In the matter of the Melbourne Metro Rail Project

Planning Panels Victoria

Proponent: Melbourne Metro Rail Authority

Expert Witness Statement of David Coutts

Expert of Melbourne Metro Rail Authority

1 Name and address

Dr David Coutts

Jacobs Group (Australia) Pty Limited, 3000 Flinders Street, Melbourne, 3000. Victoria

Phone: 0459 843 677; email: david.coutts@jacobs.com

2 Qualifications and experience

I hold the degree of Bachelor of Science in Microbiology from the University of Glasgow and a Doctorate in Landfill Microbiology from the University of Strathclyde (in Glasgow).

For the past 23 years I have been involved in a wide range of contaminated land consultancy in the United Kingdom and Australia in the industrial, land development, regulatory, waste and transport infrastructure sectors. Currently I am a Principal within the Contaminated Land team in Jacob's Melbourne office. I specialise in the areas of contaminated land site investigation, quantitative risk assessment and environmental statistics. In addition, I have been involved in environmental pollution assessment, environmental impact assessments, and regulatory reviews.

Details of my qualifications and experience are in **Annexure A**.

3 Scope

Instructions

My instructions to prepare this witness statement are set out in **Annexure B**.

Process and Methodology

I was the nominated Aurecon Jacobs Mott McDonald (AJM) Joint Venture (JV) technical lead for the contaminated land aspects of the Melbourne Metro Rail Project (Melbourne Metro). My role on the project commenced in early 2015 and my initial scope was to provide technical oversight of the investigation works and subsequent reports prepared by Golder Associates, who were originally appointed by Public Transport Victoria (PTV). I have provided technical oversight and review of Golder Associates technical outputs addressing contaminated land aspects of the project from early 2015 to the present day. I was also responsible for preparing the contaminated land and spoil management Technical Appendix Q of the EES.

4 Findings

4.1 Summary of Opinions

My initial report was exhibited with the Environment Effects Statement (EES) and I adopt it as the basis for my expert witness statement and evidence. The contaminated land

and spoil management impact assessment conducted for the EES concluded that the main contaminated land aspects requiring consideration for Melbourne Metro are:

- Non-natural contaminated spoil (fill), particularly at the western portal, eastern portal and Arden station sites and throughout the CBD where there has been a long history of potentially contaminating land use activities;
- Naturally occurring, potentially acid sulfate soil associated with the presence of specific geological formations, such as Coode Island Silt, Werribee Formation and Brighton Group, that may become oxidised during construction – with these formations most likely to be found at the western portal, eastern portal and Arden station sites and in sections of the tunnels between CBD South station and the eastern portal;
- Naturally occurring, potentially acid sulfate rock, which is prevalent along most of the alignment;
- Interception of contaminated groundwater and/or vapour in the immediate vicinity of the project boundary during construction, with potential exposure risks to workers and the environment; and
- Handling and disposal of large volumes of contaminated and clean spoil.

4.2 Any additional work undertaken since exhibition of EES

In addition to the information I reviewed in preparing the Contaminated Land and Spoil Management impact assessment report, I have also reviewed the following documents:

Author	Report Title	Date
Golder Associates	Melbourne Metro Rail Project – Interpreted Hydrogeological Setting EES Summary Report – July 2016 Update. 1525532-332-R-Rev0	29 July 2016
Golder Associates	Melbourne Metro Rail Project – Contaminated land Assessment EES Summary – July 2016 Update Report, 1525532-334-R-Rev0	5 August 2016

The post EES investigations described in these two reports present the collection of data from all precincts along the alignment, including additional soil bores, groundwater wells, soil vapour points, soil sampling for waste classification and human health risks, groundwater sampling for human health and environmental risks.

Since the EES submission over 100 additional boreholes have been advanced, over 50 groundwater wells installed and sampled and over 1,000 soil samples tested for various contaminants of concern.

My summary of works undertaken since the completion of the EES is provided in **Annexure C**.

In considering the additional information and data provided post EES and the public submissions, I have concluded the following:

- The additional data has provided an increased level of confidence in the estimation of the waste volumes and categorisation;
- The additional data has provided an increased level of confidence in the assessment of risks and requirements for mitigation from contaminated soil, groundwater, vapour and ground gases ;
- There are no changes to the identified risks;

- There are no changes to the Environmental Performance Requirements (EPRs) as presented in the EES; and
- The further works undertaken support the findings of the EES and do not result in any changes to the findings or opinions expressed in the EES.

4.3 Response to Submissions

I have reviewed the submissions which raise issues concerning contaminated land and spoil.

Table 2 in **Annexure D** contains my response.

4.4 Review of MMRA Technical Notes

I have considered MMRA Technical Notes 1–18. None of the notes are relevant to my area of expertise.

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 . D Coutts .

Dated 11th August / 2016

Annexure A – Qualifications

Qualifications

- BSc University of Glasgow (Microbiology), 1982
- PhD University of Strathclyde (Landfill Microbiology), 1986

Employment history and achievements

David is a senior contaminated land specialist and environmental microbiologist with 23 years of experience in contaminated land consultancy. David currently works for Jacobs in Melbourne and was until recently the team leader of the contaminated land team. He is currently a Principal within the contaminated land team in Melbourne focussing on Clients, project delivery and technical capability.

From a technical perspective, David specialises in the areas of contaminated land site assessment, quantitative risk assessment and remediation having been the contaminated land specialist on a diverse range of projects covering oil and gas, industrial pollution, landfill, transportation infrastructure and utilities, buildings and land development in both the UK and Australia.

Professional experience summary:

- Enviros / SKM / Jacobs (UK and AUS). Principal.
- Babtie / Jacobs (UK). Technical Director.
- SLR (UK). Technical Director.
- Weeks Technical Services (UK). Technical Director.
- Halcrow (UK). Senior Consultant.
- Taylor Woodrow (UK). Consultant.
- UKAEA (UK). Research Assistant.
- University of Newcastle upon Tyne (UK). Research assistant.

A CV is attached.

Dr David Coutts

STARTEGIC CURRENT POSITION

Principal – Jacobs, Melbourne

QUALIFICATIONS

BSc University of Glasgow

PhD University of Strathclyde

EXPERTISE

- Contaminated land investigations
- Human health risk assessment
- Contaminated land remediation
- Project management and direction

CAREER SUMMARY

- Enviros / SKM / Jacobs (UK and AUS). Principal.
- Babtie / Jacobs (UK). Technical Director
- SLR (UK). Technical Director
- Weeks Technical Services (UK). Technical Director
- Halcrow (UK). Senior Consultant.
- Taylor Woodrow (UK). Consultant.
- UKAEA (UK). Research Assistant
- University of Newcastle upon Tyne (UK). Research assistant

Summary

I am a senior contaminated land specialist and environmental microbiologist with nearly 23 years of experience in contaminated land consultancy. I currently work for Jacobs in Melbourne and was until recently the team leader of the contaminated land team. Currently I am a Principal within the contaminated land team in Melbourne and my main role is focussing on Clients, project delivery and technical capability.

From a technical perspective, I specialise in the areas of contaminated land site assessment, quantitative risk assessment and remediation having been the contaminated land specialist on a diverse range of projects covering oil and gas, industrial pollution, landfill, transportation and utilities, buildings and land development in both the UK and Australia.

Career summary

I have had a long career since leaving the University of Strathclyde initially in scientific research field and then in various consultancies following a typical path of consultant (Taylor Woodrow) through to senior consultant (Halcrow), Technical Director (Weeks, SLR and Enviros) and have had line management roles in Babtie / Jacobs in Glasgow and also in Australia with SKM / Jacobs.

In November 2010, I moved to SKM's Melbourne office taking on the role of Contaminated Land Team Leader; I have now stepped down from that role. As a Principal, I am a senior member of the team and take an active role in winning and delivering work.

Notable Project Experience

PROJECT | Melbourne Metro Rail Project

Client: Melbourne Metro Rail Authority

Role: Contamination land Technical lead

Key achievements:

- Completion of the Environmental Effects Statement specialist Appendix (still in progress as January 2016)
- Preparation of input to Initial Reference Design

PROJECT | Environmental Land Management

Client: City of Whitehorse (Melbourne)

Role: Project Manager

Key achievements:

- Completion of multiple projects relating to former landfills. Landfill cap assessments, landfill gas assessment, risk assessment.
- Liaison with EPA and ensuring that regulatory intervention is minimised
- Internal briefings to City of Whitehorse

PROJECT | Tailings Dust Release Clean Up

Client: Confidential Mining Company in WA

Role: Contamination land Specialist

Key achievements:

Dr David Coutts

- Tailings at a gold mine in WA escaped off site following a strong wind event. The tailings are contaminated with arsenic.
- Extensive investigations and quantitative human health and environmental risk assessment devised remedial solution for escaped tailings dust.
- Preparation of remedial action plan. The solution involved excavation of the dust using bobcats and sucking the dust using vacuum tankers. The recovered dust is to be placed in a containment cell within the rock dump at the site.

PROJECT | PFOS Contaminated Soils Remediation

Client: Department of Defence

Role: Contamination land Specialist

Remedial techniques: Immobilisation

Key achievements:

- Provided technical review to lab scale and field scale trials of the effectiveness of the amendment of PFOS contaminated soils with immobilisation chemicals.
- The trials were conducted in the field and determined which immobilisation reagent and at which blend would be most cost effective. We await the upscaling of this trial to full scale treatment of the PFOS contaminated soils at this facility.

PROJECT | Contaminated land assessment and remediation – Multiple Projects

Client: Confidential Government Agency

Role: Project Director

Remedial techniques: Excavation, waste classification.

Key achievements:

- Undertook multiple phases of work at a site in the north of Melbourne, following an incident relating to solvent and acid spills.
- Drilled and installed groundwater monitoring wells around the site and within the source and plume zones. Sampling events and risk assessment.
- Undertook the decommissioning of redundant raw material supply pipe
- Assessed and remediated an area of the site impacted with hydrochloric acid leaks.
- Prepared and environmental management plan for the site

PROJECT | Hydrocarbon Remediation – AMC building

Client: Swinburne University

Role: Technical specialist

Remedial techniques: Excavation, Ex-situ vapour extraction, waste classification.

Key achievements:

- investigation, risk assessment and remedial optioneering for oils found in the ground and ground water on the site of a proposed new building at Swinburne University.
- Design and implementation of a ex-situ vapour extraction remediaiton systems to reduce the waste classification from Category B and Fill with resultant cost savings.

Dr David Coutts

- Design of Liquid Boot and vapour extraction system.

PROJECT | Assessment and remediation of chlorinated hydrocarbons at an industrial facility in Melbourne

Client: Confidential

Role: Project Manager

Remedial techniques: NAPL removal, excavation, waste classification.

Key achievements:

- Multiple stages of site assessment and monitoring following the issue of a Clean-up Notice (CUN)
- Liaison with the appointed Environmental Auditor
- Successful preparation of a clean-up plan – which is now being implemented.

PROJECT | Malabar Landfill, Sydney

Client: United Group

Role: Project Director

Remedial techniques: Landfill leachate / Groundwater Interception.

Key achievements:

- Multiple phases of investigation, assessment and remedial design at large uncontrolled landfill south of Sydney.
- Significant issue relating to the uncontrolled discharge of leachate towards a public beach. Interceptor trench designs were designed and constructed. Leachate is being intercepted and piped to the nearby sewage treatment works.

PROJECT | Review of contaminated land assessment and remediation costs for mining operations in Pilbara

Client: Confidential Mining Client

Role: Technical specialist

Key achievements:

- Critical review of Client supplied rationale and cost estimate
- Fresh eyes review and revision of cost estimate

PROJECT | Investigation and remediation of sites for proposed schools under the Building Schools for the Future (BSF) program

Client: Carillion

Role: Project Principal

Remedial techniques: Dynamic compaction, virtual curtain for landfill gas.

Key achievements:

- We were commissioned by Carillion to undertake site investigations, risk assessments and prepare remedial strategies for a number of new schools across the Tameside area. This was required to gain planning permission to construct the schools. The projects were complex and time critical and involved much negotiation and liaison with the Regulator
- Assessment of landfill gas risks and design of a Virtual Curtain along the “at risk boundary” of the site.

PROJECT | Prospect Park, Heathrow

Dr David Coutts

Client: British Airways

Role: Landfill Gas Remediation Specialist

Remedial techniques: Landfill gas extraction and flaring

Key achievements:

- Involved in the investigations, planning, waste management licensing, design and construction of Prospect Park, near Heathrow for British Airways. This large project involved the excavation of two old landfills and replacement into a new licensed landfill that incorporated a landfill gas management system (active extraction system and gas flare).

PROJECT | Assessment and Clean-up of Wood Preservative Contamination

Client: Protim

Role: Project Director

Remedial techniques: Excavation, waste classification.

Key achievements:

- Investigation and remediation of a former wood preservative (aldrin and dieldrin) manufacturing facility in Dublin
- Human health risk assessment
- Environmental risk assessment considering discharges from the site to a nearby receiving stream
- Preparation of remedial options assessment, remedial actions plans and implementation of the remediation.

PROJECT | Investigation and remediation of former Alcan smelters and other facilities, Scotland

Client: Alcan Aluminium (UK) and others

Role: Various roles including project director, project manager and technical specialist

Remedial techniques: Excavation, encapsulation, waste classification.

Key achievements:

- Investigation and risk assessment at the former smelter at Invergordon and implementation of a long term groundwater monitoring system.
- Remediation of parcels of land contaminated with PCBs at Invergordon smelter. Liaison with third parties and Regulator on behalf of the Client with respect to leasing parcels of the site.

PROJECT | M74 Completion – Glasgow, Scotland

Client: Interlink M74 Joint venture

Role: Contaminated land technical lead

Remedial techniques: Excavation, waste classification, groundwater pump and treat (chromium), clean cover

Key achievements:

- The M74 completion project involved completing the link between the end of the existing M74 at Fullarton Road near Cambuslang and the M8 motorway west of the Kingston Bridge in Glasgow.
- Following a preliminary ground investigation undertaken by the Employer, contaminated land has been identified along most of the route of the M74 Completion, although the nature of the contamination and the degree of

Dr David Coutts

severity has been found to vary along the route.

- Activities involved data review and assessment, consultations, preparation of a contaminated land strategy report, detailed design drawings, designer's commercial and health and safety risk assessment.

PROJECT | Various sites in North Lanarkshire

Client: North Lanarkshire Council

Role: Project Principal

Remedial techniques: Excavation, waste classification, clean cover, landfill gas virtual curtain

Key achievements:

- Investigation, risk assessment and remediation of the former Luggie Glen sewage treatment works as a new commercial development site (currently being marketed as "Drumpellier Business Park")
- Investigation, risk assessment, application to Scottish Executive for funding, and remedial design for Brownsburn Park (a former landfill site) to be re-engineered as a public park

PROJECT | Tesco – Dingwall Gas works (northern Scotland)

Client: Tesco

Role: Project Principal (contamination)

Remedial techniques: Excavation, on situ landfarm, groundwater pump and treat, waste classification.

Key achievements:

- Tesco were planning to build a new superstore on the site of an old agricultural auction market and gas works. The site was immediately adjacent to a river.
- Undertook site investigation, risk assessment, remedial option assessment and remedial design. Liaison with SEPA and Highland Council with respect to suitability of use and also extent of remediation.
- Remediation ultimately involved excavation and off site disposal. Validation sampling demonstrated that the remedial works achieved the objectives agreed.

PROJECT | Llanelli Gas Work Remediation (south Wales)

Client: Thales Construction

Role: Contaminated land Remediation Specialist

Remedial techniques: Excavation, waste classification, groundwater pump and treat

Key achievements:

- Prepared remedial designs for this former gas works, incorporating the removal of remnant gas works infrastructure and extensive contamination prior to construction of a new supermarket and shopping centre.
- The remediation involved the on-site excavation and classification of wastes using a combination of on-site testing (for PAHs) and off site laboratory confirmatory testing. If deemed suitable the materials remained on-site; if not then the waste soils were removed to a hazardous waste landfill.
- Any water or liquids at the site were pumped to a small lagoon and aerated to remove phenolics prior to discharge to sewer under consent.

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- The site was complex and also in full public view. The on-site role also involved supervision of remediation, testing, validation, reporting, liaison with the design teams, the regulator, the press and on one occasion with the local police.

PROJECT | Remediation of Fuel Storage and Distribution Facility in Carlisle

Client: ESSO

Role: Project Manager

Remedial techniques: Excavation, waste classification, groundwater pump and treat (NAPL removal)

Key achievements:

- Undertook investigations, remedial designs and implementation of remediation for former fuel storage facility in Carlisle. The remedial solution including excavation, sorting the soils on site, installation of a groundwater pump and treat system.

PROJECT | Remediation of a Former Fuel Depot in Ayr harbour

Client: ESSO

Role: Project Manager

Remedial techniques: Excavation, waste classification.

Key achievements:

- This involved undertaking site investigations and risk assessments, undertaking the design of the remediation, preparing remedial action plans, negotiation with the regulatory authorities regarding waste classification and remedial methods and supervision of remediation. Site was successfully remediated using sol screening methodologies, with most of the soil remaining on-site.

PROJECT | CCA Spill Remediation

Client: Laporte Industries

Role: Project Manager

Remedial techniques: Groundwater interception trench

Key achievements:

- Following a spill, undertook an investigation at a wood preservative manufacturing facility in northern England. Two phases of site investigation were undertaken together with quantitative risk assessment (RBCA). Remedial designs (a cut off trench and active pumping) were then prepared and agreed with the EA, and finally implemented.

PROJECT | Glasgow Airport, International Mirror Stands Project

Client: BAA

Role: Project Manager

Remedial techniques: Excavation, waste classification, land farm, shallow groundwater interception and NAPL skimming

Key achievements:

- As part of the scoping exercise undertook a preliminary contaminated land risk assessment of the site earmarked for further development at Glasgow Airport. The site was contaminated with heating oil. Remediation undertaken using shallow groundwater extraction, oil water separation and

Dr David Coutts

ex-situ bioremediation. The majority of the soils were retained on site for re-use.

PROJECT | Langbank Remediation

Client: Renfrewshire Council

Role: Project Manager

Remedial techniques: UST excavation, waste classification, bioaugmentation.

Key achievements:

- Assessment of a kerosene spill in central Scotland, involving investigations soil and groundwater analysis, quantitative risk assessment and remedial action plan development. Remedial design completed and implemented including excavation of the source, installation of bioaugmentation boreholes within the kerosene plume.

PROJECT | Tay Waste Water Project

Client: Morrison Construction

Role: Team leader

Remedial techniques: Excavation, waste classification.

Key achievements:

- Provided contaminated land and waste management advice for the Tay Waste Water contractor team. This involved undertaking risk assessment and assessing the suitability of re-use of material under exemptions from waste management licensing.

Annexure B – Instructions

HERBERT
SMITH
FREEHILLS

David Coutts
Principal – Contaminated Land
Jacobs
david.coutts@jacobs.com

8 June 2016
Matter 82449055
By Email

Dear Mr Coutts

Confidential and Privileged

Melbourne Metro Rail Project
Engagement of Expert Witness - Contamination

We are acting as legal advisors to the Melbourne Metro Rail Authority (**Authority**) in connection with the Melbourne Metro Rail Project (**Project**). Your impact assessment report has been exhibited as part of the Environment Effects Statements (**EES**) for the Project.

1 Background

The EES is on public exhibition for six weeks from 25 May to 6 July 2016. At the completion of the public exhibition period, a panel of inquiry (**Panel**) appointed by the Minister for Planning under the *Environment Effects Act 1978* will consider and report on the EES. There are three key steps in this process that affect you:

(a) The Panel will convene a directions hearing on 26 July 2016;

(b) At the directions hearing, the Panel will direct the Authority to file and serve expert witness statements, probably 5 or 10 business days before the Panel hearing starts. For planning purposes, you are asked to assume this date will be on or about Monday 8 August 2016. We will advise you of the exact date for filing and serving statements after the directions hearing; and

(c) At this stage, you are asked to assume the Panel will commence the inquiry on or about Monday 22 August 2016. We anticipate the hearing could last up to six weeks.

During the hearing, Panel members will hear submissions and evidence on the merits and impacts of the Project from the Authority, government agencies, supporters and opponents of the Project.

We are unlikely to have all of the public and government agency submissions on the EES until the end of the public exhibition period about mid-July 2016. So that the Authority's case is fully prepared, Herbert Smith Freehills has been asked to begin preparing for the Panel now.

2 Scope

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.

You should commence preparing your witness statement with the preliminary matters required as set out in the Guide such as:

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herbertsmithfreehills.com DX 240 Melbourne

(a) An unambiguous reference to the technical report or reports that you rely upon;

(b) A statement to the effect that you adopt the findings in the exhibited report and identifying any departure from the findings and opinions you express in your report exhibited with the EES,

(c) Any key assumptions made in preparing the report; and

(d) Whether the exhibited report is incomplete or inaccurate in any respect.

Once we receive submissions relevant to your area of expertise we will also request you consider those submission and respond to relevant matters in your witness statement.

2.2 Presentation

We also encourage you to prepare a PowerPoint presentation for you to present in the Panel. This will be a presentation of your evidence, and as a 'rule of thumb' we suggest you work on the basis that your evidence could take about 45 minutes.

2.3 Availability

You will need to be available to give evidence to the Panel at some time during the course of the Panel proceedings. Your evidence is likely to be in the first two weeks of the Panel hearing, although we will advise you of the times and dates when they become available. 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 by the Authority. The Authority 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 Authority.

4 Confidentiality

Your expert report 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

As an expert, 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

It is important that you be available for the following dates, which assume a Panel commencement date of around 22 August 2016:

(a) Witness statement, addressing preliminary matters, due **6 July 2016**;

(b) Witness statement, including addressing all submissions, due **22 July 2016**;

(c) Final witness statements due to Herbert Smith Freehills on **3 August 2016** (including addressing any matters we ask you to address which may include issues raised by the Panel during the directions hearing);

(d) A PowerPoint presentation of your evidence for presentation at the Hearing due **17 August 2016**;

(e) Panel Hearing (indicative): Monday **22 August to 30 September 2016**.

It will be particularly important that you are available during July and early August when your statement and presentation is finalised, as there may be last minute issues and questions that we have in respect of those matters.

It will also be important for you to be available for the hearing dates, though you are likely to give evidence during the first two weeks of the hearing. If you give evidence, you will be expected to answer questions of the Panel and other parties, and you may be cross-examined by Counsel. We will contact you with the exact time or date of your evidence before the hearing commences, as soon as it is scheduled.

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

Tim Power
Partner
Herbert Smith Freehills

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Michelle Keen
Special Counsel
Herbert Smith Freehills

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Attached

1 Guide to Expert Evidence

HERBERT SMITH FREEHILLS

Mr David Coutts
Jacobs
david.coutts@jacobs.com

14 June 2016
Matter 82449055
By Email

Dear David

Confidential and Privileged

Melbourne Metro Rail Project
Engagement to undertake further work

We are acting as legal advisors to the Melbourne Metro Rail Authority (**Authority**) in connection with the Melbourne Metro Rail Project (**Project**). Your impact assessment report has been exhibited as part of the Environment Effects Statements (**EES**) for the Project.

In reviewing your EES report and discussions with the Authority in order to provide further legal advice to our client, we would like you to prepare a summary memo outlining the further work undertaken by Golder and reviewed by yourself since the EES was published. In particular, we would like you to describe whether the further work supports the conclusions in the EES or has made you depart from any findings or opinions expressed in the EES.

This work will assist us in advising the Authority in relation to its preparation for the hearing into the EES.

1 Fee estimate and invoicing

It is important to note that you will continue to be contractually engaged by the Authority. The Authority 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 Authority.

2 Confidentiality

Your report 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.

3 Conflict of interest

As an expert, 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.

4 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

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HERBERT
SMITH
FREEHILLS

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.

5 Due date

We would appreciate receiving your summary report by 6 July 2016. The report should be marked 'Confidential and subject to legal professional privilege.'

Yours sincerely

Michelle Keen
Special Counsel
Herbert Smith Freehills

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HERBERT SMITH FREEHILLS

Mr David Coutts
Jacobs
david.coutts@jacobs.com

1 August 2016
Matter 82449055
By Email

Dear Mr Coutts

Confidential and Privileged

Melbourne Metro Rail Project
Interpreted Hydrogeological Setting EES Summary Report

We continue to act as legal advisors to the Melbourne Metro Rail Authority (**Authority**) in connection with the Melbourne Metro Rail Project (**Project**).

We refer to our letter of instruction dated 29 July 2016.

1 Updated Interpreted Hydrogeological Setting Summary Report

Golder Associates has provided us with an updated version of the Interpreted Hydrogeological Setting EES Summary Report (**Updated Interpreted Hydrogeological Setting Summary Report**) dated 29 July 2016, which we enclose in this letter.

2 Further instructions

We ask that you consider the Updated Interpreted Hydrogeological Setting Summary Report and insofar as it is relevant to your area of expertise

1 consider whether it gives rise to a need to modify any of the proposed EPRs relevant to your area of expertise; and

2 consider whether it causes you to depart from the findings and opinions that you express in the Contaminated Land and Spoil Management Impact Assessment exhibited with the Environment Effects Statement (**EES**).

Yours sincerely

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Attached

1 Interpreted Hydrogeological Setting EES Summary Report (July 2016)

Annexure C – Summary of Additional Works Completed post EES

The post EES investigation included the collection of data from all precincts along the alignment, including: additional soil bores, groundwater wells, soil vapour points, soil sampling for waste classification and human health risks, groundwater sampling for human health and environmental risks. The following sections describe elements of the above investigations and resulting data set, and what changes/impacts they have on the conclusions of the EES submission.

Since the EES submission over 100 additional boreholes have been advanced, over 50 groundwater wells installed and sampled and over 1,000 soil samples tested for various contaminants of concern.

(a) Naturally Occurring, potentially acid sulfate soil and rock

An estimated 2,032,000 m³ of spoil would be generated by the construction of Melbourne Metro (approximately 613,000 m³ from the tunnels, 103,000 m³ from the portals and 1,316,000 m³ from the stations). Of this, it is anticipated that 48,500 m^3 would be acid sulfate soil (ASS) associated predominantly with Coode Island Silt[1] and 568,000 m^3 would be acid sulfate rock (ASR) associated with the Silurian Melbourne Formation mudstones[2] (Table 1).

Since completing the EES, over 500 additional naturally occurring / potentially acid sulfate soil and rock samples were taken by Golder.

(b) Handling and disposal of contaminated and clean spoil

The further sampling has increased the overall confidence in the data from low to medium[3] based on the possible 'high' case in-situ fill volumes. In addition:

- The overall volume of spoil to be generated has not changed as the concept design assessed has not significantly changed since the EES;
- No significant changes to Prescribed Industrial Waste (PIW) volumes have occurred since the EES; and
- The overall density of sampling has increased post EES. The sampling density at the time of the EES, depending on whether the possible 'high' case or 'likely' case in situ volume of fill was used, was between one sample per 780 m^3 to 1,100m^3. This compared to a higher sampling density post EES of between one sample per 300m^3 and 490m^3.

(c) Interception of contaminated groundwater in the immediate vicinity of the project

The EES reported that the groundwater quality beneath the project area is generally poor with high salt loads and often contaminated with various heavy metals (such as barium, boron, iron, manganese, nickel) and other inorganics (such as nitrate and ammonia). Often these contaminants reflect either natural conditions in the aquifer (such as nickel in Older Volcanics groundwater) or contamination from non-point sources.

1 The Coode Island Silt is considered the highest risk geological formation associated with waste ASS production. Spoil from the Brighton Group, Werribee Formation, Quaternary Alluvial Deposits and Older Volcanics also have potential to produce acid although sampling results suggest this is a low risk.

[2] The Melbourne Formation is more likely to be acid forming below about 24m below ground level representing where the rock changes from weathered to unweathered properties.

[3] Based on confidence levels designated in Section 5.6.3 of the EES (Contaminated Land and Spoil Management)

The EES reported that site investigations confirmed low levels of volatile organic compounds in groundwater in the Parkville to CBD North segment and near Fawkner Park associated with man-made point sources of contamination on or near the alignment.

The EES reported that twenty-eight EPA Groundwater Quality Restricted Use Zones (GQRUZs) were identified within approximately one (1) km of the project boundary (two within the project boundary), and that contaminated groundwater from these sites may migrate towards tunnels or excavations if the groundwater flow regime is altered during construction and through ongoing operation (the GQRUZs are discussed in Technical Appendix O Groundwater).

Overall the post EES investigation dataset confirms the conclusion reached in the EES, that man-made point sources of localised groundwater contamination across the alignment will be encountered and require management. This is a typical observation and conclusion when considering impacts on groundwater quality associated with infrastructure projects within an urbanised environment.

Ongoing investigations, post EES, in the area of CBD North station include additional groundwater monitoring locations in the vicinity of the former brewery site where known chlorinated hydrocarbon and hydrocarbon contamination of groundwater is present. This groundwater contamination was identified in a published environmental audit report for a portion of the former brewery site ("Stage 1A") available at the time of the EES. Since publication of the EES, an audit report for one further portion of this site (Stage 1B) has become available and audits of portions of the site (Stage 2 and Stage 3) are on-going and information is currently not publically available.

On-going investigations will provide additional data to further inform understanding of the nature and extent of groundwater contamination.

(d) Interception of vapours and gases in the immediate vicinity of the project

Investigations to assess vapour and other ground gases during the EES stage indicated:

- Coode Island Silt between around the western portal and the southern aspect of the Yarra River crossing may produce methane and other ground gases; and
- Potential for volatile contaminants (vapours) to be present in soil/groundwater near Parkville and CBD North precincts and near Fawkner Park.

Post EES investigations identified:

- Ground gases (methane) present in the Coode Island Silt at Arden station; and
- Soil vapour (solvents) is present at Arden station in shallow fill. It is noted however, that this material will be excavated during construction of the station and therefore is unlikely to present an ongoing risk to the human health or users of the site and train passengers.

The organic contamination in groundwater noted in (c) above may also lead to vapours, derived from groundwater, entering construction work areas. Additional investigation works are currently being undertaken in the area of the former brewery site to further evaluate the potential vapour risk associated with groundwater.

Table 1: Summary of 'possible high case' in situ spoil volumes (m^3)

Location	Contaminated spoil Prescribed industrial waste (PIW) [3,4]				WASS		Clean Fill Material [6]	Subtotal (Natural) [7]	Total [8]
	Category A	Category B	Category C	Total PIW	PASS / ASS	ASR			
Tunnels									
EES sub totals [1]	0	0	0	0	12,000	209,000	392,000	613,000	613,000
Post-EES sub totals [2]	0	0	0	0	14,500	274,000	324,500	613,000	613,000
Portals									
EES sub totals	1,100	5,900	18,900	25,900	1,000	0	77,300	78,300	104,200
Post-EES sub totals	2,000	4,200	18,800	25,000	1,000	0	77,000	78,000	103,000
Stations									
EES sub totals	14,600	20,200	72,500	107,300	35,000	294,000	880,000	1,209,000	1,316,300
Post-EES sub totals	9,750	21,000	76,200	106,950	33,000	294,000	882,000	1,209,000	1,315,950
Project wide totals									
EES totals	**15,700**	**26,100**	**91,400**	**133,200**	**48,000**	**503,000**	**1,349,300**	**1,900,300**	**2,033,500**
Post-EES totals	**11,750**	**25,200**	**95,000**	**131,950**	**48,500**	**568,000**	**1,283,500**	**1,900,000**	**2,031,950**

NOTES:

1. Data Source: Technical Appendix Q of the EES
2. Data Source: Golder Associates (2016). Melbourne Metro Rail Project – Contaminated land Assessment EES Summary – July 2016 Update Report, 1525532-334-R-Rev0
3. Contaminated spoil defined as Prescribed Industrial Waste in the EPA Industrial Waste Resource Guidelines 2009.
4. Contaminated spoil may also contain asbestos.
5. Waste Acid Sulfate Soils (WASS) comprise Potential Acid Sulfate Soils (PASS), Acid Sulfate Soils (ASS) and Acid Sulfate Rock (ASR).
6. 'Clean Fill' volumes calculated as the difference between the Total natural spoil volume and the volume of WASS
7. Total volumes of natural material taken from Golder Associates Procurement Stage Interpretive Report
8. Spoil quantities are in-situ (dense) volumes.

Annexure D – Response to Submissions (Contaminated Land and Spoil)

Refer to the following Table 2.

Table 2: Responses to submissions relating to Contaminated Land and Spoil Management

Issue	Submission No.	Response	Recommended New or Modified Environmental Performance Requirement
Handling and management of acid sulfate rock at Fawkner Park should the TBM launch site be reconsidered at this location.	MM141	Fawkner Park is no longer being pursued as a preferred TBM launch site.	N/A
Requests additional detail relating to local management of clean fill and prescribed waste in Federation Square precinct.	MM178	All such works would be undertaken in accordance with a construction environmental management plan (EPR EM1) and also in accordance with EPR C1, C2 and C4. The specific methodology for handling, staging and treatment of clean fill and prescribed wastes at the Federation Square precinct will be determined by the successful tenderer. EPR SC3 provides that prior to main works or shaft construction, a community and business involvement plan to engage potentially affected stakeholders and advise them of the planned construction activities and project progress.	N/A
Insufficient research completed into options for spoil removal and materials and equipment delivery for Arden Station construction. Severe amenity and safety issues for residents (dust, noise, traffic). Suggests construction of purpose built road adjacent to existing railway line for heavy and construction vehicles.	MM199	All such works would be undertaken in accordance with a construction environmental management plan (EPR EM1) and also in accordance with EPR C1, C2 and C4. The specific methodology for handling, staging and treatment of clean fill and prescribed wastes will be determined by the successful tenderer. Traffic associated with construction works will be managed through implementation of a traffic management plan, prepared by the successful tenderer. The impacts from traffic, generated during construction works, would be mitigated through the implementation of EPR T1. Potential dust and noise impacts associated with construction works are addressed in other expert witness statements.	N/A
Supports adoption of alternative design option for western portal, including transporting spoil material using conveyor with loading point via barges on Maribyrnong River and disposal to Port Phillip Bay as most spoil uncontaminated.	MM243, MM247, MM248 MM286	All such works would be undertaken in accordance with a construction environmental management plan (EPR EM1) and also in accordance with EPR C1, C2 and C4. The specific methodology for handling, staging and treatment of clean fill and prescribed wastes will be determined by the successful tenderer, including an assessment of the feasibility of use of barges for spoil disposal. Disposal of clean fill materials would be undertaken in accordance with relevant legislation, and would take place at an appropriately licensed facility. Disposal of excavated spoil would not take place in Port Phillip Bay.	N/A

Issue	Submission No.	Response	Recommended New or Modified Environmental Performance Requirement
		Traffic associated with construction works will be managed through implementation of a traffic management plan, prepared by the successful tenderer. No further details on transport options can be provided at this stage of the project. The impacts from traffic, generated during construction works, would be mitigated through the implementation of EPR T1.	
Increased volume of spoil if conceptual option adopted, supports alternative design option.	MM243	All such works would be undertaken in accordance with a construction environmental management plan (EPR EM1) and also in accordance with EPR C1, C2 and C4. The specific methodology for handling, staging and treatment of clean fill and prescribed wastes will be determined by the successful tenderer.	N/A
Environmental risks posed by the proposed project from contaminated land and soils include: · the disturbance of potential and actual acid sulfate soils during construction; and · the storage, transportation, treatment and disposal of excavated contaminated materials. Consideration should be given to the maximum reuse of materials on site. All waste materials generated during the construction works to be disposed of off-site must be managed in accordance with the Environment Protection (Industrial Waste Resource) Regulations 2009.	MM291	All such works would be undertaken in accordance with a construction environmental management plan (EPR EM1) and also in accordance with EPR C1, C2 and C4 and according to Environment Protection (Industrial Waste Resource) Regulations 2009. The specific methodology for handling, staging and treatment of clean fill and prescribed waste soils will be determined by the successful tenderer, including an assessment of the potential for reuse of materials on site (it should be noted that owing to the extent of subsurface excavations, the potential for reuse of excavated materials on site is likely to be low.	N/A
EPA Recommendation 6: EPA recommends as part of the CEMP and SEIP that Precinct-specific Groundwater Management Plans are developed and implemented to manage	MM291	EPR C3 addresses the requirement for risk assessment and (if required) identification of remedial options in respect to this risk (EES risks #CL030 and #CL54).	N/A

Issue	Submission No.	Response	Recommended New or Modified Environmental Performance Requirement
potential groundwater impacts, including the risk of “mobilisation” and/or “migration” of contaminated groundwater. There are ongoing environmental risks associated with groundwater during project operations. Risks associated with vapour penetrating the MMRP infrastructure are included.			
No specific contaminated land or groundwater concerns. Concerns re amenity including traffic, noise and air quality, tree removal.	MM306	Traffic associated with construction works will be managed through implementation of a traffic management plan, prepared by the successful tenderer. No further details on transport options can be provided at this stage of the project. The impacts from traffic, generated during construction works, would be mitigated through the implementation of EPR T1.	N/A
EES does not provide for remedial measures if spoil is mismanaged. Alternative construction method of tunnelling from outside city would enable conveying spoil to localised site outside city.	MM310	All such works would be undertaken in accordance with a construction environmental management plan (EPR EM1) and also in accordance with EPR C1, C2 and C4. In order to avoid mismanagement of spoil during the construction stage, the methodology for handling, staging and treatment of clean fill and prescribed wastes will be determined by the successful tenderer. An assessment of alignment options was undertaken in determining the concept design presented in the EES which includes TBM launch site options. Temporary staging of excavated materials may be undertaken at various locations along the alignment however the majority of excavated soil / rock will be transported directly to a receiving facility. Traffic associated with construction works will be managed through implementation of a traffic management plan, prepared by the successful tenderer. The impacts from traffic, generated during construction works, would be mitigated through the implementation of EPR T1.	N/A
Safety concerns from trucking spoil - recommend alternative construction method (tunnelling rather than shafts) to enable conveying spoil outside city.	MM317	Traffic associated with construction works will be managed through implementation of a traffic management plan, prepared by the successful tenderer. The impacts from traffic, generated during construction works, would be mitigated through the implementation of EPR T1. An assessment of alignment options was undertaken in determining the concept design presented in the EES which includes TBM launch site options. Temporary staging of excavated materials may be	N/A

Issue	Submission No.	Response	Recommended New or Modified Environmental Performance Requirement
		undertaken at various locations along the alignment however the majority of excavated soil / rock will be transported directly to a receiving facility.	
Migration of existing contaminated groundwater plumes beneath university land resulting in preclusion of groundwater beneficial uses and potential vapour intrusion to underground structures. Request EPRs include: · assessment of potential for migration under university land · consultation in preparation of any GMP which may impact on university land · communication protocols for notification to university if migration evident and remedial actions.	MM318	EPR C3 addresses requirement for risk assessment and (if required) identification of remedial options in respect to this risk (EES risks #CL030 and #CL54). However this risk is also addressed in the EES for groundwater and the groundwater expert witness statement. EPR SC3 provides that prior to main works or shaft construction, a community and business involvement plan to engage potentially affected stakeholders and advise them of the planned construction activities and project progress.	N/A
EPRs should require university to be consulted in development of spoil management plans and CEMPs affecting university land.	MM318	EPR SC3 provides the mechanism through which University of Melbourne would be engaged prior to and during construction.	N/A
Suggests emphasis of EPR amended so that design enhances flood protection rather than maintaining current status. Planning for land re handling of contaminated spoil will need to be addressed by VicTrack and government agencies responsible for establishing planning framework for future	MM365	N/A	N/A

Issue	Submission No.	Response	Recommended New or Modified Environmental Performance Requirement
renewal. No specific concerns.			
Concerned about odour and hazard to school from spoil transfer area on Edmund Herring Oval. Requests add to EPRs: · consultation re stockpiling activities, site SMP and CEMP, PASS/PASR management plan, Remedial Options Assessment, HSEMP; · installation and monitoring of vapour bores on MGS boundary during and after construction works if gases/vapours detected in ROA; and · training to MGS staff and students re HSEMP.	MM367, MM367	All such works would be undertaken in accordance with a construction environmental management plan (EPR EM1) and also in accordance with EPR C1, C2 and C4. The specific methodology for handling, staging and treatment of clean fill and prescribed wastes will be determined by the successful tenderer. EPR SC3 provides the mechanism through which Melbourne Grammar School would be engaged prior to and during construction and this engagement would include details of spoil characterization, handling, transport and disposal. A remedial options assessment would only be prepared should the level of existing contamination detected within the project boundary warrant remediation. Initial investigation data indicates that the levels of ground gases / vapours associated with contamination to be low and therefore vapour bores on the MGS boundary are not considered necessary. Traffic associated with construction works will be managed through implementation of a traffic management plan, prepared by the successful tenderer. The impacts from traffic, generated during construction works, would be mitigated through the implementation of EPR T1. Potential dust and noise impacts associated with construction works are addressed in other expert witness statements.	N/A
Groundwater drawdown in relation to potential impact on MGS buildings addressed, from inflow during construction at Domain station or rerouting/rebuilding of east-west sewer. Request impact assessed and safeguards implemented if required. MGS advised of any findings in GMP that may impact on school and be advised on final method for disposal	MM367	Response to this submission is addressed in the groundwater expert witness statement, including EPR relevant to potential dewatering impacts. EPR SC3 provides the mechanism through which Melbourne Grammar School would be engaged prior to and during construction. EPR C3 addresses requirement for risk assessment and (if required) identification of remedial options in respect to this risk (EES risks #CL030 and #CL54. However, this risk is also addressed in the EES with EPR C1, C2 and C4.	N/A