

Inquiry and Advisory Committee

West Gate Tunnel Project

Preliminary Matters and Further Information Request

Front page

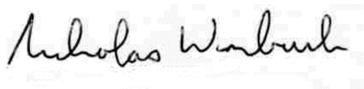
18 July 2017

Preliminary Matters and Further Information Request

General Declaration:

This information is sought for clarification and is sought without prejudice to the final recommendations of the Inquiry and Advisory Committee (IAC). The Western Distributor Authority (WDA) and other parties should not assume that the issues raised in this request for information are the only issues of interest to the IAC or that the IAC has particular concerns about these issues. The IAC reserves the right to seek further information as necessary throughout the course of the Public Hearing process. The issues raised in this report do not represent any, or the only, opinions of the IAC.

18 July 2017

A handwritten signature in black ink that reads "Nicholas Wimbush". The signature is written in a cursive style and is positioned above the printed name.

Nick Wimbush, Chair

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1 Introduction

1. Background

The Minister for Planning has appointed an Inquiry under the *Environment Effects Act 1978* and an Advisory Committee under the *Planning and Environment Act 1978* (the IAC) to report on the West Gate Tunnel Project (WGTP) in accordance with the Terms of Reference dated 26 May 2017.

The IAC has undertaken a preliminary review of the Environment Effects Statement and supporting documents. This report provides notice to the Western Distributor Authority (WDA) that there are a number of matters that the IAC is seeking clarification of, or further information on, as part of the public hearing process.

2. Purpose of this document

This report is provided to the WDA on 18 July 2017 to enable it to review the information sought and to provide a preliminary response. The report will be formally tabled at the Directions Hearing on 19 July 2017.

This report contains requests for information from the Proponent, including points of clarification arising from the IAC and IAC's technical advisers review of the EES material. It is an initial request based on a review of the material to date and should in no way be construed as expressing opinions or establishing the scope of the IAC's considerations.

3. The IAC and Technical Advisers

This report contains issues and information requests in two forms. In the body of the report a number of issues are raised by the IAC. In the Appendices a number of issues and information requests are made by the IAC's technical advisers. These requests are made within a template provided by the IAC, but the content is entirely that of the technical advisers and is not endorsed by the IAC. The requests from the technical advisers are to further inform their advice to the IAC which will be sought by the IAC at different points in the inquiry process.

2 Traffic and Transport

1. Port Access

(i) Reference

Main Report Volume 1 Chapter 3.9.2 Port Connections indicates a base assumption that Coode Road will be closed.

Technical Report A Transport Part 2 - Appendix C: Summary of traffic volumes does not contain traffic volumes for the port roads.

(ii) Request

The IAC requests:

1. Confirmation that the closure of Coode Road is a committed and essential project for the continued operation of the port and the timing requirement for it to be closed for Port requirements, that is not considering the West Gate Tunnel project.
2. Traffic volumes be provided for the port roads, including MacKenzie Road, Sims Street, Dock Link Road and Appleton Dock Road, including existing condition volumes, and turning movement data for peak traffic hours existing and 2031 with project
3. Capacity analysis of the intersections of Sims Street with Footscray Road, 2031 with project, including queue and delay data.

2. Intersection performance

(i) Reference

Technical Report A Transport Part 2 - Appendix F: Traffic Modelling Report, Tables 60, 66, 68, 74, 84, 93, 105 indicate various intersections will have some approaches operating with a level of service below D in 2031.

(ii) Request

The IAC requests:

4. Further information on intersection performances where the level of service for a movement is below D in the 2031 project case, particularly the expected queue lengths and ability to accommodate expected queue lengths, by lane, and any consideration and constraints, to upgrade intersections to improve the level of service on the individual approaches.
5. An assessment of the intersection performance on the intersection of Millers Road and Princes Highway and the intersection of Millers Road and Cypress Avenue.
6. An origin-destination assessment of trucks using Millers Road north of West Gate Freeway in the 2031 with project scenario.

3. West Melbourne and North Melbourne

(i) Reference

Summary report page 48 last paragraph states that there is adequate spare capacity in North Melbourne to cater for the additional traffic generated by the project in 2031.

(ii) Request

The IAC requests:

7. Data and analysis to support the statement that there is sufficient spare network capacity in North Melbourne to accommodate the increase in traffic in the peak hours, inter peak and daily, noting the growth predicted without the project.
8. Advice on any proposed network enhancement projects and traffic assessment particularly for the Dryburgh Road/Arden Street (noting potential rat-running via Laurens Street), Queensbury Street/Elizabeth Street and Gatehouse Street/Royal Parade intersections, proposed as part of the Melbourne Metro Rail project.

4. Microsimulation modelling

(i) Reference

Main Report Volume 2 Chapter 11.3 page 11-2 states that microsimulation model has been prepared for the West Gate corridor for construction and operation scenarios.

(ii) Request

The IAC requests:

9. Video footage from the microsimulation models showing peak congestion conditions during construction and operation.
10. Analysis from the microsimulation modelling undertaken to assess traffic performance during construction (referenced in the dot point at the bottom of page 11-2).

5. Construction Haul Routes

(i) Reference

Technical Report A Transport Chapter 8.1.1 page 357, 8.3.1 page 363 and Chapter 8.6 page 374

8.1.1 - Table 155 lists some 'unknown' values for truck volumes and is unclear on access routes for both the Southern tunnel portal compound and Williamstown Road compound

8.3.1 - vehicles hauling spoil 'would typically not travel during the peak traffic periods'.

8.6 - combining the Metro Tunnel and West Gate Tunnel Project volumes means it is estimated a total of 1,026 additional trucks could use Footscray Road each day. Assuming 24-hour operations, this equates to 43 trucks or 107 PCU movements every hour'

(ii) Request

The IAC requests:

11. Advice on the truck traffic forecasts for the Southern tunnel portal compound and the Williamstown Road compound.
12. Confirmation of the local road route into the Southern Portal compound, advice on what material will be transported to and from this compound, noting Chapter 11.1 Technical Report G - Air Quality Impact notes that this will be a TBM retrieval site, and the suitability of the route to cater for the forecast traffic.
13. Clarification whether spoil/soil haulage trucks will not travel during peak hours.
14. Confirm spoil/soil truck haulage routes for both Projects as this is not entirely clear within the documentation.
15. Confirm the duration of the cumulative effects (of soil/spoil truck movements).

6. Road Closures and Works Areas

(i) Reference

Development and Urban Design Plans - West Gate Freeway Proposed construction plans: Sheet 8 of 31 and Sheet 16 of 31.

(ii) Request

The IAC requests:

16. Clarification of whether the freeway widening works will require temporary and or permanent closure of the western end of Buchanan Road, near Lynch Road Reserve.
17. Clarification of the purpose of the works areas shown on Sheet 16, including the area of Bridge Street and The Memorial Park.

7. Sensitivity Testing

(i) Reference

Technical Report A Transport Part A Chapter 9: Sensitivity testing page 377 and Table 164: Sensitivity test results, page 380

(ii) Request

The IAC requests:

18. The data provided for the Existing Curfews test in Table 164 be expanded to include Williamstown Road and presented in two figures showing, (to allow comparison with Figures 214 and 215):
 - a. 2031 project with existing curfews (truck volumes, two-way, 24 hour weekday volumes); and

- b. 2031 project case vs project case existing curfews: changes in daily truck volumes (wo-way, 24 hour weekday volumes).
- 19. A sensitivity test that varies the tolling structure, location and/or number of tolling points to reduce toll avoidance by trucks and incentivise the use of the West Gate corridors by freight traffic in lieu of other roads including Millers Road.

3 Land Use and Infrastructure

1. Assumptions Regarding Future Port Infrastructure

(i) Request

The IAC request information on the following:

20. Has the design of the West Gate Tunnel project had regard to Infrastructure Victoria's advice on securing Victoria's Port Capacity?
21. Further, what if any, assumptions have been adopted in the design of the West Gate Tunnel Project regarding:
 - a. Long term projections of TEU shipping containers (Twenty Foot Equivalent Units) at Swanson Dock and Webb Dock;
 - b. The possible development of the Western Intermodal Freight Hub;
 - c. The term of lease at the Port of Melbourne;
 - d. The possible development of Bay West and relocation of vehicular freight trade to the Port of Hastings;
 - e. The possible relocation of Coode Island to facilitate redevelopment of Swanson Dock.

2. Dynon Road Connection

(i) Request

The IAC request information on the following:

22. How important is the Dynon Road connection in regard to achievement of the Project Objectives?
23. What functional role does the connection serve having regard to the Project's objectives; and what if any alternative options were considered to achieve the functional outcomes provided by the connection?
24. What if any, additional measures can be implemented to reduce potential negative amenity and economic impacts of the connection?

3. Wurundjeri Way Extension and Widening

(i) Request

The IAC request information on the following:

25. How important is the Wurundjeri Way extension in regard to achievement of the Project Objectives?

26. What functional role does the connection serve having regard to the Project's objectives; and what if any alternative options were considered to achieve the functional outcomes provided by the connection?
27. What if any, additional measures can be implemented to reduce potential negative amenity and economic impacts of the connection?

4 Visual Impacts, Urban Design and Landscape

1. Landscape

(i) Reference

Section 4.5 of the Development and Urban Design Plans states that 17,500 trees will be planted of which 4,000 will be advanced. The same section further states "A Landscaping Plan will be implemented that includes replacement of affected planted vegetation to achieve a canopy of equal (or greater) size of healthy, mature examples of the species".

Section 5.3.2 of Appendix N Technical report Landscape and visual states that "Following the establishment of amelioration planting, the residual visual impact would, in most instances, reduce to low." The same section later states "The level of visual impact would reduce as screening vegetation matures" (p36).

Multiple proposed operations plans in the EES Development and Urban Design Plans (for example plan 10 of 31) appears to indicate the area available for landscaping to mitigate the visual impact of the noise barrier from adjoining properties varies considerably along its length.

Appendix N Landscape and Visual appears to indicate (p54) that along part of the length of the project the mediating landscape is contained in a 2m wide strip between a retained noise barrier (2.5m high) and a proposed taller noise barrier (8.25m, itself atop a retaining wall). The landscaping plans in the EES indicates (sheet 11 Of 28) that the trees to be located in this area are described as "type 6 large native/indigenous tree mix".

(ii) Request

The IAC requests:

28. Estimates of long term survival rates of the landscape and assumptions upon which these estimates are based.
29. Estimates for the time until a canopy of equal (or greater) size of healthy, mature trees will be achieved.
30. Advice on the criteria for location of installation of choice of advanced or tube stock trees .
31. Identification of the width of the area between the noise barrier and existing residential properties that is available for landscaping along the length of the project.
32. Clarification that the understanding outlined in the last paragraph of section 4(1)(i) is correct.
33. If this understanding outlined in point 32 above is correct, how is the area to be landscaped to be accessed for maintenance.

2. Lighting

(i) Reference

Technical Appendix N section 5.3 states “The existing West Gate Freeway generally produces a glow visible from adjacent sensitive viewpoints, with lighting on tall poles shielded to prevent spill and hot spots. The proposed lighting of freeway landscape and barrier elements is not expected to result in a negative change to the setting.”

Technical Appendix N APPENDIX F – RECOMMENDED EPRs, Suggested EPR LVP3 states “Detailed design of the Works must minimise light spillage to protect the amenity of adjacent land uses to the extent practicable. The CEMP must include requirements and methods to minimise light spillage, to the extent practicable, during construction to protect the amenity of adjacent surrounding neighbourhoods, parks and community facilities including urban environments, in consultation with relevant stakeholders.” This EPR is indicated as applicable in the design and construction phase.

Technical appendix N section 5.2 states “New ramps connecting the West Gate Freeway to Hyde Street, designed with vertical fin balustrades over a simple elevated structure” and “Pedestrian bridges over the freeway at Rosala Street and Muir Street, clad with coloured perforated Metal” . Elsewhere it states "The design of the portals draws on a ‘netting or eel trap’ motif".

Sheet 46 of the conceptual urban design plans in the EES Development and Urban Design Plans Book indicate the proposed Veloway to be faced in perforated steel.

(ii) Request

The IAC requests:

34. Advice on any investigations into the potential health impacts of light spillage on surrounding properties in the operation phase.
35. Advice on any investigations into the potential for harmful perceived strobing effects for those passing through the Veloway or pedestrian bridges.

3. Shared Path

(i) Reference

Multiple proposed vertical alignment plans and operation plans in the EES Development and Urban Design Plans refer to an upgraded shared use path.

(ii) Request

The IAC requests:

36. Further explanation and detail of the features and proposed characteristics that make the proposed changes improvements.

4. Noise barriers

(i) Reference

Technical appendix F shows the shadows cast by the proposed freeway structures at 4 locations.

The EES Development and Urban Design Plans Proposed Construction Plans and the LVIA indicate Noise barriers at a variety of heights and suggests they may be aligned differently to the existing noise walls.

The EES map book, Sheet 6 of 17 of the indicative cross-sections indicates that the freeway will be elevated in the Spotswood area.

(ii) Request

The IAC requests:

37. An analysis of the shade cast into residential properties adjoining the southern side of the freeway post construction of the new noise barriers.
38. A plan indicating where the height or alignment of the barriers will differ from the existing situation, either because of a change in height or their location relative to adjacent residential areas.
39. Advice on any analysis of glare and radiant heat impacts on properties to the north of the noise barrier.
40. Indicative cross-sections of the project at Ferguson Street and Le Fevre Street.

5 Solid Waste and Contamination

1. Contaminated Soil and Spoil Management

(i) Reference

Technical Report B Contaminated Soil and Spoil Management.

(ii) Request

Technical Report B discusses options for the reuse and/or treatment of contaminated soil generated as part of the Project. The IAC requests:

41. Any identified environmental and/or human health risks that might reasonably arise from the management or reuse of contaminated soil and spoil and any information that may be available regarding how WDA/Project Co. proposes to manage/mitigate those risks.

2. Provision of Stockpiling Area

(i) Reference

Technical Report B Contaminated Soil and Spoil Management Chapter 6.2.2 page 49.

(ii) Request

The IAC requests:

42. Further information, if possible, of the location of the designated stockpile area for spoil prior to it being treated for disposal to an appropriate landfill. The IAC understand this to be located somewhere within the Project boundary.

3. Human Health – contaminated soil

(i) Reference

Technical Report B Contaminated Soil and Spoil Management Chapter 6.5.1 page 55.

(ii) Request

The IAC requests:

43. Further detail of what is meant by 'Minimal spoil is likely to be generated requiring management and exposure risks to human health can be managed by health and safety planning'. Does the WDA mean health and safety for its construction workforce or is the reference for a broader risk to the community which may require such measures?
44. Understanding of the health and safety measures proposed for the wider community.

4. Human health - odour

(i) Reference

Technical Report B Contaminated Soil and Spoil Management Chapter 8.5.1 page 104.

(ii) Request

The IAC requests:

45. Information on what the appropriate mitigation measures might be for offensive odours referred to in the above reference.

5. Asbestos

(i) Reference

Technical Report B chapter 6.5.1 page 55 and Environmental Performance Requirements (CPS2).

(ii) Request

The IAC requests:

46. That WDA consider the inclusion of an Asbestos Environmental Management Plan as described in Technical Report B, page 55.

6 Environmental Management Framework

1. Environmental management framework

(i) Reference

EES Main Report Volume 1, Chapter 8.3.1, table 8-1 Roles and responsibilities.

(ii) Request

The IAC requests:

47. Clarification of proposed governance arrangements and the management of environmental risks, in particular clarification around the role of the Independent Reviewer and the Environmental Auditor.
48. Further explanation of the process for monitoring and reporting of compliance with the EPRs including public reporting of monitoring reports, etc.

2. Planning scheme amendment, works approval application and associated documentation

(i) Reference

West Gate Tunnel Project Incorporated Document May 2017.

(ii) Request

The IAC requests:

49. Clarification as to whether the WDA considered other Incorporated Documents used recently for major projects such as the Melbourne Metro Rail Project and East West Link?
50. Advice as to whether consideration was given to including the EPRs in the Incorporated Document as opposed to referencing them.

7 Environmental Performance Requirements

1. Biodiversity

(i) Reference

Environmental Performance Requirements

(ii) Request

The IAC requests:

51. Consideration of an EPR for light spillage for potential impacts to fauna during the operation of the Project.
52. Consideration of an EPR for shading (>50%) on vegetation and native fauna habitats during the operation of the Project.

Appendix A: Groundwater Information Request

Reference number:	SH1
Advice from:	Stephen Hancock
Date of response:	5/7/2017
This advice is in response to request:	<p>From clause 3 of initiation letter of 29 June 2017:</p> <p><i>Provide a brief written statement to the IAC (a template will be provided) by Tuesday 11 July 2017 which contains, in dot point form, relevant to your expertise and within the scope of the IAC's Terms of Reference:</i></p> <ul style="list-style-type: none"> • <i>Identification of key issues; and</i> • <i>Requests for information from the Proponent, including points of clarification arising from your review of the EES material, which are necessary to inform your expert opinion on the key issues that you have identified.</i> <p><i>Please also note that any requests for information should be made in respect of key issues only and should be referable to the IAC's Terms of Reference.</i></p>

Identification of key issues and information requests

ID.	ISSUE	EES REFERENCE
SH1-A	<p>Construction Environment Management Plan</p> <p>The EES report involved a comprehensive and conservative investigation of environmental factors, management frameworks and performance criteria and options arising on the bases of the proposed project design preceding final design and construction environmental management plans. Additional investigations are to be undertaken to dictate the CEMP (Ref Sect 8.5 page 8.9 and table. 8-6, page 8-21).</p> <p>The IAC seeks advice as to:</p> <ol style="list-style-type: none"> a) The extent that existing and these additional investigations will be sufficient to finally describe the construction and environmental protection options that are alluded to in later EES document sections (vol 3 Sect 19.1 – 19.3 pages 19-1 to 19-66). b) What options of the construction procedures may still be managed by responsive actions such as changing the operational modes in tunnel boring and/or in the construction of cross tunnels, the excavation of the portals and dive structures and in the realignment works of the North Yarra Main Sewer)? c) Further, what occurrences may give rise to responsive management actions in construction procedures and how long might these actions take to implement. 	Main Report Volume 1, Section 8.1, Table 8.1, page 8-4

SH1-B	Contaminant Solubility and Natural Fixation Issues in Spoil and Waste Recycling and Containment	Main Report Vol 1, Table 4-1, Page 4-8 and Technical Report B, page 33.
<p>It is acknowledged that the project will generate contaminated spoil from the tunnel and from the portal works at least, and may disturb Potential Acid Sulphate Soils and contaminated fill and soils elsewhere. Under the EPA Waste Hierarchy Principles the options of containment and recycling are available. Given that the project will involve considerable use of cement in grouting operations, in tunnel lining, in piles and in road base stabilization, etc., the IAC seeks advice on:</p> <ul style="list-style-type: none"> a) The extent to which the use of contaminated and Acid Sulphate Soils materials have been considered as preferential sources of aggregate or as engineered (stabilised) fill where practicable. b) If not why have these options been overlooked? 		
SH1-C	Access to Investigation Data	Technical Reports C and D in Relation to Groundwater and Ground Movement
<p>The above referenced reports summarise the data obtained through the relevant investigations undertaken into the geology, groundwater hydrology and geotechnical parameters of the project area but do not include the actual data. The IAC requests access be made available to the following:</p> <ul style="list-style-type: none"> a) The specific details of the hydrological testing programs undertaken to evaluate the groundwater across the project area including the location, bore construction details and data plots analysed for the two pumping tests, the lugeon and slug testing as well as any observations of test inadequacies or failures which might have affected the constancy of the results. b) The lithological logs and any core photography of the groundwater bore holes tested c) The drilling techniques used in establishing the boreholes. d) The laboratory analyses of any water sampled from the above bores including data on depths, sampling techniques, dates and times of sampling. e) The plots of geophysical and geotechnical logging undertaken to characterise the geological sequences around the tunnel, portal and Stony Creek alignments of engineering significance. 		
SH1-D	Ground Vibration Subsidence Exacerbation	Technical report I and J, Section 3.4.2.5 page 26
<p>The issue of ground vibration giving rise to accelerated consolidation of soft sediments is not addressed, nor is the impact on ground vibrations as a consequence of the EPB TBM operating in fully closed mode using paste circulation. The IAC seeks comment on:</p> <ul style="list-style-type: none"> a) these above two aspects of tunnelling. b) what measures might be employed to mitigate or eliminate any adverse consequences of ground vibrations in respect to surface subsidence and possible local infrastructure or facility failure consequent therefrom. 		

SH1-E Construction Activity

Tunnels Vol. 1 Chapter 5.7.5

In Chapter 5.7.5, the basic controls proposed to prevent groundwater inflows and ground instability are the use of EPB TBM and pressure or jet mix grouting. These technologies are limited to pressures that are not disruptive of the overlying head space material and by the materials being penetrated at the cutting face of the tunnel or in the cross drives. The IAC seeks advice on:

- a) The extent to which the above issues are likely to cause delays in tunnel progression with formation sealing.
 - b) The extent to which mixed material cutting face profiles (eg. boulders in clay, hard materials overlain by soft) may be an issue and how such issues will be handled.
 - c) To what degree would the intersection of unforeseen steel cased vertical bore or other abandoned boreholes represent an impediment to tunnelling progress and to groundwater inflow control.
 - d) Whether changes to the cutting head mechanisms will be necessary (due to wear or changing face conditions) during the tunnel boring and if so, how often, how long would such maintenance take and what actions will be required to minimise groundwater inflows at the face while such procedures are carried out.
 - e) Whether the operation of the TBM in closed mode using paste represents a significant issue in spoil management at the surface.
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Appendix B: Noise and Vibration Information Request

Reference number:	DM1
Advice from:	Douglas A Munro
Date of response:	7 July 2017
This advice is in response to request:	<p>From clause 3 of initiation letter of 29 June 2017:</p> <p><i>Provide a brief written statement to the IAC (a template will be provided) by Tuesday 11 July 2017 which contains, in dot point form, relevant to your expertise and within the scope of the IAC's Terms of Reference:</i></p> <ul style="list-style-type: none"> • <i>Identification of key issues; and</i> • <i>Requests for information from the Proponent, including points of clarification arising from your review of the EES material, which are necessary to inform your expert opinion on the key issues that you have identified.</i> <p><i>Please also note that any requests for information should be made in respect of key issues only and should be referable to the IAC's Terms of Reference.</i></p>

Identification of key issues

ID.	ISSUE	EES REFERENCE
DM1-A	<p>Construction noise</p> <p>In relation to construction noise, I identify the following issues of interest:</p>	
	a) The appropriateness of the proposed construction noise objectives to limit noise at sensitive receptors.	Technical Report H {Noise and vibration (surface)} Appendix B, NVP 4, (pp. 296-298).
	b) The weight to be accorded compliance with construction noise objectives versus possible exceedances moderated with measures to manage those circumstances.	Technical Report H {Noise and vibration (surface)} 5.3.2.3 (p. 85)
	c) The decision making process for the above.	Technical Report H {Noise and vibration (surface)} 5.3.2.3 (p. 85).
	d) Noise monitoring at sensitive receptors to facilitate management decisions on construction noise control.	Technical Report H {Noise and vibration (surface)} See, for example p. 98.
	e) Noise from the construction of the tunnel dive structures, tunnel portals and cut-and-cover/tunnel boring machine launch and recovery sites, which, at the southern end, are both to be excavated in competent rock and one of which adjoins sensitive receptors.	Technical Report H {Noise and vibration (surface)} p. xi.

	<p>f) Possible cumulative and aggregate noise impacts from simultaneous construction activities.</p>	<p>Technical Report H {Noise and vibration (surface)} 3.7 (p.45).</p>
DM1-B	Construction vibration	
	<p>In relation to construction vibration, I identify the following issues of interest:</p>	
	<p>a) The appropriateness of the proposed construction vibration and regenerated noise objectives to limit amenity impacts and asset damage at sensitive receptors.</p>	<p>Technical Report H {Noise and vibration (surface)} Appendix B, NVPs 6.7.8 and 9, (pp. 298-300).</p>
	<p>b) Uncertainty in sensitivity of some assets to vibration and uncertainty of the actual vibration and regenerated noise levels that might result from some construction works.</p>	<p>Technical Report I {Vibration and regenerated noise (tunnel)} 3.4.2.4 (p. 25).</p>
	<p>c) The decision making process for varying vibration and regenerated noise objectives and determining management responses to vibration control.</p>	
	<p>d) Vibration and regenerated noise monitoring at sensitive receptors to facilitate management decisions on construction vibration control.</p>	<p>Technical Report I {Vibration and regenerated noise (tunnel)} 6.4.2 (p. 73).</p>
	<p>e) Asset condition surveys before, during and after vibration generating construction works to ascertain propensity for damage, actual damage, the response thereto, and any remedial actions. Note that condition surveys may also be required in those areas adjoining major excavation works where ground movement must be considered.</p>	<p>Technical Report I {Vibration and regenerated noise (tunnel)} 6.4.4 (pp. 73-74-75).</p>
	<p>f) The decision making process for managing asset integrity.</p>	
	<p>g) Possible cumulative and aggregate vibration impacts from simultaneous construction activities.</p>	<p>Technical Report H {Noise and vibration (surface)} 3.7 (p.45).</p>
DM1-C	Operational noise	
	<p>In relation to operational noise, I identify the following issues of interest:</p>	
	<p>a) Understanding of 'design year (2031)' insofar as that relates to operational traffic noise.</p>	<p>EES Main Report Volume 2 pp.13-65 for example.</p>
	<p>b) Adequacy of the proposed traffic noise objectives having regard to the likely increase in heavy vehicle traffic with the substantial expansion of container movements at the Port of Melbourne.</p>	<p>Technical Report H {Noise and vibration (surface)} Appendix B, NVP 1, (pp. 295-296).</p>
	<p>c) Compliance with the traffic noise objectives by monitoring after commissioning.</p>	<p>Technical Report H {Noise and vibration (surface)} 5.3.5.2 (p. 145) and Appendix B, NVP2, (p. 296).</p>
	<p>d) Demonstrating continuing compliance with the traffic noise objectives.</p>	<p>Technical Report H {Noise and vibration (surface)} 5.3.4.7 (pp. 140-141) for example.</p>

e)	Off reservation acoustic mitigation of sensitive receptors.	Technical Report H {Noise and vibration (surface)} 4.6.3 (p. 65).
f)	The continuity of the acoustic performance of low noise road surfaces (open graded asphalt).	Technical Report H {Noise and vibration (surface)} 3.4.2.1 (p. 37) and Appendix D (pp. 329-330).
g)	Impulsive vehicle noise (heavy vehicle engine brakes).	Technical Report H {Noise and vibration (surface)} 5.3.4.3 (p. 117).
h)	Traffic noise and open space, both existing and new.	Technical Report H {Noise and vibration (surface)} 5.3.4.4 (p. 122) for example.
i)	Predicted traffic noise at sensitive receptors at West Melbourne and Docklands.	Technical Report H (Noise and vibration (surface)) 7.3.4.2 (pp. 234-236) and 7.3.4.3 (pp. 236-237).
j)	Traffic noise at proposed development sites.	Technical Report H (Noise and vibration (surface)) 5.3.4.1 (p. 114) and 5.3.4.4 (p. 122).
k)	Noise from the tunnel ventilation structures.	Technical Report H (Noise and vibration (surface)) 6.3.4 (pp. 183-186).

Requests for information from the Proponent

ID.	INFORMATION REQUIRED	EES REFERENCE
DM1-D	<p>Technical Report H provides extensive analysis of construction noise and vibration impacts on sensitive receptors for individual construction activities. There does not appear to be an assessment of any composite effects. An affected sensitive receptor may be impacted in one or both of two ways; a cumulative impact if two or more construction activities are superimposed, and an aggregate one if impacts occur for a longer period over the project construction time than would be the case for a single one.</p> <p>The Proponent is asked to provide:</p> <p>a) an assessment of the likelihood and magnitude of possible cumulative impacts, if any, and typical estimates of aggregate impact.</p>	<p>Technical Report H {Noise and vibration (surface)}.</p> <p>See 5.3.2.4 to 5.3.2.11 (pp. 86-107), 6.3.2.4 to 6.3.2.9 (pp. 166-180) and 7.3.2.4 to 7.3.2.10 (pp. 215-228) as discussion of impacts from individual activities; and</p> <p>Technical Report H {Noise and vibration (surface)} 3.7 (p.45) and Appendix E (p.335).</p>

DM1-E	<p>Technical Report I presents information on surface vibration and associated regenerated noise from the tunnel boring. It is silent on any vibration and regenerated noise that might arise from further construction activities to prepare the tunnels for use. Specifically, can the Proponent advise:</p> <p>a) if spoil is to be returned to the tunnel inverts to support the carriageways and compacted by vibratory roller might vibration at the surface occur?</p>	<p>Technical Report I {Vibration and regenerated noise (tunnel)}.</p>
DM1-F	<p>Environment Performance Requirement NVP6 for construction vibration targets for amenity protection provides ‘<i>preferred values</i>’ and ‘<i>maximum values</i>’. The Proponent is asked to:</p> <p>a) nominate which it proposes as the single target.</p> <p>b) provide these vibration dose values (VDVs) as the equivalent peak particle velocities (PPVs) to facilitate managing this effect.</p>	<p>Technical Report I {Vibration and regenerated noise (tunnel)}.</p> <p>See 4.3.4.1 (p. 54) and Appendix B (p. 298).</p>
DM1-G	<p>The operational traffic noise assessment refers to the ‘<i>design year</i>’ of ‘2031’. This appears to be target year out to which compliance with the traffic noise objective would be achieved. The Proponent is asked to:</p> <p>a) confirm the understanding of the term, advise of its’ origin for this EES and why 2031 has been selected.</p>	<p>See, for example EES Main Report Volume 2 pp. 13-65.</p>
DM1-H	<p>The Proponent is asked to:</p> <p>a) advise whether there will be a single ‘owner’ or ‘operator’ of the asset after it is delivered in ensuring continuing compliance with traffic noise objectives and maintaining the performance integrity of noise mitigation measures (i.e. noise barriers, low noise road surface); in particular for the West Gate Freeway section from Grieve Parade to Williamstown Road, the northern portal/Maribyrnong River bridge area and the West Melbourne/Docklands locality. It is noted that the role of the Independent Reviewer and Environmental Auditor ceases two years after project completion.</p>	<p>The WDA is the proponent for the EES (EES Main Report Volume 1 p. ES-2), the delivery partner for the project is ‘Project Co’ (EES Main Report Volume 1 p. ES-2), and advice is that the Reviewer will be in place for two years after project delivery.</p>
DM1-I	<p>Technical Report H provides contours for operational traffic noise in several figures, often double sided. There are gaps in the coverage. To enhance understanding of this impact the Proponent is asked to:</p> <p>a) provide a single sided figure(s) for each of the three conditions presented (for project in design year 2031, changes between existing 2016 and project in design year 2031, and changes from no project in 2031 versus project in that year). These should display the traffic noise contours for the project not necessarily including the tunnels but including the dive structures and portals.</p>	<p>Technical Report H {Noise and vibration (surface)}</p> <p>See Figures 14 to 28 (pp. 124-128 and 130-139) and 34 to 40 (pp. 238-240 and 242-245).</p>
DM1-J	<p>Melbourne has four road tunnel ventilation stacks. It is expected that all or some would have had to meet the requirements of SEPP N-1. If information is available the Proponent is asked to:</p> <p>a) advise by what margin they meet statutory noise requirements.</p> <p>b) whether noise from them has been the subject of complaint.</p> <p>c) if the proposed West Gate Tunnel ventilation systems are proposed to use similar noise control technology.</p>	<p>Technical Report H {Noise and vibration (surface)}</p> <p>See 6.3.4 (pp. 183-186).</p>

DM1-K	<p>The assessment of noise from the tunnel ventilation systems using SEPP N-1 requires background noise data to determine the statutory requirements. These new noise sources are not introduced against a stable acoustic background, but rather, there will be a concomitant noise change from traffic with the opening new roads. The Proponent is asked to:</p> <p>a) advise on any consequence of this in ensuring compliance with SEPP N-1.</p>	Technical Report H (Noise and vibration (surface)) See 6.3.4 (pp. 183-186).
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Appendix C: Health Impact Assessment Information Request

Reference number:	LD1
Advice from:	Lyn Denison
Date of response:	14 July 2017
This advice is in response to request:	<p>From clause 3 of initiation letter of 29 June 2017:</p> <p><i>Provide a brief written statement to the IAC (a template will be provided) by Tuesday 11 July 2017 which contains, in dot point form, relevant to your expertise and within the scope of the IAC's Terms of Reference:</i></p> <ul style="list-style-type: none"> • <i>Identification of key issues; and</i> • <i>Requests for information from the Proponent, including points of clarification arising from your review of the EES material, which are necessary to inform your expert opinion on the key issues that you have identified.</i> <p><i>Please also note that any requests for information should be made in respect of key issues only and should be referable to the IAC's Terms of Reference.</i></p>

Identification of key issues

ID.	ISSUE	EES REFERENCE
LD1-A	Technical Appendix J presents the findings of a Health Impact Assessment (HIA) conducted for the project. Section 4 identified the key legislation and guidance to conduct a HIA in Australia. It is not clear from the methodology presented in Technical Appendix A how the requirements of the enHealth guidance and CHETRE (Harris, 2007) requirements for a HIA have been met. These documents establish the framework for conducting HIAs in Australia.	Technical Appendix J. p 31 and section 3 p18 – 30.
LD1-B	Socioeconomic status (SES) is a factor that makes people more sensitive to the health effects of both air pollution and noise. Although Table 5.3 of Technical Appendix J identified the variability in SES across the project area, including some areas of low SES, the HIA and associated conclusions have been drawn for the study area as a whole and the impacts on these more vulnerable areas have not been evaluated or discussed.	Technical Appendix J, p49

LD1-C	The health effects of NO ₂ are a very small subset of the health effects attributable to NO ₂ that have been identified by a range of national and international agencies including NEPC. On p90 of Technical Appendix J it is stated that the health impacts of NO ₂ have been taken from Golder 2013 however the Golder report consider a much broader range of health effects. Further justification of the health endpoints used for NO ₂ is required including clarification on the age groups assessed. Further analysis of the impact of NO ₂ from the project on the more sensitive health indicators – hospital admissions for respiratory disease in people 65+ years of age and 15-64 years of age and hospital admissions for cardiovascular disease in people 65 + years of age should be undertaken.	Technical Appendix J p90.
LD1-D	The health effects of PM ₁₀ and PM _{2.5} have been assessed using international dose-response relationships rather than the more recent Australian data. This is inconsistent with Australian guidance from NEPC (2011) and NHMRC (2006). This may lead to an underestimation of the health effects.	Technical Appendix J Table 6.13 p 104
LD1-E	The health risk assessment for NO ₂ , PM ₁₀ and PM _{2.5} short-term health effects have been calculated using data from the air quality assessment however it is not clear which scenario has been used and no sensitivity analysis for the different air quality scenarios has been presented. This needs to be clarified.	Technical Appendix J Sections 6.8 and 6.9.
LD1-F	The short-term health effects associated with NO ₂ , PM ₁₀ and PM _{2.5} have been calculated using long-term annual average concentrations rather than daily changes. The dose response relationships have been determined for daily changes in pollutant levels not annual averages. This will underestimate the potential health effects associated with short-term daily exposures.	Technical Appendix J Appendices F and G.
LD1-G	It is unclear how population growth has been included in the predicted health impacts for 2022 and 2031. This requires clarification.	Technical Appendix J Section 6.8 and 6.9
LD1-H	The health effects associated with noise that have been assessed in the HIA do not include all the health effects identified by the WHO (1999, 2011). There are a large number of recent studies (2015-2017) that have identified the association between road traffic noise and cognitive function in both adults and children but this information has not been considered in the HIA and cognitive function has not been assessed. A review of the more recent studies or further justification for not considering this health outcome is required.	Technical Appendix J Section 7.4.2
LD1-I	The NSW Road Traffic Noise guidelines have been used to assess the potential health impacts of noise rather than the WHO community noise guidelines. There is no discussion in the HIA as to why the WHO guidelines, which are health based guidelines, have not been assessed. This should be included and a sensitivity analysis conducted using the WHO guidelines.	Technical Appendix J page 133.
LD1-J	Sleep disturbance is associated using Lnight which is an annual average of the night time noise values. It is unclear from the HIA what indicator has been used and clarification is required.	Technical Appendix J Section 7.4.3

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ID.	INFORMATION REQUIRED	EES REFERENCE
LD1-K	Further information on the requirements of the enHealth and CHETRE guidance and how they have been met in the HIA is required. This includes the Level of HIA as set out on the above guidance for a project of this type and how the HIA has met those requirements.	Technical Appendix J. p 31 and section 3 p18 – 30.
LD1-L	An assessment should be conducted on the impact of both noise and air pollution on the low SES areas within the project area is required. This can be qualitative or quantitative if possible to enable an assessment on these more vulnerable groups.	Technical Appendix J, p49
LD1-M	Further justification is required on the health effects assessed in the NO ₂ health risk assessment and why it differs from the health outcomes assessed by Golder (2013). The Golder report assesses short-term all-cause mortality for all ages consistent with the epidemiological studies from which the dose response relationships have been derived but the HIA only considers the 30+ age group. This difference needs to be clarified and justified as required. Recent recommendations from WHO (2013) and COMEAP (2015) recommend assessment of long-term all-cause mortality of NO ₂ this should be included or justification as to why it is excluded is required. The health risk assessment should be expanded to include a quantitative assessment of the impact of NO ₂ from the project on the more sensitive health indicators – hospital admissions for respiratory disease in people 65+ years of age and 15-64 years of age and hospital admissions for cardiovascular disease in people 65 + years of age should be undertaken.	Technical Appendix J p90.
LD1-N	Justification on using overseas dose response data for PM ₁₀ and PM _{2.5} rather than more Australian data is required. A sensitivity analysis for the short-term effects using the Australian data, which includes studies conducted in Melbourne, should be included.	Technical Appendix J Table 6.13 p 104
LD1-O	The short-term effects of NO ₂ , PM ₁₀ and PM _{2.5} need to be assessed using the daily changes in air pollution data not the annual averages. The impacts of using the long-term data to assess short-term daily changes in health needs further assessment.	Technical Appendix J Appendices F and G.
LD1-P	Further clarification on what air quality scenario data is required. If the worst case – maximum capacity - has not been used then the analysis should be repeated with this data or a discussion on the potential impact on the predicted health outcomes using this data is required.	Technical Appendix J Sections 6.8 and 6.9.
LD1-Q	Further clarification on how population growth has been included in the predicted health risk is required.	Technical Appendix J Section 6.8 and 6.9
LD1-R	Justification of the health outcomes that have been used in the noise HIA is required. This should be based on the recommendations of WHO and the recent published studies on the health effects of road traffic noise. The assessment should include the most vulnerable groups or justification as to why this is not appropriate for this Project.	Technical Appendix J Section 7.4.2
LD1-S	Justification of the use of the NSW Road Traffic Guidelines over the WHO Community Noise Guidelines for the assessment of health impacts is required.	Technical Appendix J page 133.

LD1-T	Clarification of the noise metric used in the assessment of sleep disturbance is required. If the annual average Lnight value has not been used then the impact on the HRA outcomes needs discussion.	Technical Appendix J Section 7.4.3
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Appendix D: Air Quality Information Request

Reference number:	LD2
Advice from:	Lyn Denison
Date of response:	14 July 2017
This advice is in response to request:	<p>From clause 3 of initiation letter of 29 June 2017:</p> <p><i>Provide a brief written statement to the IAC (a template will be provided) by Tuesday 11 July 2017 which contains, in dot point form, relevant to your expertise and within the scope of the IAC's Terms of Reference:</i></p> <ul style="list-style-type: none"> • <i>Identification of key issues; and</i> • <i>Requests for information from the Proponent, including points of clarification arising from your review of the EES material, which are necessary to inform your expert opinion on the key issues that you have identified.</i> <p><i>Please also note that any requests for information should be made in respect of key issues only and should be referable to the IAC's Terms of Reference.</i></p>

Identification of key issues

ID.	ISSUE	EES REFERENCE
LD2-A	The background data used for the air quality assessment was for the years 2009-2013. This data may not be representative of current air quality in the area. Data for 2011-2015 is available for Footscray but wasn't used. Data for Brooklyn for PM10 and PM2.5 is also available but wasn't used for the Brooklyn area.	Technical Appendix J. p 31 and section 3 p18 – 30.
LD2-B	The normal operation of the tunnel has been modelled as 2 lanes. The SEPP (AQM) design criteria are 1-hour averaging periods and are assessed against the worst case operating conditions. For the tunnel, the most likely worst-case emission scenario would be 3 lanes at capacity with congested traffic for a 1-hour period which is likely to occur in peak conditions and does happen in existing tunnels in Victoria. The use of 2 lanes will underestimate the worst - case scenario.	Technical Appendix G p93
LD2-C	The study area for the impacts from the ventilation stacks has been defined a 1 km from the proposed location of the stack. No discussion or detailed justification of this has been provided. However, on p122 it is noted that impacts were predicted at 2 km from the stack location.	Technical Appendix G p34

LD2-D	The NPI data has been used to assess the emissions from motor vehicles and non-motor vehicle related sources in the project area. The motor vehicle emission factor handbook is dated 2008. The diffuse emission data in the NPI has not been updated since 2005. A discussion of the relevance of this data for the projected years is required. In particular, how the changes to the Australian Design Rules for motor vehicles and heavy-duty vehicles and the associated fuel quality changes that have been adopted or proposed needs to be discussed and made transparent in the assumptions on the motor vehicle emission factors for 2022 and 2031. The recent work done by the Commonwealth on ADRs and changes to the Fuel Quality Act include information relevant to this assessment but have not been referred to.	Technical Appendix G p46, p97
LD2-E	It is generally accepted that motor vehicle emissions are predominantly PM _{2.5} however the predicted ground level concentrations of PM ₁₀ and PM _{2.5} from the project alone do not reflect that. Further discussion is required to explain this result.	Technical Appendix G p 110-120
LD2-F	In Table 36 the traffic volumes do not add up. The sum of all vehicle classes does not always equal the 'all' category in the tables. These tables need to be checked and confirmation of the correct numbers and what was used in the modelling provided.	Technical Appendix G, p 93-94
LD2-G	The motor vehicle data has been taken from the 2012 motor vehicle census data. Is there more recent data? How does this data compare with the data in the recent Commonwealth documents? Further discussion on the uncertainty in the use of this data taking into account of proposed changes to Australian Design Rules and associated fuel quality changes is required. The percentage of HCV appears to be low.	Technical Appendix G, p Figures 50 and 51.
LD2-H	For the surface roads it is stated on p140 that non-tail pipe emissions such as tyre and brake wear and re-intrained road dust have not been included. These are significant sources of PM ₁₀ and their exclusion will under predict the PM ₁₀ concentrations. The intervention levels have been used to assess the surface road modelling. The intervention levels are to be used to assess all sources of pollution therefore the non-tail pipe emissions should have been included.	Technical Appendix G, p140
LD2-I	The surface road modelling for Hyde St states that there is a 100% increase in HCV predicted with the project however the predicted PM ₁₀ and PM _{2.5} concentrations in Table 7.5.4 decrease. This result is counterintuitive. Clarification on this modelling and further discussion on this result is required.	Technical Appendix G p167
LD2-J	There has been no modelling done for the construction phase of the project and no detailed discussion of the potential impacts on air quality. There is some discussion on increased traffic movements for trucks on local roads including a significant number on Williamstown Road, Hyde St, Hudson's Road and Francis St. The impact of this increased truck traffic should have been assessed given the number of sensitive receptors in those locations.	Technical Appendix G, p 13-14, p242-244

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ID.	INFORMATION REQUIRED	EES REFERENCE
LD2-K	Further discussion on the selection of background data is required. As with PM _{2.5} a sensitivity analysis with the 2015 should be provided for both tunnel and surface roads. A sensitivity analysis for the Brooklyn area including Millers Road should be done using the Brooklyn PM data.	Technical Appendix G, p49-77
LD2-L	The modelling of 2 lanes as normal operation needs to be reconciled with the SEPP (AQM) requirement for modelling of worst case emissions. It is accepted that it is unlikely that the tunnel will operate 24 hours a day at full capacity however as with CityLink it is likely that there will be hours in the day that the tunnel is a full capacity under normal operating conditions. This scenario needs to be assessed to show compliance with SEPP (AQM) for the tunnel operation.	Technical Appendix G p93
LD2-M	Further information on the rationale and justification of the 1 km impact zone for the emissions from the ventilation stack is required.	Technical Appendix G p34
LD2-N	Further discussion on the use of the NPI and PIARC data and how that has taken into account changes in Australian Design Rules and fuel quality is required. The impact of any changes that are not reflected in the emission factors used needs to be discussed.	Technical Appendix G p46, p97
LD2-O	Further discussion on the ratio of PM _{2.5} to PM ₁₀ in the predicted ground level concentrations is required as they do not reflect the high percentage of PM _{2.5} from motor vehicle exhausts.	Technical Appendix G p 110-120
LD2-P	The traffic data in Tables 36 needs to be checked and clarification as to what has actually been used in the air quality modelling provided.	Technical Appendix G, p 93-94
LD2-Q	Further information on the validity of the 2012 census data is required. Comparison with data from the most recent Commonwealth reports on changes to the Australian Design Rules and Fuel Quality Act should be included where possible.	Technical Appendix G, p Figures 50 and 51.
LD2-R	Further modelling of the surface roads including non-tail pipe emissions should be undertaken. If modelling is not undertaken then an assessment of the potential impact on predicted concentration of PM ₁₀ should be included.	Technical Appendix G, p140
LD2-S	The surface road modelling for Hyde St for PM ₁₀ and PM _{2.5} needs to be clarified as to why a 100% increase in HCV leads to a decrease in predicted PM ₁₀ and PM _{2.5} concentrations. Further discussion is required.	Technical Appendix G p167
LD2-T	Modelling should be conducted for the increase in construction vehicles using the local roads in particular Hyde St and Francis St. If this is not possible then the potential impacts of this traffic needs to be discussed in detail and mitigation measures proposed.	Technical Appendix G, p 13-14, p242-244