WEST GATE TUNNEL PROJECT

ASSESSMENT

under

ENVIRONMENT EFFECTS ACT 1978

Minister for Planning

November 2017

GLOSSARY

BIP	Business Involvement Plan
CCEP	Communications and Community Engagement Plan
CEMP	Construction Environment Management Plan
CHMP	Cultural Heritage Management Plan
CIPP	Community Involvement and Participation Plan
COAG	Council of Australian Governments
DDO	Design and development overlay
DELWP	Department of Environment, Land, Water and Planning
DUDP	Development and Urban Design Plan
EES	Environment effects statement
EMF	Environmental management framework
EMS	Environmental management strategy
EPA	Environment Protection Authority
EPR	Environmental performance requirement
GHG	Greenhouse gas
GMP	Groundwater Management Plan
IAC	Inquiry and Advisory Committee
IREA	Independent Reviewer and Environmental Auditor
ISCA	Infrastructure Sustainability Council of Australia
OEMP	Operational Environment Management Plan
OVGA	Office of the Victorian Government Architect
SEPP	State environment protection policy
TBM	Tunnel boring machine
VHI	Victorian Heritage Inventory
VHR	Victorian Heritage Register
WDA	Western Distributor Authority

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Executive summary

The Victorian Government received a market-led proposal from Transurban in March 2015 for the West Gate Tunnel Project. In December 2015, the government committed to the project, finding the proposal offered solutions to transport problems affecting Melbourne's west and had substantial social and economic benefits. Since then, the project has been refined to a tender design, and a framework has been proposed to regulate its environmental effects.

The project will deliver substantial benefits to metropolitan Melbourne and to the residents of Melbourne's west in particular. The wider community will enjoy improved traffic flows on the M1 corridor, reduced reliance on the West Gate Bridge, expanded capacity on the West Gate Freeway, and improved connectivity between the expanding central city and Melbourne's western suburbs. Many communities will benefit from less truck traffic on local roads, with the inner west also benefitting from improved pedestrian and cycling links and several new open spaces. Those near the West Gate Freeway will also receive greater noise protection from additional traffic noise reduction measures, while Port of Melbourne operations will be improved.

In May 2017, I appointed an Inquiry and Advisory Committee (IAC) to consider the project's environmental effects statement (EES), a draft planning scheme amendment and a works approval application. Planning Panels Victoria received 504 written submissions and the IAC held a public hearing from 14 August to 19 September 2017.

During the hearings, the Government made the following announcements in response to submissions:

- Additional noise walls to be built along sections of the West Gate Freeway.
- A requirement for the operator to maintain reduced traffic noise levels throughout the term of the contract and for 20 years after the opening of the project.
- Truck bans applied when the project opens to Blackshaws Road and Hudsons Road.
- Incentives for the transport and logistics industry to use the project including setting discounted shuttle rates and capped maximum daily tolls for trucks making multiple trips through the tunnel, as well as night-time discounts.
- A requirement for the operator to include only one truck toll point on the West Gate Freeway, sited to the east of Millers Road, to reduce forecast truck use of Millers Road.
- A commitment to work with owners of properties that front Millers Road between the West Gate Freeway and Geelong Road on noise reduction measures, including double glazing, insulation, fencing and air conditioners.

The IAC provided its report to me on 23 October 2017. It found considering the environmental effects overall, project approvals should be granted as the environmental effects could be managed to an acceptable level. Its report, submissions and the EES have informed the preparation of my assessment of the environmental effects of the project. My assessment is for the Minister for Roads and Road Safety and statutory decision-makers to inform any approval decisions on the project.

I acknowledge the project will generate both positive and negative environmental effects. A sound regulatory framework and environmental control regime is needed to ensure any adverse local effects of the project are effectively mitigated. These effects can be managed and minimised through application of environmental performance requirements (EPRs, see Appendix A) that will set standards for project delivery.

A key recommendation of the IAC was to lower the proposed Wurundjeri Way extension. During preparation of my assessment, I wrote to the proponent to request additional information on the feasibility and merit of this recommendation. The proponent has since advised the Wurundjeri Way extension can be lowered because the existing V/Line rail stabling facility can be relocated (Appendix B). Lowering the proposed Wurundjeri Way extension in this manner will result in less impact on the future development potential of the E-Gate urban renewal area, and will allow for future connectivity between E-Gate and North and West Melbourne. I am satisfied the EPRs will ensure the modified design will achieve acceptable environmental outcomes.

Consideration of environmental effects

The approach of this market-led proposal has seen a new process of constructor procurement, project design and EES preparation and exhibition. The award of the construction contract pre-dated EES exhibition, with the advantage that the selected tender design was assessed and exhibited in the EES, providing a greater level of detail about the project than the reference designs of recent similar-scale projects. My assessment has been assisted by this level of detail. The applicable legislation, policy, strategies and guidelines and the objectives and principles of ecologically sustainable development, have also informed my assessment.

I am satisfied the environmental effects of the project have been properly identified and assessed in the EES and throughout the process conducted by the IAC.

Traffic and transport

The EES highlighted the substantial transport benefits of the project, including removing heavy vehicles from local and arterial roads; reducing journey times for motorists by increasing capacity; reducing traffic volumes on most of the surrounding network and improving port access. In addition, 14 kilometres of new and upgraded shared-use paths will improve safety and connectivity for pedestrians and cyclists, with extension of the Federation Trail to Hyde Street and a new veloway (elevated bicycle path) along Footscray Road.

During construction, impacts will be felt across the transport network. Some 1,200 truck movements are forecast to access the northern portal site each day, while lane closures on the West Gate Freeway and other key arterial roads will occur outside peak periods. Works will impact shared use paths and pedestrian bridges and suitable alternatives will be provided.

On commissioning, the project will support continuous port operations and freight traffic will use the project day and night. Particular concerns have been raised about impacts on Millers Road, Brooklyn, where truck traffic is predicted to increase significantly according to modelling for 2031. Elsewhere, the project is predicted to increase traffic on streets in Yarraville and in North and West Melbourne. I encourage government to investigate and implement traffic management measures.

Land use and planning

The project enjoys broad strategic support from state policy, including *Plan Melbourne 2017-2050* and the State Planning Policy Framework. These policies identify the benefits of the project as delivering another river crossing, offering an alternative to the West Gate Bridge and improving connections to the Port of Melbourne. Six planning schemes – Brimbank, Hobsons Bay, Maribyrnong, Melbourne, Port of Melbourne and Wyndham – will need to be modified to facilitate the project.

Land use impacts during construction include temporary occupation of land, restrictions on access to open space, shared use paths and businesses, and amenity impacts such as noise and traffic. These types of impacts will be appropriately mitigated through the EPRs,

including the requirement to reinstate affected land following construction and through plans required under the environmental management strategy.

The main operational land use impacts are on: the Brooklyn residential community; the Precinct 15 urban renewal site, Altona North; Hyde Street residential properties; Maribyrnong River in Footscray; and the E-Gate urban renewal site. However, the EPRs are sufficient to meet the project's land use planning objectives.

Visual impacts, urban design and landscape

The project alignment and configuration meet the project's evaluation objectives. The project offers additional open space, improved pedestrian and cycle links and, in time, a significant increase in vegetation cover. Additional refinements reflecting the city-shaping nature of the project and its developed urban setting are needed to respond to the project's urban design principles across the project. These refinements will be achieved via strengthened EPRs that will guide the detailed design effort.

The IAC recommended strengthening the EPRs to ensure detailed design further reduce impacts on the quality and use of areas adjacent to the project and achieve good built form and urban design outcomes. In addition, the IAC recommended design reviews to determine opportunities for improvements to: the Maribyrnong River crossing; the Citylink and city connections; and the Moonee Ponds Creek open space.

Noise and vibration

The project will have noise and vibration impacts through both the construction and operational phases. Noise impacts during construction are well understood and can be managed through application of EPA guideline standards. Similarly, vibration generated during construction should be managed through the relevant EPRs.

VicRoads' *Traffic Noise Reduction Policy* (TNRP) represents the State's current formal policy position on traffic noise. The project will be operated at, or higher than, the TNRP standard. Most people living near the project will enjoy improved noise shielding but some, notably those on Millers Road and Hyde Street, may be subject to increased noise during project operation. Residences in these situations will be offered residential noise attenuation (e.g. double glazing, insulation, fencing and air conditioners) in advance of traffic increases.

A number of noise barriers were announced by Government to reduce impacts on Crofts, McIvor and Stony Creek reserves during the IAC hearing. In addition, I support augmentation of the noise barrier at the Precinct 15 open space in Altona North.

Air quality

The air quality assessment focusses on the operational phase when vehicle emissions will affect air quality. In combination with other local air pollution sources, vehicle emissions contribute to the variably poor air quality in the inner west. However, the project has the potential to deliver local air quality benefits, by diverting traffic from local roads on to arterial roads or freeways, by enabling traffic to travel at steadier, more efficient speeds, and by directing traffic through tunnels where emissions can be captured and managed.

The tunnel ventilation stack emissions are predicted to contribute occasionally to exceedances of air quality standards against background air quality where exceedances for particulates can occur up to 130 times a year at the most affected location. The EPA did not recommend installation of emission control equipment as a works approval condition, but proposed requiring provision for retro-fitting this equipment if subsequently required. Within the tunnels, I support the IAC's recommendation to maintain acceptable air quality for drivers and passengers, by application of the NSW standard for NO_2 in addition to State Environment Protection Policy standards for other indicators.

Rather than investing heavily in single point source emission control of limited, if any, effectiveness, I consider a better-targeted, multi-faceted approach is needed for the project. In particular, mitigation measures should target localities directly exposed to increased truck traffic numbers due to the project.

Greenhouse gas emissions
The construction and operation of large scale infrastructure projects typically increase greenhouse gas emissions. While a decrease in emissions would be preferable, the projected emissions increase is acceptable and proposed emission abatement via application of the Infrastructure Sustainability Council of Australia's framework is reasonable.

Human health
The EES health impact assessment characterised the health of the community near the project as generally consistent with that of the broader metropolitan and Victorian communities. However, it acknowledged concerns within the local community about the effects of air quality and noise on the health of residents, especially children, close to major roads. While no specific public health EPRs have been proposed, effective implementation of the proposed mitigation measures for air quality and noise will manage the potential environmental effects on human health. Additional cycling and pedestrian paths provide positive health opportunities for local communities.

Cultural heritage
The EES outlines the nature, extent and significance of Aboriginal cultural heritage in the area covered by the Cultural Heritage Management Plan (CHMP). No previously registered Aboriginal cultural heritage places were located within the activity area. However, two places near Kororoit Creek were registered during investigations for the CHMP. Impacts on these places will be managed via the CHMP.

The project area features many cultural heritage places, such as buildings and archaeological sites. These include heritage places listed in the Victorian Heritage Register (VHR) and Victorian Heritage Inventory (VHI) under the Heritage Act, and heritage overlays in planning schemes. Impacts of the project will generally be localised. Permits under the Heritage Act along with other measures for ground vibration will adequately manage these impacts.

Groundwater
Key potential effects and risks for groundwater are changes to groundwater levels from drawdown and changes in groundwater quality. Groundwater quality could be affected by acid formation, mobilisation of existing contaminants or contamination of groundwater.

I agree with the IAC that the EPRs provide a management, monitoring and contingency approach appropriate for controlling effects of portal and tunnel excavations on groundwater. Treatment and/or disposal of groundwater intercepted by the project would be subject to a trade waste agreement and discharged to sewer.

Potentially acid-forming materials in silts underlying the port, CityLink and city connections project component may affect groundwater quality. Past land uses and extensive historical land reclamation and filling with night soil and abattoir and industrial waste mean the groundwater is likely contaminated from human sources as well. The potential effects on (or from) groundwater from construction of pier foundations for bridges and elevated roads can be appropriately managed through effective implementation of EPRs.

Ground movement and land stability
Construction of project infrastructure will potentially influence ground movement and land stability, primarily through: removal of soil or rock; surface loadings on compressible sediments; construction on steep or unstable slopes; and desaturation of sediments resulting

in settlement. The EES contained an analysis of each potential impact, whereas the IAC focused principally on the potential for ground movement resulting from excavations for the portals, tunnels and North Yarra Main Sewer. Effective development and implementation of the Construction Environmental Management Plan will adequately control ground movements from project surface works and tunnelling.

Surface water
The project crosses four waterways and six urban drains to interact with a variety of channel, floodplain and overland flow environments. The risk of polluted runoff from construction work sites entering waterways will be managed by adopting standard, good practice management measures. Similarly, water sensitive road design adopted by the project should achieve EPA and VicRoads water quality targets for urban stormwater during normal road and tunnel operations.

Providing the proponent's designs and construction on floodplains are to the satisfaction of Melbourne Water regarding maintenance of existing flood storage capacities, flow paths and drainage lines, flooding risk during construction will be managed. In addition, the EPRs require structures to be designed and constructed to minimise impacts on river bank vegetation and aquatic habitats and increases in flood levels or loss of floodplain storage.

Biodiversity and urban ecology
Despite the project's location within a developed urban landscape, biodiversity values remain within the project area. Remnant vegetation and restored environments are associated with waterways including the Kororoit, Stony and Moonee Ponds creek corridors. The area also supports planted vegetation in roadside landscaping, parklands and scattered trees. Both remnant and planted vegetation support native animals. Some listed threatened species (Grey headed flying fox, Swift parrot, Powerful owl) may use this vegetation for foraging and temporary roosting.

Approximately 3,347 trees are estimated to be removed for the project, most of which have medium to long-term viability. Proposed tree replacement includes a combination of around 4,000 advanced trees, 13,500 tubestock trees and 900,000 understorey species to be planted. A tree replacement ratio of 5:1 is now required by the Landscaping Plan described in the EPRs. Tree removal will be noticeable for nearby residents and the IAC has emphasised the importance of ensuring tree replacement benefits those residents. The EPRs require the Landscaping Plan to be developed in consultation with local councils to maximise community and ecological benefits from restoration works.

Solid waste and contamination
The project will produce significant volumes of fill, soil and rock that, if not managed properly, could adversely affect air, water, land or human health. The majority of the spoil is expected to be classified as fill material with the remaining amount classified as solid inert waste, prescribed industrial waste (of various classifications) and acid sulphate soil or potentially acid generating material.

The EPRs require the proponent to manage waste and spoil in accordance with the EPA's waste management hierarchy, and identify opportunities for reuse of spoil. However, there will be significant volumes of spoil that will require treatment or disposal at appropriately licensed waste management and disposal facilities. A cumulative assessment of the expected volumes of spoil from the project and the Melbourne Metro Rail Project has identified sufficient capacity at waste treatment and/or disposal facilities.

Social
The project will have a 'net positive' social effect through the provision of new public open spaces, removal of truck traffic from some residential streets, increased vegetation in some areas due to replanting, and improved connectivity for pedestrians and cyclists. Community

benefits will also come from improved road transport options that reduce travel times and improved travel reliability to facilitate access to jobs, goods and services.

Regardless of the overall benefits, some local communities, particularly the residential communities near Millers and Williamstown Roads and Hyde Street, will suffer adverse effects due to cumulative project impacts associated with increased traffic or truck levels during construction and operation. These cumulative impacts could include impacts from transport, air quality, noise and vibration. However, the project has opportunities to make a net improvement in these areas beyond traffic. I support the IAC's recommended Community Involvement and Participation Plan to improve community cohesion and assist in mitigating the impacts of the project.

I support consideration of requests for Hyde Street residences affected by an existing public acquisition overlay between Francis Street and the West Gate Freeway to be acquired. I consider acquisition to be appropriate and recommend this be pursued by VicRoads on a case-by-case basis.

Business

The EES and IAC outlined a number of benefits to wider business and the economy from the project. While project benefits will be shared by some local businesses, adverse impacts will be felt most by individual businesses subject to partial or full acquisition. Land acquisition of some properties is unavoidable for a project of this scale. However, I am satisfied consultation with businesses being relocated has occurred and will continue to occur. The impacts on businesses acquired will be managed through the EPRs and provisions of the *Major Transport Projects Facilitation Act 2009*.

Environmental management framework

The broad structure of the environmental management framework (EMF) was endorsed by most submitters and the IAC. The EMF includes EPRs that define the project-wide environmental outcomes that must be achieved during project design, construction and operation.

The EMF set out accountabilities and auditing requirements associated with the EPRs to ensure the environmental effects and risks of the project are managed appropriately. An environmental management strategy will be prepared consistent with the EMF and outlining how the EPRs will be implemented for my approval. Clarification of the role of the Independent Reviewer and Environmental Auditor (IREA) was sought by the IAC during the hearings. The IREA will carry out independent reviews of activities and documentation, approve subordinate plans to the environmental management strategy and audit compliance with environmental management documents.

Next steps

My overall assessment is that the project will deliver a range of substantial transport and other related benefits and that the adverse environmental effects of the project can be appropriately managed through the application of the EPRs presented in Appendix A.

Under the *Environment Effects Act 1978*, this assessment is provided for consideration by the Minister for Roads and Road Safety, as the project minister. Beyond that, this assessment will inform other statutory decisions as shown in Section 3.2.

1 INTRODUCTION

In March 2015, Transurban submitted a proposal to the Victorian Government for what is now known as the West Gate Tunnel Project (the project) under the auspices of the Victorian Government's market-led proposal initiative. In developing its proposal, Transurban undertook an assessment of strategic transport options that sought to provide an alternative to the West Gate Bridge, improve liveability of Melbourne's inner west, provide safe and efficient capacity for growth in Melbourne's west, improve access to the port precinct, improve network performance and provide value for money.

In December 2015, the Victorian Government announced it would proceed with the project and progressed Transurban's proposal under Victoria's *Market-led Proposals Guideline* to the 'exclusive negotiations' stage. The Western Distributor Authority (the proponent) was established as an administrative office of the Department of Economic Development, Jobs, Transport and Resources and tasked with the delivery of the project for the Minister for Roads and Road Safety (project Minister). The proponent is working in partnership with Transurban to develop the project.

I declared the works proposed for the project to be 'public works' under s 3(1) of the *Environment Effects Act 1978* on 23 December 2015. In so doing I directed that an environment effects statement (EES) be prepared for the project.

1.1 Purpose of this document

This report documents my assessment of the environmental effects of the project. My assessment is the final step in the EES process under the Environment Effects Act and is for the consideration of the Minister for Roads and Road Safety and to otherwise inform decisions required to be made under Victorian law in order for the project to proceed.

1.2 Structure of the assessment

My assessment follows the general structure of the IAC report as follows:

- Chapter 2 provides a brief description of the project and variations considered both by the IAC and in this assessment. Additional information about the project can be found in the EES and the IAC report
- Chapter 3 outlines both the EES process and statutory approvals required for the project
- Chapter 4 describes the how I have undertaken my assessment and outlines the framework for managing the project's environmental effects
- Chapter 5 assesses the environmental effects of the project based on the applicable legislative and policy framework and provides a summary of key project impacts
- Chapter 6 contains my conclusions, including responses to the recommendations of the IAC
- Appendix A contains a record of the project's environmental performance requirements (EPRs) as ultimately proposed by the proponent, as recommended by the IAC and as recommended through my assessment
- Appendix B contains additional information that was provided at my request by the proponent, concerning the potential to lower the Wurundjeri Way extension.

2 PROJECT DESCRIPTION

The EES identified the project as comprising the following three broad components (based on the location and nature of the project component and construction works, the potential impacts on local areas and the characteristics of surrounding communities):

1. The West Gate Freeway component, involving the widening of the Princes Freeway between Kororoit Creek Road and the M80 (Western Ring Road) interchange, the widening and upgrade of the West Gate Freeway (M1) between the M80 and Williamstown Road and the creation of connections between the West Gate Freeway and Hyde Street
2. The Tunnels component, involving the construction of two tunnels under Yarraville
3. The Port, CityLink and city connections component, involving the construction of three bridges spanning the Maribyrnong River, access to the Port of Melbourne, elevated roadways above Footscray Road and connections to CityLink and the central city, including an extension of Wurundjeri Way to Dynon Road

The project also includes the creation of new shared use paths, upgrade of some existing shared use paths and pedestrian connections and relocation of sections of some existing utilities (e.g. high voltage electricity transmission towers and North Yarra Main Sewer).

The alignment and main features of the project are shown in Figure 1 (overleaf). The project described in more detail in Volume 1, Chapter 5 of the EES and in the order that I made under s3(1) of the Environment Effects Act on 14 May 2017.

The area directly affected by the project comprises land currently used for road or railway purposes, developed industrial and urban land, urban renewal areas and parkland reserves. The project alignment extends from Laverton North, Altona North and Brooklyn in the west through South Kingsville, Spotswood, Yarraville and Footscray, and then across the Maribyrnong River to the Port of Melbourne, Docklands and West Melbourne. A project boundary has been defined in the order of 14 May 2017 depicting the land within which the project will be constructed.

2.1 Works program

Section 6(2) of the Environment Effects Act provides that works on the project may not commence until this assessment is completed and considered by the Minister for Roads and Road Safety. Project works are proposed to proceed in two phases: preparatory buildings and works; and main works.

2.2 Victorian Government announcements since EES publication

The Victorian Government has announced the following project variations since the publication of the EES:

- Additional noise walls to be built along the West Gate Freeway at Crofts Reserve, McIvor Reserve and Stony Creek Reserve.
- A requirement for the operator to maintain reduced traffic noise levels throughout the term of the contract and for 20 years after the opening of the project.
- Truck bans (24 hours/7 days a week) applied when the project opens to Blackshaws Road (full length from Melbourne Road to Grieve Parade) and Hudsons Road (between Booker Street and Melbourne Road).
- Incentives for the transport and logistics industry to use the project including setting discounted shuttle rates and capped maximum daily tolls for trucks making multiple trips through the tunnel, as well as night-time discounts. A requirement for the operator to include only one truck toll point on the West Gate Freeway, sited to the east of Millers Road, to reduce forecast truck use of Millers Road.

- A commitment by the Victorian Government to work with owners of properties that front Millers Road between the West Gate Freeway and Geelong Road on noise reduction measures including double glazing, insulation, fencing and air conditioners.

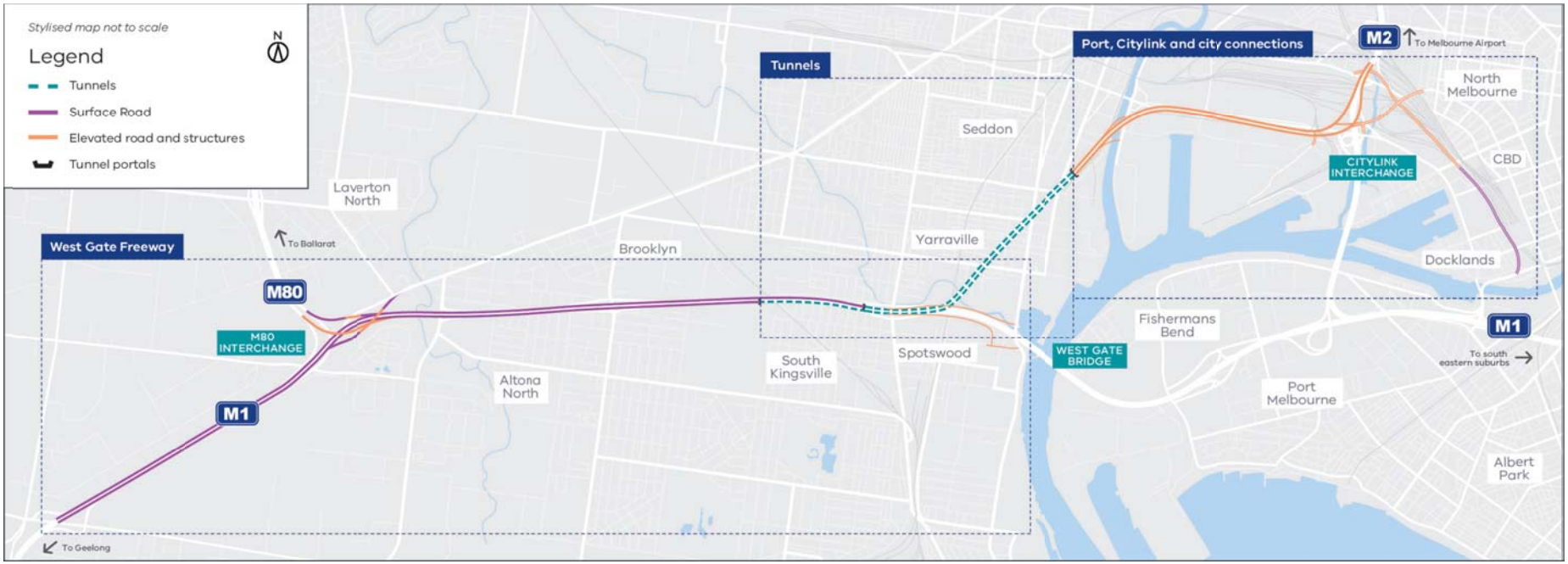

Figure 1. West Gate Tunnel Project location and alignment.

3 STATUTORY PROCESSES

3.1 Environment Effects Act

On 23 December 2015, I declared that the works proposed for the then named Western Distributor Project (now the West Gate Tunnel Project) were 'public works' pursuant to Section 3 of the Environment Effects Act. The effect of my declaration was that, pursuant to Section 4 of the Environment Effects Act, an EES was required to be submitted to me for my assessment.

On 2 April 2017, after the completion of a competitive tender process, the Victorian Government announced the selection of CPB John Holland Joint Venture to design and construct the project. The declaration of 'public works' under the Environment Effects Act was subsequently amended by order on 14 May 2017 to more accurately describe the selected tender design and facilitate a more effective, targeted and efficient assessment of the project's environmental effects.

The order specified various procedures and requirements to apply to the EES, including: scoping requirements, an inter-agency technical reference group, and an EES consultation plan. Draft scoping requirements were published for public comment from 22 February to 15 March 2016. In April 2016, I approved final scoping requirements. A technical reference group[1] was convened by the Department of Environment, Land, Water and Planning (DELWP) in accordance with normal EES practice to provide advice to the proponent and DELWP on the preparation of the EES.

The proponent prepared an EES including supporting technical reports that I authorised for public exhibition. The EES was placed on public exhibition between 29 May and 10 July 2017. A draft planning scheme amendment (Amendment GC65) to the Brimbank, Hobsons Bay, Maribyrnong, Melbourne, Port of Melbourne and Wyndham planning schemes and an EPA works approval application prepared in accordance with the provisions of the *Environment Protection Act 1970* were also exhibited with the EES.

On 18 May 2017, I appointed an inquiry under s 9(1) of the Environment Effects Act and on 26 May 2017, I published terms of reference by which the inquiry would undertake its task. I also appointed the inquiry members as an advisory committee under s 151 of the *Planning and Environment Act 1987* to consider the draft planning scheme amendment and related matters raised in submissions. Planning Panels Victoria received 504 submissions on the EES, the draft amendment and the EPA works approval application.

The IAC held a directions hearing on 19 July 2017, followed by its public hearing from 14 August to 19 September 2017. The IAC provided its report to me on 23 October 2017. The report, along with a range of other matters, has informed the preparation of this assessment of the environmental effects of the project under the Environment Effects Act. The next step is the provision of this assessment to the Minister for Roads and Road Safety and statutory decision-makers to inform any approval decisions on the project, including any subsequent planning scheme amendment or EPA works approval.

3.2 Victorian statutory approvals

The project requires a number of Victorian statutory approvals, including:

- an amendment to the Brimbank, Hobsons Bay, Maribyrnong, Melbourne, Port of Melbourne and Wyndham planning schemes under the Planning and Environment Act

[1] The technical reference group comprised representatives of departments and authorities with statutory interests or specialised expertise relevant to the project, including DELWP (Planning and Environment portfolios), EPA, VicRoads, VicTrack, Port of Melbourne, Parks Victoria, Victorian Planning Authority, Melbourne Water, Aboriginal Victoria, Heritage Victoria and Melbourne, Maribyrnong and Hobsons Bay city councils. The proponent and relevant members of its consultant team also attended meetings.

- a works approval and waste discharge licence under the Environment Protection Act for the proposed tunnel ventilation systems
- an approved cultural heritage management plan under the *Aboriginal Heritage Act 2006*
- consent to undertake works on or across a waterway under the *Water Act 1989*
- a permit to remove listed flora and/or fauna from public land under the *Flora and Fauna Guarantee Act 1988*
- a permit to take wildlife under the *Wildlife Act 1975*
- consent to undertake works on a road and to connect to a freeway under the *Road Management Act 2004*
- consent to disturb an archaeological site under the *Heritage Act 1995*
- consent to use and develop coastal Crown land under the *Coastal Management Act 1995*
- consent under the *Conservation, Forests and Lands Act 1987*.

The exhibited draft amendment and works approval application are discussed in more detail below.

3.3 Planning and Environment Act

The *Planning and Environment Act 1987* sets out processes for the amendment of Victorian planning schemes. An amendment to the Brimbank, Hobsons Bay, Maribyrnong, Melbourne, Port of Melbourne and Wyndham planning schemes is required to provide comprehensive statutory planning controls for the project. In the absence of such an amendment, the project would be subject to multiple and uncoordinated permit requirements under various provisions of the relevant planning schemes. The draft amendment included in the exhibited EES is discussed in Section 4.2.

3.4 Environment Protection Act

A works approval is required under the Environment Protection Act before commencing works associated with installing tunnel ventilation systems because they are 'scheduled premises' (item L03) under the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007*. An application for a works approval (No. S0100269) has been received by the EPA and was advertised jointly with the EES, in accordance with section 20AA of the Environment Protection Act.

Matters relevant to the assessment of the works approval application are addressed in several sections of this assessment, including the air quality, noise and health sections in Chapter 5. With specific regard to the works approval application and EPA's decision, the EPA should assess the project's compliance with applicable SEPPs, particularly SEPP (AAQ), SEPP (AQM) and SEPP N-1 and with other relevant policy under the Environment Protection Act.

In making its decision, EPA should have due regard for the specific recommendations of the IAC, while noting that I do not consider that the immediate installation of filtration equipment in the tunnel ventilation systems is necessary. Rather, I support provision in the works approval for retrofitting of such equipment in the event that air quality monitoring demonstrates that it is warranted.

Following construction and commissioning of the tunnel ventilation systems, waste discharge licences will be required for their operation.

3.5 Major Transport Projects Facilitation Act

The project was declared a major transport project to which the project delivery provisions of the *Major Transport Projects Facilitation Act 2009* will apply, by notice dated 5 September 2016 and published in the Government Gazette on 15 September 2016. The Minister for Roads and Road Safety was declared the Project Minister for the project on the same day.

3.6 Commonwealth statutory approval

In December 2015, the Department of Economic Development, Jobs, Transport and Resources referred the West Gate Tunnel Project to the Commonwealth Environment Minister (Referral 2015/7620) for a determination on whether the project was a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999*.

On 14 January 2016, the Commonwealth Environment Minister determined that the project was not a controlled action, which means it does not require assessment and approval under the Environment Protection and Biodiversity Conservation Act.

4 ASSESSMENT FRAMEWORK AND THE MANAGEMENT OF ENVIRONMENTAL EFFECTS

This part of my assessment:

- summarises my approach to assessing the environmental effects of the project
- explains relevant aspects of the proposed regulatory framework and environmental control regime that have informed my assessment
- sets out my findings about the adequacy of the information and analysis on which my assessment is based.

4.1 Consideration of environmental effects

The approach used for constructor procurement, project design and EES preparation and exhibition for this project is different to that adopted for other recent major infrastructure projects. The award of the construction contract pre-dated EES exhibition, with the advantage that the selected tender design was assessed and exhibited in the EES, providing a greater level of detail about the project than the reference designs of recent similar-scale projects. The greater design definition gives stakeholders greater confidence in the accurate prediction of the project's environmental effects.

My assessment has been assisted by the level of detail about the project and by consideration of the EES, public submissions, evidence tabled with the IAC, information and submissions presented at the IAC's public hearing, the IAC report and the additional information provided by the proponent about the potential to lower the Wurundjeri Way extension. The applicable legislation, policy, strategies and guidelines, summarised in Chapter 4 of the EES, and the objectives and principles of ecologically sustainable development, have also informed my assessment.

To provide an integrated structure for this assessment, key aspects of legislation and statutory policy relevant to the potential effects of the project have been synthesised into a set of evaluation objectives. These objectives are derived from the draft evaluation objectives that were included in the scoping requirements for the EES and used by the proponent in its assessment of alternatives and effects within the EES.

The IAC also assessed the project having regard to these evaluation objectives and I have adopted them for the purposes of my assessment. I have also included a new evaluation objective for greenhouse gas emissions to assist in my assessment of this matter.

The evaluation objectives are listed in full in Table 1. The first column of Table 1 provides references to the sections of Chapter 5 where each of these evaluation objectives is addressed.

Table 1. Assessment evaluation objectives.

Section	Final evaluation objective
5.2	**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.*
5.4	**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.*
5.5 5.6 5.8	**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.*

/cont.

Table 1 (cont.). Assessment evaluation objectives.

Section	Final evaluation objective
5.3 5.15 5.16	**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.*
5.4	**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.*
5.7	**Greenhouse gas emissions** *To manage direct and indirect emissions of greenhouse gases arising from the project in accordance with best practice principles as far as practicable.*
5.11 5.12	**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.*
5.10 5.12	**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.*
5.13	**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.*
5.9	**Cultural Heritage** *To avoid or minimise adverse effects on Aboriginal and historical cultural heritage values.*
5.14	**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.*
5.17	**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.*

4.2 Management of environmental effects

I acknowledge that the project will generate both positive and negative environmental effects. A sound regulatory framework and environmental control regime is needed to ensure that adverse local effects of the project are effectively mitigated and managed. I have considered key elements of that regime, described below, when assessing the project's environmental effects.

The primary tools in the proposed regulatory framework and environmental control regime consist of a set of planning controls, an environmental management strategy, a set of EPRs, a works approval and an approved cultural heritage management plan.

This section explains the proposed planning controls and environmental management framework in greater detail below and my assessment in Section 5.17 addresses the environmental management framework's adequacy.

Planning controls

On 19 May 2017, the proponent requested that I act as the planning authority for an amendment under the Planning and Environment Act to facilitate the project subject to a favourable assessment of the EES and any other considerations that may arise from the IAC's report. The Minister for Planning is therefore identified as the planning authority for draft Amendment GC65 to the Brimbank, Hobsons Bay, Maribyrnong, Melbourne, Port of Melbourne and Wyndham planning schemes that was developed by the proponent and exhibited with the EES.

In broad terms, the proponent's draft planning scheme amendment proposes to:

- insert an incorporated document into the six affected planning schemes to allow the use and development of the land in the project area for the purposes of the project in accordance with the control in the incorporated document
- make the Minister for Planning the responsible authority for the administration and enforcement of the provisions of the planning schemes as they relate to the project
- apply a DDO over the tunnels component of the project in the Hobsons Bay and Maribyrnong planning schemes to protect the structural integrity of the tunnels and associated infrastructure.

The purpose of the draft planning scheme amendment is to:

- facilitate project delivery in a timely, coordinated and consistent manner
- establish a framework to manage environmental effects associated with project construction and operational phases
- protect project infrastructure from new development that may compromise its structural integrity or adversely affect its operation
- ensure the main works can be planned with certainty and commence without delay.

The draft planning scheme amendment will amend the Brimbank, Hobsons Bay, Maribyrnong, Melbourne, Port of Melbourne and Wyndham planning schemes to make the Minister for Planning the responsible authority for:

- Clause 52.03 of the scheme in respect of the *West Gate Tunnel Project Incorporated Document, December 2017*
- any other provision of the scheme as it applies to the use or development of land for the project.

I note that the Minister for Planning is already the responsible authority for administering and enforcing the Port of Melbourne Planning Scheme.

The incorporated document would exempt the project from all other provisions of the planning schemes, subject to conditions within that document.

The draft incorporated document refers to DUDPs that include EPRs. The incorporated document also requires approval by the Minister for Planning of an Environmental Management Strategy by means of secondary consent before the main construction works commence. The Environmental Management Strategy must respond to the EPRs and be consistent with the exhibited EMF. The incorporated document defines preparatory and other works that may be undertaken before the Environmental Management Strategy has been approved.

Under the proposed arrangements, the planning scheme amendment, incorporated document, DUDPs, EPRs and Environmental Management Strategy would be to the satisfaction of the Minister for Planning. The proposed DDO would trigger consideration of engineering issues associated with development above the tunnels.

Submitters suggested changes to the proponent's draft incorporated document and these were discussed at the IAC hearing. The proponent tabled a final draft version of the incorporated document with the IAC (document number 333 dated 19 September 2017) and the IAC commented on this version of the document.

Environmental management framework

An environmental management framework was exhibited as part of the EES. An important part of the exhibited EMF is the content and drafting of the EPRs. The EES included an extensive list of EPRs that set the environmental standards the project must achieve. This 'performance based' approach to environmental management has been used successfully for other Victorian infrastructure projects. Ultimately, the EPRs will be included in any project agreement between the State and 'Project Co'. The content of the EPRs was refined by the proponent throughout the course of the IAC hearing in response to submissions and evidence. The proponent tabled 'Version 6' of the EPRs to the IAC on the final day of the

hearing. The IAC examined the form and content of the EPRs to ensure that they created an appropriate framework for mitigating and managing the environmental effects of the project.

As well as setting minimum environmental standards that the project would be required to achieve, some EPRs create obligations in respect of the preparation of a range of plans to deal with specific issues. For example, the exhibited environmental management framework and the EPRs require a series of subordinate plans to be prepared including:

- a Construction Environmental Management Plan (CEMP)
- Work site environmental management plans
- an Operational Environmental Management Plan (OEMP).

Subordinate plans will contain detailed mitigation measures selected for implementation by the proponent as the proposed means of achieving compliance with the environmental standards specified by the EPRs. The environmental management strategy proposed to be submitted for approval by the Minister must, among other things, set out the process for developing, reviewing and approving these plans. Other EPRs provide for further design, modelling, consultation and monitoring programs.

The EPRs aim to set clear standards for environmentally acceptable performance, either by reference to statutory obligations or by establishing project-specific benchmarks (which have regard to best practice and community expectations). This approach provides suitable flexibility for the proponent to exercise initiative and innovation in selecting and implementing mitigation measures to meet the EPRs while ensuring achievement of acceptable environmental outcomes.

Much of my assessment is concerned with assessing the environmental effects of the project in light of the EPRs.

4.3 Adequacy of consideration of environmental effects

I am satisfied that the environmental effects of the project have been properly identified and adequately assessed in the EES and throughout the process conducted by the IAC.

I am aware that some submitters to the IAC contended that the assessment in the EES was deficient in some respects. For example, the adequacy of the strategic traffic modelling undertaken by Veitch Lister Consulting as documented in the EES was challenged. I am satisfied that this modelling was suitable and that it provided a sound basis for generating traffic forecasts for the purposes of the assessment. I do not consider it necessary for the Veitch Lister Consulting modelling to have been peer reviewed as part of the EES process or for an alternative strategic model to have been used to supplement this modelling.

The IAC recommended a number of matters for further investigation as a condition of approval. My assessment in Chapter 5 addresses these matters. In some instances, I disagree that further investigation is required, but in others I agree that either further investigation should be undertaken by the proponent, or otherwise pursued by government independent of this project. Where I consider further investigation and consequential measures should be pursued by the government independent of any project approval, I am satisfied that these investigations and measures can or will be addressed by another government agency. Such measures are desirable, but not essential to mitigate impacts of the project to an acceptable level. Other than the lowering of the Wurundjeri Way extension, for which I requested additional information from the proponent, and those investigations to be undertaken by government independent of any project approval, I am satisfied that the further investigations should properly be undertaken as the detailed design of the project progresses.

4.4 Adequacy of consideration of project alternatives

Pursuant to my order made on 14 May 2017, I directed that the EES document, among other things, investigate potential environmental effects of the proposed works including, as appropriate, the feasibility of design alternatives for the project. The assessment of

alternatives for the project was also addressed in the scoping requirements that were issued for the project.

The EES records the consideration of alternatives for several components of the project (Chapter 3 of the EES). Key alternatives examined in the EES include:

- carriageway design options including not widening the West Gate Freeway and widening the West Gate Freeway to six lanes in each direction with unconstrained traffic movements or channelised traffic flow
- tunnel and Hyde Street ramp options including a short tunnel, long tunnel with northern ramps, long tunnel with southern ramps, long tunnel with Hall Street ramps, long tunnel with north and south ramps and long tunnel with north and south ramps with the southern ramp located closer to the West Gate Freeway
- alignment and configuration options for an elevated structure and a combination of elevated structure and at-grade alignment within the Footscray Road corridor
- port connection options including MacKenzie Road and Dock Link Road connections
- city connection options including: no connection to the city with connection only to/from CityLink (known as Option 1); one connection at Footscray Road (known as Option 2); two connections, with connections at Footscray Road and Dynon Road (known as Option 3); and three connections, with connections at Footscray Road, Dynon Road and an extension of Wurundjeri Way with connection to Dynon Road (being the option ultimately adopted for the project and known as Option 4).

The EES also documents how the consideration of alternatives informed the preparation of the selected tender design.

During the course of the IAC hearing the proponent conducted additional analysis concerning alternatives to particular project components. This additional analysis was documented, in part, in the following project notes:

- Project note 1, which investigated a sensitivity test on predicted truck traffic (including on Millers Road) by removing one of the truck tolling points on the West Gate Freeway.
- Project note 43, which provided further assessment of the city connection options considered within the EES including the Footscray Road, Dynon Road, and Wurundjeri Way connections.
- Project note 60, which provided further assessment of the potential traffic and transport impacts associated with city connection options 1 to 3, and an additional option (known as Option 5) where connection would be provided to CityLink, Footscray Road and the Wurundjeri Way extension (between Dudley Street and Dynon Road) with ramps at MacKenzie Road and Appleton Dock Road, but no connection between the project and Dynon Road.

This additional analysis was the subject of expert evidence and was considered by the IAC.

I am aware that a number of submitters to the IAC contended that the assessment of alternatives was inadequate and that a supplementary EES should be prepared to further examine alternatives for different components of the project. I do not agree. I am satisfied that the assessment documented in the EES, the further assessment undertaken and documented during the course of the IAC hearing, and the assessment of the alternatives completed by the IAC, was adequate.

4.5 Further information concerning the lowering of Wurundjeri Way

I am aware that the urban design and other planning ramifications of the proposed elevated extension to Wurundjeri Way, and the associated Dynon Road cross-section, were the subject of considerable attention before the IAC. During the course of its closing submissions to the IAC, the proponent indicated that it was undertaking further investigations to understand potential impediments to the prospect of lowering the Wurundjeri Way extension. The IAC recommended that the project design be reviewed and refined in this respect.

During the period of my assessment, I wrote to the proponent to request additional information concerning the prospect of revising the design of this component of the proposal. In particular I requested:

- information and review in relation to the potential option of lowering the Wurundjeri Way extension component of the project and modifying the Dynon Road link cross section
- information or assessment in relation to the potential environmental effects of lowering the Wurundjeri Way extension component of the project and modifying the Dynon Road link cross-section.

The proponent responded by advising that the Wurundjeri Way extension component of the project can be substantially lowered below the height shown in the EES on the basis that it has now been confirmed that the existing V/Line rail stabling facility, which was previously to be situated below the proposed Wurundjeri Way extension, can be relocated to another area in the South Dynon rail yard west of Moonee Ponds Creek. The proponent prepared and submitted an assessment report concerning the potential to lower the Wurundjeri Way extension which I have included as Appendix B to this report.

A detailed description of the potential to revise the design of that component of the project is contained in the assessment report. I note for present purposes that the potential design would:

- retain the existing horizontal alignment of the Wurundjeri Way extension (with the exception that the on- and off-ramps shown to the Dynon Road link would be redundant and would be deleted)
- result in the lowering of substantial portions of the Wurundjeri Way extension below the levels shown in the EES, including for portions of the extension that directly abut the E-Gate urban renewal area
- create an at-grade intersection between the Dynon Road connection and the Wurundjeri Way extension.

My assessment of this matter is addressed in greater detail in Chapter 5 of this report. I note for present purposes that in conducting my assessment I have relied on the further information to the extent that it confirms that it is now possible for the Wurundjeri Way extension to be lowered and it provides information concerning the indicative extent to which this could occur. It is readily apparent that the potential to lower this component of the project would result in lesser (and in my opinion acceptable) impacts on the E-Gate urban renewal area and that it would allow for efficient active transport connections to be established between E-Gate and North and West Melbourne. For these reasons, I recommend that the DUDPs are modified accordingly.

The assessment report also documents the findings of an impact assessment in respect of the likely environmental effects of lowering the Wurundjeri Way extension (in respect of traffic, noise and air quality). Whilst I note those findings, it is my assessment that the EPRs that have been formulated in respect of the project, and as set out in Appendix A to this assessment, will ensure that the modified configuration of the Wurundjeri Way extension will achieve acceptable environmental outcomes.

5 ASSESSMENT OF ENVIRONMENTAL EFFECTS

The project will deliver substantial benefits to metropolitan Melbourne and to the residents of Melbourne's west in particular. The wider community will enjoy improved traffic flows and resilience on the M1 corridor; reduced reliance on the West Gate Bridge; expanded capacity on the West Gate Freeway; and improved connectivity between the expanding central city and Melbourne's western suburbs. The operation of the Port of Melbourne will be substantially enhanced and many communities will benefit from a reduction in truck traffic on local roads. The inner west will also benefit from improved pedestrian and cycling links and from the provision of several new open spaces.

The project enjoys significant planning policy support within various elements of the State Planning Policy Framework and from directions articulated in Plan Melbourne 2017–2050. The project's alignment has been well chosen to generally avoid residential areas and stay within existing road reserves or on port industrial land where possible. Importantly, residents of the inner west will enjoy reduced noise and improved air quality and safety and accessibility in those locations where full-time truck bans are introduced. Those near the West Gate Freeway will also receive greater noise protection.

Largescale linear transport projects inevitably give rise to a range of impacts at a local and regional level. In this case these impacts will include, but are not limited to, permanent changes to traffic distribution, as well as localised environmental impacts on air quality, acoustic conditions, and the built environment. Constructing this project will also cause disruption. This assessment, and the process that led to it, recognises that it will not be possible to avoid all adverse effects of the project. It will be important to ensure that appropriate mitigation measures are in place to address the negative impacts of the project and that appropriate standards of environmental performance are established. This will be a focus of my detailed assessment in the sections that follow.

On balance, **it is my assessment that** the project will meet its objectives, and that its environmental effects will be acceptable.

The IAC made a number of findings and recommendations in respect of the project. My response to its key findings and recommendations, along with my assessment of the main environment effects of the project, are detailed in sections 5.2 to 5.17 below (which are grouped according to the discrete environmental objectives identified in Section 4.1). Section 5.1 identifies some of the main issues that arise for assessment for each project component and summarises my key recommendations in these respects.

5.1 Summary of environmental effects

West Gate Freeway

The impact of the project on and around Millers Road in Brooklyn has been a key consideration in my assessment of this component of the project.

While the project will result in a net reduction in kilometres travelled by trucks on arterial and local roads, it will cause a significant increase in truck traffic along Millers Road, especially to the north of the West Gate Freeway. This will give rise to a range of impacts on the residential precinct situated to the west of Millers Road, including in respect of traffic, noise and air quality. I support the announcement by the Victorian Government during the IAC hearing that the tolling point west of Millers Road will be removed and that the proponent will work with the Millers Road residents to install noise reduction measures in their homes. These measures will ameliorate some of the impacts of this project at and around this location. Further, consistent with the recommendation made by the IAC, a corridor study along Millers Road would be desirable to determine what traffic management works (if any) could be employed to improve the safety, accessibility and amenity of the community that live on or near Millers Road to a reasonable level.

The project will also generate an increase in truck traffic on Hyde Street (south of Francis Street), including placarded loads that will be directed to and from the Hyde Street ramps. I support the IAC's recommendation that the residential properties on Hyde Street between Francis Street and the West Gate Freeway should be voluntarily acquired by VicRoads. However, if those residents are not offered voluntary acquisition, the proponent must work with the residents living on or near Hyde Street to install noise mitigation measures at affected residential properties.

The impact of the project on air quality within residential areas adjacent to this component of the project, including in the suburbs of Brooklyn, Altona North, Spotswood, South Kingsville and Yarraville, is a further consideration. I recognise that air quality in the inner west is variable and sometimes poor. The modelling undertaken for the project demonstrates that it will generally have a very minor impact on peak concentrations of air quality indicators in these locations. I support the IAC's recommendation for targeted, cost-effective and strategic mitigation in areas affected by emissions from increased traffic resulting from the project and for additional air quality monitoring to be undertaken.

I note the IAC's analysis concerning the smoky vehicle program discussed during the IAC hearing. In my opinion, while the IAC recommended that a program of this type be funded and implemented within the project area, responsibility for compliance and enforcement properly rests with EPA and VicRoads. I do not consider that a statutory obligation should be imposed on the project to implement a program of this type, but I commend the IAC's finding to the project Minister for consideration of how the project might integrate with a whole of government approach to the issue.

The need for additional noise barriers and other measures along parts of the West Gate Freeway is a further key consideration for this component of the project. As I have already noted, the Victorian Government announced that additional noise walls (not specified in the EES) will be built along the West Gate Freeway at Crofts Reserve, McIvor Reserve and Stony Creek Reserve. I support this announcement but also recommend that an additional noise barrier should be installed along the northern boundary of the open space proposed as part of Precinct 15 in Altona North. I do not agree that a night time noise limit should be established in respect of the project.

Tunnels

The need for filtration systems to be installed within the tunnel ventilation systems is a key consideration for this component of the project.

Notwithstanding the recommendations of the IAC, I do not consider that filtration of tunnel ventilation emissions is necessary, or appropriate, or that it would result in any material improvement to local air quality. Instead, I consider that provision should be made for the retrofitting of a filtration system within the tunnel ventilation system, in case it is later demonstrated to be warranted. My assessment is consistent with the EPA's submission to the IAC.

The IAC also noted the need to maintain acceptable air quality within the tunnels for drivers and passengers, and supported the application of the NSW standard for NO_2 in addition to SEPP standards for other indicators. I support the adoption of the NSW standard for in-tunnel NO_2 concentrations.

The location, configuration, and design of the southern portal and structures associated with the Maribyrnong River crossing were the subject of considerable attention by and before the IAC. I am satisfied that the portal and the bridge structures are appropriately located and that they will offer safe, efficient, and direct access to and from the Port of Melbourne. I am also satisfied that, subject to a further review being undertaken in respect of the presentation of the ramps on either side of the proposed bridge structure, the design and location of the portal and river crossings is appropriate and that it will achieve acceptable outcomes in land use planning and urban design terms.

Port, Citylink and city connections

The project's city connections attracted much comment through submissions and discussion at the IAC hearing. I agree with the IAC's finding that the three city connections working together, as proposed, will best achieve the project's objectives of improving traffic capacity on the M1 corridor and improving connectivity to and from the west.

The IAC identified a number of environmental effects associated with the exhibited tender design of the Wurundjeri Way extension and the Dynon Road link. These included, most notably, constraints on the future development of E-Gate and its integration with North and West Melbourne. To address these effects, the IAC recommended 'reviewing and refining the project design at the city end' to address a number of urban design, land use and transport matters including an active transport link across E-Gate. It specifically recommended that the Wurundjeri Way extension be lowered to at grade where possible and that the Dynon Road connection cross section be modified.

As noted above, I requested additional information from the proponent about the potential of lowering the Wurundjeri Way extension, and modifying the Dynon Road link cross-section to assist in the preparation of my assessment. The proponent's response to my request for further information is contained at Appendix B.

I agree with the IAC that the design of the Wurundjeri Way extension should be revised. The lowering of Wurundjeri Way in the manner described in Appendix B would result in a number of superior environmental outcomes to the design analysed in the EES. It would reduce the impact of the project on the development potential of E-Gate and allow for active transport links to be established between E-Gate and North and West Melbourne. I am satisfied that the EPRs specified in respect of the project would ensure that appropriate environmental outcomes would be achieved by the proposed lowering of Wurundjeri Way extension and, on this basis, I recommend that this change is incorporated within the project's DUDPs. I note in this respect that the modifications to the project would concern only the vertical alignment of this component of the project and not any material change to the horizontal component of the project (or to any other component of the project).

Whereas traffic levels will increase within much of North and West Melbourne (relative to the 'no project scenario') they will decrease in other parts of the local road network (including on Dudley Street and on Spencer Street). The Wurundjeri Way extension, which will function as a city bypass, will provide particular traffic benefits to the local road network. My assessment is that the levels of traffic anticipated in North and West Melbourne will be both manageable and acceptable.

That said, I recognise that traffic conditions in North Melbourne, West Melbourne and the nearby urban renewal areas will continue to change over time, in response to a number of local land use changes (not just traffic entering these areas via the project's city connections). In concert with the evolving policy and strategic planning framework for the future development of the Arden Macaulay Urban Renewal Precinct, and other areas such as E-Gate, further investigations should be undertaken to derive an integrated traffic management response to anticipated levels of traffic within this area. I recommend these investigations to the Minister for Roads and Road Safety and to the City of Melbourne.

I note finally that the strategic planning relating to the E-Gate urban renewal area and its immediate environs remains at a relatively early stage. I recommend that Government continues to evolve the policy and strategic planning framework for the future development of the E-Gate precinct. Any such planning process should respond appropriately to the opportunity to activate community spaces along the banks of Moonee Ponds Creek. I recommend that a masterplan be produced for a linear reserve along Moonee Ponds Creek between Dynon Road and Footscray Road as part of any such planning process.

5.2 Traffic and transport

Evaluation objective – *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.*

Transport impacts are addressed in Chapters 11, 18 and 25 and Technical Report A of the EES and in Chapter 4 of the IAC report. I am generally satisfied that the traffic and transport impacts of the project are accurately described in these parts of the EES. Ten EPRs deal with transport matters and have been the subject of recommendations by the IAC.

Assessment context

Melbourne's transport challenge, as it grows from a city of 4.5 million to almost 8 million by 2051, is well documented in Plan Melbourne 2017–2050 and other strategic documents. The western suburbs have experienced rapid population growth and, with this, greater pressure on the transport network. Against this backdrop, the project has been developed to address critical transport challenges including:

- inadequate transport capacity on the M1 corridor
- over reliance on the West Gate Bridge
- inadequate port and freight connections to cater for predicted growth
- reduced amenity in the inner west due to heavy vehicle movements
- a disparity between land use and transport, with an increasing future population in the west needing to travel to the central city for work.

A project of this scale will inevitably affect other parts of the transport network. Modelling undertaken in respect of the project assessed impacts in the context of three geographical areas: metropolitan Melbourne, local areas and the project corridor. I agree that these constitute appropriate bases for assessment and, as discussed further below, I consider the methodology adopted in these respects to be appropriate.

The project is designed to support continuous port operations and hence freight traffic would be using the project both during the day and at night. Noise impacts associated with increasing freight use of the freeway at night time are considered in Section 5.5.

Construction phase impacts will also be felt across the transport network. During tunnel construction, some 1,200 truck movements are forecast to access the northern portal site each day. Lane closures on the West Gate Freeway and other intersecting arterial roads will occur outside peak periods and full closures of the freeway will occur overnight. Works would impact shared use paths and pedestrian bridges and suitable alternatives will need to be provided.

Traffic and truck increases raise associated noise, air quality, health, greenhouse gas, social, business, access and safety issues. These impacts are discussed further in other sections of this chapter.

Particular concerns have been raised about:

- the adequacy of the modelling undertaken in respect of the project
- the extent to which the project will achieve the identified transport objectives (and the extent to which it should be modified to achieve particular outcomes)
- the acceptability of the modelled levels of service
- impacts on Millers Road, Brooklyn, where truck traffic is predicted to increase primarily due to the proposed 24-hour truck bans on inner west streets (and removal of the Moore Street truck curfew exemption) currently used as freight routes between the western suburbs and the Port of Melbourne
- impacts on Hyde Street, and in particular, those attributable to increases in placarded loads
- the acceptability of the port connections

- the acceptability of the city connections component of the project, including but not limited to future transport connectivity for E-Gate and Docklands
- impacts on North and West Melbourne
- the acceptability of the active transport components of the project
- the impact of construction traffic

Each of these matters are addressed below.

Discussion

Modelling

The strategic transport modelling undertaken by Veitch Lister Consulting was central to evaluating the benefits and adverse effects of the project across the transport network (as well as on other aspects of the environment). This modelling was properly supplemented by spreadsheet and microsimulation modelling documented in the EES. I am satisfied that the analysis recorded in the EES, and as supplemented by the relevant project notes produced by the proponent, provides an appropriate basis to assess the likely traffic and transport impacts of the project.

Transport objectives

The project will provide increased capacity to the road network (including by the diversion of in the order of 8,000 trucks daily from the West Gate Bridge in 2031). It will increase network resilience and reduce pressure on the existing four key river crossings. Connectivity to and from Melbourne's west will be improved by providing direct and unimpeded freeway access to the Port of Melbourne for freight, improved access to the expanded central city, and new and improved shared use paths and cycle ways.

The project will achieve the objective of 'increasing freight movement via the freeway network' and will, in turn, reduce levels of truck traffic on many residential and arterial streets (including a reduction in the total kilometres travelled by trucks on these types of roads). Residential streets in Yarraville and Footscray that have endured substantial levels of truck traffic over prolonged periods will benefit substantially in this respect. The project will provide full-time truck bans on sections of Moore Street, Francis Street, Somerville Road, Buckley Street, Blackshaws Road and Hudsons Road. These truck bans will require effective monitoring and enforcement to ensure that benefits are realised. On the other hand, as discussed further below, the project will give rise to increases in truck traffic on other streets with residential frontages (including Millers Road, Williamstown Road and Hyde Street). The impacts of increased truck traffic on these streets, especially Millers Road, will require careful management.

The IAC recommended that planning should commence for the 'Northern Corridor' as proposed by Eddington to provide an alternative route for truck traffic using Millers Road. I note that Infrastructure Victoria recently identified that a link between CityLink and the Western Ring Road may be needed in the latter part of the 15-30 year period.

The provision and upgrade of 14 kilometres of shared-use paths will improve safety and connectivity for pedestrians and cyclists. Extension of the Federation Trail to Hyde Street and the provision of a veloway along Footscray Road are particularly valuable additions to the active transport network.

The project offers substantial benefits to the movement of freight into and out or the Port of Melbourne via MacKenzie Road (for West Swanson Dock) and Appleton Dock Road (for East Swanson Dock, Victoria Dock and Appleton Dock), with access to MacKenzie Road via dedicated (on and off) bridges over the Maribyrnong River. It will play an important role in facilitating the efficient and effective operation of the Port of Melbourne over the coming years.

The IAC found that the project meets the transport objectives identified for the project. **It is my assessment** that the project will deliver substantial transport benefits to the community consistent with the stated project objectives. Further, in keeping with the findings of the IAC,

I am satisfied that the project is responsive to the transport system objectives of the *Transport Integration Act 2010.*

Levels of Service
The EES identified transport performance targets for project freeway segments of a level of service D and for all intersections a level of service D or a degree of saturation of 0.9 or better. The modelling demonstrates that there are several segments and intersections that will not meet these target levels. In many instances, this would be the case in the no project scenario as well as project scenario. The proponent proposed that a lower level of service should be considered acceptable where the level of service is comparable to a 'no project scenario'.

I agree with the IAC's recommendation that the stated performance targets be articulated in EPR TP1, which seeks to optimise design performance, and to encourage further exploration of mitigation measures or design refinements. VicRoads would be able to grant exemptions to these targets in consultation with the relevant Council where appropriate. In so doing, the project may achieve a higher design performance in some instances or not preclude the ability for future upgrades.

West Gate Freeway
The potential for 'weaving' on the West Gate Freeway between interchanges and ramps could impact on traffic capacity and safety. The proponent's traffic expert highlighted this as a potential issue at the exit of the southern westbound portal. Further design refinement is required around the southern portal to optimise performance in this location.

Several submitters raised specific design or project scope changes, to either improve transport performance or mitigate project effects. The IAC concluded that proposals for: transit lanes on the West Gate Freeway, a reduction in traffic lanes on Footscray Road, additional connections to the West Gate Freeway or a Paramount Road corridor connection were not justified or needed to meet the project objectives. This position is consistent with VicRoads' submission and I support these conclusions.

Millers Road, Brooklyn
Millers Road is a four-lane divided arterial road. Dwellings are established along its western edge north of the West Gate Freeway. The project will have the effect of shifting truck traffic from residential streets in the inner west to Millers Road. Truck traffic is projected to increase on Millers Road, from 6,500 trucks per day in 2031 without the project to 13,500 per day in 2031 with the project. As documented in Project Note 1 presented by the proponent during the IAC hearing, it is estimated that the removal of the proposed toll point west of Millers Road would reduce the 2031 'with project scenario' truck volumes to 10,500 per day. The removal of this toll point was subsequently announced by the Victorian Government.

While recognising that Millers Road is and will continue to be an important freight route providing direct freight access between the Tottenham/Brooklyn industrial area and the West Gate Freeway and West Gate Tunnel, it is apparent that the proposal will result in substantial traffic impacts on Millers Road (even with the removal of the toll point west of Millers Road). VicRoads noted that further investigation is needed to balance freight use of Millers Road with the needs of other road users including pedestrians, cyclists, public transport and local residents to safely access the arterial network. I agree that this should occur.

To identify and plan traffic management measures required to reduce impacts on Millers Rd to acceptable levels, the IAC recommended that a corridor study along Millers Road be undertaken between the West Gate Freeway and Geelong Road to determine traffic and transport management works required to cater for the projected traffic volumes in 2031. It recommended that this study include consideration of the safety, accessibility and amenity of the abutting local residential community, and that any works identified as being necessary be undertaken as part and at the cost of the project.

I recommend to VicRoads that a corridor study should be undertaken. In undertaking the study, VicRoads should engage affected residents, businesses and Hobsons Bay City Council. Submitter concerns about potential poor traffic performance on Millers Road south of the West Gate Freeway, and the impacts of the anticipated additional traffic movements on critical intersections (such as at the Altona Gate Shopping Centre entry), may need to be included in the Millers Road corridor study. The potential to achieve a grade-separated crossing of Millers Road by the Federation Trail shared use path should also be investigated. I am not requiring the project to contribute to the cost of works in Millers Road because I consider it the responsibility of VicRoads to resolve these issues.

I also note the IAC recommendation 1c to 'extend the project boundary to include Millers Road between the West Gate Freeway and Geelong Road'. If for any reason the project boundary needs to be altered in order to facilitate additional works, this can be addressed at a future time when any such works are properly understood.

Hyde Street, Yarraville
Owing to the provision of the Hyde Street ramps and the removal of the current night-time truck ban, the project is anticipated to result in increased truck traffic (including placarded loads) on Hyde Street (between Francis Street and the West Gate Freeway) by some 1500 trucks per day in 2031 compared to the 2031 'no project scenario'. These truck movements could occur across both the day and night. Residents on the west side of Hyde Street would be affected.

As discussed in Section 5.3, I support the IAC's recommendation that voluntary acquisition be offered to the affected residential properties.

Port connections
It is my assessment that the proposed location of the northern portal, and the design and configuration of the structures crossing the Maribyrnong River, will offer safe, efficient, and direct access to and from the Port of Melbourne.

Alternative configurations of the MacKenzie Road ramps that could provide freight access to Swanson Dock West were canvassed at the hearing. The IAC found that no feasible alternative had been presented. I agree with this assessment. My recommendations on the design of these ramps are provided in Section 5.4 and my analysis of their land use impacts is provided in Section 5.3.

Submitters raised concerns about the performance of the Sims Street and Footscray Road intersection and the need for efficient and safe movement for over-dimensional vehicles, which are unable to use the tunnels, to and from the Port. VicRoads submitted that 'the intersection of the Sims Street loop and Footscray Road should be signalised to facilitate safe and efficient egress of freight traffic from Mackenzie Road and Sims Street originating from the Port or West Gate Tunnel'. The IAC considered that the need for further upgrades to these intersections should be informed by additional analysis (IAC Recommendation 6). I agree that such a study would be desirable in the context of the broader traffic network and recommend that VicRoads complete the necessary consultation and analysis.

Light vehicle traffic using the MacKenzie Road ramps may interfere with freight movements near Swanson Dock West. The extent to which traffic levels might be affected by toll avoidance needs further consideration, especially due to the city access charge on the Dynon Road link.

City connections
A number of submitters contended that the project's proposed city connections were inappropriate or that further assessment of alternative configurations should be undertaken. As noted above, the IAC found that the three proposed city connections work together to best achieve the project objectives of improving traffic capacity on the M1 corridor and improving connectivity to and from the west.

The project will likely reduce traffic (relative to the 'no project' scenario) in and around parts of the central business district, but will increase traffic in other parts of the expanded central city (including parts of West and North Melbourne). My assessment of the impacts associated with this anticipated traffic conditions are addressed below.

The Wurundjeri Way extension will function as a city bypass and will reduce traffic (relative to the 'no project' scenario) on city streets such as Dudley Street, King Street, and Spencer Street. This is a positive attribute of the project and will allow the opportunity to review the future role and function of Spencer Street, particularly in the CBD grid between Latrobe Street and Flinders Street, to achieve greater pedestrian and public transport priority.

Concerns about the future ability to provide active transport connections across E-Gate between North Melbourne and Waterfront City owing to the height of the Wurundjeri Way extension were discussed at the IAC hearing. In response, the IAC recommended that the design of this component of the project be revised, and that EPR TP1 be modified to include a requirement for the project to 'actively facilitate these active transport links'. I am satisfied that the changes that I have recommended be made to design of the Wurundjeri Way extension, along with the terms of EPR TP1, make appropriate provision for the future establishment of active transport links between E-Gate and its surrounds. I also note that a lowered Wurundjeri Way extension may provide improved opportunities for future road connectivity within E-Gate and the project. Like all components of the project, the lowered Wurundjeri Way extension will be subject to the transport performance targets identified in respect of the project, to be given effect by operation of EPR TP1.

Traffic impacts on North and West Melbourne

Details concerning the extent of the projected levels of traffic in parts of West and North Melbourne attributable to the project can be found in Chapter 25 of the EES. Submitters expressed concerns about the resulting impacts on the functional and environmental capacities of the local road network. Their concerns included the risk that east-west streets in these areas would operate at capacity for a greater length of time during the day.

I am satisfied that the traffic impacts on North and West Melbourne have been adequately assessed for the purposes of this process. I am also satisfied that the modelled levels of traffic, and their resulting impacts on the local road network, are acceptable. I note in this respect that the evidence of Mr Steven Hunt, who was called on behalf of the City of Melbourne, was that the modelled level of traffic on Dynon Road would be manageable and acceptable. This was consistent with the evidence given by Mr Kiriakidis on behalf of the proponent. I note also that the modelled traffic volumes in other parts of North and West Melbourne are generally consistent with those assessed in the context of Amendments C190 and C196 to the Melbourne Planning Schemes.

I recognise that the IAC found that the project, in combination with the development of Arden Macaulay and the Parkville Metro Tunnel Precinct, could saturate road capacity through North and West Melbourne for much of the day, bringing with it significant transport pressures. I agree that as a consequence of these various factors, traffic management measures may be needed to manage competing movements in these areas, to protect local amenity, and to retain reliability of street-based public transport connections.

The IAC recommended that 'further investigations of the traffic impacts on North Melbourne, West Melbourne and Docklands' be undertaken, along with any identified 'mitigation works as part, and at the cost, of the Project' (IAC Recommendation 5). I support the recommendation that further transport investigations be undertaken for this area in order to develop integrated management measures. The scope of the transport study will need to be determined in consultation with Transport for Victoria, City of Melbourne, VicRoads and other relevant stakeholders. I recommend that the study be undertaken as early as possible to allow mitigation works to occur prior to completion of project construction.

A coordinated approach across government will be required to ensure that the transport study is effective and that any appropriate mitigation measures are implemented. This will

include communication of stakeholder engagement, implementation and governance arrangements to provide certainty to affected residents, businesses and institutions, noting the level of concern expressed by submitters on this issue. I am not requiring the project to contribute to the cost of any works because I consider it the responsibility of State and local government more broadly to resolve these issues.

The city access charge, a variable toll proposed at the connection to Dynon Road to discourage use of the project to travel to the central city, could be used to manage increased congestion in this area. VicRoads supports this access charge. I agree with the IAC that the city access charge should be used to meet transport planning objectives.

Shared use paths and the veloway
The additional and improved shared use paths proposed as part of the project will confer significant benefits to communities in the west.

I agree with the IAC's recommendation that design of the veloway should rely on consultation with VicRoads, the City of Melbourne, Maribyrnong City Council and Bicycle Network. However, I am satisfied that a minimum width (between the rails) of 4 metres will provide an adequate cyclists-only path. I discuss further design issues of passive surveillance and ventilation in Sections 5.4 and 5.6.

Other key design refinements to address safety concerns and improve connectivity include grade separation of the Federation Trail at Millers Road and Hyde Street and an extension of the shared path along the east side of Millers Road from the freeway off-ramp to Beevers Street. I agree that these design refinements would provide better safety and connectivity outcomes, particularly in light of the increased truck traffic to be experienced in these locations. Design refinements should be further explored in accordance with EPR TP1 and TP6, which requires consultation with Bicycle Network, councils, VicRoads and Melbourne Water.

Construction
Construction over the estimated five-year timeframe, combined with construction of other major infrastructure projects including the Metro Tunnel, will place significant pressure on the transport network in the inner west. The importance of maintaining adequate traffic capacity during peak hours has been recognised by the proponent. However, this will result in major construction works occurring at night, which will in turn generate noise from the works themselves and the associated construction traffic (see Section 5.5).

Submitters expressed concerns about construction vehicles on local roads, including those accessing the southern portal compound. The IAC recommended that freeway access be provided to the southern portal in order to minimise use of residential streets. I support an amendment to EPR TP3 to this effect.

Transport management plans will be developed and implemented to manage construction impacts on traffic, public transport, parking, pedestrians and cyclists with advice from the Traffic Management Liaison Group. While there will be inevitable disruption, I agree with the IAC that construction effects on the transport network can be adequately managed via transport management plans.

Conclusion
It is my assessment that the project fulfils the strategic transport objectives to 'increase transport capacity and improve connectivity to and from the west of Melbourne and particularly to increase freight movement via the freeway network'.

Some parts of the transport network will be adversely affected by the project. **It is my assessment** that the project can 'adequately manage the effects of the works on the existing broader and local transport networks, including road, public transport, cycling and pedestrian transport networks', subject to the design refinements and amendments to EPRs addressed in this chapter and presented below:

- EPR TP1 should be amended to include reference to the intersection performance targets articulated in the EES.
- Further investigations should be undertaken to derive future traffic management measures across the west and northward expansion of the central city. The final scope and extent of the study will require further government consideration.
- Detailed design for the veloway should be prepared in consultation with VicRoads, the City of Melbourne, Maribyrnong City Council and Bicycle Network, and these standards should address issues of ventilation and passive surveillance (EPR TP6).
- Other potential design refinements for shared use paths and the veloway should be explored, as per EPR TP1 and TP6, in consultation with Bicycle Network, local councils, VicRoads and Melbourne Water.
- EPR TP3 should be modified to include a requirement to minimise construction traffic on New Street by providing alternative access to the southern portal compound via the freeway.

Measures for government include:

- The implementation by VicRoads of an effective monitoring and enforcement strategy for truck bans to ensure that their benefits are fully realised
  The use of the city access charge as a tool to fulfil transport planning objectives. This is a matter for government consideration.

Further investigation by government is recommended in relation to:

- A corridor study along Millers Road between the West Gate Freeway and Geelong Road (and potentially to the south of the West Gate Freeway) should be undertaken by VicRoads. This is to determine traffic and transport management works required to cater for projected traffic volumes, including consideration of the safety, accessibility and amenity of the local residential community. I recommend the study be undertaken as early as possible to allow mitigation works to be implemented prior to the completion of project construction.
- Future traffic management measures across the west and northward expansion of the central city. The final scope and extent of such a study will require further government consideration.
- Traffic analysis and design refinement at the Sims Street and Footscray Road intersection, in consultation with VicRoads, including an assessment of toll avoidance behaviour at the MacKenzie Road ramps.

5.3 Land use and planning

Evaluation objectives – *To minimise adverse effects on the social fabric of the community on community cohesion, access to community services and facilities, business functionality, changes to land use, public safety and access to infrastructure. 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. 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.*

Land use planning impacts are addressed in chapters 14, 21 and 28 and Technical Report K of the EES and Chapter 5 of the IAC report. I am generally satisfied that the impacts of the project on land use and planning matters are accurately described in these parts of the EES. Five EPRs deal with land use and planning matters. Four of these EPRs have been the subject of recommendations by the IAC.

Assessment context

The project will traverse land that is subject to six planning schemes—Brimbank, Hobsons Bay, Maribyrnong, Melbourne, Port of Melbourne and Wyndham—and require modifications to planning schemes in order to proceed.

The main impacts of the project identified by the IAC on land use planning include:

- Amenity impacts from increased vehicle traffic on residents of Brooklyn and along Millers Road specifically
- Amenity, construction and land acquisition impacts on the Precinct 15 urban renewal precinct
- Impacts on properties in Hyde Street, Yarraville
- Impacts on the Maribyrnong River and environs by the northern portal access and river crossings
- Amenity and land use integration impacts on the E-Gate urban renewal precinct.

Discussion

Strategic support and consistency with state planning policy

The project enjoys broad strategic support from state policy including Plan Melbourne 2017-2050 and the State Planning Policy Framework.

Plan Melbourne 2017–2050 identifies the project as a committed transport infrastructure project (subject to government approval) and identifies the project's potential alignment, including the key city connections and extension of Wurundjeri Way.

Outcome 3 of the Plan Melbourne 2017–2050 five-year implementation plan is 'Melbourne has an integrated transport system that connects people to jobs and services and goods to market'. The project is identified as an initiative that will deliver another river crossing, offering an alternative to the West Gate Bridge, and improved connections to the Port of Melbourne.

The project proposes to:

- Provide accessibility to expanding employment nodes in the west of Melbourne and to the increasingly significant knowledge economy job centre of central Melbourne
- Provide an upgraded freight route from the west and north of metropolitan Melbourne to the Port of Melbourne, and enhance the efficiency of the freight network
- Improve transport and freight connections to central Melbourne and the western region of Victoria
- Deliver a second river crossing as an alternative to the West Gate Bridge
- Increase capacity on the M1 corridor
- Improve cycling and pedestrian options for the western region of Melbourne
- Promote a high standard of urban design and increased areas of open space and landscaping.

State planning policies relevant to these benefits include:

- Clause 11 – Metropolitan Strategy
- Clause 13 – Environmental Risks
- Clause 15 – Built Environment and Heritage
- Clause 17 – Economic Development
- Clause 18 – Transport
- Clause 19 – Infrastructure.

The project is also consistent with the following directions of Plan Melbourne 2017-2050:

- Direction 3.1: Transform Melbourne's transport system to support a productive city
- Direction 3.3: Improve local travel options to support 20 minute neighbourhoods
- Direction 3.4: Improve Freight efficiency and increase capacity of gateways while protecting urban amenity
- Direction 4.3: Achieve and promote design excellence
- Direction 7.2: Improve connections between cities and regions.

It is my assessment that the project is consistent with state planning policy including Plan Melbourne 2017-2050.

Port of Melbourne

The Port of Melbourne is one of Australia's largest container and general cargo ports. It handles around a third of the nation's container trade and contributes to more than 15,000 jobs. Container movements at the port are expected to grow in coming decades. Plan Melbourne 2017–2050 notes the following about the project and the port:

> The Port of Melbourne is critical to Melbourne's leadership in freight and logistics. Enhancements that support the Port of Melbourne, such as the Western Distributor and the port-capacity project, will play a vital role in the Victorian economy and ensure Victoria remains Australia's freight and logistics capital.

The EES notes Melbourne's role as a national import and export logistics hub, the significant growth of the Port of Melbourne, and that the M1 corridor is Melbourne's most important land freight route, with the corridor playing a key role accommodating freight movements to and from the Port of Melbourne.

Australia's first National Ports Strategy (developed by Infrastructure Australia and the National Transport Commission) was endorsed by the Council of Australian Governments in July 2012. This strategy aims to facilitate trade growth and improve the efficiency of port-related freight movements. The project supports continued growth of the port and its benefits for the Victorian economy by providing direct connections between it and the M1 corridor, thereby enhancing the port's ability to grow.

General project impacts

Land use impacts during construction are generally temporary in duration and limited in nature, and are associated with activities that may be inconsistent with established land use. These impacts include temporary occupation of land, restrictions on access to areas such as open space, shared use paths and businesses, and amenity impacts such as noise and traffic. I am satisfied that these types of impacts will be appropriately mitigated through the EPRs, including the requirement to reinstate affected land following construction of the project, and through plans that will be required under the environmental management strategy.

The main operational land use impacts are assessed below. Operational land use impacts often relate to traffic, noise, air quality and social matters, which are addressed in more detail in sections 5.2, 5.5, 5.6 and 5.15.

Impacts on the Brooklyn residential community

The project will cause adverse amenity impacts on residents in the Brooklyn area due to an increased number of truck and car movements. Impacts will be felt most strongly by residents living along Millers Road where an increase of 4,000 vehicle movements per day is predicted for the year 2031.

Key impacts from additional truck and car movements caused by the project are increased noise from vehicle traffic (specifically trucks), increased exposure to air pollution, reduced connectivity, and decreased pedestrian and bicycle safety and amenity.

Many submissions were received from Brooklyn residents on these issues, as well as from Hobsons Bay City Council, and the impacts of the project were discussed at length during the IAC hearing. The IAC found that Brooklyn residents, particularly those on and around Millers Road, will experience cumulative negative impacts and supported government initiatives to mitigate these effects.

Impacts on the Precinct 15 urban renewal site, Altona North

Precinct 15 is a 66-hectare redevelopment site abutting the southern boundary of the West Gate Freeway project component. It is the subject of the recently exhibited Amendment C88 to the Hobsons Bay Planning Scheme, which proposes to enable a mixed-use development including residential components. Planning provisions proposed in Amendment C88 acknowledge planning and land requirements for the project.

The future operation of the project will give rise to amenity impacts on Precinct 15, including increased noise. The project will also require acquisition of land on the northern boundary to accommodate facilities associated with the southern westbound portal. Once project construction is completed, three hectares of the acquired land is proposed to become landscaped public open space. This proposed land use is compatible with the future development of the precinct and would act as a buffer between the project and the development.

The IAC accepted submissions from Hobsons Bay City Council and the proponent's expert evidence that the functionality, useability and attractiveness of the new open space in Precinct 15 will be compromised unless additional noise amelioration works are undertaken, such as the extension of the noise wall (see Section 5.5). The IAC noted an extension of the noise wall will also have the beneficial outcome of creating a visual screen and a 'barrier' from car and truck emissions. I support the extension of the noise wall for Precinct 15's new open space to mitigate amenity and visual impacts.

Impacts on Hyde Street residential properties
There will be significant amenity impacts on residents of Hyde Street between Francis Street and the West Gate Freeway due to the operation of the project. These impacts are associated with an additional 1,500 truck movements per day along Hyde Street.

An existing Public Acquisition Overlay – Schedule 1 (PAO1) in the Maribyrnong Planning Scheme affects the front of the impacted properties. The acquiring authority is VicRoads and the purpose of the overlay is 'proposed roads and road widening'.

Acquisition of affected Hyde Street properties is supported by the IAC and I also consider it appropriate. VicRoads should also consider how any acquired land would be used in the future. However, if those residents are not offered voluntary acquisition, the proponent must work with the residents living on or near Hyde Street to install noise mitigation measures at affected residential properties.

Impacts on the Maribyrnong River in Footscray
The project includes northern portal and three bridges connecting the western bank of the Maribyrnong River to an elevated carriageway along Footscray Road and to MacKenzie Road on the eastern bank. The project will change the appearance of the area to the south of Shepherd Bridge. The IAC states:

> The loss of some industrial buildings due to construction of tunnel access ramps and bridge crossings of the Maribyrnong River on industrial land north of Youell Street would result in changes to built form. This aside, most land outside the permanent infrastructure footprint would remain suitable for industrial, waterfront and port related uses following the completion of construction.

Current land use zoning and policies affecting this part of the project are consistent with the ongoing operation and expansion of the Port of Melbourne. These include the Special Use Zone 3 (SUZ3), the Yarraville Port Core Employment Area Policy under the Maribyrnong Planning Scheme and the Port Zone (PZ) under the Port of Melbourne Planning Scheme.

I consider the proposed Maribyrnong River crossing to be consistent with existing strategic planning policy and with the applicable planning controls.

Impacts on the E-Gate urban renewal site
Plan Melbourne 2017–2050 identifies both the project and the urban renewal of E-Gate as being of significance to Victoria. Urban renewal precincts are described in Plan Melbourne 2017–2050 as playing an important role in accommodating future housing and employment growth and making better use of existing infrastructure. The potential alignment of the project's exhibited tender design, including key city connections and an extension of Wurundjeri Way, is shown within Plan Melbourne 2017–2050 bordering E-Gate. E-Gate is also identified in the Melbourne Planning Scheme as a proposed urban renewal area.

Some of the project will be constructed within the northern extent of the E-Gate site, resulting in a reduction of developable land from 20 hectares to about 18.5 hectares. The project will also reduce the area of E-Gate with direct access to the Moonee Ponds Creek and potentially isolate a small portion of land to the northwest of the site.

It is important, in assessing the impact of the project on E-Gate, to also recognise that both in the 'project' and 'no project' scenarios, the future development of E-Gate will need to respond to the presence of at-grade and elevated infrastructure in proximity to its northern boundary (given the commuter and freight rail network in that location). That said, I recognise that the construction of Wurundjeri Way at the elevation of the tender design would impose additional impediments to the future development of this part of the urban renewal precinct and to its future connection to North Melbourne.

The IAC found that the project as currently designed imposes significant constraints and negative environmental effects on the future urban development outcome for E-Gate and the abutting rail yards primarily through the elevated design of the Wurundjeri Way extension and Dynon Road link. The IAC instead called for a more responsive mixed use planning outcome to be achieved which integrates the project with the development of E-Gate to deliver demonstrably superior outcomes to both. It noted that this is a task that cannot be achieved by the proponent alone, but requires broader state, local government and community engagement.

In making closing submissions to the IAC, the proponent indicated that it was undertaking further investigations to understand potential impediments to the prospect of lowering the Wurundjeri Way extension. During the course of preparing this assessment I wrote to the proponent to request additional information in this respect. The proponent's response is Appendix B to this assessment.

It is my assessment that the lowering of the Wurundjeri Way extension in the manner described in Appendix B would achieve a considerably superior (and in my opinion acceptable) planning outcome. It would, more particularly:

- Present an improved interface with the E-Gate site
- Reduce impacts on the development potential of E-Gate
- Reduce the visual bulk and massing of the elevated structure (both in views to and from E-Gate)
- Create the potential for improved and direct connections between E-Gate and North Melbourne

In light of these matters it is **my assessment that**, provided that the Wurundjeri Way extension is lowered in a manner that is generally consistent with that described in Appendix B, the project would not unduly impede the future development potential of the E-Gate urban renewal area.

The IAC noted that the unresolved nature of planning for E-Gate has hindered effective and integrated project planning. It is not the proponent's responsibility to undertake strategic planning for the urban renewal of E-Gate and its surrounds. The option for a lowered Wurundjeri Way extension provides adequate opportunities to integrate the project with surrounding land uses, including future development of E-Gate.

I am satisfied that the EPRs specified in respect of the project would ensure that appropriate environmental outcomes would otherwise be achieved in the modified design and, on this basis, I recommend that a lowered Wurundjeri Way extension is incorporated within the DUDPs prepared in respect of the project. Moreover, I support the IAC's recommended change to EPR LPP3, as it provides opportunities during the detailed design process to investigate the potential to further reduce impacts on future urban renewal precincts.

Conclusion
It is my assessment that:

- The project will result in a range of benefits relevant to land use planning objectives
- The project has broad strategic support from state policy.
- Adverse amenity impacts on Millers Road residents caused by the project can be managed by the relevant EPRs.
- The project is compatible with proposed development of Precinct 15 subject to extension of the noise wall to the western end of the proposed open space.
- Land use impacts of the project on the Maribyrnong River can be managed and the project is consistent with existing strategic planning policy in this area.
- VicRoads should continue consideration of Hyde Street residents' requests for land to be acquired on a case-by-case basis. However, if those residents are not offered voluntary acquisition, the proponent must work with the residents living on or near Hyde Street to install noise mitigation measures at affected residential properties.
- The lowering of Wurundjeri Way will facilitate adequate options for integrating the project with future development of the E-Gate urban renewal precinct and will achieve acceptable outcomes.

5.4 Visual impacts, urban design and landscape

Evaluation objectives – *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 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.*

Visual, urban design and landscape impacts are addressed in Chapter 6 and Technical Reports N, L and J of the EES, as well as the DUDP and in Chapter 6 of the IAC report. I am generally satisfied that the visual, urban design and landscape impacts of the project are accurately described in these parts of the EES. Four EPRs deal with visual, urban design and landscape impacts and have been the subject of recommendations by the IAC. The IAC also recommended an additional EPR LVP5.

Assessment context
The EES states that the urban design vision is to 'achieve urban design excellence through genuinely innovative and high quality design, responsive and effective urban integration, positive connections within the neighbourhoods through which it passes and a positive contribution for local communities and for greater Melbourne'.

The overall project alignment and configuration provides a safe and functional road solution, avoiding existing residential areas, and minimising impacts on some urban renewal areas. It traverses various environments including open road-focussed freeway interchanges, suburban and industrial precincts and then connects to the central city.

The project will offer additional open space, improved pedestrian and cycle linkages and, in time, a significant increase in vegetation cover.

Key issues raised by the project are potential impacts to residential and neighbourhood amenity due to a combination of overshadowing, loss of vegetation and light spill, loss of a significant number of mature trees, impacts to existing open space areas such as the Maribyrnong River and Moonee Ponds Creek and the quality of open spaces created by the project.

Discussion
The IAC provided commentary across a breadth of issues related to visual impacts, urban design and landscape. My discussion focuses on the IAC's findings with regards to design intent, urban and landscape design in project development and impacts on residential and neighbourhood amenity, development potential of surrounding areas and landscape and open space.

The IAC recommended strengthening the EPRs to ensure that detailed design further reduce impacts on the quality and use of areas adjacent to the project and achieve good built form and urban design outcomes. In addition, the IAC recommended design reviews to determine opportunities for urban design improvements to the:

- Maribyrnong River crossing
- Citylink and city connections
- Moonee Ponds Creek open space.

Urban and landscape design in project development

The IAC acknowledged that the urban design is of a high standard, celebrating the engineering qualities of the project. I agree with this assessment. The nature and proposed treatment of noise walls effectively ameliorates the increased height and facilitates access to sun and light. The proposed new narrative for the west, using interpretive features and cultural links in project elements to Aboriginal nets and eel textures and port activities, establishes a strong continuity across the project. The scale of ventilation stacks is not necessarily detrimental to the existing context, and I recognise these elements provide the opportunity to celebrate engineering qualities.

The high-quality application of the urban design vision and principles should be refined in detailed design for all ancillary structures impacting on residences and open spaces, inclusive of pedestrian bridges, traffic control and maintenance buildings. This is given effect through EPR LVP1, which requires that the urban design vision and principles be applied through detailed design, in consultation with relevant stakeholders across the entire project. I have recommended amendments to EPR LVP1 to emphasise that the design must seek to minimise landscape and visual impacts in relation to the existing context, and maximise opportunities for enhancement of proposed project elements. The IAC found that 'further consultation should be undertaken with the Aboriginal and broader community and the OVGA of existing and emerging urban design concepts'. I support this recommendation and the addition of EPR LVP5, which requires that the Office of the Victorian Government Architect (OVGA) review detailed urban design plans against the relevant EPRs and the project's urban design principles and vision.

Residential and neighbourhood amenity

The IAC acknowledged the improvements that the project will bring to residential and neighbourhood amenity via the investment in landscaping to increase tree canopy over the long-term and the commitment to improving active transport links.

Trees and other vegetation in the urban landscape are not just visual assets, they also contribute positively to air quality, shade, light and people's quality of life. The project will remove a substantial number of trees and the IAC identified a heavy reliance on the project's revegetation plans to ameliorate adverse impacts of the project. EPR EP6 specifies the requirements for the Landscaping Plan, including that tree reinstatement should take into account the amenity, shade and heritage values of existing canopy trees to local residents.

Residents abutting the West Gate Freeway will experience adverse effects from the increased overshadowing of higher noise walls, gantries and other overhead structures. EPR LVP1 will minimise further overshadowing of residential properties to the south of the freeway as a result of the proposed noise walls. The proponent's expert witness maintained that 'overshadowing could be managed by the use of transparent panels and would be no worse than existing wherever possible'. This approach should be adopted.

Elsewhere, the potential for temporary construction elements to contribute to the image and identity of the area requires consideration and therefore I support the IAC recommendation that the design intent for acoustic sheds used during construction be addressed in EPR LVP1.

Impacts on urban renewal areas
Project design is particularly important in contributing to the capacity for future urban renewal both at E-Gate and Precinct 15.

The open space planned for the northern edge of Precinct 15 offers a buffer for the future development. The addition of a noise wall at this site along with further design development, in accordance with EPR LVP1, should ensure a final project design sympathetic to the potential development of Precinct 15.

E-Gate has long been identified as being critical to the stitching of Docklands to the central city and as a valuable urban renewal opportunity in its own right. My assessment concerning the need to modify the Wurundjeri Way extension in order to address the urban design and other impacts of the project on E-Gate, including its future connectivity to surrounding areas, is addressed in Section 5.3 above.

Open space and landscape design
Improvements for open space, networks and connections will add valuable community assets to the inner west. The new wetlands and boardwalk on Whitehall Street will add to the range of open spaces and recreational opportunities. However, the proximity of other open spaces to the freeway raises concerns about their capacity to contribute positively to the community. In particular, there is a need to clarify the intended use of Altona Memorial Park, and the Precinct 15 open space to appropriately address the noise, air and visual amenity impacts of the project on these places through detailed design and development of the Landscaping Plan. I support the IAC's proposed amendment to EPR LVP4 to require vegetation screening of Altona Memorial Park.

A number of open spaces are proposed beneath bridges or adjacent to the elevated structures, creating the potential for heavily shaded environments. These environments will need to be carefully designed so that they do not unduly constrain community use and activities, amenity of active transport users or diminish the potential for landscaping. Further refinement of open and residual spaces beneath and adjacent to elevated roads and the proposed Maribyrnong River and Moonee Ponds Creek crossings is required to improve activation and passive surveillance and discourage antisocial behaviour. Although partly in shadow, new open spaces proposed as part of the project will also benefit from further detailed design, in accordance with EPR LVP1, in order to maximise the social and environmental benefits of these spaces and ensure these spaces are fit for purpose.

The IAC agreed with submitters that 'the Maribyrnong River crossing will have a significant adverse landscape effect on the river'. The IAC recommended a design review to address impacts on river views, and height and treatment of undercrofts. It recommended that the refinement should provide for more transparent and less bulky roadway elements, and to maximise light and amenity beneath the structures (IAC Recommendation 12). I support this recommendation. I have strengthened EPR LVP1 to this effect, requiring that impacts on 'significant views from the public domain' be minimised through detailed design and recognising the Maribyrnong River corridor as an important open space that requires consideration.

The IAC valued linkages and connections that contribute to the safety and accessibility of places. New pedestrian links to Stony Creek Reserve and improvements to the Federation Trail will encourage access to the open spaces and active transport. However, an improved link between the Federation Trail and the Hobson Bay Coastal Trail should be considered as the design progresses. I note that the IAC acknowledged the proponent's commitment to making further design amendments to the veloway (Section 5.2) at the detailed design stage to address health and safety concerns (Project Note 58). This will be important to ensure adequate passive surveillance within the veloway to maximise its use beyond peak commuting hours.

The IAC also noted that community groups such as "Friends of" groups can offer valuable insights into their area that can make a positive contribution to the detailed design process. I

encourage the proponent to consult with such organisations during detailed design and implementation of the project. The IAC found that further design consideration be given to the pocket of land on the south west bank of the Maribyrnong River so that it does not become associated with anti-social behaviour. I support this finding, which is addressed through EPRs including EP6.

Recommendations

It is my assessment: that the project alignment and configuration generally meets the evaluation objectives. Additional refinements reflecting the city-shaping nature of the project and its developed urban setting should be explored to improve visual, urban design and landscape outcomes. This can be achieved via strengthened EPRs that would guide detailed design.

In particular, I recommend:

- Consultation with local authorities, other agencies, community and 'Friends of' groups and the exploration of opportunities for additional design and landscape improvements outside the project boundary that support the project's objectives (IAC Recommendation 11).
- Design modifications associated with Maribyrnong River Crossing, including the MacKenzie Road ramps, to increase transparency, reduce bulk and improve the amenity of adjacent open spaces and undercrofts (IAC Recommendation 12).
- Inclusion of the IAC's new EPR LVP5 to implement a design review process by the OVGA. The design review is to assess and review the project proposal in its current format as it develops through detailed design.
- Consultation with the Aboriginal and broader community to review and test interpretation of the existing and emerging design concepts, in accordance with the CCEP.
- Extension of the urban design vision and principles to finer grain interventions across the project as well as to larger proposed engineering elements during detailed design (EPR LVP1).
- Extension of urban design vision and principles to temporary elements and acoustic sheds, contribute to the image and identity the area during the construction period (EPR LVP1).
- The loss of mature vegetation will have significant medium-term impacts. Landscaping should seek to minimise the duration and extent of the adverse impacts and to maximise benefits, including through increasing the use of advanced tree stock, planting prior to and progressively during construction, and providing an optimal growing and maintenance regime (refer EPR EP6).
- The contribution of additional open spaces from the project is welcome. Refinements through detailed design should seek to maximise the social and environmental benefits of these spaces and ensure these spaces are "fit for purpose" (EPR LVP1).
- Improved CPTED principles to open spaces and connectivity of pedestrian and bicycle networks (EPR LVP 1 and LPP4), noting in particular concerns associated with the veloway and the activation and use of open spaces at Moonee Ponds Creek and the under croft of the Maribyrnong River Crossing.
- Inclusion of existing and proposed open spaces in the development of the Landscaping Plan, as outlined in EPR LVP4 and addressing items raised in EPR EP6 and their proposed use, in consultation with stakeholders.

Measures for government include:

- Strategic planning should be progressed by broader government to include a vision for connections within and across E-Gate.
- Development of a landscape master plan for Moonee Ponds Creek be undertaken to realise the strategic planning for this open space and its role for future renewal areas (IAC Recommendation 13).

5.5 Noise and vibration

Evaluation objective – *To minimise adverse 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*.

Noise and vibration impacts are addressed in sections 13.2, 13.3, 20.2, 20.3 and 27.2 and Technical Reports H and I of the EES and in Chapter 7 of the IAC report. I am generally satisfied that the noise and vibration impacts of the project are accurately described in these parts of the EES. Nineteen EPRs deal with noise and vibration and several of these EPRs have been the subject of recommendations by the IAC.

Assessment context

The project raises noise and vibration impacts through both the construction and operational phases as summarised below. These impacts can affect the amenity of receptors. They can also be a factor in public health outcomes, especially for mental health. Health impacts are addressed in Section 5.8 of this assessment.

Construction – noise

Construction noise will be generated through a range of activities, in particular the use of earthmoving and other mobile plant in locations where excavations for tunnel portals, surface roadworks and installation of piers for elevated roadways will occur. The duration of noise-generating construction activities will vary from site to site. Other noise may be generated by short-term activities such as demolition, blasting and pile-driving. At times, practicalities of the work program will require that work and associated noise will continue through the night period, in some cases possibly for some months[2].

Construction – vibration

Aside from short-term vibration generated by blasting or pile-driving, the primary cause of vibration during the construction phase will be the operation of tunnel boring machines (TBMs) to excavate the tunnels. As the TBMs pass, a degree of vibration might be experienced at the surface, the degree being influenced by the operating power of the TBM, its depth and the nature of the intervening rock and soil. As well as being directly perceived, vibration can be manifest inside buildings as regenerated noise.

Operation – noise

The volume and mix of road traffic along with traffic speed, traffic flow and road design all contribute to a road's operational noise. Impact pathways for receptors are influenced by proximity to the road, topography, ground conditions and engineered mitigations – typically noise walls adjacent to the road or individual building treatments, but a range of other measures may also be considered, subject to circumstances.

Operation – vibration

Provided the tunnels are at adequate depth beneath sensitive receptors, traffic moving through them is unlikely to generate nuisance vibration. Operational vibration was not identified as an issue of concern by the IAC and I am satisfied that the proposal will not give rise to unacceptable levels of vibration during operation.

Standards

A range of standards apply to noise and vibration. Key standards cited in the EES, submissions and the IAC report include:

- EPA publication 1254: *Noise control guidelines* (construction)
- EPA SEPP N-1 (operations, fixed plant)
- VicRoads' Traffic Noise Reduction Policy (TNRP) (operations, traffic noise)
- British Standard BS6472:2008 (vibration standard(s))
- British Standard BS5282:2009 (vibration – amenity)

[2] See for example EES Section 13.2.5, Table 13-10, p. 13-34.

- Australian Standard AS2436 (vibration)
- German Standard DIN4150 (vibration – structures including residential and heritage)
- British Standard BS7385 (vibration – structures and infrastructure).

With the exception of noise limits set under SEPP N-1, these references generally provide advisory objectives rather than mandatory limits.

Discussion

Construction – noise

EPA Publication 1254 suggests guideline standards for noise from construction works. It does not specify a quantitative standard for normal working hours, but does provide quantifiable standards for the evening and night-time periods. I note that EPA Publication 1254 is applied most commonly to construction projects of a smaller scale and shorter duration than this project. However, it was adopted as the primary guideline for construction noise associated with the Melbourne Metro Rail Tunnel Project, which is comparable to the West Gate Tunnel Project in scale and duration of construction period. I also note that the approved EPRs NV6 and NV21 for Melbourne Metro set out daytime construction noise management levels to trigger initiation of particular management actions.

The IAC recommended some clarification in EPR NVP7 of the term 'unavoidable works', which under EPA Publication 1254 may be considered exempt from the guideline target of noise from construction works being 'inaudible within a habitable room of any residential premises' at night (between 10 pm and 7 am). In this context, I note that the approved environmental management framework for the Melbourne Metro project contains detailed provisions for unavoidable works (EPR NV21 Section J), including requirements for prior approval of planned unavoidable work and for subsequent approval of emergency unavoidable work by the Independent Environmental Auditor (effectively equivalent to the IREA for the West Gate Tunnel Project).

The IAC heard various submissions concerning the appropriate content of EPR 7 which requires the preparation of a Construction Noise and Vibration Management Plan (CNVMP). My recommendations in this respect are documented in Appendix A. I am satisfied that the preparation of a CNVMP on these terms will ensure that noise impacts during construction will be appropriately mitigated.

Construction – vibration

Provision of adequate cover between the paths of the TBMs and the ground surface through the design of the tunnels should substantially mitigate vibration for receptors on the surface. If tunnelling works cause vibration (or resultant regenerated noise) that adversely affects amenity, management rather than direct mitigation of the impact might be the most useful and cost-effective approach. This could include targeted communications, offers of respite or offers of temporary alternative accommodation for the duration of the impact. I note that vibration is likely to affect amenity at levels substantially lower than those at which structural damage to buildings on the surface is likely to occur.

I note also that vibration from blasting (if used in construction) could require management. Selection of appropriate charges in the context of local geology, depth below the surface and nature of buildings in the vicinity should enable vibration from blasting to be kept below target levels.

Buried assets such as sewers and pipes may be vulnerable to vibration damage, especially older infrastructure including materials with limited vibration tolerances. I note that the North Yarra Main Sewer is to be relocated in the vicinity of the tunnels as part of the project. Sound communications with asset owners should be a priority for the proponent to ensure that correct allowance for buried assets is made during detailed planning of construction works.

I am satisfied that the EPRs specified in respect of the monitoring and management of vibration generated during construction are appropriate.

Operation – noise

The main fixed plant that will be subject to SEPP N-1 during operations will be the tunnel ventilation systems. The systems require a works approval from EPA, the application for which was jointly advertised with the EES in accordance with Section 19B(3B) of the Environment Protection Act. Although the primary focus of the works approval application relates to air emissions, the application must also satisfy the EPA that prescribed noise limits under SEPP N-1 will be met. EPA's advice to the IAC did not indicate any concern that noise from the tunnel ventilation systems would not comply fully with SEPP N-1.

I note that VicRoads' *Traffic Noise Reduction Policy* (TNRP) represents the State's current formal policy position on traffic noise. The TNRP has been in place since 1989, and was last amended in 2005. A review commenced in 2015, but has not yet resulted in the publication of a revised TNRP or replacement guidance. The IAC has identified several aspects of the TNRP that may be outdated or inconsistent with other relevant Victorian noise policy and standards.

I support the IAC's recommendation that VicRoads should complete its review of the TNRP.

While the Victorian Government has already announced some measures to address aspects of traffic noise from the project, I recommend that particular standards specified in the TNRP should apply to the project and that they be reflected in the EPRs. In the event that VicRoads adopts a revised TNRP, it should be applied to the project in accordance with the relevant transitional provisions that may be put in place at the time.

For new or substantially upgraded freeways and arterial roads, the TNRP sets a noise level of 63 dB(A)L10 (18hr) (6 am to midnight) for 'Class A buildings' (residential premises) and the same level for 12 hours (6 am to 6 pm) for 'Class B buildings' (other premises likely to be sensitive to noise primarily during the daytime, such as schools and kindergartens). This limit is to be applied to the project (although, as discussed at the IAC, it is proposed to be applied for a period of 20 years as opposed to 10 years as is commonly the case under the TNRP). The TNRP does not provide a noise target level for open space. Although a key concern arising from traffic noise for residential premises is sleep disturbance, the TNRP does not specify a noise target level for the night period (midnight to 6am). However, it does commit VicRoads to "implement appropriate traffic management measures, if necessary, to ensure that night time noise levels are not excessively high."

It may seem logical to set a night-time traffic noise target level, whether for the period of midnight to 6 am, which is not explicitly covered in the TNRP, or for a longer night period of 10 pm to 7 am as adopted in SEPP N-1. Sleep disturbance is a primary driver for the policy imperative to address traffic noise and, for most of the community, night-time is sleep time. However, in practical terms most measures that can be taken to reduce noise from traffic rely on engineering. Once installed, road pavements and noise barriers function in the same way at all times of the day and night. On many (but not all) major roads, traffic volumes are lower, often substantially lower, during the night, and therefore engineering measures designed to achieve 63 dB(A)L10 during the day can in practice deliver a correspondingly lower noise outcome at night.

A further consequence of the characteristically lower traffic volumes at night is that individual noisy vehicles can potentially contribute more to annoyance for receptors than the overall 'hum' of the main traffic flow. The occasional passage of noisy vehicles is poorly controlled by noise target levels, because the total period for which they are audible is generally very short. Management of such annoyance therefore requires measures other than those designed to address noise from general traffic. A better approach to individual vehicles that exceed prescribed standards is targeted compliance monitoring and enforcement of the statutory standards regulating noise from individual vehicles.

The IAC recommended that a night-time noise limit should be set through the project-specific EPRs. I do not consider that this is necessary or appropriate here. I am satisfied that noise level specified in respect of day time periods in EPR NVP1 will provide adequate protection

during the night time period. However, I commend the IAC's analysis to the attention of policy-makers and regulators in the future revision of traffic noise policy for the State.

Under VicRoads' *Traffic Noise Measurement Requirements for Acoustic Consultants, September 2011*, noise is measured at the ground level of relevant premises. The IAC noted that higher levels in multi-level residential buildings may be most exposed to traffic noise emanating from an elevated roadway, and therefore recommended that measurements should be done at the most exposed level that includes habitable rooms.

Again, I do not consider that the case has been made for such a departure from current policy to be implemented for this project. I note that most dwellings in the vicinity of the West Gate Freeway and other surface roads to be built as part of the project are predominantly single storey buildings, and many are protected by noise barriers already. For the purposes of design and construction of the project, I am satisfied that the provisions of the current TNRP will deliver acceptable environmental outcomes.

I commend the IAC's views to VicRoads for careful consideration in reviewing the current policy. With the need for urban consolidation and higher population densities to accommodate Melbourne's projected growth in population and demand for dwellings, I expect that the proportion of the community living in multi-storey residential developments will continue to grow relative to single storey detached houses. This is likely to be particularly the case in inner city locations and close to major transport hubs, which are commonly served by arterial roads as well as other transport modes. In particular, it would be desirable for a TNRP in line with modern community expectations to be in place before detailed plans are finalised for urban renewal and infill sites such as E-Gate, so that developers of those precincts can plan and design to standards that reflect the realities of twenty-first century living.

The IAC noted submissions about the appropriate approach to noise protection for future noise-sensitive development adjacent to the project, with particular regard to E-Gate. Under the TNRP, the road authority is generally assigned responsibility for implementing noise mitigations where the road development or redevelopment impacts on existing sensitive land uses. If the sensitive land uses are developed after the road has been announced, responsibility is assigned to the land developer.

In applying this 'agent of change principle', the IAC has suggested that the commencement of exhibition of the EES (29 May 2017) should be adopted as the date after which developers of adjacent land should be responsible for noise mitigation measures needed to meet TNRP targets. In considering this issue, I note that both delivery of the project and optimised urban renewal of strategic redevelopment sites such as E-Gate are policy priorities of the Victorian Government's *Plan Melbourne 2017-2050*. As far as possible, the two projects should be planned and delivered in an integrated manner.

For the project, this should mean making provision for noise attenuation infrastructure, such as noise barriers, to be retrofitted to project roads, including elevated roadways, in case this is required at a later date. This was recommended by the IAC and I support this approach. For detailed planning of precincts such as E-Gate, it should mean allocating space for different land uses in a way that responds to any constraints (not just noise) resulting from the final design of the project, and contributing to installation of engineered traffic noise or other mitigation works. If different standards apply at that time following revision of the TNRP, the revised standards should be applied to all such subsequent development.

The IAC noted that during the hearing the government announced that noise barriers would be provided to reduce traffic noise impacts on Crofts, McIvor and Stony Creek reserves. The commitment is confirmed in EPR NVP1B of the version 6 EPRs tabled by the proponent. I note that this commitment goes beyond the obligations under the TNRP, which does not treat open space as noise sensitive. In supporting this initiative, the IAC proposes noise limits for open space in its recommended EPR NVP1B, and recommends noise protection be extended to apply to additional open space between Crofts Reserve and Hyde Street,

except where noise from other sources would prevent noise barriers from being effective. The IAC also recommended extending the noise wall westwards along the entire length of the northern boundary of the new open space at Precinct 15. I support augmentation of the noise wall at the Precinct 15 open space to reduce traffic noise impacts. I do not otherwise support setting noise limits for open space as I am satisfied that the particular amelioration measures identified above will achieve appropriate outcomes in the context of this project. The establishment of a noise limit in respect of open space is a matter for consideration in the review of the TNRP.

A key driver for the project is the government's recognition of the diminished amenity in parts of the inner west, due in part to large numbers of trucks on the local road network. Modelling presented in the EES forecasts reduced truck volumes on several key roads in the vicinity of the project, partly due to truck bans to be applied in conjunction with construction of the project. However, the IAC noted that the EES also predicted increases in truck volumes on other roads. In particular, substantial increases in truck traffic are predicted for Millers Road between the West Gate Freeway and Geelong Road, as well as lesser increases in several other roads including Dynon Road, Hyde Street and Williamstown Road[3], with resultant implications for traffic noise levels). Traffic volumes and traffic mix are factors in the generation of traffic noise, although I note that large changes in traffic volumes are required to make a perceptible difference in traffic noise levels.

Measurements presented during the IAC hearing[4] indicate that residents of Millers Road are already subject to traffic noise levels in excess of the retrofit trigger level in the TNRP (68dB(A)L10 (18 hr)). The IAC noted that it was advised that the TNRP does not apply to Millers Road. However, modelling presented in the EES indicates that truck traffic in Millers Road will increase significantly relative to the 'no project scenario', implying traffic noise level increases attributable directly to the project. I note that during the hearing, the Minister for Roads and Road Safety announced a government commitment to working with Millers Road residents on implementation of noise reduction measures to make homes quieter, such as double glazing and insulation. The IAC recommended that this offer should be extended to residents of side roads up to 100 metres from Millers Road.

I support the initiative for Millers Road residential noise attenuation. I also recommend that the Minister for Roads and Road safety consider extending this initiative to demonstrably affected houses along side roads (subject to a predicted or measured increase in traffic noise exposure, relative to the 'no project scenario'). Consideration could also be given to similar initiatives for residents on Hyde and Globe Streets in Yarraville if homes are shown to be subject to comparable traffic noise impacts arising from the project.

The IAC also recommended some variations to other noise and vibration EPRs. My views on those variations, and on the desirability for additional changes to EPRs and their coverage, are presented in Appendix A.

Conclusion

It is my assessment that:

- Construction noise resulting from the project will be manageable in accordance with appropriate standards. Recently applied standards for the Melbourne Metro Rail Project provide an appropriate benchmark for standards on this project, except where project differences dictate otherwise.
- Construction vibration impacts can be managed through implementation of measures to achieve compliance with recommended EPRs.
- Established policy standards and guidelines should mostly provide for operational noise management within acceptable parameters. Some additional measures

[3] See EES Technical Report A, Fig. 214, noting that the subsequent removal of the tolling point west of Millers Road reduces some of the forecast increases in truck numbers.

[4] Project Note 72.

reflecting the special nature of the project and its environmental setting are needed to achieve acceptable environmental outcomes.
- The proponent should collaborate to integrate the project with planning for adjacent major urban renewal sites to optimise outcomes for the benefit of the State. In particular, project design should actively facilitate future provision of noise protection for adjacent urban renewal sites.
- VicRoads should complete its review of the TNRP, having regard to the findings of this assessment and the recommendations of the IAC in the context of the project.

To give effect to these conclusions as relevant, I have outlined my recommended modifications to the EPRs in Appendix A.

5.6 Air quality

Evaluation objective – *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*.

Air quality impacts are addressed in sections 13.1, 20.1 and 27.1 and in Technical Report G of the EES and in Chapter 8 of the IAC report. EPRs AQP1 to AQP6 deal with air quality and most of these EPRs have been the subject of recommendations by the IAC. I am generally satisfied that the impacts of the project on air quality are accurately described in these parts of the EES. The IAC also recommended additional EPRs AQP7 and AQP8.

Assessment context

Pollutant emissions to air are regulated under the Environment Protection Act, which provides for declaration of SEPPs. The key SEPPs are SEPP (AAQ) and SEPP (AQM). The SEPPs set out beneficial uses of the air environment to be protected, identify pollutants (indicators) of concern and designate objectives and design criteria (standards) for those indicators.

The West Gate Tunnel Project is a large-scale infrastructure project that will involve an extensive construction phase with potential to affect local air quality, especially near excavation sites such as the tunnel portals and around spoil management sites. However, impacts of this type are generally well understood in the construction industry and a range of best practice management measures is available to prevent unacceptable impacts on air quality from construction. It will be important to ensure that appropriate measures are applied to achieve good air quality outcomes throughout the project's construction phase, and this is reflected in the EPRs that I recommend be adopted for the project, specifically AQP6.

The primary focus of this assessment of air quality impacts is the operational phase when vehicle emissions will affect local and regional air quality. In combination with other local air pollution sources (including industrial emissions and area source pollutants, especially particulates), vehicle emissions contribute to the variably poor air quality in the region, which has been identified through long-term ambient air quality monitoring.

The project has the potential to deliver local air quality benefits in several ways:
- by diverting traffic, especially truck traffic, from local roads fronted by residential and other sensitive premises onto arterial or freeway-grade roads
- by enabling traffic to travel at steadier, more efficient speeds at which engines can function more efficiently, with lower emissions per kilometre
- by directing traffic through tunnels, it will allow the capture and management of some emissions (subject to EPA works approval), which otherwise would disperse more generally and in an unmanaged manner through neighbouring areas.

Modelling documented in the EES suggests that air quality will improve in the case of nine out of the 12 modelled road surfaces.

Discussion
The IAC indicated, in light of its consideration of submissions and evidence, that it is generally satisfied with the method used to assess air quality impacts in the EES. I agree with this assessment.

The IAC recommended additional air quality modelling for roads such as Millers Road that are predicted to carry substantially greater traffic loads, especially trucks, due to the project, and also recommended that modelling should address both exhaust and non-exhaust emissions. I support this recommendation.

Particulates
The impact of the project on air quality within residential areas adjacent to the project, including in the suburbs of Brooklyn, Altona North, Spotswood, South Kingsville and Yarraville, was the subject of many submissions. Particular concerns were expressed in respect of the emission of particulate matter.

I recognise that air quality in the inner west is variable and sometimes poor. The modelling documented in the EES demonstrates that it will generally have a minor impact on peak concentrations of air quality indicators (including particulates) in these locations. However, I support the IAC's recommendation for targeted, cost-effective and strategic mitigation in areas affected by emissions from increased traffic resulting from the project.

While the EES considered a broader range of air quality indicators, the IAC focused primarily on particulates because ambient air quality in parts of this region already features high particulate levels and because the finer fraction of particulates (PM_{10} and smaller) has direct implications for human health. Although SEPPs set standards for a broad range of indicators, several of which are also associated with vehicle emissions, the IAC did not conclude that exceedances of objectives for indicators other than particulates might be of concern. I note that SEPP standards have changed over time as new information has become available, and they generally reflect a national approach (through national environmental protection measures) for those indicators of key concern, especially for public health.

The relevant requirements of SEPP(AQM) are given effect in EPR APQ5.

In tunnel air quality
The IAC noted the need to maintain acceptable air quality within the tunnels for drivers and passengers, and supported the application of the NSW standard for NO_2 in addition to SEPP standards for other indicators. I support the adoption of the NSW standard for in-tunnel NO_2 concentrations.

The contained nature of the tunnels will mean that air quality inside the tunnels, especially when traffic volumes are high, is likely to be relatively poor. However, given the length of the tunnels and the proposed speed limit, individual tunnel users should only be inside the tunnels for a limited duration such that the risk of adverse health impacts is low. Advisory warning systems should be installed recommending that users close windows and activate internal air circulation where fitted for the duration of passage through the tunnels.

Tunnel ventilation emissions
Ventilation passes air through the tunnels to maintain acceptable in-tunnel air quality. Road tunnel ventilation systems, as proposed for the project, are 'scheduled premises' under the *Environment Protection (Scheduled Premises) Regulations 2017*, requiring works approval and licensing under the Environment Protection Act. To prevent all the vehicle emissions from the tunnel emerging at the exit portal, a ventilation stack gathers the tunnel air and entrained pollutants and emits them (with or without treatment) at an elevation and velocity designed to disperse pollutants so that they comply with SEPP (AQM) ground level concentration objectives. Road tunnel stacks are customarily located close to exit portals to save both energy and costs.

The IAC noted that tunnel ventilation stack emissions are predicted to contribute to exceedances of the one hour average design criterion for PM_{10} eight to 11 times per year, and that that background exceedances of the criterion are known to occur (even without tunnel contributions) up to 130 times in the worst case meteorological year for which data were analysed (2009). EPA did not recommend installation of emission control equipment as a works approval condition, but proposed requiring provision for retro-fitting this equipment if subsequently required[5].

I note that in applying objectives for protecting beneficial uses, SEPP (AQM) establishes several policy principles[6], including a principle of 'Integration of Economic, Social and Environmental Considerations'. It states that 'measures adopted should be cost-effective and in proportion to the significance of the environmental problems being addressed.'

Vehicle emissions within the tunnels represent only a fraction of the total vehicle emissions resulting from the overall project, because most of the project is at, or above, the ground surface. It is impractical to capture and manage emissions from unenclosed roads. Tunnel emissions represent an even smaller fraction of total vehicle emissions across the locality, and as noted above vehicle emissions are only one of several contributors to the background particulate levels.

I am not persuaded that requiring immediate installation of filtration equipment in the tunnels ventilation systems is justified or cost-effective, or will even deliver a measurably better outcome. Unless a better environmental outcome can be expected, requiring such a measure would be an expensive gesture, distracting both investment and attention from better, and better-targeted, measures.

Rather than investing heavily in a single point source emission control method of limited if any effectiveness, I consider a better targeted, multi-faceted approach is needed for the project. In particular, the mitigation measures outlined in EPR AQP7 should target localities directly exposed to increased truck traffic numbers predicted to result from the project. In that context, I note that such localities are also those most likely to be exposed to measurable increases in traffic noise, and to be most at risk of adverse health impacts due to the project, in the absence of effective mitigation measures.

Monitoring

The first priority is to assemble robust local data, through ambient air quality monitoring. Data collected from the monitoring stations that the proponent has already established for the project in Brooklyn, Spotswood and Yarraville, and the additional station to be established in Millers Road, Brooklyn, should be input to models to predict air quality indicator levels, having regard to both exhaust and non-exhaust traffic emissions, for projected changes in traffic volumes and composition. The model outputs will enable identification of priority areas for mitigation actions, in the context of anticipated trends in background air quality, changing standards for fine particulates (especially the $PM_{2.5}$ objective, which is foreshadowed in SEPP (AAQ) to be tightened in 2025) and the most useful or appropriate mitigation measures that might be taken. Monitoring should then continue as required to determine whether the applied mitigation measures achieve the intended benefits.

I consider that monthly publication of data on an appropriate website would better than quarterly publication (as proposed in the proponent's draft EPRs and supported by the IAC), given the level of community interest in air quality and the known air quality issues in the vicinity of the project. This is addressed in a modified EPR AQP4, on which basis there is no need for the IAC's recommended AQP7.

[5] IAC Hearing document no. 34, paragraph 46.
[6] SEPP (AQM), Clause 7.

Mitigation
With the assistance of its expert adviser Dr Denison and the EPA, the IAC identified several possible mitigation measures that could alleviate the adverse effects of vehicle emissions from surface roads. Some of these measures reduce direct exposure of receptors to emissions, while others reduce the emissions.

The IAC supported implementation of a 'smoky vehicle' enforcement program. I agree that rectification of vehicles contributing unreasonably to total vehicle emissions is desirable. I understand that responsibility for compliance and enforcement rests with EPA and VicRoads. I commend the IAC's finding to the project Minister for consideration of how the project might most appropriately integrate with a whole of government approach to the issue.

The project's noise barriers will provide a secondary benefit by interrupting the ready passage of pollutants resulting from traffic into adjoining residential or other sensitive areas. The barriers will not reduce the overall quantity of pollutants but will keep them closer to the alignment of the road, so that dispersion is likely to be driven longitudinally by the passage of vehicles. Similarly, vegetation barriers could help in restricting the dispersion of pollutants away from roads.

I support the IAC's recommended EPR AQP8 (renumbered as AQP7 for targeted, cost-effective and strategic mitigation in areas affected by emissions from increased traffic resulting from the project.

Conclusion
It is my assessment that:

- The air quality impacts of project construction should be managed by the application of relevant best-practice construction practices.
- The project's air quality impacts, relative to prevailing background conditions and applicable standards, can be managed within acceptable thresholds.
- EPA should determine the works approval application with due regard for the policy principles, beneficial uses, indicators and objectives articulated in relevant SEPPs. In particular, I do not concur with the IAC's recommendation that pollution control (filtration) equipment should be installed in the tunnel ventilation system from the outset. Rather, I support making provision for retrofitting of such equipment if a suitably targeted air quality monitoring program shows that air quality in the vicinity of the ventilation if warranted.
- Where practical to do so, noise mitigation measures such as barriers should be designed to serve multiple beneficial purposes, including protecting receptors from adverse air quality exposure.
- I support the IAC's recommendations on NO_2 objectives for in-tunnel air quality.
- Appropriate warning systems should be installed in the tunnels to warn users about protecting in-vehicle air quality while passing through the tunnels.

The above recommendations should be given effect through the changes to proposed EPRs outlined in Appendix A.

5.7 Greenhouse gas emissions

Evaluation objective – *To manage direct and indirect emissions of greenhouse gases arising from the project in accordance with best practice principles as far as practicable.*

Greenhouse gas (GHG) emissions arising from the project are addressed in Section 5.14 and Appendix Q of the EES and in Chapter 8 of the IAC report. I am generally satisfied that the impacts of the project in respect of GHG emissions are accurately described in these parts of the EES. EPRs GGP1 and GGP2 deal with GHG emissions and GGP2 has been the subject of a proposed amendment by the IAC.

Assessment context
In establishing the *Climate Change Act* 2017, the Victorian Government has committed to achieving zero net emissions by 2050 and embedding climate change consideration into government decision making.

The EES and IAC hearing considered the sources and levels of GHG emissions estimated during project construction and operation. The proposed approach to reduce emissions, via application of the Infrastructure Sustainability Council of Australia's (ISCA) infrastructure sustainability rating framework, was canvassed.

According to the EES, an estimated 457 kilotonnes CO2-e would be generated during project construction. Over a four-year construction period, this is equivalent to 0.1 per cent of Victoria's 2014 GHG emissions inventory. The manufacture of construction materials (71%) and electricity consumption for plant and equipment, such as TBMs (22%), are the most significant sources.

GHG emissions from project operations were estimated to be 18.9 kilotonnes CO2-e p.a. of which the majority (89%) relate to electricity consumption for tunnel operations. In addition, there would be a small increase in vehicle traffic emissions on the Melbourne metropolitan road network both in 2021 and 2031, compared with a no-project scenario (0.23% and 0.04% respectively).

The project's tunnel ventilation systems must comply with EPA Victoria's *Protocol for Environmental Management – Greenhouse Gas Emissions and Energy Efficiency in Industry*. This protocol requires selection of best practice design and energy usage.

Discussion
An infrastructure project of this nature is likely to result in increased GHG emissions. While a decrease in emissions would be preferable, the IAC considered that the projected emissions increase was acceptable and the proposed approach to GHG emission abatement via application of the ISCA framework was reasonable. I support this finding.

EPA submitted that efficiency innovations and application of the ISCA framework should remain front of mind during the detailed design phase so that opportunities to identify and implement best practice sustainability and energy saving measures are not overlooked or dismissed due to any retrofitting constraints. The proponent committed to achieving a rating of 'excellent' for design and built construction under ISCA's framework. The EES states that '*Project Co would reduce the greenhouse gas emission impacts of the project targeting the achievement of Ene-1 (Level 2.7), which requires an approximate reduction in greenhouse gas emissions of 25 per cent from the base case (Reference Design)'* (page 5-55). The IAC recommended amending EPR GGP2 to reflect this target, as proposed by EPA. I support this recommendation as it provides clarity on the project's GHG emission abatement target.

Conclusion
It is my assessment that the proposed EPRs GGP1 and GGP2, subject to the proposed amendments recommended by the IAC, provide a sufficient basis for achieving best practice GHG abatement over the project's lifecycle.

5.8 Human health

Evaluation objective – *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*.

Human health impacts are addressed in sections 13.4, 20.4 and 27.4 and in Technical Report J of the EES and in Chapter 9 of the IAC report. I am generally satisfied that the impacts of the project on human health are accurately described in these parts of the EES. No specific health EPRs were proposed by the proponent or the IAC, on the basis that

health outcomes will be a product of residual noise and air quality impacts. These impacts are discussed in Sections 5.5 and 5.6.

Assessment context

The *Ministerial guidelines for the assessment of environmental effects under the Environment Effects Act 1978* define the term *environment* broadly, to include 'the physical, biological, heritage, cultural, social, health, safety and economic aspects of human surroundings'. It has become standard practice for EESs for projects with potential public health or safety effects to include a specialist analysis of those effects. The EES for the West Gate Tunnel Project conforms with that practice.

Impact pathways on human health in this case primarily arise from air quality and, to a lesser but still important degree, noise impacts. The environmental setting of the project and the exposure of sensitive receptors to prevailing environmental conditions is also important in understanding the project's potential health effects.

The broader area within which effects arising from the project might be experienced is characterised by variable, but sometimes poor, air quality. Vehicles contribute to background air quality and noise across the area, along with a variety of other urban sources. Poor air quality and high noise levels can lead to adverse public health consequences.

A range of other project effects may have potential to influence public health (including mental health) outcomes in less direct ways. For example, disruption of social linkages might lead to isolation, reduced access to or effectiveness of community services or reduced capacity to manage stress. Degradation of local amenity or perceptions about the safety of public spaces or active transport routes might deter people from making healthy choices about uses of leisure time or commuting modes.

The EES health impact assessment characterised the health of the community near the project as generally consistent with that of the broader metropolitan and Victorian communities. However, it acknowledged the concerns within the local community about the effects of air quality and noise on the health of residents, especially children, close to major roads.

Discussion

The IAC acknowledged criticisms from submitters and witnesses of aspects of the EES health impact study, as well as comments from its own technical adviser, Dr Denison. It concluded that the methodology for the study was reasonable, while noting that the study findings are contingent on effective implementation of the proposed mitigation measures for air quality and noise. I agree with this assessment.

In response to concerns that no specific public health EPRs have been proposed, the IAC concluded that EPRs setting appropriate standards for management and mitigation of environmental effects with potential health implications would enable the achievement of acceptable health outcomes. I agree with this assessment.

Health concerns about fine particulates arise because of physical size, and are not dependent on particle chemistry. Airborne particulates finer than 10-micron diameter (PM_{10}) are of health concern because they can penetrate the human respiratory system. The finer the particle, the deeper it can penetrate and, therefore, the greater the potential health consequences. Objectives for PM_{10} and a finer fraction, $PM_{2.5}$, are set under SEPP (AQM). Statutory standards for particulates have become more stringent over recent years and are planned to be tightened further in future[7]. The IAC also considered evidence and submissions addressing 'ultrafine' fractions (e.g. PM_1, $PM_{0.1}$), although no standards are in place for those fractions.

[7] See for example SEPP (AAQ) variation, 28 July 2016, Clause 16.

The project will redistribute truck traffic in the inner west and provide a new freeway route for trucks, especially those travelling to or from the Port of Melbourne. In so doing, the project aims to reduce truck traffic on several roads currently experiencing high truck volumes. This change is expected to deliver air quality and noise benefits for sensitive receptors close to those roads. However, traffic management arrangements for the project are predicted to generate significantly higher truck traffic volumes for some roads, particularly Millers Road, Brooklyn. In the absence of appropriate mitigation measures, noise and air quality impacts for neighbouring residents would be likely to exceed relevant standards, with potential health implications. Proposed mitigation of these impacts is discussed in Sections 5.5 and 5.6.

Acknowledging concerns about reduced amenity of streets and open spaces from construction or operation of the project, the IAC has supported offsetting those effects by 'other means to build social capital' (see Section 5.15).

The commitment to provide noise walls for key reserves along the West Gate Freeway will enhance the attractiveness of outdoor recreation areas. Proposed pedestrian and cycling infrastructure will encourage selection of those healthy transport modes.

Public infrastructure projects commonly provide benefits to the community that might seem quite small on an individual basis, but aggregated across the benefitting community are very substantial. By contrast, the adverse impacts of such projects might be felt by a much smaller number of receptors. It would not be reasonable for the health of those people to be diminished or placed at serious risk for the sake of achieving a primarily economic benefit. I am satisfied that, subject to applicable environmental standards together with appropriate mitigations discussed in this assessment and provided for in EPRs (Appendix A), this project will not cause such impacts.

Multiple environmental effects, such as air quality and noise, on receptors can compound human health impacts. To achieve acceptable health outcomes for the most affected residents, it might be necessary to select, design or implement measures to mitigate environmental effects to a greater degree than might be required under a narrow interpretation of applicable policies or guidelines. I note that some mitigation measures that have already been announced would not be obligations under current policies. This assessment supports some additional measures that collectively respond to the opportunity for the project to contribute in cost-effective ways to better environmental and public health outcomes for those most directly affected.

Safety is also discussed by the IAC and is assessed in Sections 5.2 and 5.4. Better management of truck traffic, which the project is intended to enable, will reduce conflict between trucks, passenger vehicles, bicycles and pedestrians.

Conclusion
It is my assessment that:

- The project can be delivered within acceptable criteria for impacts on human health.
- Health outcomes will be contingent on air quality and noise mitigation, and to a lesser degree on social impact.
- Environmental standards for the project will adequately manage the potential environmental effects on human health.

5.9 Cultural heritage

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

Aboriginal and historical cultural heritage impacts are addressed in Chapters 15, 22 and 29 and appendices O and P of the EES and in Chapter 10 of the IAC report. I am generally satisfied that the impacts of the project on aboriginal and historical cultural heritage values are accurately described in these parts of the EES. EPRs CHP1 and CHP7 deal with

Aboriginal heritage and EPRs CHP1 to CHP12 deal with historical cultural heritage. These EPRs have been the subject of recommendations by the IAC.

Assessment context

Aboriginal cultural heritage

Impacts on Aboriginal cultural heritage values may include disturbance or removal of Aboriginal archaeological sites, objects or remains, or damage to intangible cultural heritage values during project construction. Impacts on Aboriginal cultural heritage values are not likely during operational activities.

Submissions raised the issue of including the Kororoit Creek area specifically in the heritage interpretation strategy for the project along with the question of whether themes reflected in the design are representative of and authentic to the Aboriginal community.

The EES outlines the nature, extent and significance of Aboriginal cultural heritage for the project boundary or activity area within the CHMP. No previously registered Aboriginal cultural heritage places were located within the activity area for the project. However, two places in the activity area at Kororoit Creek were registered during investigations for the CHMP (7822-4067 and 7822-4068).

Historical cultural heritage

The project area features a large number of historical cultural heritage places, such as buildings and archaeological sites. These include heritage places listed in the Victorian Heritage Register (VHR) and Victorian Heritage Inventory (VHI) under the Heritage Act and heritage overlays in planning schemes. Impacts of the project would generally be localised and affect individual heritage places due to surface and construction works including ground vibration and permanent aboveground infrastructure.

Discussion

Aboriginal cultural heritage

The potential for effects on Aboriginal cultural heritage can be appropriately mitigated, minimised or managed through the approved CHMP as referenced in EPR CHP1.

The IAC was satisfied that the design of the project avoids direct physical impacts on registered Aboriginal cultural heritage places. The IAC was also satisfied that it is unlikely that the project would disturb previously unidentified heritage places, due to the high level of disturbance that has occurred within the project boundary.

The CHMP provides a list of recommendations and contingencies that would provide protection, recording and salvage (if required) of any Aboriginal cultural material identified during works. Responsibility for approval of the CHMP lies with the Secretary of the Department of Premier and Cabinet in accordance with the Aboriginal Heritage Act as there is currently no registered Aboriginal party for the project area.

Specific management conditions to protect the two registered places at Kororoit Creek are contained in the CHMP. Road widening and ramp construction across Kororoit Creek will have limited impacts on Aboriginal heritage identified at considerable depth (≥2 m) below significant fill deposits for place 7822-4068. Areas of higher artefact density identified within these Aboriginal places 7822-4067 will not be impacted by the project.

The IAC was satisfied that the EES and further assessment as part of the CHMP provided an adequate basis to identify and characterise Aboriginal cultural heritage values in the project area, and that consultation with relevant stakeholders on these values will continue into detailed design. I agree with this assessment.

The IAC supported Kororoit Creek being a focus for a heritage interpretation strategy for the project which seeks to explore historical and Aboriginal cultural heritage themes. The IAC was satisfied that consultation with Traditional Owners during detailed design and

construction will continue to ensure the project's design and heritage interpretation is culturally authentic, sensitive and appropriate under the proposed EPRs.

Historical cultural heritage
The historical heritage assessment conducted as part of the EES identified a number of specific heritage places, buildings or sites. The IAC considered these, as well as the targeted EPRs for some of these heritage values in its report.

The project may have an impact on historical cultural heritage places if appropriate steps are not taken to protect the heritage place from ground vibration and ground disturbance during the construction phase. The IAC did not agree with the contention by some submitters that increased traffic or nearby project infrastructure would give rise to unreasonable impacts on either heritage overlay sites or identified heritage places.

The IAC was generally satisfied that the proposed EPRs concern vibration generated during construction were appropriate (i.e. CHP4, NVP7, NVP11, GMP1 and GMP3 to GMP6) and that they would provide adequate protection or mitigation to heritage assets. The IAC did recommend a minor amendment to EPR CHP4 to explicitly include vibration monitoring as part of demolition and excavation.

For most of the historical heritage sites the IAC accepted the assessment documented in the EES and the proposed EPRs as appropriate to mitigate potential heritage impacts. The South Dynon railway turntables are not currently subject to heritage control, but are of local heritage significance. The IAC recommended an amendment to EPR CHP11 to avoid impacts to the turntables and to maintain them in situ.

I consider that the likely and possible effects of the project on these heritage places can be adequately addressed by the EPRs together with the statutory framework under the Heritage Act. The Heritage Act requires approval of any proposed changes to places included in the VHR or VHI (for archaeological sites).

Conclusion
It is my assessment that the effects on any Aboriginal cultural heritage can be appropriately managed through the approved CHMP under the Aboriginal Heritage Act. Consultation with Traditional Owners on project design and heritage interpretation should continue during detailed design and construction (see Section 5.3).

The IAC's recommended changes to the historical cultural heritage EPRs have my support, subject to minor variations (see Appendix A). **It is my assessment** that the historical heritage EPRs should be reworded to use the term 'heritage places' to ensure consistency with the Burra Charter. This amendment also ensures the protection of places with recognised heritage significance which would include those subject to heritage overlay as well as on the VHR and VHI. A note should be included in the EPR CHP2 to clarify that the EPRs are intended to be in addition to the need for approval under the Heritage Act.

The implementation of these EPRs in addition to the existing statutory process under the Heritage Act would provide a suitable framework for protecting heritage places at risk from the project.

5.10 Groundwater

Evaluation objective – *To avoid or minimise adverse effects on groundwater quality and hydrology, in particular, resulting from the disturbance of contaminated or acid-forming materials.*

Groundwater impacts are addressed in sections 12.2, 19.2 and 26.2 and Appendix C of the EES and in Chapter 11 of the IAC report. I am generally satisfied that the impacts of the project on groundwater are accurately described in these parts of the EES. EPRs GWP1 to GWP7 deal with groundwater matters and some of these EPRs have been the subject of recommendations by the IAC.

Assessment context
Project excavations, whether related to the drilling of bored piles for the bridges and overhead structures, construction of earth embankments, dive and portal structures, road tunnels, or the realignment of North Yarra Main Sewer, would intercept shallow groundwater. However, the interaction of project construction activities with groundwater would be most significant where works are planned at greater depths, for example, dive and portal structures, tunnel construction and realignment of the North Yarra Main Sewer.

The key potential effects and risks addressed in the EES and at the hearing include changes to groundwater levels and availability through groundwater drawdown and changes to groundwater quality. Groundwater quality could be affected by in situ processes, such as acid formation, mobilisation of existing contaminants or contamination of groundwater. Potential for ground movement associated with desaturation of compressible sediments is assessed in Section 5.11.

Discussion
The groundwater level for the West Gate Freeway Project component is likely to be between 5 and 10 metres below ground level with water levels closer to the surface in the vicinity of surface water features such as Kororoit and Stony creeks.

Acid sulphate soils have been identified in the quaternary undifferentiated sediments near Stony Creek and Stony Creek Backwash. In addition, discrete zones of potentially acid forming materials were identified within some of the deeper underlying geological units. Desaturation of these materials may lead to oxidation and generation of acidity thereby reducing groundwater quality.

Contaminated groundwater may exist in the vicinity of the Hyde Street ramps and may be intercepted by the proposed works. I accept the findings of the IAC that construction of bridges and elevated ramps within the West Gate Freeway project component involves minor volumes of groundwater, and potential groundwater effects can be appropriately managed through effective implementation of proposed EPRs and Environmental Management System.

The proposed depths of portal, tunnel and tunnel cross passage excavations mean that the greatest potential for interaction with groundwater exists within the tunnels project component. A number of potential groundwater effects were explored at the hearing with the key potential risks including lowering the groundwater table, mobilising contaminated groundwater by altering hydraulic gradients and generation and mobilisation of acidity. The realignment and sealing of a section of the North Yarra Main Sewer would also be likely to result in a rebound of local groundwater levels and potentially change the direction of local groundwater flows.

The proposed earth pressure balance TBM would use paste or compressed air to reduce groundwater inflows at the cutting face. A segmental concrete lining for the tunnels would be installed and grouted in place as the TBM progresses. These engineering techniques are the primary methods for controlling tunnel excavation effects on groundwater.

Tunnel portals are proposed to be excavated from the surface with perimeter grout curtains or secant pile walls proposed to reduce groundwater inflows and drawdown around the portal excavations. Groundwater recharge wells are also proposed to control groundwater drawdown during excavation of the portals.

The IAC assisted by its expert adviser, Mr Hancock, considered the proposed engineering controls and EPRs outlining management, monitoring and contingency measure approaches appropriate for controlling effects of portal and tunnel excavations on groundwater. I accept the findings of the IAC on these matters. Treatment and/or disposal of groundwater intercepted by the project is likely to involve discharge to sewer and would be subject to a trade waste agreement with the relevant sewerage authority.

The groundwater level for the port, CityLink and city connections project component is relatively shallow at between one and two metres below ground level. Potentially acid-forming materials were identified in the geological formations underlying this component, in particular the Coode Island Silts and Fishermans Bend Silts. Anthropogenic contamination of groundwater is likely throughout this component due to past land uses and extensive historical land reclamation and filling with night soil and abattoir and industrial waste. I accept the findings of the IAC that construction of pier foundations for bridges and elevated roads within this component are likely to encounter minor volumes of groundwater or saturated sediments. Potential effects to groundwater can be appropriately managed through effective implementation of proposed EPRs and Environmental Management System.

It is appropriate that the Groundwater Management Plan (GMP) (EPR GWP1) be developed in consultation with EPA Victoria, as recommended by the IAC, given the existing anthropogenic contamination, including potential polyfluorinated alkyl substances (PFAS), of groundwater across the project footprint. EPA will ensure that groundwater is managed in accordance with the Environment Protection Act.

Conclusion
It is my assessment that the potential groundwater level and quality impacts should be manageable and within acceptable thresholds through the proposed engineering controls, Environmental Management System and EPRs, as recommended by IAC. These will set appropriate standards for managing impacts from construction and operation of the project.

5.11 Ground movement and land stability

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

Ground movement and land stability impacts are addressed in sections 12.3, 19.3 and 26.3 and Appendix D of the EES and in Chapter 11 of the IAC report. I am generally satisfied that the impacts of the project on ground movement and land stability are accurately described in these parts of the EES. Seven EPRs deal with ground movement and land stability matters.

Assessment context
Construction of project infrastructure will have the potential to influence ground movement and land stability primarily through: removal of soil or rock; surface loadings on compressible sediments; construction on slopes that are steep or unstable; and the desaturation of sediments resulting in settlement.

The EES contained an analysis of each potential impact whereas the IAC focused principally on the potential for ground movement resulting from excavations for the portals, tunnels and North Yarra Main Sewer. These excavations could desaturate compressible sediments and will remove soil or rock volume. Potential effects on groundwater are assessed in Section 5.10

Discussion
The West Gate Freeway Project component traverses Newer Volcanics basalt. The road surface will be constructed on controlled, engineered fill to minimise the risk of ground movement and subsequent impacts on the structural integrity and stability of the freeway. Compressible sediments (e.g. Coode Island Silt) were identified near the proposed works for the Hyde Street ramps and the port, CityLink and city connections project component. In accordance with the advice provided by the IAC's expert adviser, Mr Hancock, the IAC found that effective development and implementation of the CEMP and the Environmental Management System would mean significant ground movements from project surface works are unlikely.

Groundwater drawdown has the potential to desaturate compressible sediments leading to settlement and, possibly, subsidence. Therefore, engineering controls proposed to manage groundwater effects for portal and tunnel excavations (see Section 5.10) will also manage ground movement.

Engineering controls proposed in Section 5.10 are also intended to minimise potential for slumping or settlement of sediments near the portal excavations due to loss of volume of soil and rock. These engineered structures will control the horizontal or vertical creep of materials towards the void. The proposed tunnel boring operation and the progressive lining of the tunnel with segmented concrete and grout should reduce the potential for material inflow, over-excavation and slumping or settlement due to the loss of rock and soil from tunnel excavations.

I accept the findings of the IAC, that the proposed engineering controls and a properly prepared and implemented groundwater management plan and CEMP should achieve the desired tunnel construction outcomes while reducing the potential risks of ground movement to an acceptable level.

Potential for ground movement effects near the northern portal is medium. Submitters raised concerns about potential impacts to their properties from ground movement associated with project construction. I consider that minor changes are warranted to EPR GMP3 to allow concerned property owners to have pre- and post-construction condition surveys where they can demonstrate sufficient potential risk posed by project construction. Minor changes to EPR GMP3 should also be made to ensure property owners are consulted (in accordance with EPR SP2) and they receive condition survey results.

Mr Hancock highlighted several submissions that focused on potential impacts to properties based on changes to the water table influencing the soil moisture content of reactive soils underlying the western extent of the project area particularly near Stony Creek and the Hyde Street ramps. I support minor changes to EPR GMP3 to reflect Mr Hancock's recommendation for condition surveys in areas that may be susceptible to water table and soil moisture interactions. I agree that it would also be prudent for EPR GMP5 to specify that the project must monitor water table and soil moisture interactions in potentially sensitive areas to inform and implement remedial action should there be any adverse variations in soil moisture associated with project implementation.

Conclusion
It is my assessment that ground movement due to the project should be manageable and impacts within acceptable thresholds. Minor refinements to ground movement EPRs will strengthen benchmarking, transparency and monitoring requirements for ground movement.

5.12 Surface water

Evaluation objectives – *To avoid or minimise adverse effects on surface water quality and hydrology resulting from disturbance of contaminated materials, and to maintain functions and values of floodplain environments. To avoid or minimise adverse effects on riverbed or bank stability from project activities including tunnel construction, and crossings of the Maribyrnong River, Kororoit Creek, Stony Creek and Moonee Ponds Creek.*

Impacts on surface water are addressed in Chapters 12, 19 and 26 and Technical Report E of the EES and Chapter 12 of the IAC report. I am generally satisfied that the impacts of the project on surface water are accurately described in these parts of the EES. Fifteen SWP EPRs deal with surface water.

Assessment context
The project traverses four waterways and six urban drains to interact with a variety of channel, floodplain and overland flow environments. Submissions raised a number of common issues:

- surface water quality

- water sensitive urban design
- instream works
- hydrology and flooding.

Discussion
The range of potential surface water management issues addressed in the EES and canvassed by submitters are not unusual for a major urban road project.

The risk of polluted runoff from construction work sites entering waterways could be managed by adopting standard, good practice management measures such as sediment controls, bunding, stormwater treatment systems, regular site audits and ongoing monitoring of construction areas. Similarly, the water sensitive road design that has been incorporated into the project design should achieve EPA and VicRoads water quality targets for urban stormwater during normal road and tunnel operations.

Providing the proponent's designs and construction on floodplains are to the satisfaction of Melbourne Water (EPRs SWP11 and SWP12), flooding risk during construction could be managed by maintenance of existing flood storage capacities, flow paths and drainage lines. Similarly, construction of bridges and elevated structures that require reshaping of discrete sections of river banks, including river widening and bridge piers in some waterways, notably Stony Creek, Maribyrnong River and Moonee Ponds Creek, must be designed to the satisfaction of Melbourne Water (EPRs SWP9 and SWP10). The EPRs require structures to be designed and constructed to minimise impacts on riparian and aquatic habitats and minimal increases in flood levels or loss of floodplain storage. While the IAC shared the concerns of many submitters about bridge piers in waterways, it concluded, on balance, that the environmental effects can be reduced to an acceptable level.

Conclusion
It is my assessment that the EPRs will provide suitable and available mitigation measures to address the identified risks of impacts from the project on surface water to acceptable levels.

5.13 Biodiversity and urban ecology

Evaluation objective – *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.*

Biodiversity and urban ecology impacts are addressed in chapters 12, 19 and 26 and Technical Report F of the EES and in Chapter 13 of the IAC report. I am generally satisfied that the impacts of the project on biodiversity and urban ecology are accurately described in these parts of the EES. Seven EPRs deal with biodiversity and urban ecology. These EPRs have been the subject of recommendations by the IAC.

Assessment context
Despite the project's location within a developed urban landscape, biodiversity values remain within the project area. Remnant vegetation and restored environments are associated with waterways including the Kororoit, Stony and Moonee Ponds creek corridors. The area also supports planted vegetation in roadside landscaping, parklands and scattered trees.

Both remnant and planted vegetation support native animals. Indeed, some listed threatened species (Grey headed flying fox, Swift parrot, Powerful owl) may use this vegetation for foraging and temporary roosting.

A total of 0.66 hectares of native vegetation and 22 scattered trees would be removed during construction or lost or compromised due to overshadowing by new elevated structures. This includes: Brackish wetland (EVC 656) within Moonee Ponds Creek; Coastal Saltmarsh (EVC 9) and Mangrove Shrubland (EVC140) within Stony Creek environs; and Riparian Woodland

(EVC 641) within the Kororoit Creek corridor. The removal of this vegetation would not result in a significant loss of local habitat or affect threatened species. All losses of remnant vegetation are proposed to be offset in line with the *Permitted clearing of native vegetation – Biodiversity assessment guidelines.*

Construction works, including installation of piers and bank widening works in the Maribyrnong River and Moonee Ponds Creek as well as works on the banks of Stony Creek and Kororoit Creek could alter flows, hydrology and water quality. This may in turn affect aquatic environments. An assessment of impacts to waterways in the project area is provided in Section 5.12 of this report.

Impacts to fauna may also occur from increased noise, light and vibration during construction and operation. Groundwater drawdown from excavation of the southern portal may impact groundwater dependent vegetation. The IAC concluded that both the EES and the revised EPRs for noise, light spillage and groundwater adequately addressed these impacts.

Approximately 3,347 trees are estimated to be removed for the project, most of which have been assessed in the EES to have medium to long-term viability. Proposed tree replacement includes a combination of around 4,000 advanced trees, 13,500 tubestock trees and 900,000 understorey plantings to be planted according to a Landscaping Plan (EPR EP6).

Discussion

Overall, the project would not have a significant impact on native vegetation or on ecologically sensitive areas. No significant impacts are expected on species listed as threatened at national or state levels. Native vegetation mitigation and offsets can be delivered through the EPRs, incorporated document and in accordance with existing policy.

In recent years, there has been greater recognition of the contribution urban ecology (including planted trees) makes to community wellbeing, social amenity and biodiversity. This was a focus of the EES's biodiversity assessment, and I concur with the IAC that removing 3,347 trees for the project will give rise to a substantial impact, given many of these trees are medium to large trees. The impacts of tree removal on the landscape and social amenity are assessed in sections 5.4 and 5.15 of this report.

Tree reinstatement was the subject of submissions before the IAC. I have considered these and the IAC's views in recommending modifications to the Landscaping Plan (EPR EP6) to minimise biodiversity, community and landscape impacts.

While a target tree replacement ratio of 3:1 is stated within the EES, a ratio of 5:1 is envisioned by the Landscaping Plan presented in the EES. I support the IAC recommendation to formalise the tree replacement ratio of 5:1 (rather than the previous ratio of 3:1) into EPR EP6. This provides clear expectations for the tree replacement regime.

Tree removal will be noticeable for nearby residents and the IAC has emphasised the importance of ensuring that tree replacement benefits such residents. On the other hand, ecological enhancement outside of the project boundary to provide greater long-term and broader ecological benefits was canvassed at the hearing. Better alignment with existing open space strategies was sought. Development of the Landscaping Plan in consultation with relevant councils would provide the opportunity to maximise these community and ecological benefits from restoration works.

Acknowledging that it will take many years for trees to mature and the canopy to re-establish, the proponent's expert ecologist, Mr Millar advised that one way to address canopy re-establishment was to 'increase the quantum of advanced trees up from 22%.' He went on to state that 'this will lead to a reduction in time for a significant canopy to form in the medium term (10-20 years). Alternatively, where possible early works could include advanced planting in areas not-impacted by construction.'

More advanced tree stock may be appropriate for some areas, although long-term survival associated with larger stock can be problematic. Notwithstanding, I support the IAC's recommendation that areas for planting advanced tree stock and areas to be planted before and progressively during construction be identified in consultation with the relevant councils and specified in the Landscaping Plan to minimise tree removal impacts.

Landscaping maintenance periods for the Landscaping Plan were canvassed, with views from expert witnesses ranging from 12 months to five years. The Landscaping Plan will offset adverse impacts resulting from tree loss for the project. I agree with the IAC that an ongoing management and maintenance period for five years post planting is appropriate and should be mandated within the EPR.

The Landscaping Plan should be completed in consultation with councils, Melbourne Water and City West Water prior to its approval by the IREA. The Landscaping Plan must be completed before any landscaping works may commence.

Impacts of the project on the Stony Creek and Moonee Ponds Creek environs were discussed by the IAC. The Landscaping Plan would need to be consistent with the Stony Creek Master Plan. The IAC also gave consideration to evidence that Moonee Ponds Creek between Dynon Road and Footscray Road is the best open space along the lower Moonee Ponds Creek. Infrastructure proposed by the project will inevitably compromise the strategic intent to enhance this area as a recreation space and habitat corridor. In view of this, I support the IAC's recommendation for a masterplan for a large linear reserve along this section of Moonee Ponds Creek. This recommendation is discussed further in Section 5.4.

I also note that tree removal on this scale could displace native fauna and that animal welfare concerns may arise. EPR EP4 addresses this issue. Translocation of native fauna from cleared sites may result in aggression from other wildlife or limited available shelter and food. For these reasons, I have recommended the EPR reference engaging a wildlife ecologist to advise on this issue prior to commencement of works.

Conclusion
It is my assessment that impacts to native flora and fauna would be adequately managed via the EPRs with some adjustments. The Landscaping Plan (EPR EP6) should include:

- a tree replacement ratio of 5:1
- a maintenance period of five years post planting
- clarity on locations and the quantum of advanced tree stock to be used
- clarity on locations for planting before and progressively during construction
- revegetation to both ameliorate the impacts on residents from tree removal as well as to create or improve habitat corridors and linkages
- the transplanting, if possible, of palm trees removed from Yarraville Gardens (see Section 5.4)
- input from Friends of and other local groups (see Section 5.4)
- review by the IREA.

5.14 Solid waste and contamination

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

Solid waste and contamination impacts are addressed in Sections 12.1, 19.1 and 26.1 and Appendix B of the EES and in Chapter 14 of the IAC report. I am generally satisfied that the impacts of solid waste and contamination associated with the project are accurately described in these parts of the EES. EPRs CSP1 to CSP4 and WMP1 deal with solid waste and contamination. Some of these EPRs have been the subject of recommendations by the IAC.

Assessment context
Anthropogenic contamination is possible across the project footprint due to past industrial land use, decommissioned landfills and historical in-filling of land. There are also naturally occurring materials that have the potential to generate acidity and mobilise contamination if not properly managed.

The project will require excavation of significant volumes of fill, soil and rock which if not managed properly could adversely affect air, water, land or human health. Potential effects associated with contaminated groundwater are assessed in Section 5.10.

Discussion
The project is expected to excavate approximately 2,110,000 m^3 of spoil. The IAC and its expert adviser, Mr Hancock, found that the indicative characterisation is sufficient to support the assessment of potential effects of solid waste and contaminated spoil. The majority of the spoil (indicative volume of 1,654,000 m^3) is expected to be classified as fill material with the remaining waste classified as:

- solid inert waste (indicative volume of 198,000 m^3)
- prescribed industrial waste of various classifications (indicative volume of 173,000 m^3)
- acid sulphate soil/potentially acid generating material (indicative volume of 85,000 m^3).

The EPRs require the proponent to manage waste and spoil in accordance with EPA's waste management hierarchy and identify opportunities for reuse of spoil where the quality or proposed use of the spoil allows. However, there will be significant volumes of spoil that will require treatment or disposal at appropriately licensed waste management and disposal facilities. A cumulative assessment of the expected volumes of spoil from the project and the Melbourne Metro Rail Project, undertaken by the proponent, has identified sufficient capacity at waste treatment and/or disposal facilities.

Most (approximately 1,504,000 m^3) of the spoil is expected to come from the project's tunnels and associated excavations. The majority of this spoil is proposed to be transported from the TBM within an enclosed conveyor system to a spoil management facility at 221 Whitehall Street, Yarraville. The IAC heard submissions about potential migration of contamination to other premises and the resulting impacts on business. EPR CSP2 was amended by the proponent to specify that the spoil management facility would be fully enclosed. Refer to Section 5.16 for my assessment of potential effects on businesses.

Spoil management facilities will also be required at the southern portals and at construction compounds within the West Gate Freeway and at the port, CityLink and city connections project components. However, these facilities are proposed to manage smaller volumes of spoil. I accept the findings of the IAC that the proposed spoil management approach, EPRs and governance framework would manage potential effects associated with solid waste and contaminated spoil to within acceptable levels.

I accept the IAC's revised EPRs noting the requirements for further spoil characterisation, management and treatment opportunities to be developed as part of the CEMP and solid waste and contamination sub-management plan. I consider that it is appropriate that this sub-management plan be developed to the satisfaction of EPA and IREA to ensure that spoil is managed in accordance with the Environment Protection Act.

Paste used during tunnel construction could be contaminated by materials containing legacy land and groundwater contamination as it recycled through the TBM. I support the IAC's recommendation, on advice from Mr Hancock, to amend EPR CSP1 to ensure that the paste is classified and managed with the project's solid waste and contaminated spoil.

The proposed works along the West Gate Freeway project component are located near and may intercept former landfill sites. I support the IAC's recommendation for the inclusion of

the assessment of potential landfill gas migration at the former quarry locations and landfills in accordance with EPA Victoria's *Landfill Best Practice Environmental Management Publication 788*.

Conclusion
It is my assessment that the potential effects of solid waste and contaminated spoil would be managed to acceptable levels. The EPRs, as recommended by the IAC, will set appropriate solid waste and contamination standards for the construction and operation of the project.

5.15 Social

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

Social impacts are addressed in sections 14.2, 21.2 and 28.2 and Technical Report L of the EES and in Chapter 15 of the IAC report. I am generally satisfied that the social impacts of the project are accurately described in these parts of the EES. Five EPRs deal with social matters. Some of these EPRs have been the subject of recommendations by the IAC.

Assessment context
The project has the potential to provide positive effects to the local and broader community within Victoria through shorter travel times, improved access to employment, services and facilities, improved shared use path infrastructure and improved amenity in local areas.

The project could also adversely affect local communities, for example, longer travel times during project construction with reduced access to employment, services and facilities. Potential amenity effects, for example noise or air quality, could also occur in some areas during construction as a result of construction activities. Potential amenity effects could also occur during operation in some areas through redistribution of traffic resulting in a reduced sense of place or liveability.

Potential social effects associated with the project are intrinsically linked to the potential traffic and transport (Section 5.2), air quality (Section 5.6), noise and vibration (Section 5.5), human health (Section 5.8), land use (Section 5.3), business (Section 5.16) and visual, urban design and landscape effects (Section 5.4) and, as such, this section should not be read in isolation.

Discussion
The IAC found that the project would have a 'net positive' social effect through the provision of new public open spaces, removal of truck traffic from some residential streets, increased vegetation in some areas due to replanting, and improved connectivity for pedestrians and cyclists. Community benefits will also come from improved road transport options that reduce travel times and facilitate access to jobs, goods and services.

Discussion during the hearing around the potential social benefits of public open space focused on the need for acceptable amenity (including in respect of noise and air quality) at proposed new open spaces to ensure that their potential community benefits are realised. Open spaces are considered further in Section 5.4. The IAC recommended minor changes to EPR SP1 around specifications for replacement landscaping. These changes are discussed within Section 5.13 (Biodiversity and Urban Ecology).

The proponent proposed a new EPR SP4 during the hearing in response to evidence from their expert witness. This EPR requires a Workforce Development Plan and Local Industry Development Plan to encourage local procurement where possible and provide local employment skills training opportunities. This EPR was supported by the IAC who found that it would support additional social and business benefits and foster community resilience and I support this initiative.

Expected 'net positive' social impacts from the project will come with high residual negative social impacts for some local communities according to the IAC. These negative effects would be felt particularly by the residential communities near Millers and Williamstown Roads due to cumulative project impacts during construction and operation. These cumulative project impacts could include impacts arising from transport, air quality, noise and vibration and safety or human health. According to the IAC, moderate residual effects are also expected for communities that experience traffic changes or travel delays during project construction.

The IAC supported a recommendation of the proponent's expert witness for a Community Involvement and Participation Plan (CIPP) to improve community cohesion and assist in mitigating the impacts of the project on affected communities. Hobsons Bay City Council's expert witness also supported the CIPP and agreed it would mitigate project impacts and build resilience. The IAC considered the CIPP critical for mitigating project impacts and found that some of the impacts on the community will be borne by more vulnerable communities with a lower socio-economic profile and poor environmental quality. The project has significant opportunities to make a net improvement in these areas beyond traffic.

I support the IAC's recommendation for a CIPP to be developed and implemented. However, EPR SP5 should be amended to specify that the CIPP focus on those communities where significant local residual adverse impacts are expected and specify the period for which the plan will apply.

Moderate residual cumulative social impacts were also identified for Hyde Street residences between Francis Street and the West Gate Freeway. VicRoads submitted to the IAC that 'while the project scope of the West Gate Tunnel Project does not require the acquisition of the properties, VicRoads has been in contact with affected residents and supports the consideration of each resident's request for land to be acquired by VicRoads on a case-by-case basis, given the unique circumstance of their location and the presence of the overlay.' The IAC found that these Hyde Street residents have a strong case for the voluntary acquisition of their properties based on amenity and other effects. I consider acquisition to be appropriate and recommend that this be pursued by VicRoads.

I support the IAC's finding that adopting and implementing the remainder of the relevant EPRs will manage the project's social effects to acceptable levels. I recommend minor changes to EPR SP2 to specify that the IREA should approve the Communications and Community Engagement Plan (CCEP) and that it be prepared and approved prior to construction. The CCEP should also be published on the project website during construction to ensure transparency in the project's approach to community and business engagement.

A number of the EPRs concerning other environmental aspects require the proponent to make environmental monitoring data publicly available. I recommend minor changes to EPR SP2 to identify within the CCEP how environmental monitoring data that is to be made publicly available can be accessed.

I recommend that EPR SP2 also be amended to specifically reference the Business Involvement Plan (BIP) as discussed further in Section 5.16 (business).

Conclusion

It is my assessment that the project will result in a net positive social impact on the community. I accept that some local communities would be subject to adverse effects during construction and/or operation. However, the EPRs recommended by IAC, subject to minor changes as detailed above, would appropriately manage adverse social impacts during construction and operation and should establish a positive social legacy for the project.

5.16 Business

Evaluation objective – *To minimise adverse effects on the social fabric of the community, on community cohesion, access to community services and facilities, business functionality, changes to land use, public safety and access to infrastructure.*

Business impacts are addressed in sections 14.3, 21.3 and 28.3 and Appendix M of the EES and in Chapter 16 of the IAC report. I am generally satisfied that the business impacts of the project are accurately described in these parts of the EES. EPRs BP1 to BP9 deal with business and these EPRs have been the subject of recommendations by the IAC.

Assessment context

The EES and IAC outlined a number of benefits that the project will deliver to wider business and the economy. The benefits focus on transport connectivity such as improved connections between the West Gate Freeway and the Port of Melbourne, CityLink and city, which are particularly relevant for port-related businesses with time sensitive supply chains.

While project benefits will be shared by some local businesses, adverse impacts may be felt most by individual businesses subject to partial or full acquisition. Indirect business impacts may also arise during construction as a result of traffic management or other activities that could disrupt businesses operating as usual.

The proponent advised that 65 properties used for commercial purposes will need to be either fully or partially acquired across the project alignment, with less than ten needing to relocate. Land will be acquired pursuant to the terms of the Major Transport Projects Facilitation Act.

Discussion

Land acquisition of some properties is unavoidable for a project of this scale. However, like the IAC, I am generally satisfied that consultation with businesses being relocated has occurred and that it will continue to occur. The impacts on businesses acquired will be managed through the EPRs such as BP9 as well as provisions of the Major Transport Projects Facilitation Act.

The EPRs proposed by the proponent and refined during the course of the hearing seek to mitigate and manage the risks posed to businesses. The IAC accepted the wording and intent of the business EPRs subject to minor variations. I support these changes including the addition of a requirement to consult with 'relevant land owners and parties as necessary' through detailed design and construction to minimise impacts on third party property and infrastructure.

The IAC heard from submitters concerned about communication with affected businesses as well as the impact of amenity changes, contamination, and reduced access during construction on their business operations. Meaningful communication with impacted stakeholders about upcoming works and detailed design will assist in reducing impacts on businesses. EPR BP5 requires the preparation and implementation of a BIP as part of the CCEP required by EPR SP2. I strongly support the proponent's inclusion of an enquiry management process with provision for a 24-hour telephone service in EPR SP2, as this will provide communication channels to both the community and affected businesses.

The proponent and its contractors will be responsible for responding to affected businesses as sensitively and as openly as circumstances allow. For this reason, the BIP should be explicitly referenced in EPR SP2 to ensure it is consistent with the CCEP. The BIP will outline procedures to disseminate information on the construction schedule and procedures to engage with affected businesses. Further, I endorse the proponent's proposed inclusion of a complaints and dispute resolution mechanism through EMP4 consistent with the *Australian Standard AS ISO 1002-2014 Guidelines for Complaint Management in Organisations*. Providing a fair and timely disputes resolution process is crucial to managing undue stress on business operators affected by the project.

Given the importance of consultation to manage business impacts, the BIP should be approved by the IREA and published on the project's website for the duration of construction. EPR SP2 should also refer to EPR EMP4 for procedures for documenting and responding to complaints.

A number of submitters were concerned that road network disruptions would impact on business operations. Traffic management plans (EPR TP3) in conjunction with the social and business EPRs should be effective in allowing businesses to prepare for any road network changes during construction. I also support the inclusion of EPRs BP6 and BP7 to specifically manage impacts on utility assets and gas utilities during construction.

There are a range of EPRs that will alleviate concerns raised by submitters about amenity or contamination impacts from construction (see Sections 5.4, 5.5, 5.6 and 5.14).

Conclusion
It is my assessment that:

- The suite of business EPRs (BP1 to BP9) and a combination of other EPRs that mitigate noise, vibration, contamination, transport and air quality impacts will effectively reduce impacts on businesses.
- While I support the IAC's recommended amendments to the business EPRs, I have recommended changes in Appendix A to ensure a consistent consultation process for both the community and businesses. The BIP and CCEP will both attract wide community interest, and both should be published on the project's website for the duration of construction (see EPRs BP5 and SP2).

5.17 Environmental management framework

Evaluation objective – *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 environmental management framework (EMF) is addressed in Chapter 8 of the EES and Section 17 of the IAC report. The proposed planning controls are addressed in Appendix I of the EES and Section 18 of the IAC report.

Assessment context
The broad structure of the EMF has been endorsed by most submitters and the IAC. The EMF, as exhibited in the EES, included EPRs that define the project-wide environmental outcomes that must be achieved during design, construction and operation of the project. Submitters and the IAC requested changes to published EPRs and commented on how the incorporated document linked to the EMF and EPRs.

The EMF set out accountabilities and auditing requirements associated with the EPRs to ensure that the environmental effects and risks of the project are managed appropriately. The exhibited EMF and the EPRs require a series of subordinate plans to be prepared (see Section 4.2).

Discussion
The IAC stated that generally the EMF and EPRs are 'a sound and robust framework for managing the environmental effects of the project during its construction and operational stages'.

The EPRs specify the required environmental outcomes for the project, while allowing flexibility and innovation for the proponent in choosing and implementing mitigation measures to achieve those outcomes. The proponent proposed a version of the EPRs (Version 6) after considering changes proposed by other parties. The IAC considered Version 6 EPRs generally covered the appropriate range of issues but, in some cases, recommended further changes. These and my recommended amendments are shown in Appendix A. Submissions received on the wording of the EPRs from councils or

stakeholders were quite detailed and prescriptive and were focused on achieving a particular individual or community group benefit. It is understandable that parties want to see the EPRs drafted in very precise language, and incorporated into the planning scheme in a way that would make departure from the precise language difficult. For each EPR there is a question as to what level of prescription in the planning framework is necessary to drive an appropriate level of mitigation and management of the environmental effects of the project. It must be recognised that this project will be sponsored by the Victorian Government, which has an interest in ensuring that the environmental impacts of the project are properly mitigated and managed.

The IAC supported flexible EPRs, while ensuring they are targeted, easy to understand and clear in their purpose and intent. A balance between detail and outcome-orientated performance is the best way to ensure that the project can respond to the environmental issues that arise. Where more prescription is required, this should include environmental limits or targets, and outlines of key plans, such as the Communications and Community Engagement Plan (CCEP).

Clarification of the role of the Independent Reviewer and Environmental Auditor (IREA) was sought by the IAC during the hearings. The IREA is jointly engaged by the proponent (on behalf of the Victorian Government) and the proponent to carry out independent reviews of activities and documentation, approve the CEMP and OEMP and all revisions prior to implementation and audit compliance with environmental management documents.

The IAC recommended increasing transparency around the role of the IREA. The IAC amended EPRs EMP1 and EMP3 to include public release of the approved environmental management strategy and IREA audit reports. I agree with these amendments to EPRs EMP1 and EMP3, and require this process for approval of plans to be clearly outlined in the submitted environmental management strategy. The IAC queried whether the Minister for Planning needed to intervene if disputes arose during approval of subordinate plans by the IREA. I see merit in the IREA approving the CEMP and OEMP as recommended by the IAC in EPR EMP2. If any disputes arose during approval of these plans, then I would expect the proponent to work with the IREA to resolve these disputes.

Open communication and stakeholder consultation is a core intent of the environmental management strategy and essential to the effective management of project impacts. Submissions on the EPRs and incorporated document also sought active engagement with key stakeholders (including relevant agencies, councils and specific reference groups such as the transport management liaison group). The IAC proposed changes in both the EPRs and incorporated document to strengthen consultation with regulatory and relevant authorities and councils. The IAC proposed that the incorporated document require a ‘description of the form and extent of consultation undertaken with local councils, relevant government agencies and other stakeholders concerning the proposed change, and their response’ be provided to the Minister for Planning if an amendment is sought to the EPRs.

The proponent will need to provide for community engagement during detailed design. At the same time, I recognise that the engagement process must be efficient and should not itself contribute to increased uncertainty about project timing or cause undue delay in delivering the project.

The IAC referenced the preparation of an environmental management strategy, as required by the draft incorporated document. The environmental management strategy proposed to be submitted for approval by the Minister for Planning must, among other things, set out the process for developing, reviewing and approving subordinate plans referenced.

Conclusion

I consider that the broad architecture for governance of environmental management is appropriate. My support for this framework is based on my power under the incorporated document to give effect to this assessment and require the proponent to submit an environmental management strategy outlining how the EPRs will be implemented for my

approval. I have made a number of recommendations on the EPRs in Appendix A. The final EPRs must be updated by the proponent in consultation with DELWP prior to the proponent submitting them for my approval. The proponent proposed that EPRs be included in DUDPs referenced in Clause 5.1 of the incorporated document. However, **it is my assessment** that the EPRs form a standalone document referenced by the incorporated document.

I understand that the environmental management strategy and EPRs I approve will then also form part of the contractual arrangements for delivery of the project, to be enforced by the proponent on behalf of the Victorian Government.

The environmental management strategy will be required to outline the expanded role of the IREA and references the technical skill set that the IREA will require. **Is my assessment** that the environmental management strategy requires the IREA to investigate complaints that are recorded in the complaints management system (EPR EMP4) to ensure conformance with the EPRs. Further, EPR SP2 should be amended to explicitly reference this complaints management system in the CCEP so that stakeholders are aware of the dispute resolution process.

6 CONCLUSION

My overall conclusion is that the project, with modifications and environmental performance requirements recommended here, will have an acceptable level of environmental effects.

The project's benefits mean the wider community will enjoy improved traffic flows on the M1 corridor, reduced reliance on the West Gate Bridge, expanded capacity on the West Gate Freeway, and improved connectivity between Melbourne's western suburbs and the expanding central city. Many communities will see less truck traffic on local roads, with the inner west also benefitting from improved pedestrian and cycling links and several new open spaces.

My assessment seeks improvements to the project's design and to proposed mitigation, management and monitoring measures consistent with many of the IAC's recommendations. I understand much of this design improvement will occur during the detailed design phase.

I also find the proponent, on behalf of the Victorian Government, should continue to acknowledge and respond sensitively and appropriately to individuals, families, communities and businesses who will bear the greatest burden of the adverse impacts during the project's construction and operation phases. Where my assessment recommends further consultation requirements, greater transparency, better governance and, in a few instances, higher performance standards, my objective is to support the community and the proponent in finding solutions that strike an appropriate balance between community concern and project imperatives.

6.1 Summary of response to inquiry recommendations

Table 2 summarises my responses to the IAC's 21 consolidated recommendations and references the relevant section of this assessment.

The IAC also offered guidance on many matters of detail, primarily in the context of suggested changes to the EPRs (which may be seen as supporting Recommendation 2) as well as further refinement to the incorporated document (which may be seen as supporting Recommendation 1). My responses to that guidance are presented in the relevant sub-sections of Chapters 4 and 5.

Table 2: Response to inquiry recommendations.

No	Inquiry and advisory committee recommendation	Summary response	Sect
1	Adopt Amendment GC65 to the Melbourne, Maribyrnong, Port of Melbourne, Brimbank, Hobsons Bay and Wyndham Planning Schemes subject to:	Supported	4.2
a)	Revising the Project design as announced by the Victorian Government including: i. Three additional noise walls on Crofts Reserve, McIvor Reserve and Stony Creek ii. Truck bans on Blackshaws Road and Hudsons Road iii. Removal of the proposed toll point on the West Gate Freeway west of Millers Road iv. A range of mitigating measures for properties fronting Millers Road north of the West Gate Freeway including double glazing, insulation, fencing and air conditioning	Supported	2.2 5.2 5.5

/cont.

Table 2 (cont.): Response to inquiry recommendations.

No	Inquiry and advisory committee recommendation	Summary response	Sect
b)	Reviewing and refining the project design at the city end to achieve: i. A more responsive and high quality urban design outcome which is guided by, and is responsive to, the Project design principles ii. The lowering of the Wurundjeri Way extension, to at grade where possible, and modification of the Dynon Road link cross section to: a. Ensure the urban renewal opportunities for the development of the E-Gate precinct, and its land use integration with North and West Melbourne, are maximised to the greatest extent possible b. Actively facilitate the provision of an active transport link across E-Gate between North Melbourne Station and Waterfront City c. Minimise traffic impacts from the city connections d. Actively facilitate potential future intersection and interchange upgrades, particularly where levels of service are constrained	Supported in part. The proponent will refine urban design for the entire project during detailed design to inform construction. I have recommended that the DUDPs be revised so that they lower the Wurundjeri Way extension generally in accordance with the information presented in Appendix B. This, in my assessment will achieve acceptable planning and environmental outcomes, and make adequate provision for future connection between E-Gate and North Melbourne Station and Waterfront City. Work remains for Government to clarify its development strategy for the E-Gate urban renewal site. This work will evolve along with further investigations to derive future traffic management measures across the west and northward expansion of the central city.	5 5.2 5.3 5.4
c)	Extending the project boundary to include Millers Road between the West Gate Freeway and Geelong Road	Supported if required to facilitate mitigation works on Millers Road.	5.2
d)	Applying the Incorporated Document in Appendix E of this report	Supported with modifications. Further refinements of the incorporated document will need to be made to reflect this assessment.	4.2
e)	Applying the Environmental Performance Requirements in Appendix F of this report	Supported with modifications as shown in Appendix A. Commentary about proposed changes to EPRs is provided in Chapter 5.	App A
2	Include the Environmental Performance Requirements in any Project Agreement between the State and 'Project Co'.	Supported	4.2 5.17
3	The Environment Protection Authority considers the recommendations and Environmental Performance Requirements in this report when determining the Works Approval Application.	Supported	3.1

/cont.

Table 2 (cont.): Response to inquiry recommendations.

No	Inquiry and advisory committee recommendation	Summary response	Sect
Transport capacity, connectivity and traffic management			
4	Undertake a corridor study along Millers Road between the West Gate Freeway and Geelong Road to determine traffic and transport management works required to cater for the projected traffic volumes in 2031, including consideration of the safety, accessibility and amenity of the abutting local residential community, and undertake works as part, and at the cost of, the Project.	Supported in part, noting that this study should be completed by VicRoads.	5.2
5	Undertake further investigations of the traffic impacts on North Melbourne, West Melbourne and Docklands and undertake mitigation works as part, and at the cost of, the Project if required.	Supported in part, noting that Government to coordinate these investigations within the broader context of the expanding central city.	5 5.2
6	Undertake additional traffic modelling, and implement works, to facilitate safe and efficient access by freight vehicles, including over-dimensional vehicles, travelling via Sims Street and MacKenzie Road to and from Footscray Road. The assessment should include consideration of the impacts of including the city access charge on the MacKenzie Road off-ramp.	Supported in part, noting that this study should be completed by VicRoads.	5.2
Health, amenity and environmental quality			
7	Incorporate in the Project design, capacity for the future provision of noise protection measures, at source, where the alignment is adjacent to existing and future urban renewal areas.	Supported with modifications as shown in the EPRs in Appendix A.	5.5
8	Undertake additional air quality surface road modelling including exhaust and non-exhaust emissions for roads likely to experience a significant increase in traffic including Millers Road, and Williamstown Road. The results should be used as appropriate to inform mitigation responses. The mitigation response should also include Hyde Street if the recommendation to acquire properties on that street is not accepted.	Supported with modifications as shown in the EPRs in Appendix A..	5.6
9	Develop and fund a specific air quality mitigation response for roads likely to experience a significant increase in traffic including Millers Road, and Williamstown Road. The mitigation response should also include Hyde Street if the recommendation to acquire properties on that street is not accepted.	Supported with modifications as shown in the EPRs in Appendix A.	5.2 5.6
10	Develop and fund a 'smoky vehicle enforcement program' within the Project area to identify smoky vehicles for enforcement/rectification action.	Supported, noting that responsibility for compliance and enforcement rests with EPA and VicRoads.	5.6

/cont.

Table 2 (cont.): Response to inquiry recommendations.

No	Inquiry and advisory committee recommendation	Summary response	Sect
Landscape, visual and recreational values			
11	Consult with local and other relevant authorities to explore the potential for further urban design and landscape improvements outside the project area where these may achieve improved outcomes.	Supported, noting that responsibility for actions outside the project area rest with other authorities.	5.4
12	Review the design of the ramps on either side of proposed Maribyrnong Bridge to minimise visual bulk and incorporate transparent panels on bridge parapets.	Supported.	5.4
13	Fund a masterplan for a linear reserve along the Moonee Ponds Creek between Dynon Road and Footscray Road including the proposed open space west of the Creek. The plan should be prepared by the relevant land manager in consultation with the City of Melbourne, Melbourne Water, and other relevant authorities, the Friends of Moonee Ponds Creek and the Moonee Ponds Creek Co-ordination Committee.	Supported, noting that this plan should be developed in parallel with the evolution of Government's development strategy for the E-Gate urban renewal site.	5.4
Social, business, land use, public safety and infrastructure			
14	Develop and implement a Community Involvement and Participation Plan to mitigate social impacts particularly on communities which will experience cumulative negative impacts, and to provide 'legacy' beneficial environment effects.	Supported	5.15
15	Voluntarily acquire the residential properties located on the west side of Hyde Street, south of Francis Street and opposite the Yarraville Oil Terminal promptly following the granting of necessary Project approvals.	Supported, noting that VicRoads is the acquiring authority.	5.2 5.3
Further recommendations on issues raised in submissions			
16	The State retain control of the city access charge amount to ensure that the traffic management aims of that charge can be met.	Supported.	5.2
17	The State retain the authority to waive general tolls when operational plans for network redundancy are put in place to divert West Gate Bridge traffic onto tolled roads.	Supported.	5.2
18	Investigate alternative mechanisms for truck ban monitoring beyond physical surveillance by VicRoads.	Supported, noting that VicRoads will be the responsible authority.	5.2
19	The Environment Protection Authority continue to monitor emerging trends in air quality and health impacts research to ensure air quality standards are best practice.	Supported.	5.6
20	VicRoads advance the development and release of a revised Traffic Noise Reduction Policy to ensure Victoria maintains a best practice approach to traffic noise mitigation.	Supported.	5.5

/cont.

Table 2 (cont.): Response to inquiry recommendations.

No	Inquiry and advisory committee recommendation	Summary response	Sect
21	Planning should commence for the 'northern corridor' as proposed in the Eddington Report as a complementary link to the West Gate Freeway and the West Gate Tunnel Project.	Supported in principle. I note that Infrastructure Victoria recently identified that a link between CityLink and the Western Ring Road might be needed in the latter part of the 15-30 year period.	

HON RICHARD WYNNE MP
Minister for Planning

/ / 2017