ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B1: Hon Adele Farina MLC asked –

What are the salary costs of staff dedicated to clearing regulation?

Answer:

The salary cost of staff dedicated to clearing regulation is $1.93 million. This figure is on an annual basis and includes oncost.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B2: Hon Adele Farina MLC asked –

What are the estimated future costs associated with implementing the green growth plan?

Answer:

The Department of Environment Regulation and other agencies, led by the Department of the Premier and Cabinet, are working to estimate agency costs for implementing the Strategic Assessment for the Perth and Peel Region Conservation Program.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

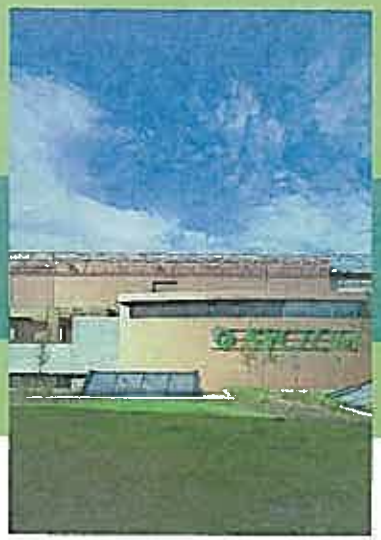
Environment Regulation

Supplementary Information Number B3: Hon Adele Farina MLC asked –

Please provide a copy of the Waste Authority's policy for waste-to-energy proposals.

Answer:

A copy of the Waste Authority's policy for waste-to-energy proposals is attached.



WASTE AUTHORITY

MAY
2013

Waste to Energy Position Statement

(Thermal Treatment)

WASTE AUTHORITY
WA...TOO GOOD TO WASTE

1. BACKGROUND

In April 2013, the Environmental Protection Authority and the Waste Authority provided advice to the Minister for Environment on the environmental and health performance of waste to energy (WtE) technologies. The advice was provided under Section 16e of the *Environment Protection Act 1986* and contained recommendations relating to waste to energy in Western Australia.

This WtE Position Statement complements the Section 16e advice and presents additional matters of interest for the Authority that are outside the scope of that advice. The Position Statement addresses WtE in the context of the Authority's efforts to reduce waste to landfill and increase resource recovery in Western Australia.

This WtE Position Statement focuses on the thermal treatment of waste with energy recovery and does not directly consider other forms of waste management that use mechanical and biological treatment to produce energy or fuels.

Waste Generation in Western Australia

Waste generation in Western Australia is growing, largely as a result of increasing population and economic growth. In 2011/12 it was estimated that total solid waste generation in the Perth and Peel regions was 5.23 million tonnes, increasing to 5.6 million tonnes in 2014/15 and 6.1 million tonnes in 2019/20.

Legislation and Policy

The Western Australian Government is committed to reducing waste and increasing resource recovery. The *Waste Avoidance and Resource Recovery Act 2007* (WARR Act) and the Western Australian Waste Strategy *'Creating the Right Environment'* are the key legislative and policy documents that support this commitment.

The WARR Act establishes the Waste Authority and its functions, including a requirement for the Waste Authority to prepare a waste strategy for Western Australia.

The Western Australian Waste Strategy aims to move the State to a low waste society. The strategy contains landfill diversion targets for the three main waste streams:

- Municipal Solid Waste: 65% diversion of metropolitan waste from landfill by 2020 (50% diversion from major regional centres)
- Construction and Demolition Waste: 75% diversion from landfill by 2020
- Commercial and Industrial Waste: 70% diversion from landfill by 2020

The Waste Hierarchy

A waste hierarchy is set out in Section 5 of the WARR Act and the Waste Authority supports its application.

The waste hierarchy ranks waste management options in order of their general environmental desirability. It is developed from a life cycle viewpoint, and is consistent with approaches to risk management. Generally, the higher waste is managed up the hierarchy, the lower the impact – and therefore risk - to the environment and communities.

The waste hierarchy, or variations thereof, is internationally recognised as a best practice waste management tool. It is a key feature of the EU Waste Framework Directive, and is applied by the US EPA.

The waste hierarchy places energy recovery ahead of disposal.

The waste hierarchy is intended to be used alongside other assessment tools such as cost benefit analysis to help guide decision making.

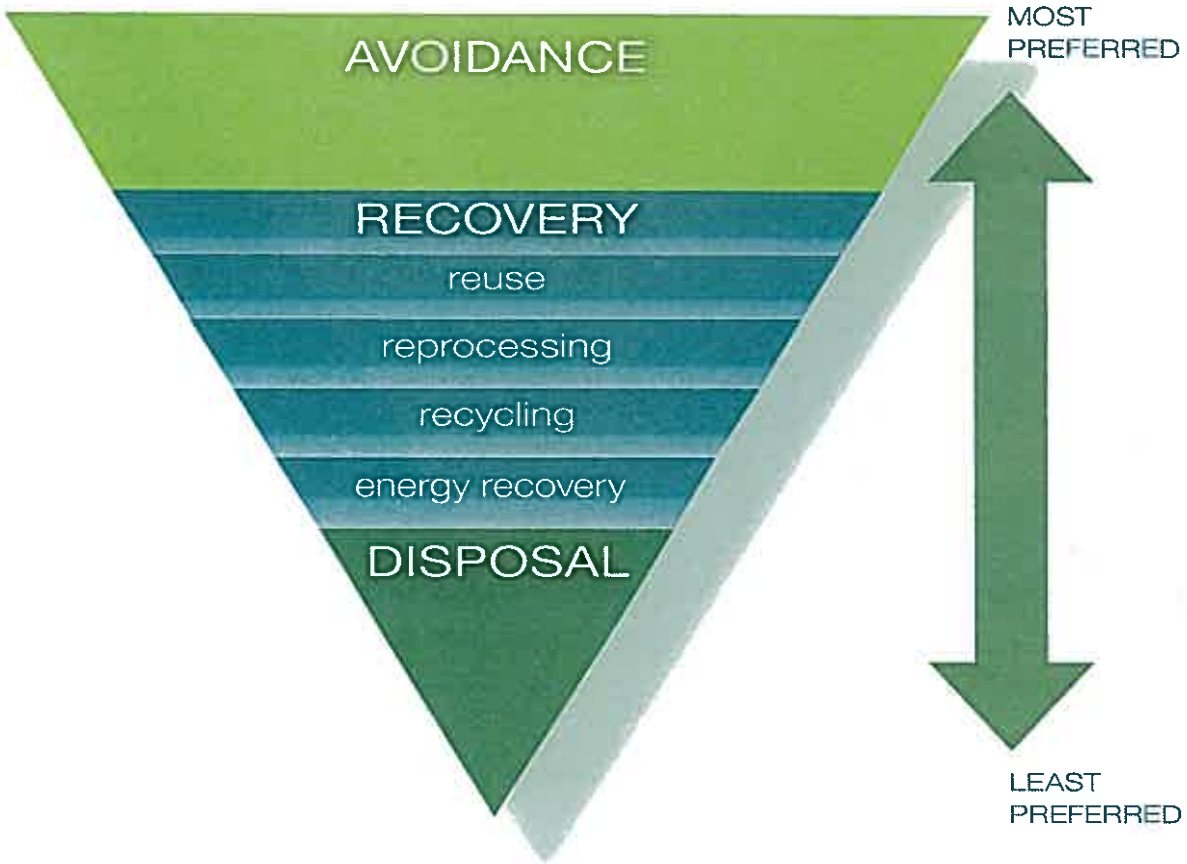


Figure 1 Waste hierarchy based on the WARR Act

No single waste management process or technology is suitable for all waste streams and all circumstances. In order to deliver the objectives and targets in the Waste Strategy, there is a need to utilise a range of waste management processes and technologies along different points of the waste hierarchy.

Energy recovery is a recognised option at the lower end of the waste hierarchy, which may be suitable for residual waste. Energy recovery is more favourable than disposal to landfill, but less favourable than the options of avoidance, re-use, reprocessing and recycling.

Residual waste generally refers to material that is left over after processing (through a processing facility and/or a source separation system), and which would otherwise be sent to landfill. The composition of residual waste streams may vary from region to region and over time, depending on the availability of recycling and recovery options.

Considerable volumes of residual waste are currently being disposed to landfill. The Waste Authority considers best practice WtE processes to be a preferable option to landfill for the management of residual waste but not at the expense of reasonable efforts to avoid, reuse, reprocess or recycle waste. WtE has the potential to divert substantial volumes of waste from landfill (and thereby support the delivery of Waste Strategy targets) and produce a beneficial product.

Waste Governance Arrangements

WtE facilities rely on a certain volume of feedstock (waste) to ensure viability over the long-term. However, long-term waste supply arrangements have the potential to undermine the application of the waste hierarchy; long-term supply arrangements can 'lock up' residual waste streams for a specific use thereby undermining the viability of future higher value waste management options (such as recycling).

The Waste Authority promotes waste management practices that are consistent with the waste hierarchy. This requires flexibility in waste collection and processing arrangements to allow waste to flow to its 'best' (highest value and lowest environmental impact) use over time. Current waste collection and processing arrangements may not readily accommodate this level of flexibility.

> *The Waste Authority promotes governance arrangements that accommodate flexibility in waste management and processing. Flexibility is important for ensuring that waste is managed consistently with the waste hierarchy, and can accommodate changing waste streams, technologies and processes.*

Siting Considerations

The Section 16e advice recommends that *Waste to energy plants must be sited in appropriate current or future industrial zoned areas with adequate buffer distances to sensitive receptors. Buffer integrity should be maintained over the life of the plant* (Recommendation 20). The Waste Authority considers that the location of WtE facilities in industrial areas in the early stages of waste to energy processing in Western Australia is an appropriate approach, however each case must be considered on its merits and other siting options are possible, depending on the circumstances.

The Waste Authority recognises the benefits in siting waste infrastructure close to the source of waste generation. Benefits include reduced transport impacts from the movement of waste, such as greenhouse impacts, traffic congestion and community amenity.

Given the advances in pollution control technology and architectural design, the Waste Authority provides in principle support for more flexible siting arrangements for WtE facilities into the future. Flexible siting arrangements may help to reduce the overall impacts to the environment and community.

The Waste Authority also understands that WtE operations require long-term certainty. The Waste Authority supports the buffers for WtE operations being within a facility's site to help protect long-term siting. The Waste Authority encourages the development of precincts where compatible uses are incorporated into the buffer boundary of WtE facilities and would ensure that tracts of land are not locked up unnecessarily as empty buffer areas.

> *The Waste Authority supports appropriate siting arrangements for WtE facilities into the future to harness the benefits of locating waste facilities close to the source of waste generation. The Waste Authority also considers that WtE buffers should be contained on site or within waste management precincts to protect the site over the longer term, to maximise the utility of the buffers, and to avoid impacts on other land owners.*

5. CONCLUSION

The Waste Authority is a co-signatory (with the Environmental Protection Authority) to the WtE advice provided to the Minister for Environment under Section 16e of the *Environment Protection Act 1986*. This position statement sets out additional matters of interest to the Authority beyond the scope of the Section 16e advice.

The waste hierarchy is set out in Section 5 of the *WARR Act 2007* and the Waste Authority supports its application. Energy recovery is preferred over disposal to landfill, and the Waste Authority agrees it can play an important role alongside other waste management options to achieve waste strategy targets and minimise environmental impacts.

The Waste Authority believes that waste to energy should only be used for genuine residual waste that could not with reasonable efforts be reused, reprocessed or recycled, and would otherwise go to landfill. The Waste Authority also supports siting arrangements for WtE facilities into the future that harness the benefits of locating waste facilities close to the source of waste generation.

Waste to energy is relatively new to Western Australia. The Waste Authority recognises there may be significant developments in waste to energy (for example, policy, regulation, technologies) into the future. The Waste Authority may review the position statement in light of these changes.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B4: Hon Adele Farina MLC asked –

Please provide a list of those local governments that have taken up the Better Bins initiative and are currently implementing it and how much money they are getting.

Answer:

Funding agreement signed and implementation commenced

Shire of Donnybrook-Balingup	$154,050
City of Bayswater	$713,760
City of Stirling	$1,650,000
Town of Cambridge	$211,182
Shire of Capel	$141,000
Shire of Collie	$117,000

Better Bins funding is determined by the type of kerbside services provided by local governments and the number of households to which those services are provided.

The figures listed above are subject to change depending on actual services provided by the end of the contract period.

Three further local governments (Town of Cottesloe, City of Rockingham and City of Cockburn) have indicated their in-principle support to participate in the program.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B5: Hon Peter Katsambanis MLC asked –

Please provide a breakdown of LEED projects that have been funded for 2014-15 and 2015-16, and any money that might have already been committed for 2016-17.

Answer:

The Low Emissions Energy Development fund has provided a total of $17.2 million in grants to the following nine low emissions energy projects:

- Carnegie Wave Energy's CETO 5 technology produces electricity and desalinated water from wave energy at Garden Island.
- Morton Seed and Grain's boiler burns waste oat husks to produce steam and electricity at Wagin.
- Curtin University is developing a grinding pyrolysis technology to produce solid, liquid and gas from biomass.
- The University of Western Australia is developing a pressure swing adsorber to separate methane from a nitrogen waste stream at natural gas facilities.
- The University of Western Australia's enhanced natural gas recovery reinjects waste carbon dioxide into natural gas reservoirs to enhance yield and sequester carbon dioxide.
- Richgro/Biogass's anaerobic digester uses food waste to produce methane for electrical generation in Jandakot.
- Future Farm has built a demonstration mallee harvester to harvest trees of up to ten metres in height.
- The City of Kalgoorlie Boulder installed a ground source heat pump for its swimming pool matched with solar thermal and solar photovoltaic energy systems.
- Aurora Algae constructed a demonstration facility to cultivate algae for biofuel production in Karratha.

Recipient	**2014-15** **$**	**2015-16** **$**	**2016-17** **$**
Carnegie Wave Energy	991,649		
Morton Seed and Grain	319,853	62,590	
Curtin Pyrolysis	338,361	164,444	
UWA methane separation	90,000	86,000	
UWA enhanced gas recovery	82,057	255,337	
Total	**1,821,920**	**568,371**	

No grant funds are currently committed for 2016-17.

Four projects were completed prior to 2014-15.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B6: Hon Adele Farina MLC asked –

What are WA's per capita emissions compared to levels in other Australian States?

Answer:

State or territory	Total greenhouse gas emissions for 2013-2014 ($MtCO_2$-e)	Greenhouse gas emissions intensity ($MtCO_2$-e /$b)	Per capita greenhouse gas emissions for 2013-2014 (tonnes)
Western Australia	86.1	0.32	33.7
Queensland	146.7	0.49	31.1
New South Wales	130.2	0.26	17.3
Victoria	118.1	0.34	20.2
South Australia	27.6	0.28	16.4
Northern Territory	12.4	0.61	51.1
Tasmania	1.6	0.06	3.0
Australian Capital Territory	1.5*	0.04	3.8

* The Australian Capital Territory emissions figure is a partial inventory as stationary energy emissions are included in the New South Wales inventory.

Note: Estimates of greenhouse gas emissions are sourced from Commonwealth of Australia (2016) 'State and Territory Greenhouse Gas Inventories 2014'.

The Gross State Product (GSP) data used in the emissions intensity calculations were sourced from Australian Bureau of Statistics (2015) 5220.0 - Australian National Accounts: State Accounts, 2014-15.

Population data for the June 2014 quarter used in the per capita calculations were sourced from Australian Bureau of Statistics (2015) 3101.0 - Australian Demographic Statistics, September.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B7: Hon Adele Farina MLC asked –

In relation to the Department's oversight of environmental licences issued under Part V of the EP Act, how many complaints relating to each category of licence have been received in the last 12 months?

Answer:

The information requested cannot be provided by licence type as the Department of Environment Regulation's Incident and Complaints Management System does not record a complaint by licence type. Each complaint would need to be interrogated individually to determine if it was related to a licence type and collation of this information is a resource intensive task that will involve substantial resources and I am not prepared to divert valuable staff resources away from other duties to this task.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B8: Hon Adele Farina MLC asked –

Of those complaints, how many were investigated; how many were found to be legitimate complaints so that it was justified it was an actual breach and not someone who thought it was a breach but turned out not to be a breach; and where the complaint was found to be legitimate, what action was taken against the licence holder?

Answer:

The information requested cannot be provided by licence type as the Department of Environment Regulation's Incident and Complaints Management System does not record a complaint by licence type. Each complaint would need to be interrogated individually to determine if it was related to a licence type and collation of this information is a resource intensive task that will involve substantial resources and I am not prepared to divert valuable staff resources away from other duties to this task.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B9: Hon Adele Farina MLC asked –

Given that we do everything in government on a cost-recovery basis, why is cost recovery not applied to the assessment of proposals under Part IV?

Answer:

The assessment of Department of Environment Regulation administered licences and associated administration costs, under Part V of the *Environmental Protection Act 1986,* are at full cost recovery.

Part IV of the *Environmental Protection Act 1986* is administered by the Office of the Environmental Protection Authority (OEPA). The budget of the OEPA is presented in Budget Paper 2 page 565 to page 572.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B10: Hon Ken Travers MLC asked –

What are the volumes of articles received through media monitoring at DER?

Answer:

The Department of Environment Regulation received the following volumes of articles from iSentia for the 2014–15 financial year, and the 2015–16 financial year to date (July 2015–May 2016):

July 2014 – June 2015:
Press Clips – 567
TV & Radio Summaries – 273
Online News – 52

July 2015 – May 2016:
Press Clips – 573
TV & Radio Summaries – 350
Online News – 139

AG

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B11: Hon Ken Travers MLC asked –

The thing I find fascinating about it is that you have this figure of $18 million for "Other", which was your actual figure in 2014-15, your estimated actual for 2015-16 and then it is budgeted for every year going forward, but the budget for 2015-16 was only $12 million. It is either some sort of fixed amount that sits there for some reason or what is it? Why does it stay constant, for want of a better term; and why in the 2015-16 budget was it expected to reduce but then did not reduce?

Answer:

The current assets figure of $18,327,000 in the 2014-15 Actual; 2015-16 Estimated Actual, and 2016-17 Budget and Forward Estimates in the line "Other" relates to landfill levy debtors. This is landfill levy owed but not yet collected.

The "Other" line item in the 2015-16 budget of $12.0 million was set in the 2014-15 Budget process and based on the 2013-14 actuals. The figure was not adjusted in the 2015-16 budget process.

At the time of setting the 2016-17 budget, the actual collection for 2014-15 was $18.3 million. This is the figure that was used to forecast the 2015-16 Estimated actual, the 2016-17 budget and forward estimates.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B12: Hon Adele Farina MLC asked –

What is the timeframe for the completion of the assessment of possible contamination on the site on Koombana Bay for new Parks and Wildlife offices?

Answer:

Investigations to determine the nature and extent of any contamination present at the proposed office site on Koombana Bay have been commissioned by the Department of Parks and Wildlife. Parks and Wildlife's environmental consultant has advised the Department of Environment Regulation (DER) that a detailed site investigation report has been completed and provided to the accredited contaminated sites auditor engaged by Parks and Wildlife for review.

Once the auditor's report and accompanying investigation reports have been submitted to DER, the Department will complete its assessment. DER has a target timeframe to complete its assessment within 21 days from receipt of auditor's reports.

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B13: Hon Ken Travers MLC asked –

Please provide reports DER has received regarding the construction work for the railway works associated with the new station or any other works around the new stadium in the areas identified for asbestos contamination.

Answer:

The Public Transport Authority has engaged auditors accredited under Part 7 of the *Contaminated Sites Act 2003*, Mr Jason Clay and Mr Paul Steinwede (both of AECOM Australia Pty Ltd), to audit the investigation, management and remediation of contamination (including asbestos) within the new Perth Stadium and associated rail corridor development areas. As part of the audits, the auditors have submitted six interim reports to the Department of Environment Regulation (DER). The following documents are attached:

1. Interim Auditor Advice - Perth Stadium Environmental Management Plans (16 November 2012)

2. Interim Advice - New Perth Stadium - Transport Corridor, Environmental Management Plan (23 May 2013)

3. Interim Auditor Advice - Perth Stadium Stage 2 and 3 Site Investigation Contamination Report Review (23 May 2013)

4. Interim Advice – Ertech Keller JV Construction Environment Management Plan (Rev F) for Perth Stadium PCS Works Project (26 June 2013)

5. Interim Audit Advice: Review of YRJV Response to Auditor Comments on SRPB CEMP (20 November 2015)

6. Interim Audit Advice: Review of YRJV Response to Auditor Comments on SRPB CEMP, Acid Sulfate Soils Plan and Water Quality Monitoring Procedure (12 January 2016)

DER has advised me that the documents reviewed by the auditors in preparing their interim advice have also been submitted to the Department. Further interim audit advice may be submitted to DER before the management and remediation of contamination is completed and final auditors' reports are prepared and submitted.

ATT 1

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16 November 2012

Chrissie Harwood
Infrastructure and Planning Services
Public Transport Authority of Western Australia
PO Box 8125
Perth Business Centre WA 6849

Dear Chrissie

Interim Auditor Advice - Perth Stadium Environmental Management Plans

1.0 Introduction

Jason Clay of AECOM Australia Pty Ltd (AECOM) was engaged by Perth Transport Authority (PTA) as a WA Department of Environment and Conservation (DEC) Accredited Contaminated Site Auditor (under the *Contaminated Sites Act 2003*). The Site Auditor role is to provide an independent audit of the various environment investigation reports to be produced as part of the Perth Stadium development at the Burswood Peninsula, Perth WA. This audit is required because it is understood that a Mandatory Audit Report may be required as part of the project's environmental/planning approvals.

This advice should not be considered a Mandatory Audit Report (MAR) under the definition of the *Contaminated Sites Act, 2003*. However, this Interim Advice will be attached to the final MAR should one be required.

2.0 Document Reviewed

The following document was reviewed when preparing this Interim Advice Letter:

- Golder (2012) *New Perth Stadium Environmental Management Plan*. Draft, October 2012. Prepared by Golder Associates Pty Ltd. Ref 117643077-036-R-RevC-DRAFT.

It is noted that this interim advice did not include review of the Acid Sulphate Soil (ASS) Sub Management Plan.

3.0 Environmental Management Plan Review

The Site Auditor's review comments are provided in grey shaded boxes throughout this letter for ease of reading.

As part of the review, the Site Auditor has assessed the Golder (2012) draft EMP with general consideration of the WA DEC '*Contaminated Sites Management Series Guidelines*'.

4.0 Technical Review

The Site Auditor's review comments are provided in grey shaded boxes throughout this letter for ease of reading.

As part of the review, the Site Auditor has assessed the documents against the reporting requirements as specified in the WA DEC *Reporting of Site Assessments* (WA DEP, 2001) guideline document.

4.1 Environmental Management Plan - Overview

The New Perth Stadium Environmental Management Plan (EMP) has been prepared as part of an Environmental Management Strategy to guide the Department of Treasury Strategic Projects (SP) in establishing and maintaining controls to manage potential environmental and social impacts during the project.

Golder noted that the EMP should be read in conjunction with the Construction Environmental Management Framework (CEMF), the Operational Environmental Management Framework (OEMF) and the New Perth Stadium Section 38 Referral Supporting Documentation.

The EMP provides a brief overview of the planned stages of the development as summarised below:

- Part 1 – Construction of the Stadium and associated Sports Precinct. This is comprised of two phases:
  - Pre-construction Site Works (PCS works); and
  - Stadium Construction works (Stadium Works)
- Part 2 – construction of the transport infrastructure including rail works and rail station upgrades.
- Part 3 – the construction of the new pedestrian bridge over the Swan River.

The structure of the Environmental Management Plan (EMP) provides an overarching EMP for Part 1 only and includes sub EMPs considerate of Acid Sulphate Soils, Dewatering and Contaminated Sites for the following aspects of the proposed stadium development:

- Stadium and Plaza.
- Bus hub.
- Pedestrian access ways and the stadium ring road.
- Pedestrian bridge across Victoria Park Drive.
- Parklands.

The EMP excludes the following areas:

- Swan River pedestrian bridge.
- Train station.
- Rail alignment.
- Road upgrades to Victoria Park Drive.

The Objectives of the EMP are to describe the various environmental considerations and procedures relevant to the project. The EMP is to be implemented by every Lead Contractor and subcontractor working on-site as well as the Stadium Governance body. It is noted that the EMP will be required to be revised and finalised to the satisfaction of the relevant regulatory agencies and final approval of the Project EMP by SP before any form of work begins on-site.

An overview of the Environmental Management Strategy developed for the New Perth Stadium project is presented in Figure 3 of the EMP.

The Auditor acknowledges the staging of the project and the considers the structure of the EMPs as appropriate and notes that site specific Construction EMPs (CEMP) and Operational EMPs (OEMP) will be developed by the Lead Contractors once appointed. While the overall contents of the EMP and sub EMPs are considered to adequately address potential contaminated site concerns a number of comments are noted in the following letter below. The Auditor's comments are principally focused on:

- Ensuring that the Auditor's stop work authority is enshrined in the reporting responsibilities of the Lead Contractors in a practical and effective way.
- Ensuring that the methods of sampling and assessment of soils and groundwater during the construction phases of the project as detailed in the EMP are consistent with those detailed in the Stage 1 SAP.
- Clarifying wording or trigger points in the EMP that triggers the requirement to report an incident e.g. the use of the words '*significant*'.
- Providing more detail regarding the management of waste and the potential re-use thereof.
- Ensuring that the assessment of data collected during the construction phases are undertaken with full consideration of the CSM developed and agreed to by Golder and the Contaminated Site Auditor.
- Not limiting the contingency measures and management objectives to an exhaustive list i.e. provide these as a minimum requirement.

4.1.1 EMP - Contaminated Sites Auditor

Section 5.5 of the EMP states that "*it is assumed that the Contaminated Sites Auditor will be involved in the project up to site classification (under the Contaminated sites Act 2003). Once the Site has been classified, it is envisioned that the Operation of the Project will be regulated by the relevant regulatory authorities*".

The Auditor agrees with the assumption that the Auditor's role may cease following site classification.

4.1.2 EMP - Environmental Management Objectives

Section 6.0 of the EMP details the various Environmental Management Objectives for the project.

The Auditor notes that this section would benefit from clarification that management of contamination will be in accordance with the relevant legislation and guidance i.e. *Contaminated Sites Act, 2003* and the *DEC Contaminated Sites Guideline Series.*

4.1.3 EMP - Aquatic Flora and Fauna and Groundwater Management Measures

Section 7.3.4 of the EMP provides a list of management and mitigation measures to be taken by the Lead Contractor to reduce or negate impacts to project area aquatic flora and fauna during the construction phase.

Section 7.5.9.1 of the EMP also details the field monitoring requirements, laboratory analysis and sampling methods. The EMP states that "*Groundwater sampling should be carried out by an experienced groundwater professional or environmental scientist in accordance with Australian sampling standards and using appropriate low flow sampling methods*".

The Auditor notes that the third bullet of the management and mitigation measures (undertake groundwater and surface water monitoring in line with Sections 7.4 and 7.5) refers the reader to Sections 7.4 and 7.5 of the EMP which provides details on specific management measures to be implemented.

The Auditor considers that the EMP would benefit from additional clarification as follows:

- Tables 5 and 7 to provide clarity on who reports to the Auditor within 24 hours as it is not currently clear if this would be the SP or the Lead Contractor. As discussed in recent meetings, it is suggested that a risk/non-conformance register be developed to aid the reporting to ensure consistency in potential non-conformance interpretation.
- Where mitigation measures are being applied to an identified non-conformance, it is considered appropriate that the Auditor should be involved in assessing the adequacy of proposed measures from an early stage.
- Where trigger values are noted in the text, these should be more broadly linked to those agreed in the existing Stage 1 SAP for the Project.
- Where the trigger is related to interpretive wording such as '*significant*' or '*impact negatively*', clearer wording or triggers should be used. It is considered by the Auditor that such wording is vague and open to interpretation and may influence the reporting of non-conformances. Where words such as '*significant*' are not related to statistical significance or a definite interpretation then an alternative trigger should be derived.
- Provide the surface water and groundwater mitigation measures as a minimum requirement i.e. not an exhaustive list to ensure flexibility should other mitigation measures be required as the project progresses.
- In order to ensure consistency regarding analytical data, the sampling and analytical methods for groundwater sampling should be the same as those specified in the agreed Stage 1 SAP. The wording in the EMP should reflect this as it is understood that the Stage 1 SAP has been made available to prospective Lead Contractors.
- Is there an intention to provide guidance on the level of assessment (e.g. tier 1 assessment considerate of the CSM for the Project) to be undertaken by the Lead Contractor? Currently this is not provided for in the EMP and may be useful in ensuring there is a consistent assessment of data as the project progresses.

4.1.4 EMP - Waste Management

Section 7.11 of the EMP provides details on the waste management aspects of the project including management objectives, limits and targets, potential social and environmental impacts and proposed management and mitigation measures.

The Auditor considers that the report would benefit from inclusion of a discussion regarding the process of managing re-use of soil wastes at the site. At present the EMP does not provide any guidance on the expected approach to be adopted for determining the suitability and legality of reusing site derived waste during cut and fill activities during construction.

4.1.5 EMP - Environmental Incidents Management Procedure

Section 14 of the EMP provides an overview of the proposed organisational structures for reporting during the construction and operational phases of the Project and is also presented in Figures 5 and 6 of the EMP.

The Auditor considers that the proposed reporting structure is suitable for the project. However, as referred to earlier in this advice, the Auditor considers that the EMP would benefit from a better definition on the trigger for reporting . In addition, it is considered that provision of all reported non-conformances be made available to the Auditor by way of a register so that collective judgement between SP and the Auditor can determine the need for a stop work order.

4.2 Dewatering Management Plan

The Dewatering Management Plan (DMP) is presented as Appendix D of the overarching EMP and provides details on management measures to be implemented where dewatering will be undertaken. Currently no specific dewatering has been identified and it is not expected that any significant dewatering will be required during the project. However, to ensure that where dewatering activities are required this plan has been developed to assist the Lead Contractor.

The Auditor considers that the DMP has been sufficiently developed to provide the necessary guidance to the Lead Contractor with the exception of the following comments:

- Nutrients are not clearly stated as being present in groundwater in some of the DMPs sections e.g. 8.1.1 and 8.1.2 only refer to metals and subsequent treatment of them.
- The DMP does not provide clear reference to the level of assessment required i.e. are concentrations of Contaminants of Potential Concern (CoPC) to be compared to the trigger values as presented in the Stage 1 SAP or just to baseline and determine trends. The expectation should be made clear with the Auditor's preference to have the Lead Contactor compare to the trigger values as presented in the Stage 1 SAP for overall project consistency.
- The sampling and analytical methodologies are not clearly stated in the DMP. The Auditor considers that the methods specified in the Stage 1 SAP should be referenced here for consistency.

4.3 Contaminated Sites Management Plan

The Contaminated Site Management Plan (CSMP) is presented as Appendix E of the overarching EMP and details the objectives as follows:

- Outline the measures related to the management of contamination that SP and its Lead Contractors are to follow to minimise impact on sensitive receptors and the environment during the Construction Phase of the Project.
- Describe the management measures and controls required in order to minimise environmental impact arising from the Construction Phase of the Project.
- Describe the management measures and controls required in the instance that unknown contaminated soil or water is encountered during the Construction Phase of the Project.
- Outline the measures related to the management of contaminated sites that the Stadium Governance body and its contractors are to follow to minimise impact on sensitive receptors and the environment during the Operational Phase of the Project.

The Auditor considers the objectives suitable for the proposed works.

4.3.1 Potential Environmental Impacts

The CSMP provides detail in Sections 7.1 and 7.1 on the Construction Phase work items and their associated potential impacts on the environment.

The Auditor notes that potential ground improvement techniques such as piling, installation of wick drains or installation of stone columns has not been included in either Section 7.1 or 7.2. Given that such activities will have activity specific potential impacts in the form of the potential creation of vertical preferential pathways through the different groundwater bodies at the site, it is considered that these should be included.

It is also not clear if the '*dewatering of potentially contaminated water*' line item in Section 7.1 is inclusive of the modelled increase in groundwater discharge to the Swan River resulting from surcharging.

Clarity should be provided on whether vapours have been used to cover both landfill gases as well as hydrocarbon vapours.

4.3.2 Potential Environmental Disturbance and Impacts

Section 8.1.4 of the CSMP lists aspects of the Construction Phase that may have the potential to disturb contaminated soil and ASS. The CSMP states that the "*potential impacts of contaminated soil and ASS disturbance on the environment include:*

- *Release of contaminants and/or acidity into groundwater and the Swan River*
- *Release of contaminants into the air through volatilisation and dust generation".*

The Auditor considers that the CSMP would benefit from making a clearer distinction on the presence of separate groundwater bodies rather than referring to groundwater only. This is considered relevant due to the potential construction methods and activities including piling, wick drains, stone columns etc that will need to consider the presence of multiple aquifers prior to implementation.

4.3.3 Construction Phase Management Objectives, Targets and Key Performance Indicators

Section 8.1.5 of the CSMP details in tabular form (Table 1) the various management objectives, target and key performance indicators to be adopted by the lead contractors.

The Auditor considers that Section 8.1.5 would benefit from the following:

- Inclusion of guidance on appropriate location of stockpiling and the condition of the bund (e.g. ideally constructed of impermeable materials to prevent leachate migrating vertically down through un-impacted unsaturated soils)
- Provide management objectives for the management of leachate from stockpiles – not just run off.
- Inclusion of a management objective relating to appropriate reuse of materials at the site.

4.3.4 Contingencies

Table 3 in the CSMP details the contingency actions for the soil management plan where key performance targets are not met.

The Auditor considers that the contingency actions detailed in Table 1 would benefit from inclusion of sampling beneath stockpiles after their removal to ensure that no impacts have occurred to unsaturated shallow soils. It is also considered that the report would benefit from the provision of details on how to manage leachate generated from stockpiles and not limited to run off only.

The air management reference references '*Section 0*'..

4.3.5 Water Management Plan

Sections 8.2.1, 8.2.2 and 8.2.3 details the current understanding of groundwater at the site, provides a list of potential environmental disturbance and impacts and defines the Construction Phase management objectives, targets and performance indicators respectively.

Section 8.2.5.2 provides details on the proposed analytes and sampling method (low flow) to be used during the management of groundwater. Section 8.2.5.3 (Other Monitoring) provides details on the potential impacts surcharging may have at the site and recommends locations which should be considered for monitoring of groundwater quality during the surcharging works.

The Auditor notes that in Section 8.2.1 naphthalene impacts are not mentioned. Although current data indicate that impacts are relatively localised, this information should be included.

The Auditor also considers that Section 8.2.2 should provide improved detail on the potential for ground improvement works such as piling, wick drains and stone columns to create preferential pathways between separate groundwater bodies understood to be present at the site. Based on this, the Auditor considers that the CSMP would therefore benefit from including a distinct management objective relating to prevention of impacting groundwater bodies resulting from creation of vertical preferential pathways.

As previously noted in this letter, the the report should reference the sampling suites, sampling methods and analytical methods in the Stage 1 SAP to ensure data consistency throughout the project.

The Auditor notes that Groundwater locations are presented on Figure 5 and not Figure 4 and that some of the locations recommended for sampling as listed in Table 7 are not present on Figure 5. The number of wells proposed to monitor the potential impacts of surcharging are limited and may not provide adequate coverage relative to the area of surcharging. The CSMP may benefit from suggesting that further wells are likely to be required to appropriately manage this element of the works.

4.3.6 Reporting

Section 8.4, Section 13 and Table 11 present the requirements for reporting during the Construction Phase for soil, water and air management.

As noted previously, the Auditor considers that the reporting process shinclude a risk/non-compliance register that can be distributed to SP and the Auditor to facilitate effective and timely decision making on stop work orders where these are considered necessary.

4.3.7 Auditor Conclusions

The Auditor considers that the overarching EMP and related sub management plans (Dewatering and Contaminated Sites) have been adequately developed with the exception of the comments included above. The Auditor considers that amendment of the EMP and Sub EMPs considerate of the comments provided above would provide a more robust basis for the development of the CEMP and OEMPs to be developed by the Lead Contractor(s).

4.4 Closure

Should you have any queries relating to the above review, please do not hesitate to contact Jason Clay or the undersigned.

Yours sincerely

Jason Clay

WA DEC Accredited Contaminated Site Auditor

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23 May 2013

Chrissie Harwood
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Dear Chrissie

Interim Advice: New Perth Stadium - Transport Corridor, Environmental Management Plan

Introduction

Jason Clay of AECOM Australia Pty Ltd (AECOM) was engaged by Public Transport Authority (PTA) as a WA Department of Environment and Conservation (DEC) Accredited Contaminated Site Auditor (under the *Contaminated Sites Act 2003*). The Site Auditor role is to provide an independent audit of the various environmental investigation reports to be produced as part of the Perth Stadium development at the Burswood Peninsula, Perth WA. This audit is required because it is understood that a Mandatory Audit Report (MAR) may be a necessary element of the project's environmental/planning approvals.

This advice should not be considered an MAR under the definition of the *Contaminated Sites Act, 2003*. However, this Interim Advice will be attached to the final MAR should one be required.

Document Reviewed

The following document was reviewed when preparing this Interim Advice Letter:

> Golder (2013) *New Perth Stadium Environment Management Plan*, May 2013. Prepared by Golder Associates Pty Ltd. Ref 127643056-037-R-RevD-Draft.

Document Review

The Site Auditor's review comments are provided in grey shaded boxes throughout this letter for ease of reading.

As part of the review, the Site Auditor has assessed the Golder (2013) EMP in accordance with the WA DEC '*Contaminated Sites Management Series Guidelines*' specifically against the reporting requirements as specified in the WA DEC *Reporting of Site Assessments* (WA DEP, 2001) guideline document the and general consideration of the *Contaminated Sites Act, 2003*.

1.0 DOCUMENT REVIEW

1.1 Introduction

The introduction provided an overview of the scope of work, for which this Transport Corridor Environmental Management Plan (TC EMP) will apply; namely the planned upgrade of the existing Burswood rail corridor to accommodate the proposed new Perth Stadium project.

The section stated that the project will be delivered in three parts:

- **Part 1**: construction of the new Perth Stadium and associated Sports Precinct.
- **Part 2**: construction of the Transport Corridor project including the rail woks, the train station upgrade, Victoria Part Drive road bridge upgrades and pedestrian underpass. This will be conducted in two phases:
  - **Construction phase** which includes: (1) service relocation, preconstruction site works (PCS Works) and construction works.
  - **Operations Phase** – ongoing environmental monitoring.
- **Part 3**: construction of the new pedestrian bridge over the San River, including bus and pedestrian facilities at Gloucester Park.

The section stated that the TC EMP was related to the Construction Phase of Part 2 with some overlap into Part 1 to accommodate for construction of the required road, rail, pedestrian and drainage infrastructure.

The section summarized the Part 2, Construction Phase scope of works and stated that cut and fill earthworks, piling, surcharging and new stormwater management conveyances would be required as part of the scope of work.

The objectives for the TC EMP were stated to describe the following:

- Existing environment.
- Environmental issues.
- Environmental and social receptors.
- Potential environmental and social impacts.
- Project roles and responsibilities.
- Standards, guidelines and legislation.
- Limits and targets.
- Environmental management measures.
- Monitoring procedures.
- Incident management.
- Training.
- Auditing procedures.
- Reporting procedures.
- Environmental management document review procedures.

The section identified the construction boundary (shown on Figure 3). The section stated that historical land uses included the following:

- A landfill facility for mixed wastes.
- A sewage treatment facility.
- A former James Hardie asbestos factory.
- Swan Portland cement works.

It stated that the Project area contains Lots that are classified as *"Remediated for Restricted Use."* Remediation works have been performed to remove areas of soil containing free asbestos fibres, but it is presumed that asbestos has been buried and capped within the corridor.

The section stated that the objectives of the TC EMP are to:

- Outline the measures related to the management of contamination, asbestos and ASS to minimize impact to sensitive receptors and the environment during construction.
- Describe the management measures and controls required to minimize environmental impact arising from the construction phase of the project.
- Describe the management measures and controls required in the instance that unknown contaminated soil or water is encountered during the construction phase of the project.

This section references:

- Figure 1 – Location map. Project Regional Location, Project Parts & Proposed Development Areas.
- Figure 2 – Master plan.
- Figure 3 – Transport corridor construction boundary.

The Auditor has the following comments:

- The development activities have been referred to taking place in Parts 1 to 3, whereas elsewhere in this report (e.g. Figure 5) and in other reports, the activities are sequenced with Stages. Please amend to ensure consistency in terminology and the included activities with other project documentation.
- Section 1.3 stated that the TC EMP has been drafted by Golder in consultation with the PTA based on the findings of the Stage 2 and 3 Site Investigation (SI) reports and the content of the Environmental Management Frameworks (EMFs); please provide references for the SI reports and the EMFs.
- The Auditor notes that Figures 1 through 3 are used in part to illustrate the final design and proposed construction activities. However, they label few of the site features that are referenced in the text. Please annotate the figures to show the locations and extent of the various construction elements.

1.2 Project Scope

This section provided additional detail of the Construction phase of part 2 of the project. The scope is provided for the (1) Preconstruction site works and (2) construction site works.

The section stated that the main components of the PCS works are site preparation such as fencing, clearing, cut and fill earthworks, upgrades to the drainage network and ground treatment such as compaction of uncontrolled fill and surcharging (in three phases).

The section provided additional detail of the construction works. The section included proposed construction staging for the rail corridor as comprising four stages. The main components of the construction phase consist of piling of station structures, bridges and earth retaining structures, and construction of above ground infrastructure.

This section references:

- Figure 4 – Surcharging ground improvement areas.
- Table 1 – Ground improvement requirements.

The Auditor has the following comments.

- The areas of activity and infrastructure/site identifiers provided in the text are not clearly shown on figure 4. Some identifying text appears to be present; however it is too small to be legible. Please amend accordingly.
- Figure 4 shows a surcharge area on the west side of the area (the Auditor assumes between CH1300 and CH1550) which is identified as "surcharge." Please amend the figure to indicate which Phase this relates to.

1.3 Environmental and sensitive receptors

This section identified the following as environmental and sensitive receptors.

- Residents occupying the Mirvac Burswood Peninsula residential development located approximately <50 m from the Project.
- Current and future users of the Belmont Park development north of the Graham Farmer Freeway.
- Graham Farmer Freeway, Victoria Park Drive, Armadale rail, Crown Perth complex and the State Tennis Centre users.
- Swan River (which is extended to Lake 2 in the new Perth Stadium area) which borders the Project to the east and west.
- Flora and fauna contained within and surrounding the Project area.
- Groundwater system.

The Auditor suggests the addition of site construction workers to this list.

1.4 Construction phase environmental management and monitoring

1.4.1 Overview

The section stated that the Contractor engage for the Construction Phase of the project is required to prepare a construction environmental management plan (CEMP) applicable to their specific works and operations based on the content of this project EMP and any environmental sub-management plans that may be prepared.

Furthermore, the contractor will be required to prepare and maintain an 'aspects and impacts' register as part of their CEMP. The section provided a list of factors that the CEMP will be required to detail the management of.

The CEMPs are expected to comply with following project plans:

- Soil management plan.
- Water management plan.
- Air management plan.
- Asbestos management plan.
- Terrestrial flora, fauna and rehabilitation management plan.
- Noise and vibration management plan.
- Visual amenity management plan.
- Indigenous heritage management plan.
- European heritage management plan.
- Waste management plan.

Summary details of each of these plans are provided below.

1.4.2 Soil Management Plan

Section 9.2 provided the soil management plan (SLMP).

The SLMP provided general site conditions (including geotechnical conditions, contaminated site conditions and potential acid sulphate soil conditions), management objectives, limits and targets, potential environmental impacts, management measures, monitoring procedures and contingencies.

The section referenced:

- Figure 5 – SI soil investigation locations.
- Figure 6 – Risk for ASS.
- Table 2 – Conceptual site model.
- Table 3 – Management of reuse of soils.
- Table 4 – Monitoring required to achieve soil management targets.
- Table 5 – Contingency actions for the soil management plan.

The Auditor has the following comments relating to the Soil Management Plan:

- Table 2: There is an asterisk with no explanatory note following the bullet that defines construction works as a potential receptor to PASS; please amend accordingly.
- Management measures: (1) The section stated that *"it is considered that a capping depth of 0.3 m within the rail corridor will be sufficient to manage risk of exposure to potential contaminants, due to the restricted access requirements within this area. A more conservative capping layer depth of 0.5 m is recommended for areas outside the rail corridor that will have unrestricted public access."* Please provide justification to support these capping thicknesses, do they follow DoH requirements? (2) Section 9.2.5.2 last paragraph states, *"the Contractor must demonstrate that the material remaining on the surface of the final design levels has maintained a layer of clean fill at the final design level."* Please specify the minimum fill thickness.

1.4.3 Water Management Plan

Section 9.3 provided the water management plan (WMP). The WMP provided current understanding of groundwater quality and stormwater, management objectives, limits and targets, potential environmental impacts (including potential groundwater impact due to surcharging, potential effects to the Swan River, dewatering and stormwater), management measures, monitoring procedures and contingencies.

The section listed the potential environmental impacts to water during the Construction Phase to include:

- Disposal of water produced during from dewatering.
- Increased flow of groundwater towards the Swan River due to surcharging.
- Potential mobilization of groundwater of lesser quality towards areas of dewatering.
- Indirect contamination risks to surface water bodies due to ground disturbance, spills and unmanaged storm water flow.

The section listed management measures to minimize impacts to surface water and groundwater during the Construction Phase.

The section stated that groundwater monitoring will be conducted, in accordance with applicable (listed) guidelines, to monitor for any changes to the groundwater quality and pressures and determine any potential impacts to the Swan River and aquifer system due to Project works. Likely monitoring requirements were also provided for groundwater monitoring, monitoring of dewatering discharge and monitoring of settling effects if proposed groundwater drawdown is of sufficient magnitude to potentially cause settlement of surrounding nearby structures.

The listing of contingencies includes a listing of action triggers and contingency actions.

This section referenced:

- Table 6: Groundwater Analytical Results that Exceed Selected Environmental Guidelines.
- Table 7: Swan River Trust Guideline Trigger Values for Dewatering Disposal into the Swan River.
- Table 8: Estimated Groundwater Flow into the Swan River from the Surcharge Area.
- Table 9: Proposed Analytes for Laboratory Suite for Groundwater.
- Table 10: Surface Water and Groundwater Contingencies.

The Auditor has the following comments relating to the Water Management Plan:

- Table 6: (1) pH is within the normal range, whereas it has been flagged as DEC Marine Water quality guidelines, (2) dissolved manganese concentrations are less than the DEC fresh water guidelines; however BH015 and BH016 are flagged as exceedances.

1.4.4 Air Management Plan

Section 9.4 provided the air management plan. The section stated that the PSI and SI undertaken for the site did not identify any current impacts to air quality with the exception of the potential for asbestos fibres to become airborne during construction activities. Asbestos impacts to air quality are discussed in the Asbestos Management Plan.

The Air Management Plan included a listing of management objectives relevant to atmospheric emissions and specific project objectives with regard to the risk and management of impacts to air quality during the construction phase. The plan also included a listing of limits and targets for dust and ground gas. The section states that the management of ground gases is likely during the construction of the pedestrian underpass, which overlaps with the Part 1 project area.

The section lists the potential impacts of the Project during the Construction Phase to air quality to include:

- An increase in greenhouse gas emissions due to the combustion of fuel.
- An increase in particulate emissions due to the combustion of fuel and resulting exhaust emissions.

- An increase in airborne dust due to: (1) clearing of flora and vegetation exposing dust, (2) project preconstruction and excavation operations, (3) the transportation and loading/unloading process of fill and other sand, and (4) onsite vehicle movements on unsealed roads.
- Air and greenhouse gas emission greater than baseline levels due to the operation of machinery.
- Dust (particulate) emissions as a result of earthwork activities.
- Uncontrolled ground gas impacts due to the disturbance of *in-situ* landfill material in the area of the pedestrian underpass.

The section included management measures to be taken by the Contractor to minimize impacts to air quality during the construction phase, monitoring activities and contingencies (with action triggers and contingency actions).

This section referenced:

- Table 11: Ambient air quality NEPM standards for lead and particles.
- Table 12: Air toxics NEPM.
- Table 13: Kwinana EPP, TSP ambient air quality standards and limits for Area C (rural/residential area).
- Table 14: Contingency actions for air quality management.

The Auditor has the following comments relating to the Air Management Plan:

- Section 9.4.6.2 cites the CIRIA (2007); please provide a reference for this guideline in Section 18.0.
- Section 9.4.3.2 provides guidelines for ground gas of 500 ppm; please provide a reference for this value.

1.4.5 Noise and Vibration Management Plan

Section 9.7 included the Noise and Vibration Management Plan. This included a summary of the current understanding of potential noise and vibration impacts, which identified a potential requirement for noise mitigation measures, possibly in the form of a 2.5 m high noise wall to be erected within the rail corridor adjacent to the Mirvac Burwood Peninsula residential development, and predicted that temporary elevated noise emissions may be experienced during the Project works resulting from the operation of vehicle and machinery. The section also included management objectives, limits and targets, potential environmental impacts, management measures, monitoring procedures and contingencies.

This section referenced:

- Table 18: Noise contingency actions.

Noise is outside the scope of the audit; however, Section 9.7.3.1 states that the chief executive officer may request that a noise management plan be submitted; please specify the organization to which the CEO belongs.

1.4.6 Indigenous Heritage Management Plan

Section 9.9 included the Indigenous Heritage Management Plan. The section provided a listing of sites included for open access with no restriction on the Register of Indigenous Heritage sites. It also stated that an archaeologist has been engaged to assess the project area conditions and impact of the proposed works and an anthropologist has been engaged to assist in the consultation process.

The section provided management objectives for indigenous heritage values, listed the primary State and Commonwealth legislation covering Aboriginal heritage in Western Australia, obligations under indigenous heritage legislation. The section also listed potential environmental impacts, management measures and contingencies.

This section referenced:

- Figure 8: Indigenous Heritage Site Locations.
- Table 19: Summary of Indigenous heritage sites listed on the register of indigenous heritage sites (open access, no restriction).
- Table 20: Indigenous heritage contingency actions.

AECOM

The Auditor has the following comment relating to the Indigenous Heritage Management Plan:

- Please provide the meaning of the acronym SWALSC at the first mention.

2.0 Review

This section provided an overview of review procedures for the Contractor CEMPs. The first review will be held three months after the commencement of the work and subsequent reviews will be annual or as needed.

Please define which parties will be conducting the reviews and summarize requirements to document the review and ensure tracking of any necessary modifications to the CEMP.

3.0 Auditing

This section provided an overview of the objectives, scope and schedules for internal audits and inspections and independent external audits required at various stages of the project.

Please define RABQSA at its first mention.

4.0 Auditors Conclusions

The Auditor considers that the management plan is adequate and has been developed in a consistent manner to the other EMPs developed for the wider project. Consideration should be provided to the comments made herein with provision of clarifications made where requested.

Yours sincerely
For **AECOM Australia Pty Ltd**

Jason Clay

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23 May 2013

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Dear Chrissie

Interim Auditor Advice - Perth Stadium Stage 2 and 3 Site Investigation Contamination Report Review

1.0 Introduction

Jason Clay of AECOM Australia Pty Ltd (AECOM) was engaged by Public Transport Authority (PTA) as a WA Department of Environment and Conservation (DEC) Accredited Contaminated Site Auditor (under the *Contaminated Sites Act 2003*). The Site Auditor role is to provide an independent audit of the various environmental investigation reports to be produced as part of the Perth Stadium development at the Burswood Peninsula, Perth WA. This audit is required because it is understood that a Mandatory Audit Report (MAR) may be a necessary element of the project's environmental/planning approvals.

This advice should not be considered an MAR under the definition of the *Contaminated Sites Act, 2003*. However, this Interim Advice will be attached to the final MAR should one be required.

2.0 Document Reviewed

The following document was reviewed when preparing this Interim Advice Letter:

- Golder (2013) *New Perth Stadium Stage 2 and 3 Site Investigation Contamination Report*, May 2013. Prepared by Golder Associates Pty Ltd. Ref 127643056-034-R-RevC. Herein referred to as the 'SI' report.

3.0 Document Review

The Site Auditor's review comments are provided in grey shaded boxes throughout this letter for ease of reading.

As part of the review, the Site Auditor has assessed the Golder (2013) Stage 2 and Stage 3 Site Investigation Contamination Report in accordance with the WA DEC '*Contaminated Sites Management Series Guidelines*' specifically against the reporting requirements as specified in the WA DEC *Reporting of Site Assessments* (WA DEP, 2001) guideline document the and general consideration of the *Contaminated Sites Act, 2003*.

3.1 Technical Review Stage 2 and 3 Site Investigation Contamination Report

4.0 General

The Auditor has the following general comments that relate primarily to the Golder Stage 2 and 3 Site Investigation Contamination Report but also to relevant sections contained within the Golder Groundwater Report (April 2013) and the Transport Corridor Environmental Management Plan (April 2013):

- The Transport Corridor Groundwater Report (April 2013) includes details of groundwater sampling undertaken in existing wells within the Stage 2. This informed assessment of potential risk associated with surcharging and potential groundwater flow to the Swan River. Groundwater sampling was not included in the Stage 2 SAP or reported on in the SI report (April 2013). The results (including leachability) should be reported in line with the overall assessment of potential risk in the Stage 2 CSM and the proposed development. In line with DEC requirements issues such as the usability of the data, well construction details etc should be provided. Dissolved metals and PAHs, some nutrients and dissolved methane were identified with some exceeding their respective GILs. Limited discussion was provided discounting these as naturally occurring or reflective of background concentrations. The Auditor considers that further discussion and justification should be provided to assess the potential risks and long term implications these concentrations pose. Is further assessment required to inform the design of the new rail station (e.g. presence of dissolved methane?).
- Can Golder clarify at what Stage assessment of Victoria Park Drive underpass will be undertaken (if any)? The boundary for the Stage 2 works suggests that the underpass sits within the Stage 2 area.

4.1.1 Executive Summary

The executive summary provides a detailed overview of the background, objectives, scope of work, summary of analytical results and summary of conclusions and recommendations.

The Site Auditor considered the executive summary has been prepared in accordance with WA DEC Guidance. It is noted that reference to a DEC Site Summary Form is not included in the Executive Summary and should be included in the final version of the report.

4.1.2 Introduction and Background

Sections 1 and 2 provided an introduction and background to the project including a discussion on previous investigations undertaken (which highlighted the areas of potential concern within Stages 2 and 3), details of the proposed development and an overview of the proposed staging of the entire project, Stages 1 through 4.

Reference is made to the Sampling and Analysis Plan prepared for the Stage 2 and 3 Investigation (127643056-006-R-Rev1) as well as the Preliminary Site Investigation (PSI) prepared for the audit boundary (117643077-005-R-Rev1, dated May 2102) and addendum letter (117643077-031-L-Rev1 dated October 2012). Golder also noted that a preliminary conceptual ground improvement design had been prepared for the Stage 2 Road and Rail Transport Corridor (Golder, 127642088-001-R-Rev0, 2013).

The Auditor notes the staging of the project and that Golder has prepared a preliminary conceptual ground improvement design for the Stage 2 Road and Rail Transport Corridor (Golder, 127642088-001-R-Rev0, 2013). This document has not been reviewed a part of this Audit. Can Golder confirm that all pertinent information within the conceptual ground improvement design that relates to Stage 2 is included in this SI Report?

Table 1 described the presence of an off-site fuel storage shed of Belmont Racecourse, it would be beneficial to understand how far away this shed was to Stage 2.

4.1.3 Site Description

Section 3 of the SI report provides a summary of the site surface features and topography, climate and geology. Reference is made to the Golder geotechnical Interpretive Report: Masterplan Study Phase, new Perth Stadium and Sports Precinct, Burswood. Report Reference No. 127642046-003-R-Rev0, October 2012.

The Auditor considers that the Stage 2 and Stage 3 SI report provides adequate information in regards to geology site surface features and topography and climate. Hydrogeology, however, is not covered, and this is required by the WA DEC (2001). Considering that a groundwater assessment has been undertaken at Stage 3 and surcharging is proposed as part of the development, a summary of the hydrogeological information should be included in the Stage 2 and 3 SI report.

4.1.4 Objectives and Scope of Work

Section 4 of the SI report provided the objectives and scope of work for the Stage 2 and 3 investigations. The objectives were to collect preliminary data and the sampling density did not meet DEC or Department of Health (DoH) sampling density requirements, however aims to *"provide an indication of soil quality and preliminary classification of the material (should offsite disposal be required)."*

Section 4.2 provided the scope of works undertaken at Stage 2 and 3.

The Auditor considers that the objectives and scope of the work are adequate for the purposes of this SI.

4.1.5 Field and Laboratory Methodology

Section 5 of the SI report provided information on the fieldwork methodology undertaken for the investigation works. The field investigations included the advancement of the soil bores using either a direct push core drilling rig or a hand auger, air monitoring for airborne fibres during the Stage 2 investigations, installation of three groundwater monitoring wells in Stage 3 and one round of groundwater sampling, acid sulfate soils sampling and field testing of samples from both Stage 2 and 3 and the installation of two ground gas wells in Stage 3 and three rounds of gas monitoring.

The Auditor considers that the description of the field and laboratory methodology is reasonably consistent with WA DEP (2001) guidance.

Although referenced in the SAP, clarification on the ground gas monitoring strategy (i.e. sampling density and monitoring event numbers and frequency) should be provided in the report.

4.2 Sampling and Analysis Program

The sampling and analysis program was detailed in Section 6 of the SI. It is stated that there were 17 investigation locations in Stage 2 and 7 in Stage 3. Table 4 stated 54 samples and 21 QA/QC samples would be collected from Stage 2 and 44 samples (with 5 QA/QC samples) collected from Stage 3. The samples were analysed for one of two suites which are detailed in Table 5. Three groundwater wells were sampled and analysed from Stage 3 for water quality parameters and a broad range of contaminants which are listed in the SI report.

Golder stated that soil waste not able to be returned to the holes and groundwater purge water were contained in drums and disposed by an approved licensed waste disposal contractor.

Section 6.2 detailed the ASS analysis undertaken and Tables 6 and 7 details the number of samples submitted for field screening and CRS analysis.

Field ground gas monitoring was undertaken on the two gas wells installed in Stage 3 and two primary ground gas samples were collected and analysed.

Section 6.4 described the quality control program undertaken during the field investigations.

The basis of assessment is detailed in Section 6.5. Soil results were assessed against the DEC Ecological investigation levels (EILs) and the health investigations levels (HILs) for commercial/industrial landuse, HIL-F for Stage 2 and HIL-D for residential areas with minimal access to soil, for Stage 3.

Groundwater results were stated as being compared against the following guidelines:

- "Marine" Waters ANZECC 2000Australian Water Quality Guidelines for Fresh and Marine Quality Trigger Values for slightly to moderately disturbed ecosystems.
- Swan River Trust Draft Guidance for the Disposal of Dewatering Effluent in the Swan Canning Catchment (May 2012).
- "Estuarine Ecosystems" ANZECC (2000) South West Australian Water Quality Guidelines – Trigger values for slightly disturbed ecosystems.
- Long Term Irrigation Assessment levels: National Water Quality Strategy (NWQS), Australian and New Zealand Guidelines for Fresh, Marine and Long Term Irrigation Water Quality (ANZECC, 2000).
- Ecological assessment levels: National Water Quality Strategy (NWQS), Australian and New Zealand Guidelines for Fresh, Marine and Long Term Irrigation Water Quality (ANZECC, 2000).
- Domestic Non-potable Groundwater Use levels or 10 times Drinking Water guidelines
- Human health assessment levels: Australian drinking water guidelines (2012).

Ground Gas levels are stated as being referenced against the CIRIA C665 (2007).

The following comments are made on the Section 6 Sampling and Analysis Program:

- Disposal receipts for the material disposed by a licensed contractor should be included in an Appendix.
- ASS field testing and CRS analysis is detailed in Table 6 and 7. Why were Stage 2 samples not submitted for CRS?
- Review of the ground gas logs indicates that the sealed section of the well is less than 30 cms. Can Golder provide comment on the suitability of the wells construction from a QA/QC perspective?
- Beneath Table 5 is a footnote stating that "*Concentrations that detect TRH will be forwarded for TPH analysis*". Is this silica gel clean up? If so this should be included in the foot note.
- The Landfill Waste Classification and Waste Definitions 1996 (as amended December 2009) Guidelines and DEC Acid Sulfate Soil guideline documents should be referenced in Section 6.5.

4.2.1 Results

The results of the investigations across Stage 2 and 3 are presented in Section 7. Ground conditions and field observations are summarised in Table 9 and Section 7.1.1.

Analytical results are summarised in Section 7.2 which includes tables highlighting guideline exceedences, references to report figures and an assessment of the QA/QC procedures undertaken.

Section 7.3.2 provides details of the groundwater flow direction (south easterly) and refers to Figure 14 which provides groundwater contours and a flow direction arrow.

The Auditor considers this section is prepared in general accordance with DEC requirements however makes the following comments:

- The groundwater flow direction indicated on Figure 14 appears to be at odds with the contours is this error or interpolation?
- Appendix I containing Waste Classification Results for Stage 2 soil samples should be referenced in the Report.
- The Results section should refer to the tables at the back of the Report.
- Asbestos detections in BH11-S2 are not included in Table A1.
- The QA/QC assessment has highlighted and provided justification for non-compliances. Golder should state whether the non-compliances impact the usability of the results.
- The notes on Tables 13 and 25 appear to be mixed up.
- ASS field screening results are provided, however the CRS analysis is not discussed in the SI Report. It is also noted that requests for SPOCAS analysis were made but the results have not been reported.
- It is not clear whether the TPH speciation undertaken on soil samples was with silica gel clean up.
- Groundwater field parameters are summarised in Section 7.3.3 however it would be beneficial if all the field parameters were provided in tabular form. Table 26 should include all ground gas field measurements not just a summary.
- Section 6.4.3 stated that rinsate samples would be collected during groundwater sampling as a check on cross contamination; however, Section 7.3.5 stated this sampling was not undertaken. Why were rinsate blanks not collected during groundwater sampling, has this impacted data integrity?
- The last two paragraphs under Note 2 in Section 7.3.5 seem to contradict each other.
- It is stated that TRH was reported in groundwater triplicate sample from BH03-S3 at low levels with a total TRH concentration of 7.66 mg/L. Is 7.66 mg/L isn't low level?
- Section 7.4.1 stated that "*barometric pressure decreased from 1007 to 1008*" and should be replaced with increased.
- Field ground gas results were not detailed with reference to CIRIA C665 guidance.
- Section 7.4.4, Table 28 Ground Gas QA/QC stated that the assessment of leakage of each sample during transit, had no potential leakage identified, however Note 2 beneath the table states that "*the laboratory report noted that Q10103-03 (duplicate sample) was received open and a brass plug was not properly used to seal the canister. Sample vented to ambient air pressure during shipment*". The report noted that the analyte concentrations are considered an estimate. This should be reflected in Table 28 and the impact of this should be further discussed in the Notes.

4.2.2 Preliminary Conceptual Site Model

Section 8.0 of the Stage 2 and Stage 3 SI provided reference to the preliminary Conceptual Site Model (CSM) revised based on the results of the Stage 2 and 3 investigations.

Future land use was identified as park and recreation with the potential for commercial development associated with the stadium. The CSM identified humans and the environment as potential receptors. Golder stated that the CSM had been revised to include ASS and ground gases based on the outcomes of this investigation and the data obtained to date. A separate CSM has been prepared for Stage 2 and Stage 3.

The Auditor assumes that the end use of Stage 2 as a road corridor will have limited risk to human receptors based on the fact that the area will be sealed and the only significant access will be vehicular. While this end use is likely to result in lower risks to identified receptors groundwater contamination is not considered in this CSM it should be.

4.2.3 Discussion and Recommendations

Section 9 of the SI Report provided the discussion and recommendations. Section 9.1 provided a general overview of the site and proposed development as well as the identified areas of potential environmental concern. The data were collected to provide guidance for the site specific Environmental Management Plans.

Section 9.2 provided a discussion on the soil results which are summarised as follows:

Stage2

- Metals above DEC EILs across the site, one PCB EIL exceedence and two positive identifications of asbestos fibres in Fill Sand materials. There were no HIL-F exceedences.
- A limited number of samples were scheduled for the field screening of ASS; however, there is little information to base assumptions relating to the location of ASS materials at the Site.

Stage 3

- Fill waste and Fill Sand material varies in depth, with the thickest waste profiles encountered towards the east side of the investigation area towards the Swan River.
- Metal EIL exceedences were detected at six locations, with lead above HIL-D at two locations at depth.
- TRH concentrations were detected at six locations in Fill materials from depth, with speciated TPH above HIL-D at three locations.
- Further ASS analysis may be required to better understand the potential to encounter ASS material during construction works.

Golder stated that the potential exposure to DEC EIL and HIL-D exceedences is limited and will be managed during construction by following control measures set out in the site environmental management plans.

Groundwater analysis at Stage 3 indicated metal and water quality parameters in exceedence of water quality guidelines and further groundwater sampling is recommended to confirm the presence of TRH at one location.

Golder stated that based on the context of the proposed construction (no dewatering or impact to underlying groundwater, based on surficial works only) they do not consider there is a risk to human health. However; management plans will be required to ensure that construction activities do not impact on groundwater quality. In addition, since hydrocarbons were detected in groundwater, it is considered that should groundwater be considered for dust suppression or construction purposes, further sampling is required.

Ground gases were detected at very low concentrations the field monitoring with little or no flow and as such Golder stated that it is considered there is a low risk associated with the concentrations of ground gas encountered at Stage 3 as the end land form is an open air structure. Golder recommended that the construction process be cognisant of the potential for risks from ground gas build up in excavations and other potential areas for excavation.

The Auditor concurs that the risk to potential receptors from the currently identified exceedences in soil and groundwater are likely to be manageable with appropriate management practices and plans implemented as part of the construction phase. However, further consideration should be given to the potential risks associated with the groundwater results and dissolved methane (primarily in the Stage 2 area but also in relation to Stage 3) as well as the flow direction reported in the Stage 3 area. In addition, further justification should be provided on the proposed management measures in relation to the use of a 0.3 m capping layer in some areas of the site. Can Golder provide commentary on whether the identified impacts that require management have been sufficiently delineated and characterised such that future designs can provide robust management?

Asbestos and dust management procedures, as well as relevant DoH and DEC guidelines, should be followed to reduce the risk of potential exposure to asbestos fibres.

As little is known about the presence of ASS at both Stage 2 and Stage 3, should any excavations at either site extend below the water table or require material to be put beneath the water table, further investigations will be required to demonstrate that the material will not pose unacceptable risk to the environment.

Other key observations that have not been commented on in the report relate to the following:

- Is the absence of soil data from the area beneath the proposed rail station a data gap?
- Should the area of the proposed pedestrian underpass be investigated to inform its design?

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4.2.4 Auditor Conclusions

One of the objectives of the report was to evaluate the potential for health and environmental risk and it isn't clear what the conclusion is on this. Golder should provide a definitive statement about whether the site is fit for the intended purpose and if not what further works are required to make it so. If Golder is not in a position to make this statement it should define what further works are necessary to meet this objective.

The Auditor considers that the Stage 2 and 3 SI has been prepared in general accordance with the DEC guidance with the exception of the comments included above which should be addressed prior to further review of the documents.

4.3 Closure

Should you have any queries relating to the above review, please do not hesitate to contact Jason Clay or the undersigned.

Yours sincerely
For **AECOM Australia Pty Ltd**

Jason Clay

WA DEC Accredited Contaminated Site Auditor

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26 June 2013

Chrissie Harwood
Infrastructure and Planning Services
Public Transport Authority of WA
Perth Business Centre
Perth WA 6849

Dear Chrissie,

Interim Advice: Ertech Keller JV Construction Environment Management Plan (Rev F) for Perth Stadium PCS Works Project

1.0 Introduction

Jason Clay of AECOM Australia Pty Ltd (AECOM) was engaged by Public Transport Authority (PTA) as a WA Department of Environment and Conservation (DEC) Accredited Contaminated Site Auditor (under the *Contaminated Sites Act 2003*). The Site Auditor's role is to provide an independent audit of the various environmental investigation reports to be produced as part of the Perth Stadium development at the Burswood Peninsula, Perth WA. This audit is required because it is understood that a Mandatory Audit Report (MAR) may be a necessary element of the project's environmental/planning approvals.

2.0 Document Reviewed

The following document was reviewed when preparing this Interim Advice Letter:

- Ertech Keller JV (2013). Construction Environmental Management Plan for Perth Stadium PCS Works Project; Rev. F (18 June 2013). Herein referred to as the 'CEMP'.

3.0 Document Review

The Site Auditor's review comments are provided in grey shaded boxes throughout this letter for ease of reading.

3.1 Introduction

Section 1 provided an overview of the purpose of the CEMP and the PCS works; the objective and scope of the CEMP, and a listing of applicable regulatory guidelines.

The guidance for the *Treatment and Management of Soils and Water in Acid Sulphate Soil Landscapes* was updated in 2013; please amend the reference.

3.2 Project Description and Environmental Issues

Section 2 provided a general site overview, a description of the material tracking system, a summary of the site preparation works (including related environmental issues and management measures), and a description of ground improvement works to be implemented during the PCS works.

Section 2.3.1: It is unclear how Table 1 related to the risk assessment presented in Appendix G; some works were presented in Table 1 and not in the risk assessment, whereas the risk assessment conversely included some environmental issues not included in Table 1. For clarity, the Auditor suggests using a consistent format and recommends that the EKJV considers providing identification numbers for the works/issues to enable a clear understanding of issues throughout the CEMP.

3.3 Site Description

Section 3 provided a site description including the following:

- Site features.
- Environmental receptors.
- Topography.
- Geology and subsurface features.
- Contaminated soils.

- Acid sulphate soils.
- Hydrogeology, including groundwater levels, flow and quality.
- Air quality.
- Ground gas potential.
- Potential environmental impacts.

3.4 Environmental Strategy

Section 4 described the environmental strategy and documents the content of the CEMP.

There are numerous grammatical, editorial and spelling errors throughout the CEMP and the Auditor has refrained from commenting on each of those; however the Auditor recommends that the EKJV undertakes and thorough QA/QC review of the document. The document is not clear or easy to follow in its current condition.

3.5 Organization and Responsibilities

Section 5 provided a description of the project organization and core responsibilities for the:

- EKJV general project management team;
- EKJV construction manager;
- EKJV environmental representative; and
- contaminated sites auditor.

3.6 Environmental Management Objectives

Section 6 provided environmental management objectives for the Project.

3.7 Construction Phase Risk Management

Section 7 stated that a construction phase risk assessment was undertaken and was included in Appendix J; the section acknowledged that this risk assessment may be modified as the project progresses. The section stated that EKJV will inform and maintain an Aspects and Impacts Register as part of the CEMP (Appendix I).

Figure 1 is referenced as showing locations of important features of the environmental management systems; please review Figure 1 to identify the 'monitoring stations' as 'air monitoring stations.'

3.8 Environmental Impact, Management and Monitoring

Section 8 stated that an environmental risk assessment was undertaken and identified key environmental receptors with the potential to be impacted at various stages throughout the Project. The section identified the key activities of the PCS works with potential environmental impacts. The section stated that a number of management and mitigation techniques proposed to reduce the environmental impact to the environment were outlined in the CEMP.

The section referenced Appendix K for all monitoring, management and mitigation measures and Appendix L for a discussion of relevant legislation and guidelines.

The section provided details of environmental management objectives, potential environmental impacts, management measures and monitoring and mitigation measures for the following environmental features:

- Terrestrial flora and fauna.
- Aquatic flora and fauna.
- Surface water.
- Groundwater.
- Settling effects.
- Air quality.
- Noise and vibration.

- Visual and public amenity.
- Indigenous heritage.
- European heritage.

Appendix B was referenced for waste management and contaminated soil management measures.

The Auditor provides the following comments:

- Section 8.1: change the reference for the environmental risk assessment from Attachment H to Appendix G.
- Section 8.1: The section stated that the environmental risk assessment highlighted the key environmental receptors with the potential to be impacted at various stages throughout the project. The Auditor notes that the risk assessment (Appendix G) did not clearly define the receptors, and recommends that EKJV considers a modification to the risk assessment table to clearly identify the potential receptors.
- Section 8.1: The section identified the key activities of the PCS works with potential environmental impacts in the second set of bullets. The Auditor notes that this bulleted list is incomplete, both in terms of key activities and potential impacts, when compared to the risk assessment presented in Appendix G. Examples include potential impacts to fauna, aboriginal heritage and potential for migration of ground gases. Please review the list for completeness and define how the risk matrix and other information presented elsewhere are used to derive this list of key activities.
- Section 8.1, second set of bullets: the Auditor notes that stormwater surface runoff is not an activity and recommends that EKJV considers restructuring the list to "activities – potential impact(s) to receptor(s)."
- Section 8.4.3: please amend Figure 2 to clearly identify the stormwater management areas.
- Section 8.5.2: several of the bullets were repeated; please amend accordingly.
- Section 8.5.3: Table 6 referenced the *Emergency Preparedness and Response Procedure (MP-7-07)*; please reference the location of this procedure in the CEMP. The Auditor notes that standard procedures are referenced sporadically throughout the CEMP (in Sections 14 and 15, for example) and requests that the locations of these procedures are also referenced whenever they are cited.
- Section 8.5.4, first sentence: The Auditor assumes "Proposed management measures..." should read "Proposed Monitoring and Mitigation measures..."; please amend accordingly.
- Section 8.5.4, paragraph 2: The section stated that *Trigger levels will be established to assist in determining dewatering management requirements*: the Auditor assumes this should read, *Trigger levels have been established...* Please amend accordingly.
- Section 8.5.5, paragraph 1: WORKS is repeated.
- Section 8.5.5, paragraph 3: please clarify that the separate piezometers will be installed for each response zone.

3.9 Reporting

Section 9 described reporting requirements for the project.

3.10 Public Complaint Management

Section 10 stated that all complaints received by EKJV or the Stadium Governance body from the public, in relation to impacted sensitive receptors or the environment would be treated as environmental incidents and would follow the Environmental Incidents Procedure. Further management details were provided in this section and Section 15.

3.11 Communication of Environmental Matters

Section 11 provided an outline of how environmental matters would be communicated by EKJV.

3.12 Training

Section 12 provided a summary of induction and environmental training requirements for the Project.

3.13 Environmental Documentation

Section 13 summarized environmental documentation management responsibilities.

3.14 Management of Change

Section 14 described the management of change procedures. Changes were classified as being one of mechanical, technical, procedural, organizational or environmental.

3.15 Environmental Incidents

Section 15 described how environmental incidents would be managed. The section included incident management and incident reporting procedures, the role of the contaminated site auditor, records of environmental activities and emergency preparedness and response procedures.

3.16 Auditing

Section 16 outlined planned internal audits and inspection and independent external audits.

3.17 Review

Section 17 provided the approximate review schedule and stated the general circumstances that would lead to an additional review of the CEMP.

3.18 Appendices

The following appendices were included with the CEMP:

- Appendix A: Summary of Current and Potential Approval Requirements.
- Appendix B: Waste Management Plan.
- Appendix C: Dewatering Management Plan **(Not included for review).**
- Appendix D: Construction Schedule.
- Appendix E: EPA's environmental objectives for each environmental factor.
- Appendix F: EKJV Environmental Policy.
- Appendix G: Risk Assessment.
- Appendix H: EKJV New Stadium Preconstruction Works Organograph.
- Appendix I: Hazards and Aspect Register.
- Appendix K: Environmental Impact Management and Monitoring Measures.
- Appendix L: Relevant Legislation and Guidance for each Environmental Factor.
- Appendix M: Dewatering Discharge Treatment Process, Water Treatment Systems Australia.
- Appendix N: Construction Environmental Inspection Checklist.
- Appendix O: Surface Water Monitoring Trigger Levels.
- Appendix P: Groundwater Monitoring Trigger Levels.
- Appendix Q: Ertech Holdings Pty Ltd Restricted Asbestos License (WARA 1087).
- Appendix R: Induction (MP-6-21) & Training Procedure (MP-6-08).

The Auditor provides the following comments on the appendices:

- Appendix B: Waste Management Plan:
  - Please review for, and revise, the grammatical errors throughout.
  - Section 1.2, bullet 1 states that *"formalization of a work procedure for an excavation works across the site, detailing the general safety procedures to be following and personal protective equipment (PPE) to be worn by the relevant workers."* The Auditor notes that no detail of PPE to be worn, other than for management of asbestos-containing materials, is provided in the WMP.

- Section 1.2, bullet 2 states that, *"provision of [a] waste laydown and transfer facility to sort and manage wastes generated onsite"* is a management strategy. More discussion of the use of this facility should be provided in the WMP.
- Section 2.6, final bullet. Please amend the reference to the Construction Environmental Inspection Checklist to Appendix N.
- Section 2.6.1. Please update the reference for the *Treatment and management of soils and water in acid sulphate soils landscapes* to DEC, 2013.
- Section 2.6.1. Please place the discussion of management of asbestos, or potential asbestos, containing soils in a separate appropriate section.
- Section 3: The Auditor suggests that EKJV considers providing an introduction to Section 3 to state when materials will be subject to validation sampling.
- Section 7: Tables 2 and 3 were not referenced in the text.
- Section 7, Table 3: footnotes 1 – 3 were not provided to correspond with footnote references in the table.
- Section 7, Table 3. Reference was made to Section 9.2 and Section 6 from the Environmental Impact Management & Monitoring Measures, Perth Stadium Environmental Impact Reference Book, EKJV. Please include these Sections (as appropriate) within the CEMP and reference accordingly.
- Section 9; references are made to MW-6-21, MW-7-07 and PF-6-21-03; please attach these to the WMP or provide in an appendix to the CEMP.
- Section 12: please cite the references in the text.

- Appendix E – EPA's environmental objectives for each environmental factor:
  - The section relating to acid sulfate soils stated that one of the environmental commitments would be to comply with the ASS Management Plan; this is not included within the CEMP. Please attach and provide a reference for this plan.
- Appendix F – EKJV Environmental Policy:
  - The Auditor notes that this appears to be the Environmental Policy for Ertech, Ertech Geomarine, Formaction and Duratec Australia. Please confirm that it is the policy for EKJV.
- Appendix G – Risk Assessment:
  - As related to the one of the comments on Section 8.1, the Auditor recommends that the risk assessment table is modified to clearly identify potentially impacted receptors; for example the column "un-wanted event/impact" could be split into 'potential impact" and "potential receptors".
  - Regarding *"surcharging: impact to ground gas regime and gas release"*, the WMP is referred to for details of gas monitoring during DC and surcharging; this reference appears to be incorrect - please amend accordingly.
- Appendix H: EKJV New Stadium Preconstruction Works Organograph
  - The Auditor assumes that this was intended to refer to the organogram; please amend accordingly.
- Appendix K – Environmental Impact Monitoring and Mitigation Measures:
  - Section 1.1, Paragraph 2 stated that *"The following sections provide information with regard to the sensitive environmental receptors"*. The Auditor notes that the named bulleted sections that follow that statement were actually split between Section 8 of the CEMP and Appendix K; please amend the text in this section to reflect that organization.
  - Section 1.1: the Auditor suggests adding a paragraph to the front of the section to state how Append K relates to Section 8 of the CEMP.
  - Section 5.1; the section stated that Figure 4 shows the location of 15 additional proposed monitoring wells; the Auditor could only locate 14 additional wells on the Figure, please check

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and amend as appropriate.

- Section 5.1: please change the reference for the adopted trigger levels from Appendix M to Appendix P.
- Section 5.1, Table 7: Please provide further explanation on what criteria will be used to determine whether OC/OP pesticides and/or PAHs are sampled for in groundwater.
- Section 5.5: the Auditor suggests adding a statement to note that calibration records for all equipment will be maintained.
- Section 5.6: The section stated that "*Trigger levels will be established to assist in determining dewatering management requirements*"; the Auditor assumes this should read, *Trigger levels have been established…* Please amend accordingly.
- Section 6.1, Tables 9 and 10: please reference the sources of the maximum concentrations and maximum flow values.
- Section 6.3, Table 11: Please explain why the H_2S STEL was selected as a trigger for OHS management procedures rather than the TWA.
- Section 6.3, Table 11: Please note that the H_2S STEL conflicts with the 'maximum concentration" provided in Table 10. Please revise tables as necessary or provide explanation of this discrepancy.
- Section 6.3, Table 11: the table stated that one of the mitigation measures for when personal monitors indicate ambient environment ground gas levels in excess of TWA is to reassess gas concentrations after a **minimum** duration of 10 minutes; the Auditor assumes that this should be a **maximum** duration of 10 minutes.
- Section 6.3, Table 11: Please explain the 500 ppm trigger value cited in the mitigation measures when *active gas generation is identified in the vicinity of the separable portion receiving DC or surcharging*; provide details of what is being measured and the regulatory/technical basis of this value.

4.0 Closure

Should you have any queries relating to the above review, please do not hesitate to contact Jason Clay.

Yours sincerely
For **AECOM Australia Pty Ltd**

Jason Clay

Jason Clay
WA DEC Accredited Contaminated Site Auditor

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This interim site audit advice is not a Mandatory Audit Report, but forms part of the Site Audit process. It is intended that a Mandatory Audit Report will be issued at the completion of the site audit.
Consistent with WA DEP requirements for staged "sign-off" of sites that are the subject of progressive assessment, remediation and validation, the Auditor is required to advise that:

- This site audit advice does not constitute a mandatory audit report.
- This interim advice is considered by the Auditor to be consistent with WA DEP guidelines and policies.
- This interim advice will be documented in the final Mandatory Audit Report and associated documentation.

HPS

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20 November 2015

Ken Aitchison
Infrastructure Planning & Land Services
Public Transport Authority
Perth Business Centre
PERTH WA 6849

Dear Ken,

Interim Audit Advice: Review of YRJV Response to Auditor Comments on SRPB CEMP

1.0 Introduction

Paul Steinwede of AECOM Australia Pty Ltd (AECOM) was engaged by the Government of Western Australia Public Transport Authority (PTA) as a WA Department of Environment Regulation (DER) Accredited Contaminated Sites Auditor to conduct a technical review of the Swan River Pedestrian Bridge CEMP (Report Ref. YR001-PL-005 Rev. E) for the new Perth Stadium development at the Burswood Peninsula, Perth, Western Australia (WA).

The Auditor's role on the project is currently non-Mandatory in respect of the development on the Burswood Peninsula, whilst a Mandatory Audit Report (MAR) will be required in support of the discharge of DA conditions relating to the component of the SRPB development on the East Perth foreshore.

This interim advice is provided by the Auditor based on responses received from YRJV and its nominated consultant 360 Environmental in relation to the issues raised in Auditor correspondence dated 20 October 2015. This advice should not be considered an Audit Report under the definition of the Contaminated Sites Act 2003 (CS Act). However, this advice will be attached to the final non-Mandatory Auditor's Report should one be required.

2.0 Documents Reviewed

The Auditor has undertaken a review of the following response documents in preparing this advice letter:

- YRJV Document Ref. YR001-PL-005.CEMP (r00E) entitled *'Swan River Pedestrian Bridge Construction Environmental Management Plan'*, Rev. E, dated 28 October 2015
- YRJV Document Ref. D15_666615 CSA COMMENTS Rev D Comments (containing YRJV response to Auditor comments on CEMP Rev. D), undated
- Golder Document Ref. 1538968-002-L-Rev0 entitled *'Swan River Pedestrian Bridge – Preliminary Acid Sulfate Soil Investigation'*, dated 28 October 2015
- Golder Document Ref. 1533842-009-L-Rev0 entitled *'Opportunistic Acid Sulfate Soils and Sediment Contamination Sampling Results, Swan River Pedestrian Bridge'*, dated 23 September 2015

3.0 Technical Review

The Auditor has assessed the revised report against relevant regulatory guidelines including the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) 1999 (as amended 2013), DER *Assessment and Management of Contaminated Sites* guidelines (2014), the WA Department of Health (DoH) Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia (2009) and general requirements under the *Contaminated Sites Act 2003.*

The report has also been assessed against the following Auditor endorsed documents for the scheme:

- new Perth Stadium Construction Environmental Framework, July 2013 (Report Ref. 117643077-037-R-Rev1);
- new Perth Stadium Swan River Pedestrian Bridge Environmental Management Plan, October 2014 (Report Ref. A1475197 v4); and
- Scope of Works and Technical Criteria, Contract 26/13, Swan River Pedestrian Bridge, Main Roads WA.

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4.0 Comments

The CEMP (Rev. E) is deemed acceptable for endorsement by the Auditor, contingent on the following:

- Provision of all remaining Activity Work Method Statements (AWMS) referenced in the CEMP, for review and approval by the Auditor prior to commencement of those activities.
- Confirmatory SPOCAS and CRS laboratory analysis of any PASS materials identified and excavated within the Eastern Bridge Work Area (either from below or above the water table) to assess appropriate liming rates. The Auditor understands that excavation is not currently proposed below groundwater level within this work area based on the proposed construction methodology. The preliminary ASS investigation conducted by Golder (1538968-002-L-Rev0, dated 28 October 2015) did not meet DER requirements due to the omission of confirmatory laboratory testing, which is explicitly acknowledged in the ASSP prepared by 360 Environmental. Current DER (2015) guidelines specifically caution that field pHf and pHfox tests only *"provide an accurate indication of ASS in only 60-80 per cent of cases"*. The current liming rates for ASS treatment in the Eastern Bridge Work Area are based on data collected by Golder during the Stage 1 and 3 investigations conducted in 2012 from locations MW84 and LGSB112, both of which are located some distance outside of the development footprint of the Eastern Bridge Work Area (based on drawing SRPB-001-DRG-TW-0404).

Investigation findings from the new Perth Stadium Transport Corridor have confirmed the presence of PASS materials above the water table, which require management according to established ASSP treatment protocols. Whilst the current ASSP for the SRPB does not explicitly recognise this possibility, the Auditor notes that the recently endorsed AWMS for the Stage 1 Site Establishment works for the Eastern Work Site does identify this issue and provides for identification and management of ASS materials should they be encountered during excavation works above the water table. This commitment should also be reflected in the remaining AWMS documents to be submitted for Auditor review, as relevant to subsequent work stages.

5.0 Closure

Should you have any queries relating to the above review, please do not hesitate to contact Paul Steinwede directly (0419 232 476) or alternatively Steve Morrison (0402 170 140).

Yours sincerely

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This interim site audit advice is not a (non) Mandatory Audit Report, but forms part of the Site Audit process. It is intended that a (non) Mandatory Audit Report will be issued at the completion of the site audit for the Swan River Pedestrian Bridge development.

Consistent with WA DER requirements for staged "sign-off" of sites that are the subject of progressive assessment, remediation and validation, the Auditor is required to advise that:

- This site audit advice does not constitute a (non) Mandatory Audit Report.
- This interim advice is considered by the Auditor to be consistent with WA DEP guidelines and policies.
- This interim advice will be documented in the final (non) Mandatory Audit Report and associated documentation.

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12 January 2016

Ken Aitchison
Infrastructure Planning & Land Services
Public Transport Authority
Perth Business Centre
PERTH WA 6849

Dear Ken,

Interim Audit Advice: Review of YRJV Response to Auditor Comments on SRPB CEMP, Acid Sulfate Soils Plan and Water Quality Monitoring Procedure

1.0 Introduction

Paul Steinwede of AECOM Australia Pty Ltd (AECOM) was engaged by the Government of Western Australia Public Transport Authority (PTA) as a WA Department of Environment Regulation (DER) Accredited Contaminated Sites Auditor to conduct a technical review of the Swan River Pedestrian Bridge CEMP (Ref. YR001-PL-005 Rev. F1) and an updated version of the Acid Sulfate Soil Plan (Rev. 7), which were provided for Auditor review on 12 January 2016. Proposed final amendments to the associated Swan River Water Quality Monitoring Procedure (Ref. YR001-WP-063) were also detailed in the response to comments provided by YRJV, although formal issue of this latter document is proposed following acceptance of the changes by the Auditor.

The Auditor's role on the project is currently non-Mandatory in respect of the development on the Burswood Peninsula, whilst a Mandatory Audit Report (MAR) will be required in support of the discharge of DA conditions relating to the component of the SRPB development on the East Perth foreshore.

This Interim Advice is provided by the Auditor based on responses received from YRJV in relation to the issues raised in Auditor correspondence dated 18 December 2015. This advice should not be considered an Audit Report under the definition of the Contaminated Sites Act 2003 (CS Act). However, this advice will be attached to the final non-Mandatory Auditor's Report should one be required.

2.0 Documents Reviewed

The Auditor has undertaken a review of the following response documents in preparing this advice letter:

- YRJV document ref. YR001-PL-005.CEMP (r00E) entitled *'Swan River Pedestrian Bridge Construction Environmental Management Plan'*, Rev. F1, dated 11 January 2016
- YRJV document ref. *'YR001-CEMP-COMMENTS_RESPONSES.F.IFI'*. The response document is undated.
- YRJV document ref. *'YR001-PL-005-CEMP-ADDENDUM1-TRACK-CHANGES.F1.IFI'* [Tracked changes version provided by YRJV]
- 360 Environmental document ref. 1150 CL *'Swan River Pedestrian Bridge Acid Sulfate Soil Plan'* (Rev. 7, dated 11 January 2016) [*Tracked changes version provided by YRJV*]

3.0 Technical Review

The Auditor has assessed the revised report against relevant regulatory guidelines including the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) 1999 (as amended 2013), DER *Assessment and Management of Contaminated Sites* guidelines (2014), the WA Department of Health (DoH) Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia (2009) and general requirements under the *Contaminated Sites Act 2003*.

The report has also been assessed against the following Auditor endorsed documents for the scheme:

- new Perth Stadium Construction Environmental Framework, July 2013 (Report Ref. 117643077-037-R-Rev1);
- new Perth Stadium Swan River Pedestrian Bridge Environmental Management Plan, October 2014 (Report Ref. A1475197 v4); and
- Scope of Works and Technical Criteria, Contract 26/13, Swan River Pedestrian Bridge, Main Roads WA.

AECOM

4.0 Auditor Comments

SRPB CEMP Rev. F1

The remaining issues of concern in relation to the CEMP have been addressed by YRJV to the satisfaction of the Auditor.

Acid Sulfate Soil Plan (Rev. 7)

The outstanding issues of concern within the ASSP have been addressed by YRJV to the satisfaction of the Auditor.

SRPB Work Procedure: Water Quality Monitoring – Swan River

The proposed amendment to the water quality monitoring procedure is accepted by the Auditor and this document may now be finalised by YRJV.

5.0 Closure

Should you have any queries relating to the above review, please do not hesitate to contact Paul Steinwede directly (0419 232 476) or alternatively Steve Morrison (0402 170 140).

Yours sincerely

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cc: Deborah Lin, PTA

ESTIMATES AND FINANCIAL OPERATIONS COMMITTEE

QUESTIONS TAKEN ON NOTICE

Thursday, 16 June 2016

Environment Regulation

Supplementary Information Number B14: Hon Ken Travers MLC asked –

Please provide figures relating to illegal dumping.

Answer:

In 2010 the *Environmental Protection Act 1986* was amended to introduce a new offence for the illegal dumping of waste.
The team of five officers comprising a senior manager and four investigators came to full strength in February 2016.
To date in this financial year, 13 prosecutions for illegal dumping of waste were commenced resulting in 11 prosecutions and two Modified Penalty Notices. A further matter is currently before the courts involving five charges of illegal dumping.

Financial year	**Dumping complaints recorded**	**Dumping incidents confirmed & investigated**	**Litter Act infringements**	**EP Act illegal dumping prosecutions**
2012/13	Data not captured*	Data not captured*	33	8
2013/14	Data not captured*	Data not captured*	28	2
2014/15	44	25	24	4
2015/16	282	49	47	11
Total	**326**	**74**	**132**	**25**

*Prior to April 2015 data centrally recorded by DER and its predecessors did not separate illegal dumping complaints and investigations managed under the *Environmental Protection Act 1986* from those managed under the *Litter Act 1979*.

DER identifies illegal dumping incidents through public complaints, overt and covert surveillance, and sharing intelligence with partnership bodies such as Local Government Authorities and other land managers.

As an investigation into a complaint of illegal dumping progresses and key facts are established, it may be more appropriately dealt with by issuing an infringement under the *Litter Act 1979*. Conversely there have been occasions where littering complaints have been received for significant offences, where a response commensurate with the offence warrants prosecution under the illegal dumping provisions of the *Environmental Protection Act 1986*. DER's Enforcement and Prosecution Policy provides guidance on how the Department exercises its enforcement and prosecution responsibilities.