

In the matter of the Metro Tunnel

Planning Panels Victoria

Proponent: Melbourne Metro Rail Authority

**Expert Witness Statement of
Shane Lakmaker**

Expert of Melbourne Metro Rail Authority

1 Name and address

This Expert Witness Statement has been prepared by Shane Lakmaker, Atmospheric Scientist, Jacobs Group (Australia) Pty Ltd of 710 Hunter Street Newcastle West. I was engaged by Melbourne Metro Rail Authority (MMRA) to prepare this Witness Statement in relation to the Melbourne Metro Rail Project (the Project), and in accordance with Planning Panel Victoria's *Guide to Expert Evidence*. I have read and followed the *Guide to Expert Evidence* in preparing this document.

2 Qualifications and experience

I hold the degree of Bachelor of Technology, majoring in Atmospheric Science.

For the past 17 years I have worked as a consultant in the private sector with specific focus on the assessment of air quality. Some recent and relevant projects have included:

- Technical reviewer of the air quality assessment for the Sydney Metro Chatswood to Sydenham Project.
- Air quality assessment of the proposed Lower Hunter Freight Corridor.
- Technical reviewer of the air quality assessment for the proposed Brisbane Cross River Rail Project.
- Air quality assessment of the Wambo and United Open Cut Coal Project.

Annexure A contains a statement detailing my qualifications and expertise and addressing the matters set out within Planning Panels Victoria's *Guide to Expert Evidence*. Annexure B includes a copy of my Curriculum Vitae.

3 Scope

3.1 Role in Preparation of the EES

My firm, AJMJV, was responsible for the preparation of the technical report titled "Air Quality Impact Assessment" (dated 20 April 2016) which is included as Technical Appendix H to the EES, hereafter referred to as the "Technical Report". The Technical Report was prepared by my colleague, Mr Greg Simes (Environmental Scientist).

My role was as a Technical Reviewer. This involved reviewing a draft version of the Technical Report prior to submission to MMRA. More specifically I checked the emission calculations and checked that the methods of assessment were consistent with EPA assessment approaches. I also checked that the findings were consistent with the results from the quantitative modelling and investigations. A draft version of the Technical Report was also reviewed by Dr Matthew Pickett (Atmospheric Scientist), of AJMJV. Dr Pickett's role was as a second Technical Reviewer. Review comments from Dr Pickett and myself were incorporated by Mr Simes in the final version of the Technical Report.

A third party peer review of the Technical Report was provided by Damon Roddis of Pacific Environment Limited. Peer review comments were adopted by Mr Simes prior to finalising the Technical Report. The final peer review letter (dated 21 April 2016) stated that:

- *“AJM has adequately addressed the Environment Effects Statement (EES) Scoping Requirements that are relevant to air quality issues in the P5.1 Air Quality Impact Assessment report. Further, it is anticipated that the P5.1 AQ Assessment may be relied upon for the development of appropriate mitigation strategies during the construction phase of the project.”*

In December 2015 I was involved in presenting to the TRG on the air quality impact assessment.

3.2 Instructions

I have been engaged by MMRA to prepare this Expert Witness Statement in response to the instructions of Herbert Smith Freehills. The instructions for preparation of this Expert Witness Statement were to:

- Address the Technical Report and outline my opinions on the report findings.
- Address the public submissions.
- Respond to the Panel further questions.
- Review the Environmental Performance Requirements.

The instructions of Herbert Smith Freehills were received in writing on 5 August 2016 and a copy of these instructions is provided in Annexure C.

3.3 Process and Methodology

I undertook the following tasks in preparing this Expert Witness Statement:

- Reviewed the Technical Report and documented my opinions on the report findings.
- Obtained a copy of all submissions which had reference to the air quality impacts of the Project. As of 5 August 2016 there were 91 relevant submissions.
- Reviewed each submission and provided a response to each submission (or group of submissions where similar comments were raised), with consideration of the findings from the Technical Report.
- Obtained a copy of the Panel's further questions and documented my responses.
- Reviewed the Environmental Performance Requirements and documented any changes.

4 Findings

4.1 Summary of Opinions

I have reviewed the Technical Report (Technical Appendix H to the EES) in preparing this expert witness statement. The Technical Report documented the outcomes of the air quality impact assessment. In summary, the assessment involved:

- Reviewing air quality monitoring data to identify any existing issues in terms of non-compliances with the air quality objectives noted by the Environment Protection Authority (EPA) Victoria.
- Obtaining Project information from MMRA, including proposed construction activities, and carrying out a risk assessment to identify the areas with the highest potential to cause adverse air quality impacts to sensitive locations.

- Quantifying the potential air quality impacts of the highest risk areas using an air dispersion model approved by EPA Victoria, and with consideration of existing air quality levels.
- Developing the Environmental Performance Requirements, based on the model results, to minimise the potential for adverse air quality impacts.

The risk assessment identified three construction sites with a high air quality risk rating; Arden Station precinct, Domain Station precinct, and Fawkner Park. Air dispersion modelling was carried out for these sites using truck movement, spoil handling and other data necessary to calculate emissions. These Project data were provided by MMRA. The modelling showed that air quality objectives could be achieved at off-site sensitive receptor locations. This constituted a sound basis to infer that compliance with air quality objectives could be achieved at all other construction sites given the lesser quantities of spoil that would be generated and handled at these locations.

The modelling relied most significantly on estimated truck movements, areas of exposed construction worksites and spoil handling data, formulated in respect of the Concept Design. At this stage it is also not possible to predict exactly how construction activities will occur on a day-to-day basis during the construction of the project. This will depend on the procedures adopted by the construction contractor(s). Given this potential variability between the modelled and actual activities the assessment therefore concluded that it will be important to clearly define the way in which emissions to air will be managed from activities at each construction site. Therefore, one of the key Environmental Performance Requirements was to define how emissions will be managed by developing and implementing plan(s) for dust management and monitoring.

Save where otherwise indicated I adopt the Technical Report as the basis of my evidence before the Inquiry and Advisory Committee.

4.2 Any Additional Work Undertaken Since Exhibition of EES

AJMJV is developing a specification for air quality monitoring, focussing on existing background air quality at the Arden Station precinct. Development of this specification is currently in progress. It is anticipated that background air quality monitoring will commence in August 2016. No data from this monitoring program were available in this respect as at the date of this Witness Statement.

4.3 Response to Submissions

I have obtained a copy of all submissions which had reference to the air quality impacts of the Project. As of 5 July 2016 there were 91 relevant submissions. All of these submissions have been reviewed. My detailed response to the matters raised in these submissions is set out in Annexure D.

4.4 MMRA Technical Notes

I have reviewed MMRA Technical Notes 1 to 18. Technical Note 3 and Technical Note 16 are relevant to the potential air quality impacts of the Project.

Technical Note 3 explains why dust dispersion modelling was not carried out for the Eastern Portal Precinct. The information in Technical Note 3 does not give rise to a need to modify any of the proposed Environmental Performance Requirements in relation to air quality.

Technical Note 16 explains that the use of Fawkner Park is no longer required to launch and retrieve TBMs to develop the southern sections of the Melbourne Metro rail

tunnels. This means that only the Domain site will be required for the southern TBM launch site. The potential air quality impacts of the Domain site only, and the alternative option of using both the Domain and Fawcner sites were assessed in Section 13 of the Technical Report. Section 13.5.1 of the Technical Report addressed the use of the Domain site only and Section 13.5.2 addressed the concurrent use of the Domain and Fawcner sites. The information in Technical Note 16 means that the assessment provided in Section 13.5.2 of the Technical Report is now no longer applicable. This change does not give rise to a need to modify any of the proposed Environmental Performance Requirements in relation to air quality.

4.5 Review of Panel Further Questions

Section 6 of the IAC's "Preliminary Matters and Further Information" request (dated 25 July 2016) seeks further information on five items in relation to air quality. Responses to these items are provided below.

Item no.	IAC request	Response
22	<i>whether there is any baseline information as to asbestos fibres within the general air space from the current EPA Richmond and Footscray air monitoring stations (within dust particulates) available for review</i>	The EPA does not collect information on asbestos fibres in their air quality monitoring network. The EPA focusses on substances in the air which have been determined as general indicators of air quality.
23	<i>the potential for adverse effects on air quality due to asbestos fibre in air (associated in dust particulates) as a consequence of the project</i>	The air quality impact assessment has assumed that asbestos containing material will be identified and managed in accordance with the "Code of Practice for the Management and Control of Asbestos in Workplaces" (NOHSC 2005) to prevent airborne asbestos fibres and exposure. It has therefore been assumed that there will be no asbestos fibres in air (associated in dust particles) and therefore no adverse effects.
24	<i>whether there are monitoring plans, and if so, detail those plans, to conduct baseline and ongoing air quality studies for the Project, at nominated tunnel spoil disposal locations, once these off-site locations are known</i>	A specification for air quality monitoring at potential spoil disposal locations is currently being developed based on the outcomes of the Technical Report. It is anticipated that the monitoring will include: <ul style="list-style-type: none"> - Dust deposition monitoring, to measure dust fallout levels before, during and after construction, at key construction sites. - Real-time PM₁₀ monitoring during the construction period, to allow construction contractors to respond to any elevated levels which may be due to their activities.
25	<i>further information that supports the contention that thermal emissions associated with the venting of heat from such tunnels and stations represents a low risk</i>	Temperature and heat are not routinely measured from ventilation outlets associated with rail tunnels during construction or operation. The determination of thermal emissions as a low risk was therefore guided by information from motor vehicle tunnels. A recent Environmental Impact Statement for the WestConnex Project (major motorway project in Sydney) provided data on the diurnal variations in temperature from ventilation outlets (WestConnex Delivery Authority 2015). These data showed that temperature from the outlets varied from in the order of 5°C below ambient (when the temperature was high, around 30°C) to in the order of 10°C above ambient (when the temperature was low, around 6°C). These temperatures variations were derived for motor vehicle tunnels, where heat from combustion engines is involved. Therefore the data are conservative estimates for ventilation of tunnels serving electric trains. Based on this information the variations in temperature from ambient levels will not cause ambient temperatures in the vicinity of the ventilation outlets to vary beyond the natural ambient temperature ranges in Melbourne. Consequently the


		thermal emissions associated with venting of heat was given a low risk rating.
26	<i>examples of monitoring and management measures for thermal emissions that have been implemented for similar existing projects</i>	Temperature and heat are not routinely measured from ventilation outlets associated with rail tunnels during construction or operation. This is because, as noted above, thermal emissions associated with venting of heat are not known to cause ambient temperatures in the vicinity of the ventilation outlets to vary beyond the natural surrounding ambient temperature ranges.

4.6 Environmental Performance Requirements

I have reviewed the EPRs relevant to air quality. I consider these EPRs to establish an appropriate framework to govern the construction and operation of the Project if it ultimately differs from the Concept Design.

5 Declaration

I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.

Signed  ...
Dated11 August 2016

Annexure A – Response to PPV Guide to Expert Evidence

Expert’s Qualifications

Bachelor of Technology (Atmospheric Science)

Professional Associations

Member, Clean Air Society of Australia and New Zealand

Committee Member of the Hunter Sub-branch of the Clean Air Society of Australia and New Zealand

Employment History and Achievements

2013 to present: Jacobs, Senior Associate (Air Quality)

2008 to 2013: Sinclair Knight Merz (SKM), Senior Atmospheric Scientist

1998 to 2008: Holmes Air Sciences, Environmental Scientist

Expertise to Make Report

Over 17 years’ experience in the environmental field with specific expertise in air dispersion modelling and air quality assessment.

Other Significant Contributors to the Report (if any)

Mr Greg Simes (report author) and Dr Matthew Pickett (Technical Reviewer).

Instructions to Prepare Report

Details in letter dated 5 August 2016 from Herbert Smith Freehills, refer to Annexure C.

Identity of Persons who have Carried out Tests or Experiments upon which Reliance has been Placed (if any)

Mr Greg Simes of AJMJV

Reports Relied Upon to Prepare Expert Witness Statement

AJMJV (2016) “Air Quality Impact Assessment”. Technical Appendix H to the Melbourne Metro Rail Project EES. Document number MMR-AJM-PWAA-RP-NN-000819. Dated 20 April 2016.

WestConnex Delivery Authority (2015) “WestConnex M4 East, Air Quality Assessment Report, 4 September 2015”. Prepared for Westonnex Delivery Authority by Pacific Environment Limited.

Annexure B – Curriculum Vitae



Shane Lakmaker

AIR QUALITY

Summary of competencies

Shane obtained a Bachelor of Technology (Atmospheric Science) degree from Macquarie University in 1997 and is a Senior Associate (Air Quality) with Jacobs. He has over 17 years' experience in the environmental field with specific expertise in air dispersion modelling and air quality assessment, meteorology, greenhouse gas inventories and software development.

Shane has experience in a range of industry sectors including open cut and underground mining, power generation, transport infrastructure (roads, motorways and tunnels), waste management, and wastewater treatment. He is experienced in the use of a wide range of meteorological and air dispersion models (MM5, TAPM, CALPUFF, AERMOD, AUSPLUME, ISC, EDMS, CALINE, TAPM-CTM) and has installed over 30 meteorological stations.

Areas of Expertise

- Air quality assessment and dispersion modelling
- Meteorology
- Greenhouse gas inventories
- Software development

Selected experiences

- Air quality impact assessments for over 100 mining projects. These assessments involved the preparation of dust emission inventories, analysis of air quality monitoring data, meteorological data collection and air dispersion modelling for open-cut and underground mines.
- Air quality impact assessments for several major roadway projects in Australia including Brisbane North South Bypass Tunnel (EIS), Brisbane Airport Link Tunnel (EIS), Brisbane Northern Link Tunnel (EIS), Cross River Rail, Sydney Cross City Tunnel (EIS), Sydney Lane Cove Tunnel (EIS), M4 East Tunnel (Concept Design), and F3 to M2 (Concept Design).
- Air quality impact assessments for rail infrastructure projects including Maldon to Dombarton Rail Link, Cross River Rail, Lower Hunter Freight Corridor.
- Developed and implemented site-specific meteorological, dust and noise forecasting systems. This system was the winner of the 2013 NSW Minerals Council Environment & Community Excellence Award.
- Audits of air quality compliance with approval conditions at mining operations, landfills, coal terminals.
- Air quality assessment for the Brisbane Airport New Parallel Runway and Melbourne Airport Third Runway.
- Odour impact assessments for wastewater treatment plants (over 50).
- Odour impact assessments for waste treatment and composting facilities.
- Developed the Jacobs greenhouse gas activity and emissions management system, known as CarbonEasy™. CarbonEasy™ provides a simple interface between the activities of an organisation

EDUCATION/QUALIFICATIONS

Bachelor Technology (Atmospheric Science), 1997 Macquarie University, NSW.

MEMBERSHIPS AND AFFILIATIONS

Member of the Clean Air Society of Australia and New Zealand

CURRENT POSITION AND HISTORY

Senior Associate (Air Quality)

2013 to present: Jacobs

2008 to 2013: SKM

1998 to 2008: Holmes Air Sciences (now Pacific Environment Limited)

Shane Lakmaker

AIR QUALITY

- and its reporting requirements (compliance, legislative, and internal).
- Air quality assessments for power generation projects including ENAP Refinery Cogeneration and Combined Cycle Project (Chile), Latrobe Valley Air Quality Control Region, Yallourn CCGT Power Station Project, Mt Piper Power Station Extension Project, Muja AB Power Station (Collie Region of WA). Modelling was undertaken using CALPUFF and TAPM, Munmorah power station OCGT, BlueScope Illawarra Co-generation Project (ICP) and others.
- Management of long-term dust monitoring programs.
- Installation and management of more than 30 weather stations around Australia, including data analysis, verification and monthly reporting.
- Peer reviews of air quality impact assessments.
- Expert Witness in proceedings for Land and Environment Court, Independent Hearing and Assessment Panel, Commission of Inquiry, and Planning and Assessment Commission.

Published Papers

- Holmes K T and Lakmaker S (2000), "Queensland Cattle Feedlot Guidelines Revisited", Proceedings of Enviro 2000 Conference, Sydney 9-13 April 2000.
- Holmes K, Lakmaker S, Lott S and Patricks R (2003), "Accounting for feedlot management practices in odour dispersion modelling", Proceedings of National Clean Air Conference, Newcastle, 23-27 November 2003.
- Cox J, Holmes K, Lakmaker S, Beyers C, Richardson C, Lilley W and Camamo M (2007) "An Air Quality Screening Tool for Roadway Analysis", Proceedings of the 14th IUAPPA World Congress, Brisbane, QLD, September 2007.
- Holmes N and Lakmaker S (2007) "The Performance of Dispersion Models in Predicting Maximum 24-hour PM10 concentrations from Open Cut Mines", Proceedings of the 14th IUAPPA World Congress, Brisbane, QLD, September 2007.
- Holmes N, Lakmaker S and Richards A (2009) "Meteorological Modelling for the Hunter Valley", Proceedings of the 19th Clean Air and Environment Conference, Perth, WA, September 2009.
- Davies M, Lakmaker S and Marlin H (2009) "Issues associated with air quality assessment of ships", Proceedings of the 19th Clean Air and Environment Conference, Perth, WA, September 2009.
- Holmes N and Lakmaker S (2009) "Meteorological Modelling for the Hunter Valley", ACARP Research Project C12036.
- Holmes N and Lakmaker S (2012) "Use of Meteorological Models to Predict Dust Risk Indices for Mining Areas in the Hunter Valley", ACARP Research Project C19034.

Annexure C – Instructions of HSF



Mr Shane Lakmaker
Environmental Scientist (Air Quality)
Jacobs
shane.lakmaker@jacobs.com

5 August 2016
Matter 82449055
By Email

Dear Mr Lakmaker

Confidential and Privileged

**Melbourne Metro Rail Project
Engagement of Expert Witness - Air Quality**

We are acting as legal advisors to the Melbourne Metro Rail Authority (**Authority**) in connection with the Metro Tunnel (**Project**). The air quality assessment authored by Greg Simes of your offices dated 20 April 2016 has been exhibited as part of the Environment Effects Statements (**EES**) for the Project.

This letter outlines the scope of your engagement as an air quality expert witness in relation to the Project.

1 Background

The EES was on public exhibition for six weeks from 25 May to 6 July 2016. An Inquiry and Advisory Committee (**IAC**) has been appointed by the Minister for Planning under the *Environment Effects Act 1978* to consider and report on the EES.

A directions hearing was conducted by the IAC on 26 July 2016 and the following directions were made relevant to the preparation and circulation of your expert witness statement and your participation in the upcoming hearing:

- (a) The hearing will commence on 22 August 2016 and conclude on or around 5 October 2016;
- (b) The hearing will be conducted at the Mercure Hotel at 13 Spring Street, Melbourne;
- (c) MMRA will likely be allocated ten days to complete its principal case, between 22 August 2016 and 5 September 2016;
- (d) Expert witness statements must be prepared in accordance with Planning Panel Victoria's Guide to Expert Evidence and must be submitted to the IAC in electronic and hard copy formats by 10 am on 12 August (see 2.1 below);
- (e) Expert conclaves in respect of the following disciplines are to be conducted in the week commencing 15 August 2016. The experts participating in these conclaves are to prepare a statement which sets out matters upon which they agree and matters upon which they disagree relevant to their area of expertise. These statements will be provided to the IAC at the commencement of the hearing on 22 August 2016. The IAC has directed that the following disciplines be the subject of an expert conclave:
 - (1) Traffic;
 - (2) Heritage;
 - (3) Acoustics and vibration;
 - (4) Arboriculture;
 - (5) Land Contamination;

- (6) Groundwater; and
- (7) Air Quality,

Please see 2.6 below for more information.

2 Scope of your engagement

2.1 Expert Witness statement

We would like you to prepare a witness statement in accordance with Planning Panel Victoria's *Guide to Expert Evidence* which prescribes the content and form of expert witness statements. We enclose a copy of the Guide for your reference. You are required to review and understand the Guide and to ensure your witness statement addresses all matters set out in the Guide in particular those matters listed under the heading content and form of expert's report. Please contact us if there is anything in this Guide which you do not understand, or if you have any questions in relation to it.

Your witness statement should:

Address the Guide

- (a) address all matters set out in the Guide in particular those matters listed under the heading 'content and form of expert's report';

Address the Technical Report

- (b) describe any technical report that you reviewed or relied on in the preparation of your witness statement;
- (c) state whether you adopt the findings in the exhibited report, identifying any departure from the findings and opinions expressed in the report exhibited with the EES;
- (d) includes any key assumptions made in preparing the report;
- (e) states whether the exhibited report is incomplete or inaccurate in any respect

Address the public submissions

- (f) address or respond to each of the public submissions we forwarded to you;

Respond to the Panel further questions

- (g) respond to Section 6 of the 'Preliminary Matters and Further Information' Request;

Review the EPRs

- (h) Review the enclosed MMRA Technical Notes (see 2.2 below) and consider whether they give rise to a need to modify proposed EPRs relevant to your area of expertise; and
- (i) Consider whether the EPRs relevant to your area of expertise establish an appropriate framework to govern the construction and operation of the Project if it ultimately differs from the Concept Design (see 2.3 below).

2.2 MMRA Technical Notes

Throughout the course of the hearing MMRA will prepare technical notes in response to requests for information made by the IAC or in respect of matters arising out of submissions made to the IAC or following consultation with relevant stakeholders (**MMRA Technical Notes**). The purpose of the MMRA Technical Notes is to set out MMRA's

position in respect of particular issues or matters that arise throughout the course of the hearing.

The first group of MMRA Technical Notes – numbered 1 - 18 – was provided to the IAC at the Directions Hearing. Copies of those MMRA Technical Notes are enclosed.

MMRA Technical Notes 1 – 8 were prepared in response to a request for information made by the IAC on 13 July 2016 (a copy of which is attached). MMRA Technical Notes 9 – 18 document modifications to the Concept Design supported by MMRA.

You are instructed to review the enclosed MMRA Technical Notes and, insofar as they are relevant to your area expertise, consider whether they give rise to a need to modify any of the proposed EPRs relevant to your area of expertise.

It is anticipated that MMRA will prepare further technical notes both in advance of, and during, the hearing. You may be instructed to review further technical notes prior to the completion of your witness statement or prior to giving evidence before the IAC.

2.3 Environmental Performance Requirements

In preparing your expert witness statement you are instructed to critically evaluate the proposed EPRs that are relevant to your area of expertise. In doing so you should consider whether the EPRs establish an appropriate framework to govern the construction and operation of the Project if it ultimately differs from the Concept Design (but is still situated primarily within the Project Boundary as shown in the EES Map Book).

Your report should identify any modifications to the EPRs that you consider necessary.

2.4 Template

We have prepared a template to assist you prepare and order your expert witness statement. You should treat the template as an aid and should not consider yourself constrained by it if you would prefer to structure your statement differently.

2.5 PowerPoint Presentation

We will advise you closer to the hearing date whether a PowerPoint presentation will be required in conjunction with your evidence at the IAC, and, if so, the length of such presentation.

2.6 Conclave

We will provide you with further instructions concerning whether you are required to participate in an expert conclave prior to the commencement of the hearing. For present purposes, we request that you indicate any times during the week commencing 15 August 2016 in which you are not available to attend any such conclave.

If you have not participated in such a process before, the purpose of a conclave is to limit the issues in dispute so that only the matters where experts disagree are ventilated before the IAC. The IAC has directed that the relevant experts meet in the week commencing 15 August (after expert reports have been filed). At this meeting (or “conclave”) you must endeavour to identify the key issues that are in agreement and where there are key matters of disagreement, identify them and briefly note why you disagree with the other expert(s) at your conclave. The process is not one of negotiation or of advocacy on behalf of your client, but of genuinely trying to identify the real issues in dispute between experts.

The preparation of a document which identifies all of these matters is the expected outcome of this process. The preparation of that document, whilst the joint output of the conclave, is most sensibly prepared by one of the group. The document is signed off by all of you who participate in the conclave.



Where you meet, how you communicate (in person or by teleconference) is a matter for you to arrange with your fellow experts. Participation in the conclave by legal advisers or by representatives of a client is not permitted.

As noted above, the conclave reports must be provided to the IAC by the commencement of the hearing on 22 August.

2.7 Availability

The IAC have prepared a preliminary timetable in respect of the upcoming hearing which allocates air quality as commencing at 10am, Friday 26 August 2016. We request that you set aside at least a day either side of this date (Thursday the 25th and Monday the 29th) in case this timetable changes).

We may also ask that you be available at other times when evidence is being called by other Authority experts whose evidence is relevant to yours, or by experts retained by other parties.

3 Fee estimate and invoicing

It is important to note that you will continue to be contractually engaged as a sub-consultant of AJM Joint Venture on behalf of the Authority. The AJM Joint Venture will continue to be responsible for the payment of your fees and your accounts should be sent directly to the appropriate person nominated by the AJM Joint Venture.

4 Confidentiality

Your expert witness statement prepared in accordance with this retainer is confidential and is not to be copied or used for any purpose unrelated to the Panel hearing without our permission.

Material supplied by Herbert Smith Freehills is, unless it is already in the public domain, confidential and is not to be copied or used for any purpose unrelated to your retainer without our permission.

5 Conflict of interest

It is important that you are free from any possible conflict of interest in providing your advice. While we assume you have no conflict of interest given your role in preparing the EES, you should again ensure that you have no connection with any potential party to the panel hearing which could preclude you from providing your opinion in an objective and independent manner.

6 Communications

Unless advised otherwise, all communications, whether verbal or written, should be directed to our office so that we can coordinate, manage and integrate work activities with legal requirements and ensure legal professional privilege is maintained as appropriate. It is however quite appropriate for your communication to be copied into the Authority.

7 Your duties and responsibilities as an expert witness

As set out in the Guide, an expert witness has a duty to the Panel and not to the person engaging the expert. You are not an advocate for any party. Consequently, though you are retained by the Authority, you are retained as an expert to assist the Panel, and have an overriding duty to it. The Panel will expect you to be objective, professional and form an independent view as to the matters in respect to which your opinion is sought.

Until your statement is in final form it should not be signed. You should, however, be aware that unsigned documents may need to be disclosed to other parties.



8 Important dates

We confirm the following dates in respect of the upcoming hearing:

- (a) Final witness statements due to Herbert Smith Freehills at midday on **11 August 2016**;
- (b) Potential participation in expert conclave in the week commencing **15 August 2016**;
- (c) A PowerPoint presentation of your evidence for presentation at the Hearing due **17 August 2016**;
- (d) Appearance at IAC Hearing: **Friday 26 August 2016**.

If you have any questions about this letter, your role in the hearing, or the approval process, and would like to discuss your availability or the content of your report, please contact us.

Yours sincerely

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Herbert Smith Freehills LLP and its subsidiaries and Herbert Smith Freehills, an Australian Partnership ABN 98 773 882 646, are separate member firms of the international legal practice known as Herbert Smith Freehills.

Attached

- 1 Guide to Expert Evidence
- 2 Pro forma Expert Witness Statement

Annexure D – Detailed Response to Submissions

Issue(s)	Submission No.	Response	Any Recommended New or Modified Environmental Performance Requirement
General comments on dust from construction	19, 25, 37, 58, 63, 84, 97, 100, 101, 102, 104, 107, 109, 115, 124, 135, 141, 144, 153, 166, 169, 183, 186, 190, 193, 196, 199, 204, 205, 218, 224, 227, 228, 229, 230, 232, 235, 236, 237, 240, 241, 260, 263, 264, 266, 268, 271, 272, 273, 274, 276, 281, 285, 289, 298, 299, 300, 301, 304, 305, 306, 310, 311, 313, 315, 318, 319, 325, 338, 339, 346, 348, 352, 356, 370, 371, 374, 377, 38, 78	<p>Many of the submissions raised dust from construction as a concern but were not specific about any technical issues in the Technical Report to be addressed. A response to these general comments has therefore been developed to outline how the Project was assessed, the key findings, and the Environmental Performance Requirements. The response is below.</p> <p>The potential air quality impacts of the Project were assessed and documented in the "Air Quality Impact Assessment" (Technical Appendix H to the EES). The main objective of the assessment was to address the EES Scoping Requirements in relation to air quality.</p> <p>The assessment was carried out in consultation with the EPA and involved:</p> <ul style="list-style-type: none"> - Obtaining and reviewing air quality monitoring data to identify any existing issues in terms of non-compliances with the air quality objectives noted by the EPA or national air quality standards. It was noted that air quality objectives are set for the protection of both health and amenity. - Obtaining Project information from MMRA, including proposed construction activities, and carrying out a risk assessment to identify the areas with the highest potential to cause adverse air quality impacts to sensitive locations. - Quantifying the potential air quality impacts of the highest risk areas using an air dispersion model approved by the Victorian EPA and with consideration of existing air quality levels. - Developing Project-specific Environmental Performance Requirements, based on the model results, to minimise the potential for adverse air quality impacts. <p>The risk assessment considered a range of potential air quality issues including construction dust (at all proposed locations), odour, vehicle exhausts, ventilation shafts and emissions, operational emissions, portals, and fires.</p> <p>The key issue from the risk assessment was identified as dust from the proposed construction activities. In particular, the Arden Station, Domain Station and Fawkner Park precincts were identified as the locations where air quality impacts were most likely to occur. This outcome arose from a review of the proposed spoil handling quantities, estimated truck movements and likely extent of exposed areas. From this review, dust emissions from construction in the Arden Station, Domain Station and Fawkner Park precincts were determined to be more significant than emissions from other locations or activities. Therefore, further investigation of the potential air quality impacts in the vicinity of these three sites was carried out.</p> <p>The investigations of potential impacts in the Arden Station, Domain Station and Fawkner Park precincts involved quantification of construction dust emissions and prediction of dust concentrations and deposition levels using an air dispersion model. The dispersion model used was EPA Victoria's regulatory model known as AERMOD. Meteorological conditions, emission estimates and existing air quality conditions were the main inputs to the model.</p> <p>The modelling indicated that air quality objectives for key dust classifications (PM₁₀, PM_{2.5} and deposited dust) could be achieved at all off-site sensitive locations under typical background air quality conditions, however there was the potential for the short-term PM₁₀ objective to be exceeded if background levels were already very close to the objective on a particular day. It was therefore concluded that the Project was unlikely to be the cause of an air quality exceedance. Since emissions are related to the intensity of construction activities, it was also inferred that compliance with air quality objectives could be</p>	Nil

		<p>achieved in the vicinity of all other construction sites, and that impacts of other identified air quality issues would be acceptable.</p> <p>A recommendation of the assessment was that dust management and monitoring plans will need to be developed and implemented by the construction contractor(s). The plans will need to outline the specific measures to minimise emissions to air from each activity, as well as the actions to occur in response to adverse weather or air quality conditions.</p> <p>Monitoring of air quality will also need to be carried out before, during, and after the construction period. Specifications for baseline monitoring are currently being developed by MMRA. It is anticipated that further monitoring will be carried out and used by the construction contractor(s) to modify activities, if necessary, in order to minimise air quality impacts during periods of adverse meteorological or environmental conditions. At this stage the mechanisms for delivery of data are not known.</p> <p>The approach outlined above constitutes an acceptable approach to quantifying the potential air quality impacts of these types of Projects. The approach, based on quantitative modelling, also goes beyond what has historically been undertaken for other similar Projects. A recent example is the Environmental Assessment for the Sydney Metro rail project, whereby a qualitative approach to the assessment of air quality was adopted.</p>	
Concern with the use of monitoring data from Richmond	170	<p>The submitter raises a concern with the use of monitoring data from Richmond to characterise air quality in the North Melbourne area. EPA Victoria monitors air quality at 10 locations in the "Port Philip Air Quality Control Region". Consistent with the National Environment Protection (Ambient Air Quality) Measure, EPA Victoria monitors are located in order to obtain a representative measure of the air quality likely to be experienced by the general population in the region or sub-region. That is, they generally are not located in areas which would capture local contributions from specific industries or sources. This means that there is the potential for concentrations of airborne substances to be higher at specific sites (such as North Melbourne) than at the EPA Victoria monitoring locations on occasions.</p> <p>The closest EPA Victoria monitoring sites to the study area were identified as Richmond (community centre, approximately 2.3 km from the proposed eastern portal) and Footscray (located in Hansen Reserve approximately 4.5 km from the proposed western portal). There are no known air quality monitoring stations located closer to the project alignment, or in the North Melbourne area, which could be used to inform the derivation of background levels for the assessment. Therefore, data from both the Footscray and Richmond sites were reviewed in order to derive the background concentrations that may apply in the vicinity of each construction sites. The monitoring data showed that air quality conditions in Footscray have historically been similar to air quality conditions in Richmond, in terms of average PM₁₀ concentrations which are in the order of 17 to 19 µg/m³. However Footscray has typically recorded 2 to 3 more days each year above the 24-hour average PM₁₀ objective than at Richmond.</p> <p>A conservative approach was adopted to address potential differences in air quality between EPA Victoria's Richmond monitoring site and other locations. This involved taking the 75th percentile of air quality statistics from Richmond for PM₁₀ (and Footscray for PM_{2.5}) to derive estimates of background levels in the vicinity of modelled construction sites. The dust classification most likely to approach air quality objectives was determined to be 24-hour average PM₁₀. Based on the 24-hour average PM₁₀ predictions in the vicinity of the Arden construction site, the adopted background levels could be doubled (that is, from 21 µg/m³ to 42 µg/m³) before the air quality objective would be approached at the location of the business of the submitter. Doubling of the adopted background levels would be an over-conservative approach, based on the monitoring data, but nonetheless demonstrates that variations in background levels, due to the industrial nature of North Melbourne, can be accommodated without resulting in adverse air quality impacts.</p>	Nil
Degradation of air quality due to heavy vehicle generated dust along transport routes. Exhaust emissions from construction vehicles along vehicle routes. Monitoring data to be made available.	180	<p>A recommendation of the Technical Report (Technical Appendix H of the EES) was that management and monitoring plans will need to be implemented by the construction contractor(s). This is addressed in EPR AQ1. This plan will outline the specific measures to minimise emissions to air from each activity (such as dirt carried onto transport routes), as well as the actions to occur in response to adverse weather or air quality conditions. Examples of standard mitigation measures to minimise dirt from being tracked onto transport routes, and which may be outlined in the plan, include the use of rumble grids, wheel washing, street sweeping and / or road washing.</p> <p>The submitter requests that it be listed as a key stakeholder that needs to be consulted during development and implementation of air quality management plans. The submitter also requests additional monitoring equipment to determine air quality conditions in the vicinity of its facilities. EPR AQ1 requires the plan to be prepared in consultation with the EPA. EPR AQ1 also identifies the facilities of the submitter as a key sensitive receptor who's monitoring requirements must be addressed by the dust management and monitoring plan. It is my opinion that EPR AQ1 specifically addresses the management and monitoring requirements for the facilities of the submitter and that additional consultation, with respect to development and implementation of air quality management plans, would not be necessary.</p>	Nil

<p>Impacts to air filters on building air intakes</p> <p>Aspergillus spores</p>	<p>191</p>	<p>Submission 191 raises two issues:</p> <ul style="list-style-type: none"> - <i>“air filters on building air intakes could become clogged”</i> - <i>“large excavation and removal of soil releases aspergillus spores which naturally occur in soil”</i> <p>The Technical Report determined that air quality objectives for key dust classifications (PM₁₀, PM_{2.5} and deposited dust) could be achieved at all off-site sensitive locations under average background air quality conditions, however there was the potential for the short-term PM₁₀ objective to be exceeded if background levels were already very close to the objective on a particular day. It was therefore concluded that the Project was unlikely to be the cause of an air quality exceedance in the vicinity of the three construction sites with the expected highest levels of activity and spoil movement; namely, Arden, Domain and Fawkner. It followed that the Project was unlikely to be the cause of an air quality exceedance in the vicinity of other construction sites where there would be less spoil movement and activity including at Parkville and at building air intakes associated with the facilities identified by the submission.</p> <p>Aspergillus is a common mould that is present in both indoor and outdoor air. Aspergillus spores are not usually assessed as part of air quality impact assessments for these types of projects. This is because the EPA’s air quality objectives and goals are set for substances most commonly linked to adverse health effects in the general population and in ambient air, such as airborne particulate matter (as PM₁₀), nitrogen dioxide, sulphur dioxide, lead and ozone. Nevertheless the air quality assessment has concluded that the Project is unlikely to be the cause of air quality (particulate matter) exceedances. This outcomes suggests that aspergillus spores (which may be present in particulate matter generated by the Project) are unlikely to be a unique Project issue.</p>	<p>Nil</p>
<p>Air quality (dust generation)</p> <p>Precinct-specific Air Quality Management Plan to manage dust during construction</p>	<p>291</p>	<p>The submission is by the EPA and, in terms of air quality, emphasises the importance of appropriate controls for dust management.</p> <p>I agree with the submission content in relation to air quality. An air quality management and monitoring plan will be developed and implemented by the construction contractor(s), specific for each precinct. This plan will outline the specific measures to minimise emissions to air from each activity, as well as the actions to occur in response to adverse weather or air quality conditions. EPR AQ1 requires that EPA Victoria be consulted in the development of relevant air quality management and monitoring plans.</p>	<p>Nil</p>
<p>Health of patients</p> <p>Standard industry air quality guidelines for health and research precinct</p> <p>Risk assessment for the Parkville Precinct.</p>	<p>308</p>	<p>The submission suggests that standard industry air quality guidelines are not considered acceptable for a specialist health and research precinct (Parkville) with high environmental sensitivities. The submission requests further studies and detailed assessments including:</p> <ul style="list-style-type: none"> - The compliance threshold, how it will be monitored and the agreed process when these levels are reached. - Contingency plans for the risk mitigation strategies proposed by MMRA. - Planning to ensure that health services work very closely with the preferred contractor during construction. <p>The Technical Report has concluded that compliance with the EPA Victoria’s air quality objectives, set for the protection of human health and amenity, can be achieved in the vicinity of all construction sites, including in the Parkville Precinct.</p> <p>As per EPR AQ1, an air quality management and monitoring plan will be developed and implemented by the construction contractor(s). This plan will outline the specific measures to minimise emissions to air from each activity (risk mitigation strategies), as well as the actions to occur in response to adverse weather or air quality conditions. It is my opinion that EPR AQ1 addresses the specific concerns of the submitter. In particular, EPR AQ1 identifies the facilities of concern from the submitter as a key sensitive receptor who’s monitoring requirements must be addressed by the dust management and monitoring plans.</p>	<p>Nil</p>
<p>Food safety and quality impacts cause by dust during construction</p>	<p>357</p>	<p>Air quality and risk of contamination in the vicinity of the submitter have been raised as concerns. The submitter’s facilities are located on Lauren Street, in the Arden Precinct. The submitter requests:</p> <ol style="list-style-type: none"> 1. <i>“Due to the presence of sensitive equipment and operations at the mill, real time air quality monitoring must be provided to [withheld], at no cost to [withheld].”</i> 2. <i>“Routes 1 and 2a identified in the Project Transport Impact Assessment in Technical Appendix D of the EES should not be utilised to provide construction vehicle access under any circumstances.”</i> 3. <i>“Alterations to the various EPRs applicable to air quality and risk of contamination are required.”</i> 	<p>Nil</p>

		<p>4. "[withheld] must be provided with an opportunity to review and comment on future management plans and designs developed by the MMRA, contractors and Government to achieve an acceptable outcome for all stakeholders."</p> <p>The Technical Report has concluded that compliance with the EPA's air quality objective for amenity (that is, deposited dust of 4 g/m²/month) can be achieved in the vicinity of the Arden Precinct construction site, including at the facilities identified in the submission. The EPRs for air quality were developed from this conclusion and, following additional review as part of preparing this Expert Witness Statement, no alterations to the EPRs are deemed necessary.</p> <p>EPR AQ1 states that the monitoring requirements of residential and commercial properties (such as the facility identified by the submitter) must be addressed by the dust management and monitoring plan. It is my opinion that EPR AQ1 specifically addresses the management and monitoring requirements for the facilities of the submitter and that additional consultation, with respect to commenting on air quality management plans, would not be necessary.</p>	
Air quality management plans to be informed by final construction plans Air quality monitoring before and during construction	367	<p>The submission suggests that the EPRs are not sufficiently detailed and that dispersion models will require revision once construction and operating plans are finalised. The submission requests additional EPRs for air quality including:</p> <ul style="list-style-type: none"> - Development of air quality management measures on updated dispersion modelling. - Baseline air quality monitoring prior to commencement of construction including TSP, PM₁₀, PM_{2.5} and deposited dust. <p>One of the conclusions of the assessment was that the Project was unlikely to be the cause of an air quality exceedance, including at the location of all areas of the facilities identified by the submission. The EPRs for air quality were developed from this conclusion and, following additional review as part of preparing this Expert Witness Statement, no alterations are deemed necessary. It should be noted that EPR AQ1 specifically requires the proponent / construction contractor(s) to "Undertake air modelling for construction to inform the dust management plan". EPR AQ1 also identifies the facilities of the submitter as a key sensitive receptor who's monitoring requirements must be addressed by the dust management and monitoring plan. It is my opinion that EPR AQ1 addresses the air quality concerns of the submitter.</p>	Nil
Modelling of air quality in the Parkville precinct	373	<p>Submission 373 notes that air quality modelling was not carried out for the Parkville area and recommends:</p> <ul style="list-style-type: none"> - Air Quality modelling be conducted for Parkville Precinct. - Consultation with stakeholders be enhanced to ensure risks are appropriately identified. - EPR measures beyond EPA SEPP criteria be developed to mitigate such identified risks to acceptable levels for a health and medical research precinct. <p>The submission also lists sensitive facilities in the vicinity of the Parkville precinct.</p> <p>The Technical Report has concluded that compliance with the EPA's air quality objectives, set for the protection of human health and amenity, can be achieved in the vicinity of all construction sites, including in the Parkville Precinct.</p> <p>The key issue from the risk assessment was identified as dust from the proposed construction activities. In particular, the Arden Station, Domain Station and Fawkner Park precincts were identified as the locations where air quality impacts were most likely to occur. This outcome arose from a review of the proposed spoil handling quantities, estimated truck movements and area of the exposed construction worksites. Specifically, the highest volumes of spoil and truck movements were proposed for the Arden Station, Domain Station and Fawkner Park sites. The level of construction activity (and therefore emissions) in the Parkville Precinct will be much lower than at the Arden Station, Domain Station and Fawkner Park sites.</p> <p>From this review, dust emissions from construction activities in the Arden Station, Domain Station and Fawkner Park precincts were determined to be more significant than emissions from other locations (including Parkville) or activities. Therefore, further investigation of the potential air quality impacts in the vicinity of these three sites was carried out.</p> <p>The investigations of potential impacts in the Arden Station, Domain Station and Fawkner Park precincts involved quantification of construction dust emissions and prediction of dust concentrations and deposition levels using an EPA approved air dispersion model. The modelling indicated that the Project was unlikely to be the cause of an air quality exceedance. In addition, it was inferred that compliance with air quality objectives could also be achieved in the vicinity of all other construction sites, including in the Parkville Precinct, since these other sites will have lower levels of activities and consequently lower overall dust emissions.</p>	Nil

Asbestos dust	12	The air quality impact assessment has assumed that asbestos containing material will be identified and managed in accordance with the "Code of Practice for the Management and Control of Asbestos in Workplaces" (NOHSC 2005) to prevent airborne asbestos fibres and exposure. It has therefore been assumed that there will be no asbestos fibres in air (associated in dust particles) and therefore no adverse effects.	Nil
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