structures.

Groundwater risks are not uncommon for major tunnelling projects and proven engineering solutions and construction techniques would be used to manage, monitor, reuse and dispose of groundwater inflows. A groundwater model would be maintained and updated as necessary throughout the project's construction phase. The project's tunnels would be excavated using TBMs that are designed to maintain the pressure of the earth around the tunnel excavation, minimising the risk of groundwater disruption.

As the TBM progresses, a support consisting of a segmental concrete lining would be installed behind the machine and grouted in place against the surrounding ground. This permanent lining would seal the tunnel and minimise groundwater seepage and inflows during construction and operation.

Lowering of groundwater levels in acid sulphate soils could potentially result in acidification of the groundwater. The highly urbanised nature of areas within and adjacent to the project boundary also means that contaminated groundwater could be encountered during tunnelling. The CEMP would incorporate well-tested construction methods to maintain groundwater quality and reduce the risk of groundwater acidification and the potential impacts of encountering and/or displacing contaminated groundwater.

The diversion of a portion of the North Yarra Main Sewer may alter the current flow paths of potentially contaminated groundwater from a number of properties, although the change in flow direction would be unlikely to significantly alter the extent of existing contamination. A precautionary monitoring and management program would be undertaken in the vicinity of these properties to evaluate how best to minimise possible future adverse impacts associated with changes in groundwater flow direction and the migration of existing contamination.

Groundwater encountered by the project would be treated and may be reused during construction. Groundwater would only be discharged to waterways or drainage systems in accordance with the requirements of the relevant regulatory authority.

Adopting these measures would enable the project to achieve EPA Victoria and SEPP requirements and meet the evaluation objective of avoiding or minimising adverse impacts on groundwater quality.

### 9.3.8 Biodiversity

*To avoid or minimise adverse effects on native terrestrial, aquatic and inter-tidal flora and fauna, and address opportunities for offsetting potential losses consistent with the relevant policy.*

The impact assessments undertaken for the EES identified that very few native terrestrial, aquatic and inter-tidal flora and fauna values would be impacted by the project. Following the implementation of the EPRs, the project has been assessed as consistent with the biodiversity evaluation objective in the Scoping Requirements: biodiversity and ecological impacts are expected to be low and unavoidable impacts to remnant vegetation would be offset.

#### Native vegetation

The highly urbanised landscape traversed by the West Gate Tunnel Project means that most areas have been cleared of native vegetation. The project has been designed to avoid impacts to remnant vegetation where possible, but some native vegetation would be removed during construction or lost due to overshadowing by new elevated structures. This impact would be small in scale: a total loss of 22 scattered trees and around 0.66 hectares of remnant vegetation located within a disturbed urban setting. This comprises 0.05 hectares of Riparian Woodland on the north-eastern bank of Kororoit Creek, 0.47 hectares of Coastal Saltmarsh from the south bank of Stony Creek (both within the West Gate Freeway component) and 0.14 hectares of endangered Brackish Wetlands lining the east and west banks of Moonee Ponds Creek (in the port, CityLink and city connections). The removal of this vegetation would not result in a significant loss of local habitat or significantly affect threatened species.

During detailed design, further consideration would be given to minimising the extent of remnant vegetation clearing by reducing the project's construction footprint, minimising the removal of trees and restricting works near wetlands and remnant vegetation. The CEMP prepared by Project Co would include measures to protect vegetation during construction. Restoration of disturbed areas following construction would replace the same or similar species as removed and enhance ecological and urban amenity where possible. Any loss of remnant vegetation would be offset within the same water catchment or municipal district in accordance with the *Permitted clearing of native vegetation – Biodiversity assessment guidelines*.

#### Trees and planted vegetation

While the project has been designed to avoid impacts to trees and other planted vegetation, construction of the project would potentially require the removal of around 2,480 trees of varying types and ages within the West Gate Freeway component, around 120 trees within the tunnels component and around 740 trees within the port, CityLink and city connections component.

The estimated number of trees expected to be lost is a conservative assessment, as this impact would be minimised through detailed design and pre-construction site assessments. Project Co's tree replacement strategy proposes replacing every canopy tree removed during construction with three trees: 4,000 advanced trees and 13,500 tubestock trees would be planted across the three project components, along with extensive understorey plantings.

As part of the CEMP, Project Co would be required to implement a Tree Management Plan that would identify trees to be retained and specify protection measures to ensure these trees are not affected during construction. All sites disrupted by temporary works would be reinstated with appropriate vegetation. The project-wide Landscaping Plan prepared for the project would have regard to local tree replacement, street planting and urban forest strategies. The plan would also include measures to support the long-term viability of replacement plantings.

Any lowering of groundwater levels as a result of the project could affect groundwater dependent ecosystems (GDEs) – such as trees and vegetation – in proximity to the project alignment. Project Co would be required to design and adopt specific controls to reduce the likelihood of impacts to these GDEs, including in and around Stony Creek and in Yarraville Gardens. These controls would include monitoring of groundwater levels and developing a contingency plan to limit impacts on sensitive areas and trees from a loss of water.

## Terrestrial fauna

Fauna species inhabiting the areas surrounding the project alignment are common to urban environments and are considered resilient and adept at thriving within these environments and capable of withstanding disturbances from road construction and operation. Alongside general noise and vibration controls, the EPRs and CEMP would include specific measures to relocate significant native fauna species (where appropriate), minimise lighting impacts in known fauna habitats and prevent the spread of weeds and pathogens.

## Aquatic ecology

As with terrestrial fauna, aquatic fauna species within the areas surrounding the project alignment – such as common and exotic fish and frogs – are considered highly resilient within urban environments and capable of withstanding disturbances. However, these species could be affected by works occurring in or near waterways, the risk of surface water runoff and groundwater discharge carrying sediments, pollutants or contaminants being released into waterways during construction and the location of permanent piers in or near waterways.

Potential impacts on aquatic flora and fauna during construction would be minimised through compliance with EPA Victoria guidelines and SEPP (Waters of Victoria), the adoption of best practice construction techniques (such as minimising chemical and fuel storage onsite) and regular site audits. These practices would be included in the CEMP.

The EPRs would require waterway flows to be maintained and the potential for erosion and sedimentation to be minimised. Piers would be designed so as to not increase flood risk, and bank stability would be managed to the satisfaction of Melbourne Water. These measures would be sufficient to protect aquatic and inter-tidal ecology.

Project Co would also be required to design and adopt specific controls to reduce the likelihood of a lowering of groundwater levels affecting aquatic ecosystems.

Adopting the design and construction measures would minimise adverse effects on native terrestrial, aquatic and inter-tidal flora and fauna and enable the evaluation objective to be met.

### 9.3.9 Cultural heritage

*To avoid or minimise adverse effects on Aboriginal and historical cultural heritage values.*

Development and urbanisation in the areas traversed by the project have resulted in widespread ground disturbance over many decades, meaning that there are very few locations of Aboriginal cultural heritage sensitivity. A Cultural Heritage Management Plan (CHMP) has been prepared alongside the EES to manage any potential impacts to Aboriginal cultural heritage.

Waterways within the project boundary are likely to have been the focus of Aboriginal occupation and a small area with high archaeological potential lies adjacent to Kororoit Creek in Altona. Archaeological testing undertaken in this area as part of the preparation of the CHMP discovered two Aboriginal cultural heritage places: an artefact scatter and a low density artefact distribution. These sites have been registered and conditions for protecting them are contained in the CHMP.

Similarly, the nature and extent of historical and ongoing urban development along the project corridor (including the original construction of the West Gate Freeway) means that most of the land required for the project has low historical archaeological potential or heritage values. The key exceptions to this are:

- The area around Stony Creek in the West Gate Freeway component, where three sites listed on the Victorian Heritage Inventory – a wharf, a drawbridge and ballast quarries – may be disturbed due to construction of the northern Hyde Street ramp
- A number of heritage registered shipwrecks thought to be located in the Maribyrnong River, which could be affected by construction works within the river or on the banks
- Evidence of historical infrastructure and services along the Footscray riverfront (including rail tracks and a bluestone drain), which could be affected by construction of the elevated structures over the Maribyrnong River
- Heritage places associated with waste disposal and rail activity around Moonee Ponds Creek, where construction activities would require relocation of at least one of the locally significant South Dynon rail turntables.

Given the history of the local area, there is also the potential to uncover previously unrecorded items and sites of historic heritage significance during construction. The Archaeological Management Plan prepared for the project would set out measures to protect these sites as far as practicable, including through testing, researching, recording and possible salvage activities.

Opportunities to refine the design of project structures would be pursued during detailed design, with the aim of avoiding or minimising impacts on heritage structures and places. Where impacts cannot be avoided entirely, the EPRs would require Project Co to provide physical protection for structures and places, undertake archival photographic recording and dismantle, store or reinstate heritage assets appropriately. Specific EPRs have been developed to minimise impacts on the shipwrecks in the Maribyrnong River and on a number of structures, including the rail turntables.

Project Co would consult with local councils in developing a heritage interpretation strategy for the West Gate Tunnel Project that explores historical and Aboriginal cultural heritage themes.

With the implementation of the EPRs, including the implementation of the CHMP, the project would be consistent with the evaluation objective for cultural heritage.

### 9.3.10 Waste management

*To manage excavated spoil and other waste streams generated by the project in accordance with the waste hierarchy and relevant best practice principles.*

Construction of the West Gate Tunnel Project would generate approximately two million cubic metres of soil and rock (spoil). The bulk of this spoil would be generated from tunnelling and portal construction works and would be extracted at the northern portal construction site.

Most of this spoil would be 'clean fill' or non-hazardous material that could include soil, rock and stone. As construction would take place in a highly urbanised environment, with a long history of industrial use, works may also encounter contaminated material including prescribed industrial waste (such as heavy metals, pesticides and petroleum hydrocarbons) and asbestos, as well as naturally occurring acid sulphate soil and rock.

Investigations to date indicate that contaminated soil and materials could be effectively managed, to minimise the risk of impact to the environment and the health the general public following the implementation of the EPRs and CEMP. Further investigations would be undertaken as part of the detailed design phase of the project to better understand the risks posed by contamination at specific sites along the project alignment.

Contaminated spoil would be assessed and managed in accordance with standard construction methods and compliance with environmental laws, regulations and guidelines. Project-specific controls – including requirements for storage, handling, treatment, transport and disposal of spoil – would be incorporated within the CEMP.

As the quantity of spoil would exceed the amount of fill required on-site, excess spoil would be stored and then removed to appropriate disposal, recycling or reuse areas. The site for the temporary storage of tunnel spoil would be near the northern portal. Spoil would be stored temporarily at this site prior to being removed to the tunnel spoil handling facility located within 221 Whitehall Street (the former Pivot site). Tunnel spoil would be conveyed to the facility via a fully enclosed elevated conveyor system. Once appropriately categorised, spoil would be loaded onto spoil trucks by excavators and transported away from this site.

Project Co has assessed the capacity of existing spoil disposal facilities and determined that there would be sufficient capacity for disposal and, where permitted by EPA Victoria, reuse of appropriate spoil for landscaping and infill.

Waste other than spoil would be minimised and eliminated as far as practicable during construction and operation. Waste management measures would be implemented in accordance with the waste hierarchy and applicable legislation.

With the implementation of the EPRs, the project would meet the evaluation objective in the Scoping Requirements for waste management.

### 9.3.11 Environmental Management Framework

*To provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with construction and operation phases of the project, in order to achieve acceptable environmental outcomes.*

The proposed EMF for the construction and operation phases of the West Gate Tunnel Project is included as Chapter 8 *Environmental Management Framework*. The development of the EMF has been guided by the Scoping Requirements and relevant legislation, policy and guidelines, and informed by the environmental risk and impact assessment prepared by technical specialists for the EES. It also considers feedback provided by regulators and other stakeholders during the EES consultation process.

The EMF sets out EPRs that define the outcomes the project must achieve during its design, construction and operation. The EPRs provide a performance-based approach to achieving the project objectives, environmental outcomes and obtaining the required project approvals. This approach enables consideration of design alternatives in detailed design fostering innovation in ongoing design development and project implementation, without compromising on the environmental outcomes to be achieved.

The EMF also outlines roles and responsibilities for managing the environmental aspects of the project.

If the West Gate Tunnel Project obtains approval and proceeds:

- Delivery of the project would be required to comply with the EPRs
- The Environmental Management Strategy (EMS), (prepared in accordance with the EMF and the EPRs) would have regulatory status as part of the planning scheme amendments required for the project
- The Western Distributor Authority would incorporate the relevant EPRs as specific requirements in the contractual arrangements for the delivery and operation of the project.

This approach gives the appointed contractors flexibility to devise innovative and value for money solutions during the project's detailed design phase, while ensuring that impacts stay within acceptable levels and comply with the standards and requirements set out in this EES.

The EMF presented with this EES provides an appropriate and robust framework for managing the potential impacts of the project. Adopting the EMF would enable the West Gate Tunnel Project to achieve the project objectives with acceptable environmental outcomes.

## 9.4 Obligations under the *Transport Integration Act 2010*

The *Transport Integration Act 2010* aims to support the development of an integrated and sustainable transport system in Victoria that contributes to an inclusive, prosperous and environmentally responsible State. To achieve this outcome, transport bodies (and those interfacing with the transport system) must have regard to the transport system objectives and decision-making principles set out in the Act.

This means the Minister for Planning must consider these objectives and principles and determine the weight to be given to each of them when assessing this EES and deciding whether to approve the planning scheme amendments for the West Gate Tunnel Project. The Western Distributor Authority is also required to have regard to these objectives and principles and determine the weight to be given to them when exercising its powers and performing its functions under the relevant legislation.

### 9.4.1 Evaluation against the Act's principles

The evaluation of the project against the Act's principles is informed by the following guidelines published by the Victorian Government:

- Addressing the *Transport Integration Act 2010* in a planning scheme amendment, Advisory Note No. 34 (Department of Planning and Community Development, January 2011)
- Transport and the triple bottom line. Transport's role in driving the economic, social and environmental objectives of the *Transport Integration Act 2010* (Department of Transport, 2012).

### Principle of integrating decision making

This principle means seeking to achieve Victorian Government policy objectives through coordination between all levels of government and government agencies and with the private sector.

The following features of the West Gate Tunnel Project's development demonstrate consistency with this principle:

- The project has been developed jointly by the Victorian Government and Transurban (as outlined in Chapter 3 *Project development*). This process included collaboration on technical design and constructability aspects of the project, and consultation with approval agencies, local authorities and private sector stakeholders.
- The project considered and is consistent with national and Victorian Government policy objectives (as described in section 2.4 of Chapter 2 *Project rationale*), notably the *Australian Infrastructure Plan*, the *Smart Cities Plan*, the *National Ports Strategy*, the *Plan Melbourne* strategy and *Victoria the Freight State*.
- As noted in Chapter 1 *Introduction*, the West Gate Tunnel Project was referred to the Australian Government in accordance with the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The delegate for the Commonwealth Minister for the Environment determined that the project is not a 'controlled action' requiring assessment and approval by the Minister and that no further action is required under the EPBC Act.

- DELWP established an agency-based Technical Reference Group (TRG) to advise on a range of matters related to the project and the EES (as described in Chapter 7 *Communications and engagement*). The TRG included representatives of DELWP, DHHS, EPA Victoria, the Port of Melbourne, Melbourne Water, Heritage Victoria, Aboriginal Victoria, VicRoads, VicTrack, City of Melbourne, Hobsons Bay City Council and Maribyrnong City Council. The advice from the TRG has been considered in assessing the environmental effects of the project and preparing this EES.
- Alongside the TRG, the Western Distributor Authority is working and consulting with other national, State and local government bodies, peak industry groups, businesses (including local freight and logistics firms and Port of Melbourne operators), community organisations and service providers.

## Principle of triple bottom line assessment

This principle means assessing the economic, social and environmental costs and benefits, taking into account externalities and value for money.

Despite the reference to ‘costs’ in this principle, a triple bottom line assessment does not require ‘costs’ and ‘benefits’ to be calculated as monetary amounts. Rather, this principle recognises the importance of conducting a risk-weighted assessment of benefits and impacts to establish whether a project will achieve a net community benefit. Accordingly, when evaluating the West Gate Tunnel Project against the triple bottom line principle, ‘costs’ and ‘benefits’ are equated with the predicted impacts identified and assessed in this EES.

The project would be consistent with the triple bottom line principle because:

- The ‘costs’ or potentially adverse impacts of the project (summarised below) have been assessed in this EES and would be confined largely to the construction phase of the project. These impacts would be temporary and the adoption of the EPRs would help to ensure that these ‘costs’ are acceptable, are managed appropriately and that any ongoing negative effects are avoided or minimised.
- The ‘benefits’ or potentially positive impacts of the project (summarised below) have been assessed in this EES and relate generally to the longer term legacy of the project in association with the development of more resilient transport network in Melbourne, improved freight access to the Port of Melbourne and enhanced amenity in the inner west.

## Economic, social and environmental costs

The key *economic costs* of the project would be associated with the displacement of businesses as a result of commercial properties being acquired for the project, disruptions to business operations during the project’s construction and changes to traffic patterns as a result of the introduction of tolls and truck curfews. Early engagement with directly affected businesses has already commenced to assist them to plan for and implement measures to mitigate the effects on customers, suppliers and employees.

The key *social costs* of the project would be associated with the temporary disruption to communities during the construction of the project as a result of the acquisition of commercial properties, restricted use of recreational facilities and public open space, changed traffic conditions and amenity impacts (such as reduced air quality and increased noise). Good planning and careful design considerations would reduce these costs. Clear communication to people potentially affected by these issues would inform them about their rights when properties are occupied or acquired, and about changed traffic conditions and alternate access arrangements during the project’s construction.

The key *environmental costs* of the project would be associated with the project's construction phase and include the potential for dust emissions and the management of spoil, groundwater and runoff. Across the project alignment, around 3,370 planted trees would need to be removed and replaced. These costs have been minimised to a significant extent by the comprehensive development process undertaken for the project, which resulted in a Reference Design being provided to inform tenderers seeking to design and construct the project. Costs would be minimised further through the project's detail design phase. In addition, the EPRs (including the preparation and implementation of the CEMP) require the use of appropriate, well-tested construction techniques and engineering solutions, and the development of contingency plans to address unexpected impacts. The EPRs would also require the project-wide Landscaping Plan to replace each tree lost with three trees.

## Economic, social and environmental benefits

The main benefits delivered by the West Gate Tunnel Project are described in Chapter 2 *Project rationale*.

The key *economic benefits* accrue as a result of travel time savings, a more competitive port and freight sector, reduced reliance on the West Gate Bridge and Wider Economic Benefits (such as agglomeration benefits generated by improved connectivity and accessibility). The project would boost economy-wide activity (in Victoria and nationally) through improvements to transport productivity and greater infrastructure expenditure in Melbourne. This includes additional jobs and increased GSP.

The project would contribute to higher levels of productivity for businesses, as well as boosting the competitiveness of some businesses (particularly those moving goods to and from the port by road). The project is also expected to increase accessibility to jobs for people living in the western region, contributing to the reinvigoration of the western Melbourne economy.

The economic appraisal conducted for the West Gate Tunnel Project found that the project (including wider economic benefits) would have a Benefit Cost Ratio (BCR) of 1.6,<sup>\*</sup> indicating that the potential benefits would outweigh the costs and that the project would deliver a net economic benefit.

One of the main *social benefits* delivered by the project would be the removal of a substantial number of trucks from local roads in the inner west, making these residential areas safer, quieter, less polluted and more attractive places to live. The project has a strong focus on improving walking and cycling connections, and the improved accessibility offered by the West Gate Tunnel Project would support planned urban renewal projects designed to assist in managing the transition from areas of industrial development to mixed use or higher density residential development. The project would also create almost nine hectares of new landscaped parkland in areas where there is a shortage of public open space.

The key *environmental benefits* of the project include improved air quality along residential streets carrying fewer heavy vehicles, improvements to public open space and a project design that incorporates excellence in sustainable practices, minimises the use of energy and water and is resilient to anticipated climate hazards. The EMF required for the project would incorporate verifiable commitments on how environmental risks, issues and impacts would be managed and reduced during the project's construction and operation.

---

<sup>\*</sup> Including the Monash Freeway Upgrade and Webb Dock Access Improvements

## Principle of equity

The principle of equity means:

- Equity between persons irrespective of their personal attributes, including age, physical ability, ethnicity, culture, gender and financial situation, or
- Location, including whether in a growth, urban, regional, rural or remote area, or
- Equity between generations by not compromising the ability of future generations to meet their needs.

The West Gate Tunnel Project incorporates a number of elements designed to preserve intergenerational equity, including integrating sustainability principles and resource and energy efficiency into the project's design and ensuring that the project's structures are resilient to anticipated future climate hazards. Life cycle costs have been incorporated into project design and delivery to reduce operation and maintenance costs of the asset to the broader community over the longer term.

The project would improve access to jobs, education and services for people living in Melbourne's growing western suburbs, which have historically suffered from lower levels of connectivity and accessibility than other metropolitan regions. In addition, the project would meet minimum local content requirements under the *Victorian Industry Participation Policy*, providing an incentive to source materials locally.

Project structures (such as pedestrian bridges and bike paths) would comply with the Commonwealth *Disability Discrimination Act 1992*. The urban design principles and guidance developed for the project provide for new or upgraded recreational facilities and public open spaces to be welcoming, accessible and inclusive environments.

## Principle of the transport user perspective

The transport system user perspective means:

- Understanding the requirements of transport system users, including their information needs
- Enhancing the useability of the transport system and the quality of experiences of the transport system.

Transport users want a reliable, efficient and safe transport system. Assessments undertaken as part of the project's development and for this EES have considered in detail the specific requirements of road users, freight operators, public transport services and pedestrians and cyclists. These requirements have been used as the basis for determining the optimal corridor alignment and configuration for the project.

Development of the project has been based on an integrated approach to transport and land use planning and has considered the need to improve connectivity and accessibility for important land uses and urban renewal areas (refer to Chapters 14, 21 and 28 and Technical Report K *Land use planning*).

Project Co's urban design concept includes elements to enhance the experience of transport users, including:

- Legible and distinctive wayfinding and signage that would make the project easy to access and navigate
- Safe public spaces around the project
- Use of lighting, colour and materials to provide an engaging driver experience.

The Freeway Management System proposed for the project would incorporate the use of message signs to give drivers information about traffic conditions on the West Gate Tunnel Project.

Input was sought from potential users of the West Gate Tunnel Project throughout the project's development and further consultation would be undertaken as the project proceeds (refer to Chapter 7 *Communications and engagement*).

## The precautionary principle

The precautionary principle means that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The precautionary principle requires:

- Careful evaluation to avoid serious or irreversible damage to the environment wherever practicable
- An assessment of the risk-weighted consequences of various options.

In accordance with the Minister for Planning's Order under the *Environment Effects Act 1978*, the Scoping Requirements and evaluation objectives, this EES identifies the potential effects of the West Gate Tunnel Project on the environment. It describes the existing environment that may be affected by the project, identifies key risks and impacts, and recommends actions to avoid, minimise or manage any adverse environmental effects. It includes a recommended EMF with EPRs for managing and monitoring the potential environmental effects of the project. The evaluation undertaken for the EES would enable decision-makers (including Ministers, local councils, statutory authorities and approval agencies) to make informed decisions about whether approvals and consents for the project should be issued and, if so, on what conditions. This would ensure that serious or irreversible damage to the environment is avoided.

Considering the impacts of climate change is particularly important when applying the precautionary principle. Climate change risks associated with the project have been assessed as part of this EES and the project's infrastructure would be designed to withstand anticipated climate hazards and to continue to operate under future climate conditions.

An assessment was conducted of the greenhouse gas (GHG) emissions associated with the project's construction, operation and maintenance. The assessment found that there would be a marginal increase in vehicle emissions across the metropolitan Melbourne road network in 2021 and 2031 with the project operating, compared to a scenario where the project is not built (0.23 per cent and 0.04 per cent respectively). However, anticipated future improvements in motor vehicle fuel efficiency would reduce greenhouse gas emissions under both the 'with project' and 'no project' future scenarios. Overall, the GHG intensity of the metropolitan Melbourne road network (kg CO<sub>2</sub>-e per vehicle kilometre travelled) is estimated to reduce marginally with the project operating in 2021 and 2031 (0.24 per cent and 0.31 per cent respectively).

Sustainable practices would be integrated into the project's detailed design, construction and operation to minimise GHG emissions. In addition, the Victorian Government has committed to at least 25 per cent of the state's electricity coming from Victorian-built renewable generation by 2020, and 40 per cent by 2025. Achieving these targets would further reduce the project's operational GHG emissions.

## Principle of stakeholder engagement and community participation

The principle of stakeholder engagement and community participation means:

- Taking into account the interests of stakeholders, including transport system users and members of the local community
- Adopting appropriate processes for stakeholder engagement.

The following features of the West Gate Tunnel Project's development demonstrate consistency with this principle:

- A comprehensive program to engage stakeholders and the community has been undertaken to support the preparation of this EES and to assist in the development of the project. This program would continue through the project delivery phase, with the objective of keeping the community informed about the progress of the project, seeking input into the project's development and identifying and responding to stakeholder and community concerns. The engagement approach adopted for the project is set out in Chapter 7 *Communications and engagement*
- Community input has played an important part in shaping the project and will continue to do so as the project progresses to construction and operation. Feedback from stakeholders and the community has been sought and the project team has carefully considered and responded to issues raised and ideas presented
- A Community Liaison Group (CLG) has been established as an important avenue for providing community feedback directly to the West Gate Tunnel Project team. The CLG comprises 10 community representatives, four representatives from local councils and three stakeholder group representatives.

## Principle of transparency

The principle of transparency means members of the public should have access to reliable and relevant information in appropriate forms to facilitate a good understanding of transport issues and the process by which decisions in relation to the transport system are made.

The West Gate Tunnel Project is consistent with this principle because:

- The Western Distributor Authority has used a wide range of activities and tools to provide information about the project to members of the public. Channels of communication include an interactive website and social media, community newsletters and fact sheets, and community briefings, workshops and meetings. Messages and information about the project have been tailored to suit the communication and information needs of audiences, including hard-to-reach and CALD communities
- The EES process makes detailed information about the West Gate Tunnel Project and its potential environmental effects publicly available and provides members of the public with an opportunity to participate in and comment on the project's merits
- As described in section 9.3.11, the project would be designed, constructed and operated in accordance with the EMF documented in this EES. The EMF is a transparent framework that sets out who is accountable for managing the environmental aspects of the project and auditing, monitoring and/or reporting in relation to specific environmental impacts. This includes requirements to report regularly and publicly on important aspects of the project.

## 9.4.2 Evaluation against the Act's objectives

Six objectives for the transport system are defined in the Act, relating to:

- Social and economic inclusion
- Economic prosperity
- Environmental sustainability
- Efficiency, coordination and reliability
- Integration of transport and land use
- Safety and health and wellbeing.

As identified in the former Victorian Department of Transport's 2012 publication *Transport and the triple bottom line*, the first four objectives listed above are recognised in the *Transport Integration Act 2010* as being closely interrelated. Summarised at a high level, the project seeks to address each objective as follows:

- **Social and economic inclusion:** the project has been shaped by community and stakeholder input. The urban design concept for the project includes elements to make the project easy to access and navigate, and for public facilities and spaces to be accessible and inclusive. Project structures (such as pedestrian bridges and bike paths) would comply with the *Commonwealth Disability Discrimination Act 1992*. The project aims to create a positive community legacy through the creation of significant new parkland, improved amenity for local places and enhanced walking and cycling connections.
- **Economic prosperity:** the project would deliver economic benefits through improvements to travel times, support for a more competitive port and freight sector, and reduced reliance on the West Gate Bridge. The project is expected to increase accessibility to jobs for people living in Melbourne's western region and contribute to the reinvigoration of the western Melbourne economy. Some businesses would benefit directly from higher levels of productivity, particularly those using the arterial road network and those moving goods to and from the port by road. Other business benefits would include improved travel times and reliability for employees, customers and suppliers, and lower transport and operating costs.
- **Environmental sustainability:** the West Gate Tunnel Project has sought to integrate sustainability principles into all aspects of project design and Project Co has identified specific measures that would be undertaken to improve sustainability outcomes in construction and operation. The project would be designed, constructed and operated as a climate resilient asset to reduce future from extreme weather events. The project would achieve an Infrastructure Sustainability Council of Australia (ISCA) rating of 'excellent' for the design and a rating of 'excellent' for the as built construction.
- **Efficiency, coordination and reliability:** resource and energy efficiency have been integrated into the project design, including the use of Water Sensitive Road Design (WSRD), the adoption of sustainable waste management practices and a commitment to monitoring greenhouse gas emissions and taking action to reduce them. The Freeway Management System would support the efficient and reliable operation of the project, including integrating with VicRoads freeway management and the surrounding major road network. The Western Distributor Authority is working with VicRoads and other responsible authorities to coordinate the project's integration with other planned transport projects and to develop complementary programs that build on the base provided by the West Gate Tunnel Project to deliver transport, safety and amenity benefits.

As described in *Transport and the triple bottom line*, actions to achieve one of these objectives may have a positive or negative influence on the other objectives. The EES process acknowledges that in achieving some important transport system objectives, such as improved redundancy and reliability, a major transport project such as the West Gate Tunnel Project is likely to have some adverse impacts. The EES process facilitates an understanding of these positive and negative implications across policy objectives and explores ways to balance and manage these implications. As part of the EES process, EPRs have been identified to minimise the potential impacts of the project and to maximise its potential benefits.

## Integration of transport and land use

The project has been developed giving consideration to the need to integrate transport and land use planning, and to improve connectivity and accessibility for important land uses and urban renewal areas (refer to Chapters 14, 21 and 28 and Technical Report K *Land use planning*). As detailed in Chapter 2 *Project rationale*, the project responds to this objective of the Act by providing a new transport connection that satisfies the evolving demand for travel movements being driven by a growing population and changing land uses across Melbourne, but particularly in the western region and central city. It seeks to do so in a way that minimises the impacts of the transport system on adjacent land uses, through good project design and by implementing the EPRs.

This objective states that transport and land use should be effectively integrated to reduce the need for private motor vehicle transport and the extent of travel. As detailed in Chapter 3 *Project development*, the Victorian Government undertook qualitative assessments of reform and demand management strategies and network productivity interventions and investigated the viability of public transport solutions such as port-rail shuttles and passenger rail. Ultimately, it was found that these strategic interventions would not address the problems described in Chapter 2 *Project rationale* if implemented as 'standalone' solutions. The development of a new western road connection was found to deliver the highest level of benefit in terms of providing an adequate alternative to the West Gate Bridge and supporting the productivity and efficiency of the M1 corridor.

It is important to note that the project would not preclude other strategic interventions from proceeding, including actions and investment to increase the use of port-rail shuttles, the introduction of network or corridor pricing schemes, improvements to public transport services or further new road connections along alternative corridors.

## Safety and health and wellbeing

As noted in section 9.3.3, all design options considered during the development of the West Gate Tunnel Project were evaluated for safety (with any significant safety flaw resulting in the option not being advanced further) and measures would be taken to protect the public from safety risks during construction.

Project Co's urban design concept includes a number of road safety elements, such as tunnel lighting designed to keep drivers alert and distinctive wayfinding features. The proposed Freeway Management System would play a key role in maintaining a safe road environment for users of the West Gate Tunnel Project. Safety in public spaces would be protected and enhanced by responding to the urban design principles.

The EES has determined that there would be no measurable changes to the health of the community due to the project and that following the implementation of the EPRs, all risks to human health associated with the project would be reduced to negligible to acceptable/tolerable thresholds (as defined in human health assessment practice).

## 9.5 Project approvals

### 9.5.1 Commonwealth approvals

As discussed in section 1.9.1 of Chapter 1 *Introduction*, the project would not impact any matters of national environmental significance. The Commonwealth Minister for the Environment has determined that, as the project is not a 'controlled action' under the *Environmental Protection and Biodiversity Convention Act 1999*, no further assessment or approval is required at the national level under the EPBC Act.

### 9.5.2 Victorian approvals

The Western Distributor Authority (as the project proponent) has prepared a Works Approval application for the tunnel ventilation systems (provided in Attachment V of this EES) and a draft planning scheme amendment for the project (provided as Attachment IV). Other Victorian statutory approvals required for the project would be obtained by Project Co. A summary of the main statutory approvals and consents required for the project to proceed is provided in section 8.4 of Chapter 8 *Environmental Management Framework*.

A Cultural Heritage Management Plan (CHMP) has been prepared for the project under the *Aboriginal Heritage Act 2006*. The CHMP would need to be approved by Aboriginal Victoria prior to the Minister for Planning making a decision on the EES. As required by the Aboriginal Heritage Act, construction of the West Gate Tunnel Project works cannot commence until the CHMP has been approved.

## 9.6 Next steps

The EES will be on public exhibition for 30 business days. During this time, members of the public can view the EES and make written submissions. At the end of this period, the Minister for Planning is expected to appoint a Joint Advisory Committee/Inquiry to evaluate the effects of the project, having regard to the EES, the proposed Planning Scheme Amendments, the Works Approval application and public submissions.

The Inquiry may take one of three forms: a desktop review of written submissions, a conference of submitters and a review of submissions, or a formal hearing where the proponent and submitters can speak and present expert witnesses. Given the scale of the West Gate Tunnel Project, the Inquiry would be expected to take the form of a formal hearing.

Following receipt of the Inquiry's report, the Minister for Planning will prepare an assessment of the environmental effects of the proposed project. The Minister's Assessment may conclude that the project:

- Would have an acceptable level of environmental effects, or
- Would not have an acceptable level of environmental effects, or
- Would need major modifications and/or further investigations to establish that acceptable outcomes would be achieved.

If the Minister's Assessment concludes that the project would be acceptable, a number of statutory approvals would be required for the project to proceed. These approvals are outlined in Chapter 4 *Environment Effects Statement assessment framework*.

## 9.7 Conclusion

As Melbourne continues to grow and change at an unprecedented rate, accessibility, connectivity and a high performing transport network are more important than ever to securing the city's future.

The West Gate Tunnel Project would enhance the city's transport network by reducing reliance on the heavily used M1 corridor and providing a much-needed alternative to the West Gate Bridge. By delivering a new river crossing, the project would improve peak hour traffic capacity across the Maribyrnong and Yarra Rivers by around 20 per cent and relieve pressure on existing river crossings.

The project would relieve congestion and significantly reduce peak period travel times across Melbourne's primary western road corridor, improving accessibility from the western region to jobs and services across the city. It would provide a direct freeway connection to the Port of Melbourne and improve travel times for freight movements from the west to the port. Critically, the project would remove up to 9,300 trucks from streets in the inner west, improving the safety and amenity of residential areas and making them more attractive places to live, work and invest.

The EES for the West Gate Tunnel Project provides a comprehensive assessment of the potential environmental impacts associated with the construction and operation of the project. This assessment has been guided by the EES evaluation objectives contained in the Scoping Requirements prepared by the Minister for Planning.

The EES details the risk-based approach adopted to identify and assess the potential impacts of the project and develop a transparent and accountable EMF and EPRs. The adoption of the EMF and EPRs would enable the West Gate Tunnel Project to achieve its project objectives with acceptable environmental outcomes. It would also ensure that the project delivers significant transport, economic, social and business benefits not only for the inner west and the wider western region, but also for Melbourne and Victoria.

