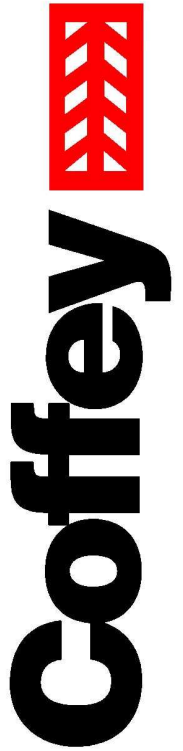


ACT PLANNING AND LAND AUTHORITY
**PHASE 1 ENVIRONMENTAL SITE ASSESSMENT, EAST LAKE URBAN
RENEWAL PROJECT, FYSHWICK, ACT**

C7908/1-AE
19 October 2005



C7908/1-AE PR:

19 October 2005

ACT Planning and Land Authority
Dame Pattie Menzies House
16 Challis Street

Attention: Mr Patrick Paynter

Dear Helen,

**RE: PHASE 1 ENVIRONMENTAL SITE ASSESSMENT, EAST LAKE URBAN
RENEWAL PROJECT, FYSHWICK, ACT**

We are pleased to present our Phase 1 Environmental Site Assessment for the above site. This report includes recommendations for further works including a detailed scope of work for the Phase 2 assessment and provision of indicative budget estimates for Phase 2 and Phase 3 costs including independent auditor costs.

Please do not hesitate to contact the undersigned should you have any questions regarding this report.

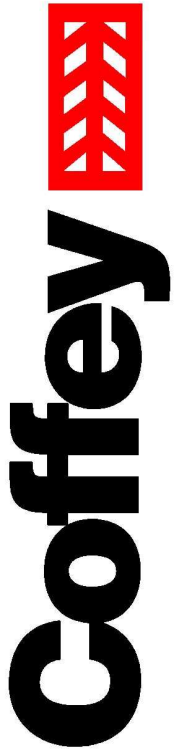
For and on behalf of

COFFEY GEOSCIENCES PTY LTD



PETER REEVES

Distribution: 5 copies sent to ACT Planning and Land Authority
1 copy held by Coffey Geosciences Pty Ltd
Original held by Coffey Geosciences Pty Ltd



EXECUTIVE SUMMARY**INTRODUCTION**

This report presents a Phase 1 Environmental Site Assessment (ESA) for the East Lake Urban Renewal Project study area located between the Kingston Foreshore development and the Monaro Highway. The site covers an area of 471 ha and incorporates the Canberra Rail Station, Railway land, Fyshwick Markets, the Canberra Institute of Technology campus and surrounding industrial/commercial properties and the Jerrabomberra Wetlands and Creek system. The site boundary for the purposes of this study is indicated on Figure 1.

POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

Based on the results of the limited site history study, it was assessed that there are ten main potential areas of environmental concern (AEC) within the area assessed. These AECs and associated main potential Chemicals of Concern (COCs) are listed in below.

SUMMARY OF MAIN POTENTIAL AREAS OF ENVIRONMENTAL CONCERN AND CHEMICALS OF CONCERN

Site Feature ¹	Chemicals of Concern ²	Comments
AEC 1: ACT Rail land Block 2 Section 47 Fyshwick divided into:	TPH, BTEX, heavy metals, asbestos, PAH, PCB, OCP	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil and fouled ballast. Potential contamination with heavy metals from landfill leachate. <i>NB PPK have previously undertaken an assessment of the landfill assuming an ongoing industrial use. Based on site observations it is assessed that asbestos containing materials may be present within the landfill. Groundwater contamination was identified in the vicinity of the refuelling facility.</i>
A: Former Fuel Storage		
B: Former Landfill		
C: Fouled Ballast and assorted Fill		
D: Former Turntable	TPH, BTEX, PAH, heavy metal.	Potential hydrocarbon impacts from former turntable identified from previous sampling. Further assessment required.
E: Railway Museum	TPH, BTEX, PAH, heavy metal and asbestos.	Oil stained areas in and around workshed and coal store. Leakage from batteries and potential asbestos from train parts.
F: Miniature Railway	TPH, BTEX, PAH, heavy metal, asbestos and OCP	Waste fill materials exposed in cuttings including potential asbestos cement board. Fuel and chemicals stored on site. Ash and clinker on track.

Site Feature ¹	Chemicals of Concern ²	Comments
AEC 2: Service Station and refuelling facilities Block 2 and 3, Section 25, Griffith. Block 2, Section 26, Griffith	TPH, BTEX, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 3: "Causeway Tips" Municipal Landfills Block 20, Section 6, Kingston Block 1, Section 74, Fyshwick. Block 1, Section 66, Fyshwick	TPH, BTEX, heavy metals, PCB, asbestos, PAH, nutrients, organics and others	Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses
AEC 4: Department of Agriculture, Fisheries and Forestry Field Research Station Block 2, Section 6, Fyshwick	Potential storage of Hazardous Materials	Potential contamination from chemicals/radioactive materials used on site.
AEC 5: Fuel Storage, Municipal Depot Block 15, 19, 24 and 26, Section 6, Fyshwick Block 18, Section 30, Fyshwick	TPH, BTEX, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 6: Service Station and refuelling facilities Block 6, Section 6, Fyshwick Block 4 and 7, Section 7, Fyshwick	TPH, BTEX, PAH and lead	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 7: Uncontrolled Fill Section 39 Fyshwick		Sourced from excavation for New Parliament House. May contain boulders – therefore potential geotechnical constraint. Low environmental risk.
AEC 8: Municipal Landfill Block 12 Section 38 Fyshwick	TPH, BTEX, heavy metals, PCB, asbestos, PAH, nutrients, organics and others	Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses. No information on age or depth of fill recorded during desk top study.

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Site Feature ¹	Chemicals of Concern ²	Comments
AEC 9: Former DAS Fleet refuelling Facility and municipal landfill (Block 11 Section 38 Fyshwick)	TPH, BTEX, heavy metals, PCB, asbestos, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil. Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses. It is understood that the site is currently subject to a Phase 2 ESA. The Auditors report has not been received by Environment ACT.
AEC 10: Fyshwick Sewage Treatment Works (FSTW).	Faecal coliforms, nitrogen, phosphorous, Heavy metals.	Potential contamination of soil, surface water and groundwater in the vicinity of the FSTW.

The location of the potential AECs is shown in Figure 3. Sites that exhibited similar attributes, which were in close in proximity to one another were merged to form a single AEC. A reassessment of the railway land investigated by PPK for residential end use has been proposed as part of the Phase 2 scope of works.

PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT

Based on a review of the previous investigation reports, aerial photographs, government records and the site walkover, it is assessed that there is a potential for surface or subsurface contamination of soil and/or groundwater to be present on parts of the site associated with 10 main areas of environmental concern. Further assessment of these potential AECs would be required as part of a Phase 2 ESA prior to redevelopment of these areas for residential end use. In addition the brief review of the privately leased and owned properties indicate several potentially contaminating activities and storage of chemicals of concern that could have a negative impact on human health and the environment.

RECOMMENDATIONS

Based on the results of the Phase 1 ESA further assessment of the potential areas of environmental concern is required prior to redevelopment of the site. The level of investigation and remediation required will be dependent on the preferred renewal option, which has yet to be determined. As the purpose of this report is to inform future planning processes an estimated cost of undertaking future investigations is provided. These indicative costings have been based on a worst case development scenario based on the opportunities and constraints identified in the associated Land Capability and Suitability Study and the costs of comparative contamination exercises undertaken in the ACT.

On this basis it is assessed that further assessment of the Railway site (including the rail museum and miniature railway) and the municipal landfill and the former DAS Fleet refuelling facility (AECs 1, 8 and 9) will be required.

Should the commercial land use remain the same then further assessment regarding contamination issues may not be required as part of the planning or development process. Assessments may be necessary for other reasons such as due diligence purposes or future liability purposes, such as if there is a change in ownership. It should be noted that if redevelopment of the commercial area is proposed then further assessment as part of a Phase 2 ESA would be required.

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ESTIMATE OF FEES AND COSTS FOR PHASE 2 ASSESSMENT

In accordance with the project brief we have provided preliminary assessment of indicative budget estimates for Phase 2 costs including independent auditor costs. It should be noted that the costs have been based on the proposed preliminary Work Plan and therefore may be subject to change depending on the Auditors requirements.

The budget estimate of costs (fees and expenses) to complete the Phase 2 environmental assessment as per the preliminary scope of works total \$184,000 (excluding GST).

POTENTIAL REMEDIAL WORKS

Due to the requirement for further Phase 2 assessment it has not been possible to prepare budget estimates for Phase 3 remedial works at present. There are several remedial options/management strategies for managing and/or remediating waste materials and petroleum hydrocarbon contaminated soil, which are locally and internationally available. Soil remediation and/or management will be required for the petroleum hydrocarbon contaminated soil and groundwater and potentially contaminated waste materials within the landfill areas including asbestos impacted soils. The preferred remedial option would be assessed following the completion of the Phase 2 and preparation of a Remedial Action Plan (RAP) which would be forwarded to the Auditor for approval.

It is understood that an Auditor would be engaged from commencement of the Phase 2 Stage until completion of a Site Audit Statement and Site Audit Report. This would include a review of the brief for the Phase 2 Consultancy.



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- 3 Potential Areas of Environmental Concern
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- A Correspondence from Environment ACT



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1. INTRODUCTION

1.1 General

This report presents a Phase 1 Environmental Site Assessment (ESA) for the East Lake Urban Renewal Project study area located between the Kingston Foreshore development and the Monaro Highway. The site covers an area of 471 ha and incorporates the Canberra Rail Station, Railway land, Fyshwick Markets, the Canberra Institute of Technology campus and surrounding industrial/commercial properties and the Jerrabomberra Wetlands and Creek system. The site boundary for the purposes of this study is indicated on Figure 1.

ACT Planning and Land Authority (ACTPLA) are currently undertaking a number of studies to assess the potential of the site for development in accordance with the Canberra Spatial Plan which provides strategic direction for future growth within the Territory. The Canberra Spatial Plan identifies the site as a key area for mixed use including residential development.

It is understood that a Phase 1 Environmental Site Assessment (ESA) of the East Lake area is required as part of a broader Environmental Impact Assessment for the East Lake Urban Renewal Project. As part of the East Lake Urban Renewal Project the Redbox Design Group prepared a "Study and Report on Land Capability and Suitability for the East Lake Urban Renewal Project Site".

The Phase 1 ESA is required to assess potential areas of environmental concern, possible planning constraints and to scope the requirements for Phase 2 and 3 investigations. The Phase 2 investigations are likely to involve further sampling and analysis to enable the preparation of a Phase 3 Remedial Action Plan. The validation and monitoring works would then be undertaken following the completion of the remedial works as a Phase 4 assessment.

This report presents the Phase 1 ESA and the proposed scope for the Phase 2 ESA. The Phase 1 ESA includes a review of previous site investigations carried out by Parsons Brinkerhoff Australia Pty Ltd (PB) previously known as PPK Environmental and Infrastructure Pty Ltd (PPK) and the additional information obtained during the site visit, discussions with railway site personnel and a review of aerial photographs. The information obtained during the preparation of the Phase 1 report has been used in the preparation of the Phase 2 scope of works.

1.2 Objective and Scope of Works

As indicated in the project Brief and reiterated in our proposal C7908/1P-AA, the scope of works for this project comprises:

- (a) Review of existing PPK reports (supplied by ACTPLA) and information held by Coffey relating to subject site;
- (b) Additional site history review comprising;
 - a. A review of Environment ACT records relating to the sites (contaminated land searches)
 - b. A review of historical aerial photography over the past 40-50 yrs;
 - c. A review of ACT WorkCover Records on the site relating to the storage of dangerous goods;
- (c) Site walkover by a Senior Environmental Engineer to assess present and past potentially contaminating activities;
- (d) Preparation of Preliminary Draft report presenting information gained during the above tasks and providing:

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- a. Preliminary assessment of type and extent of contamination on the site (based on existing information);
 - b. Assessment of the actual or potential migration of contaminants (based on existing information);
 - c. Preliminary assessment of contamination status and suitability of the site for the proposed residential land use based on the available information;
 - d. Provision of recommendations for further works including a detailed scope of work for the Phase 2 assessment and provision of indicative budget estimates for Phase 2 and Phase 3 costs including independent auditor costs; and
- (e) Power Point presentation of Preliminary Draft to Steering Committee.
- (f) Preparation of Final Draft report including consideration of comments received from ACTPLA and other Government Agencies on Preliminary Draft.
- (g) Power Point presentation of Final Draft to Steering Committee.

In accordance with the above scope of works this report presents the findings of the supplied review of PPK reports, additional site history information and observations during a site walkover. The objectives of this report are therefore to present:

- The Phase 1 ESA and identify potential areas of environmental concern and associated chemicals of concern; and
- recommendations for further works including a scope of work for the Phase 2 assessment and provision of indicative budget estimates for Phase 2 and Phase 3 costs including independent auditor costs.

This report has been prepared in accordance with Environment ACT Contaminated Sites, Environment Protection Policy (EPP) (November 2000) which references NSW EPA "Guidelines for Consultants Reporting in Contaminated Sites" and NSW EPA "Guidelines for the NSW Site Auditor Scheme" and the National Environment Protection Measure (NEPM) 1999 Guidelines for Assessment of Contamination. The principle of Data Quality Objectives (DQO) has been adopted during the preparation of proposed Phase 2 scope of works as discussed in Section 7.2.

The Proposed Scope of Works for a Phase 2 assessment should be reviewed by the Site Auditor to ensure that his requirements are met.

1.3 Report Format

The format of this report is as follows:

Section 2 presents the background to the site and Phase 1 ESA with a summary of the land use and topographical, geological and hydrogeological features of the site and the surrounding land, together with the assume development option used for scoping and costing purposes;

Section 3 presents a review of the previous environmental site assessments by PPK URS and Coffey together with an assessment of their limitations.

Section 4 presents the site history based on a review of the aerial photographs, site observations and discussions with site personnel.

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Section 5 lists areas of potential environmental concern (AEC's) and potential chemicals of concern, based on the results presented in Sections;

Section 6 presents a preliminary environmental site assessment based on the results of the site history assessment and site walkovers;

Section 7 presents the recommendations for further works including a preliminary work plan for a Phase 2 ESA

Section 8 presents the budget estimate cost for undertaking a Phase 2 assessment.

Section 9 presents the range of potential remedial works to be undertaken at the site.

Section 11 presents the references for the report

2. BACKGROUND

2.1 Site Ownership and Zoning

The land is currently owned by the ACT Government and leased for both ACT Government and private commercial, industrial and municipal uses and residential. There are large areas of open space including the Jerrabomberra Wetlands that are managed for their environmental values. The current land uses are shown on the attached Figure 2 and are summarised below:

- Educational Facility
- Open Space Agriculture
- Designated land
- Open Space
- Residential – Government housing
- Municipal
- Industrial
- Community
- Commercial
- Railway

2.2 Site Location and Land use

The site extends from Cunningham Street and The Causeway in Kingston, through the Jerrabomberra Wetlands, along the Molonglo River and Monaro Highway and along Canberra Avenue to McMillan Crescent and then along Wentworth Avenue. The site is approximately 471ha in area and is divided into two halves by Jerrabomberra Creek which runs from the south east corner to the central western boundary of the site where it enters Lake Burley Griffin (see Figure 1). Of this area, the Jerrabomberra Wetlands covers approximately 221 ha.



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The site includes a variety of land uses including Industrial, Municipal Services, Residential, Urban Open Space, River Corridors and National Capital Open Space – Lake Burley Griffin. To simplify the description of the study area the site has been split into two main areas divided by Jerrabomberra Creek.

Zone 1 located to the north and east of the Creek mainly comprises the Jerrabomberra Wetlands and the Fyshwick Sewage Treatment Works (FSTW) and the former DAS Fleet refuelling facility. The Jerrabomberra Wetlands are an artificially formed area of wetlands located between the Molonglo River, which forms the northern boundary, the upper reaches of Lake Burley Griffin (East Basin), which form its west boundary, Jerrabomberra Creek which forms the southern boundary, and the FSTW and Dairy Road, which form the east boundary. The wetlands are situated across several old river courses (palaeochannels), which comprise alluvial sands and gravels and have fluctuating water levels, which reflect the varying level in Lake Burley Griffin.

Zone 2 located to the south and west of Jerrabomberra Creek comprises the main industrial and commercial areas and the former DAS Fleet refuelling facility with the residential area of the Causeway located on the western boundary. The industrial area includes various buildings as listed below:

- Various warehouses and distributions centres;
- ActewAGL switching station;
- ACT mail centre;
- Fyshwick Fresh Food Markets;
- A fire station;
- Canberra Institute of Technology;
- Service Stations;
- A fast food outlet;
- Milk processing and distribution centre;
- A bakery;
- The bureau of Animal Health;
- Various art studios;
- A consultant engineering company (Coffey Geosciences);
- Insurance Building

The Canberra Railway Station, Railway Museum and Miniature Railway sites are located to the north of the industrial centre and comprise various buildings and storage areas as described in Section 4.4. The residential area of the Causeway Estate includes a community hall and preschool area.

2.3 Adjacent Land use

The study area is bordered to the north by Molonglo River with the Royal Military College of Duntroon and the Suburb of Russell beyond the Molonglo River. The commercial and industrial centre of Fyshwick is located to the east of the site with the residential suburbs of Narrabundah and Kingston to the south and east respectively. Lake Burley Griffin border the Jerrabomberra to the west of the site.



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The industrial area of Fyshwick located to the east and up gradient of the site includes several fuel depots namely Shell, Caltex and Mobil. In addition there are several vehicle service centres, smash repair yards, and spray paint centres which have the potential to cause groundwater contamination beneath the subject site.

The Kingston Foreshore development site forms the north western boundary of the site. Coffey have undertaken investigation and remediation of several sites within the Kingston Foreshore site. The subject site is generally up gradient to cross gradient of the Kingston Foreshore site and therefore activities on the Kingston Foreshore site are unlikely to pose a significant risk to the subject site.

A plan showing the current and adjacent land use is included as Figure 2.

2.4 Topography

The topography of the study area is generally flat through the Jerrabomberra Wetlands at an elevation of 560m AHD and rises gently to the south to around 570m AHD with slight undulations around Jerrabomberra Creek.

Jerrabomberra Creek generally runs within a broad open channel with gently sloping banks, which broadens into a silt trap and Jerrabomberra Pool before entering Lake Burley Griffin. Similarly the Molonglo River, which borders the site to the north, is contained within a broad open channel with gently sloping banks.

The main railway area and adjacent shunting yards include areas of substantial fill in the east and some cut in the south west. The residential development of the Causeway to the north is several metres higher than the adjacent rail yards and an embankment of fill forms the north eastern boundary of the rail site.

2.5 Surface Conditions

The Jerrabomberra Wetlands comprise open areas of grassland and trees and includes numerous water pools and areas of waterlogged ground. The developed area to the south of the wetlands comprises the rail corridor and various commercial and industrial buildings.

The Canberra Railway station comprises asphalted and grassed areas with some areas of fill also noted in the western part of the site. The commercial and Industrial properties mainly comprise of asphalted parking areas and building with median strips comprising of grassed areas.

Tall grasses and reeds area present within broad drainage channel of the southern portion of Jerrabomberra Creek.

2.6 Geology

The 1:10,000 Geology Sheet of Central Canberra, published by Bureau of Mineral Resources (BMR) (GA Henderson, 1985) and the Canberra, Queanbeyan and Environs 1:50,000 geology sheet (GA Henderson, 1980) indicates the site is underlain by sedimentary bedrock of the Canberra Formation, comprising sandstones, shales and siltstones overlain by alluvial and colluvial deposits from the Quaternary and Tertiary geological periods in the area of the Jerrabomberra Wetlands Jerrabomberra Creek. The Quaternary deposits are subdivided into areas of gravel, sand, silt and clayey gravel and sand within the central portion of the Jerrabomberra Wetlands, with smaller deposits of fine red Aeolian sand also present within this area.

The 1:10,000 map records the presence of a sanitary landfill in the area of the railway site (Block 2, Section 47, Fyshwick) and other areas of recent fill have been recorded by Environment ACT in the area of the DASFLEET site (Block 11 and 12, Section 38 Fyshwick) and "Causeway Tips" (Block 20, Section 6, Kingston, Block 1, Section 74 Fyshwick and Block 1, Section 66 Fyshwick).



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In addition Environment ACT have recorded an area of uncontrolled fill on Section 39 Fyshwick sourced from the excavation of New Parliament House.

2.7 Hydrogeology

The 1:100 000 Hydrogeology Map of the ACT and Environs (Evans and Moffat 1984) indicates that aquifers in the study area are likely to have yields generally of 0.5L/s to about 1.0 L/s with concentrations of total dissolved solids expected to be less than 500 mg/l over the majority of the site and in the range of 500mg/l to 1000mg/l in the south-eastern portion of the site.

Several boreholes have been drilled within the Jerrabomberra Wetlands area of Zone 1. Based on information obtained during an assessment of the Fyshwick Sewage Treatment Works (FSTW) for ACTEWAGL it is assessed that the groundwater level within the wetlands is approximately 2m below ground level (bgl). The inferred groundwater flow direction is expected to be generally towards the Lake Burley Griffin with local variations in the vicinity of Molonglo River and Jerrabomberra Creek. Groundwater conditions are expected to be strongly influenced by the nearby Jerrabomberra Creek and adjacent wetland areas.

Information obtained from the boreholes installed during the previous PPK investigation reports on the Railway site within Zone 2 suggests that groundwater levels in the vicinity of the railway vary seasonally from 2m bgl to 10m bgl, and generally lies between 4m to 6mbgl with dominant flows towards Jerrabomberra Creek.

2.8 Potential Scope of Development

Redbox Design Group have prepared a report on Land Capability and Suitability that has identified site opportunities and constraints for East Lake.. These opportunities and constraints will inform the next stage of the planning process and will influence the preferred direction of any future development in this area, which has yet to be determined. For the purpose of this report a worst case scenario based on indicative maximum redevelopment levels has been adopted to assist in scoping infrastructure and land remediation needs and costs including the extent of any proposed Phase 2 contamination works.

3. REVIEW OF PREVIOUS ENVIRONMENTAL SITE ASSESSMENT REPORTS

As indicated in Section 1 PPK have previously undertaken Phase 1 and 2 ESA's at the railway site. The reports supplied by ACTPLA comprised:

- Report on Further Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor' (PPK document number 99-0885-00) in December 1999
- 'Addendum Report: Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor' 'PPK document number 01-0078-02) in March 2001.

These reports included a summary of Phase 1 and Phase 2 ESA's previously prepared by PPK for Indec Consulting on behalf of Australian National as part of the Commonwealths Environmental Remediation Program:

- Phase 1 Environmental Audit of the Australian National Facilities Canberra Railway Station Yards and Rail Corridor Report' (PPK document number 98-182), March 1998
- Phase 2 Environmental Site Assessment Canberra Railway Station Yards and Rail Corridor' (PPK document number 98-845), November 1998

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- Report on Further Soil and Groundwater Investigations Canberra Railway Station Yards and Rail Corridor' (PPK document number 99-014), January 1999.

In addition to the above PPK reports, Coffey have undertaken several geotechnical and environmental studies across the site, some of which contain information relevant to this environmental assessment. These reports are summarised in the following sections and an assessment of significant gaps in the information is provided.

3.1 Phase 1 Environmental Audit, PPK, March 1998

Introduction

PPK undertook a Stage 1 environmental site assessment at Block 2, Section 47, Fyshwick and Block 5, Section 11, Kingston in March 1998. The Stage 1 environmental assessment was part of a nationwide environmental remediation program for rail sites by the then owner, Australian National.

Site Description

The site is the Canberra Railway Station Yards and Rail Corridor. Site features include the railway station, refuelling facility, and the Australian Railway Historical Society (ARHS).

Site History

The former uses of the site included a refuelling facility for trains, a locomotive turntable, stockpiles of coal, and a landfill in the northern part of the site, adjacent the ARHS building, which has 3 abandoned underground storage tanks.

Potential Areas of Environmental Concern

Based on the results of the site history review and the site walkover, the following potential areas of environmental concern (AEC) were identified as shown in Table 3-1.

TABLE 3-1 SUMMARY OF AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Site Feature	Chemicals of Concern	Comments
Area along the rail corridor adjacent to the fuel depots	TPH, BTEX and lead	Potential contamination from leakages or spills associated with the tanks, fuel lines or gantry operations.
Area around disused locomotive refuelling facility in the centre of the rail yards	TPH	Potential contamination from leakages or spills associated with the tank or suction line.
Area containing fill materials in the western part of the site	TPH, PAH	Potential contamination from the presence of ash and cinders.
Area containing uncontrolled fill in the northern part of the site	TPH, PAH, heavy metals	Potential contamination from the presence of uncontrolled fill.
Eastern stormwater drains adjacent the Shell Depot and the ARHS site	TPH, BTEX and lead	Potential contamination from oily wastes disposed of to the drains.

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Site Feature	Chemicals of Concern	Comments
Areas known to have coal stockpiles or localised hydrocarbon surface staining	TPH, BTEX, lead and PAH	Potential contamination to surface soils from the presence of coal stockpiles, or hydrocarbon surface staining.

NOTES:

TPH – total petroleum hydrocarbons

BTEX – benzene, toluene, ethylbenzene, xylenes

PAH – polycyclic aromatic hydrocarbons

Conclusions

Based on the findings of the site history investigations, undertaken during the Stage 1 Environmental Assessment, the areas of environmental concern were identified and selected for further investigation during the subsequent Stage 2 ESA program:

3.2 Phase 2 Environmental Site Assessment, PPK, November 1998**Introduction**

PPK undertook a Stage 2 environmental site assessment at Block 2, Section 47, Fyshwick and Block 5, Section 11, Kingston in November 1998. The Stage 2 environmental assessment was part of a nationwide environmental remediation program for rail sites by the then owner, Australian National.

Site Description

The site is the Canberra Railway Station Yards and Rail Corridor. Site features include the railway station, refuelling facility, and the Australian Railway Historical Society (ARHS).

Site History

The former uses of the site included a refuelling facility for trains, a locomotive turntable, stockpiles of coal, and a landfill in the northern part of the site, adjacent the ARHS building, which has 3 abandoned underground storage tanks.

Potential Areas of Environmental Concern

Based on the results of the site history review and the site walkover, the following potential areas of environmental concern (AEC) were identified as shown in Table 3-2.

TABLE 3-2 SUMMARY OF AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Site Feature	Chemicals of Concern	Comments
Area along the rail corridor adjacent to the fuel depots	TPH, BTEX and lead	Potential contamination from leakages or spills associated with the tanks, fuel lines or gantry operations.
Area around disused locomotive refuelling facility in the centre of the rail yards	TPH	Potential contamination from leakages or spills associated with the tank or suction line.
Area containing fill materials in the western part of the site	TPH, PAH	Potential contamination from the presence of ash and cinders.

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Site Feature	Chemicals of Concern	Comments
Area containing uncontrolled fill in the northern part of the site	TPH, PAH, heavy metals	Potential contamination from the presence of uncontrolled fill.
Eastern stormwater drains adjacent the Shell Depot and the ARHS site	TPH, BTEX and lead	Potential contamination from oily wastes disposed of to the drains.
Areas known to have coal stockpiles or localised hydrocarbon surface staining	TPH, BTEX, lead and PAH	Potential contamination to surface soils from the presence of coal stockpiles, or hydrocarbon surface staining.
Area adjacent to the former cement works in the rail corridor	Heavy metals	Potential contamination from the presence of fill from the former cement works.

NOTES:

TPH – total petroleum hydrocarbons

BTEX – benzene, toluene, ethylbenzene, xylenes

PAH – polycyclic aromatic hydrocarbons

Fieldwork

Environmental sampling was carried out as part of this Stage 2 environmental assessment. The field sampling targeted the features assessed to have the greatest potential for contamination as listed above.

Laboratory Results

The results of the laboratory testing were compared to the soil investigation guideline levels listed in NSW EPA (1994) "Guidelines for assessing service station sites" which have been adopted by Environment ACT. The results were as follows:

- Localised soil and groundwater impacts adjacent to the former municipal waste dump (vertical and lateral extent of impacts not delineated).
- Localised soil impacts (heavy metals) adjacent to the former cement works (vertical extent delineated, however lateral extent of impacts not delineated). This area is located outside the East Lake study area.
- Localised soil and groundwater impacts in the location of the former refuelling area, in the main rail station complex (lateral extent of impacts not delineated).
- Localised groundwater and soil impacts (petroleum hydrocarbons) in the eastern rail corridor, adjacent to and potentially resulting from the Shell, Caltex/Ampol and Mobil fuel depots (the lateral extent of these impacts were not delineated). This area is located out side of the East lake study area.

Conclusions

Based on the site observations and laboratory testing and the former uses of the site and the areas and chemicals of potential environmental concern identified in Table 3-1, it was assessed by PPK that the

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identified areas of contamination had not been delineated, and recommendations were made to undertake additional investigations in order to delineate the areas of identified impacts, as listed above.

3.3 'Report on Further Soil and Groundwater Investigations, PPK, January 1999.

Introduction

PPK undertook a Stage 2B environmental site assessment at Block 2, Section 47, Fyshwick and Block 5, Section 11, Kingston in January 1999. The Stage 2B environmental assessment was part of a nationwide environmental remediation program for rail sites by the then owner, Australian National.

Site Description

The site is the Canberra Railway Station Yards and Rail Corridor. Site features include the railway station, refuelling facility, and the Australian Railway Historical Society (ARHS).

Site History

The former uses of the site included a refuelling facility for trains, a locomotive turntable, stockpiles of coal, and a landfill in the northern part of the site, adjacent the ARHS building, which has 3 abandoned underground storage tanks.

Areas of Environmental Concern

Based on the results of the site history review, site walkover, Stage 1 and Stage 2 environmental site assessment, the following areas of environmental concern (AEC) were identified as shown in Table 3-3.

TABLE 3-3 SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN

Site Feature	Chemicals of Concern	Comments
Area along the rail corridor adjacent to the fuel depots	TPH, BTEX and lead	Contamination from leakages or spills associated with the tanks, fuel lines or gantry operations.
Area around disused locomotive refuelling facility in the centre of the rail yards	TPH	Contamination from leakages or spills associated with the tank or suction line.
Area containing uncontrolled fill in the northern part of the site	TPH, PAH, heavy metals	Contamination from the presence of uncontrolled fill.
Area adjacent former cement works in rail corridor	Heavy metals	Contamination from the presence of fill from the former cement works.

NOTES:

TPH – total petroleum hydrocarbons

BTEX – benzene, toluene, ethylbenzene, xylenes

PAH – polycyclic aromatic hydrocarbons

Fieldwork

Environmental sampling was carried out as part of this Stage 2B environmental assessment. The field sampling targeted the features previously identified as being a source of contamination as listed above.



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Laboratory Results

The results of the laboratory testing were compared to the soil investigation guideline levels listed in NSW EPA (1994) "Guidelines for assessing service station sites" which have been adopted by Environment ACT. The results were as follows:

- Further delineation of soil and groundwater impacts adjacent the former refuelling area located in the central rail station area (impacted area estimated at 25m+2+, with apparent thickness of phase separated hydrocarbon reaching a maximum of 4mm).
- Localised soil impacts (heavy metals) adjacent the former cement works were confirmed and recommendations for minor remedial works to address the soil impacts were made. This area is located outside the East Lake study area.
- Localised soil and groundwater impacts adjacent to the former municipal waste landfill (vertical and lateral extent of impacts further delineated).
- Localised groundwater impacts (petroleum hydrocarbons) were confirmed in the eastern rail corridor, adjacent to and potentially resulting from the Shell and Mobil fuel depots (lateral extent of these impacts was not delineated north south). This area is located outside the East Lake study area.

Conclusions

Based on the site observations and laboratory testing and the former uses of the site and the areas and chemicals of potential environmental concern, it was assessed by PPK that further investigations were required to delineate the extent of the contamination.

3.4 Report on Further Environmental Site Investigations and Site Remedial Works PPK, December 1999 and 'Addendum Report: Environmental Site Investigations and Site Remedial Works , PPK, March 2001.

Introduction

PPK undertook a Stage 3 environmental site assessment at Block 2, Section 47, Fyshwick and Block 5, Section 11, Kingston in December 1999 and March 2001. The Stage 3 environmental assessment was part of a nationwide environmental remediation program for rail sites by the then owner, Australian National.

Site Description

The site is the Canberra Railway Station Yards and Rail Corridor. Site features include the railway station, refuelling facility, and the Australian Railway Historical Society (ARHS).

Site History

The former uses of the site included a refuelling facility for trains, a locomotive turntable, stockpiles of coal, and a landfill in the northern part of the site, adjacent the ARHS building, which has 3 abandoned underground storage tanks.

Potential Areas of Environmental Concern

Based on the results of the site history review and the site walkover, the following potential areas of environmental concern (AEC) were identified as shown in Table 3-4.



TABLE 3-4 SUMMARY OF AREAS OF ENVIRONMENTAL CONCERN

Site Feature	Chemicals of Concern	Comments
Area along the rail corridor adjacent to the fuel depots	TPH, BTEX and lead	Contamination from leakages or spills associated with the tanks, fuel lines or gantry operations.
Area around disused locomotive refuelling facility in the centre of the rail yards	TPH	Contamination from leakages or spills associated with the tank or suction line.
Area containing fill materials in the western part of the site	TPH, PAH	Contamination from the presence of ash and cinders.
Area containing uncontrolled fill in the northern part of the site	TPH, PAH, heavy metals	Contamination from the presence of uncontrolled fill.
Area adjacent former cement works in rail corridor	Heavy metals	Contamination from the presence of fill from the former cement works.

NOTES:

TPH – total petroleum hydrocarbons

BTEX – benzene, toluene, ethylbenzene, xylenes

PAH – polycyclic aromatic hydrocarbons

Fieldwork

Environmental sampling was carried out as part of this Stage 2B environmental assessment. The field sampling targeted the features assessed to have the greatest potential for contamination as well as areas identified as of potential environmental concern in addition to those listed previously, namely the area containing abandoned underground storage tanks adjacent the William Edmunds leased building, and the area in the south of the rail yards containing contaminated ballast.

Laboratory Results

The results of the laboratory testing were compared to the soil investigation guideline levels listed in NSW EPA (1994) "Guidelines for assessing service station sites" which have been adopted by Environment ACT. The results were as follows:

- Localised groundwater impacts adjacent the former municipal waste dump (lateral extent of impacts not delineated). Two wells (GW39, GW110) recorded TPH above Dutch criteria.
- Localised soil impacts (heavy metals lead and zinc) adjacent the former cement works in the eastern rail corridor (lateral and vertical extent of impact delineated).
- Localised significant groundwater impacts (petroleum hydrocarbons) adjacent the Shell and Mobil fuel depots in the eastern rail corridor (lateral extent delineated to east and west, but not north and south (offsite). Mobil Oil Australia and Shell Australia Limited have undertaken further investigative works for their respective properties.
- Localised groundwater impacts in the location of the former refueling area, in the main station complex (lateral extent of impacts not fully delineated). Three wells (GW5, GW101, GW102) contained Phase Separated Hydrocarbons to a maximum depth of 4mm. 16 wells recorded

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concentrations of TPH above limit of detection, with 8 wells recording TPH levels in excess of the Dutch criteria.

- Localised fill materials to a maximum of 4.9m in the central portion of the landfill. The presence of asbestos/fibre cement sheeting was not confirmed by additional site works. No contaminant levels exceeded criteria.
- Buried ballast materials potentially contaminated with hydrocarbons present in the southern portion of the main railyard to 3.5m. No contaminant levels exceeded criteria.
- Abandoned underground storage tanks adjacent to William Edmunds leased area, no contaminant levels exceeded criteria, and no dissolved phase hydrocarbon impacts.

Conclusions

Based on the site observations and laboratory testing and the former uses of the site and the areas and chemicals of environmental concern identified in Table 3-4, it was assessed by PPK that the identified areas of contamination have been delineated, and no further recommendations were made based on continued use of the site for railway purposes beyond liasing with Shell and Mobil to address identified dissolved phase hydrocarbon impacts adjacent the fuel depots.

3.5 Major Site Environment Audit – Canberra (URS December 2000)

Introduction

URS Australia Pty Ltd (URS) undertook an independent audit (Mr Warren Pump, a Victorian EPA Accredited Contaminated Land Auditor) of the PPK environmental site assessment at Block 2, Section 47, Fyshwick and Block 5, Section 11, Kingston in December 2000. URS were commissioned by Indec on behalf of Commonwealth Department of Transport and Regional Services to conduct an independent audit review of the former Australian National land in Canberra to provide the ACT Government confidence that the necessary investigation and remedial works had been carried out to enable the continued use of the site for its current land use. URS stated that the independent Audit was equivalent to an environmental audit of contaminated land in accordance with the requirements of the Environment Protection Authority (EPA), Victoria. However, this does not constitute a statutory Audit.

Conclusions

Based on the PPK reports, it was concluded by URS that:

FUEL DEPOTS ADJACENT TO THE EASTERN RAIL CORRIDOR (OUTSIDE STUDY AREA)

The identified total petroleum hydrocarbons (TPH) (including the presence of phase separated hydrocarbons (PSH) was not likely to impact on the continued use of the site for railway purposes. However the combination of significant concentrations of TPH and shallow depth of groundwater may expose workers in the areas to potential soil vapours. An assessment of this issue would be required to assess that identified receptors were not exposed to any potential risks associated with the soil vapours.

FORMER CEMENT WORKS ADJACENT TO THE EASTERN RAIL CORRIDOR (OUTSIDE STUDY AREA)

The identified concentrations of lead in soils that are of limited vertical and lateral extent were likely to be acceptable for continued railway (commercial) use.



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OLD REFUELLING DEPOT

Semi quantitative Contaminant modelling of the TPH and PSH present in the vicinity of the former refuelling area indicated that there was likely to be minimal risks to Jerrabomberra Creek, however further monitoring of this area would be required to confirm the predictions of the modelling.

Modelling and assessment of the groundwater bore GW304 indicates a separate source to the former refuelling area. Based on the fate and transport model PPK assessed that there was likely to be no future risks from this contamination, however no explanation of the source of contamination was given.

FORMER GOODS SHED

There were no significant issues associated with the goods shed that had the potential to impact the site, however the facility was established over filled ground comprising solid and inert wastes.

MAIN CANBERRA STATION AREA

There were no current activities associated with the Canberra station which had the potential to impact on the continued railway use of the site. In the past, ballast contaminated with TPH was removed and a geofabric liner placed to reduce future TPH contamination of ballast by leakage from locomotives. No documentation was provided by PPK to indicate the excavation of ballast materials was validated.

Fouled ballast material, adjacent soils and groundwater down-gradient from the area was assessed and indicated that there were no significant issues which would limit continued railway use of the site.

LEASED AREAS (WILLIAM EDMUNDS PLUMBERS AND ARHS)

Site facilities are located over filled areas, and three underground storage tanks (USTs) were identified north of the main building. Assessment of the adjacent soils and groundwater indicate that there were no adverse impacts from the presence of the USTs.

VACANT LANDFILL SITE

Levels of TPHs were identified in the northern end of the landfill and appeared to be localised in area, it was assessed these levels were unlikely to impact on Jerrabomberra Creek. Further monitoring of the groundwater should be undertaken to confirm modelling outcomes.

There were indications that groundwater quality had been impacted by leachate generated by the decomposition of putrescible waste. It was recommended that groundwater quality be monitored for typical landfill leachate parameters as well as other parameters identified in previous monitoring.

CORRIDOR BETWEEN JERRABOMBERRA CREEK AND IPSWICH STREET

No significant issues were identified that would impact on continued railway use of the area.

OTHER AREAS

Based on the above, it was assessed by URS that the following areas within the PPK investigation area have the potential to present a risk to human health and the environment should significant contamination be present:

- Filling of the former railway turntable;
- Potential for fragments of asbestos sheeting and asbestos fibres, to exist in the surface soils;

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- Oily wastes being disposed of into the stormwater drain at the ARHS site;
- Filling east of Jerrabomberra Creek, north and adjacent to the railway alignment, similar to the vacant dump area;
- Significant staining of the soils by petroleum hydrocarbons noted alongside the fuel depot sidings; and
- Black oily waste was observed in a drainage alignment adjacent to the Shell depot (out side East Lake study area).

Until further information can be provided, threatened environmental harm exists for the following issues:

- The potential for landfill leachate from the vacant dump site and filled area to the east of Jerrabomberra Creek to be impacting the underlying groundwater and therefore the Jerrabomberra Creek
- The potential for petroleum hydrocarbon soil vapours adjacent to the Shell bulk terminal to impact upon the identified receptors (located outside the East Lake study area).

3.6 Addendum: Major Site Environment Audit – Canberra (URS May 2001)

Introduction

Following the completion of additional investigation works undertaken by PPK, URS undertook an audit of the PPK addendum environmental site assessment report at Block 2, Section 47, Fyshwick and Block 5, Section 11, Kingston in May 2001.

Conclusions

Based on the PPK addendum report, it was concluded by URS that there were likely to be no further sources of identified contamination at the facility, which would impact on the identified beneficial uses of the site. However there were a number of technical issues raised by URS which remain as “Minor Non Conformances”.

In URS’s opinion, these minor non conformances did not deter from the overall assessment and suitability of the site for continued land uses identified as a result of these investigations. Nevertheless, several issues may be relevant to the redevelopment of localised parts of the site for residential end use, and may have to be taken into account by future site owners/occupiers.

3.7 Limitation of Previous PPK Investigation Reports

As indicated in the Brief, the PPK reports were aimed at characterising, delineating and reducing potential liabilities and/ or human health risks posed by the continued use of the site for railway infrastructure operations prior to land transfer. The laboratory test results were therefore compared to National Environment Protection (Assessment of Site Contamination) Measure (NEPM) “Guideline on the Investigation Levels for Soil and Groundwater” Schedule B1 Column F for Commercial / Industrial Land use. These criteria are less sensitive than the criteria normally adopted for the assessment of sites for which residential land use has been proposed.

A review of the PPK reports and the URS auditor comments indicates the following issues remain to be resolved:

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- A former railway turntable has been identified as having been filled, and is located partially under Robbo's Pet Barn and adjacent to bitumen paved car park. This potential area of concern has not been assessed directly. The presence of localised groundwater contamination in sampling locations GW211, GW308 and GW309, in the vicinity of the turntable, suggests that the turntable may be a potential source of contamination.
- A former Abattoir site located approximately 1.5km beyond the eastern boundary of the site to the east of Newcastle Street, represents a potential area of environmental concern as the groundwater flow direction is to the west, towards the subject site. Therefore it is assessed that the abattoir is unlikely to impact on the Eastlake Basin site.

A power station foundry was identified as a potential area of environmental concern in the PPK Phase 2 ESA (Section 4.0), with contaminants of concern including heavy metals and polycyclic aromatic hydrocarbons (PAHs) from foundry operations and on-site disposal of foundry wastes. The exact location of the foundry has not been specified and has not been assessed to date.

3.8 Coffey Report C7729/1-AC Fyshwick Sewage Treatment Works, Stage 1 Assessment of Environmental Impact on Groundwater

Introduction

Coffey has previously undertaken a preliminary environmental assessment of the potential impact on groundwater from seepage losses from the effluent lagoons at the Fyshwick Sewerage Treatment Plant (FSTP) for ActewAGL in report reference C7729/1-AC.

The Fyshwick STP is located off Dairy Road in Fyshwick and covers an area of about 10 Ha along the eastern boundary of the East Basin site.

The Lagoons have been excavated into generally sandy alluvial materials within the Jerrabomberra Wetlands area. A number of old stream channels run across the wetlands. Water from the Lagoons can be high in ammonia, nitrate and phosphorous and there is potential for seepage from the lagoons to enter the underlying alluvial deposits of the Molonglo River Flood plain and for this water to enter the local groundwater table and eventually Lake Burley Griffin.

The Coffey Stage 1 study comprised a desktop review of available information, together with comments and recommendations on:

- groundwater flow modelling and potential contaminant transport to Jerrabomberra Creek and other receiving water bodies;
- potential impact on groundwater of buried grit and screening from the plant;
- further investigations to confirm model parameters.

Groundwater Levels

The lagoons have been constructed with a water level at approximately RL560m. The closest hydraulic boundary has been assumed to be Jerrabomberra Creek located approximately 400m to the west of the lagoons. This Creek enters Lake Burley Griffin within a few hundred metres and so the water level in the Creek has been assumed to be at Lake level which is nominally RL555.9m. The few recorded or calculable water seepage levels at previous investigation locations are typically close to Lake level.



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Water Quality

Assessment of the water quality data supplied by ActewAGL for Lagoon Stages 1 and 2 provided the following ranges for ammonia, nitrogen and phosphorous:

WATER QUALITY FOR 1ST AND 2ND STAGE LAGOONS

Lagoon	Ammonia (mg/L)	Total Nitrogen (mg/L)	Total Phosphorous (mg/L)
Lagoon 1 – range	0.05 – 29	7.5 - 39	0.45 – 7.3
– median	9.9	25	2.6
Lagoon 2 – range	0.03 - 21	3.0 - 47	0.21 – 9.3
– median	6.45	14	1.6

Published data indicates that the following typical ranges of values have been measured over the last decade for Molonglo River at Dairy Flat:

Ammonia:	0 – 0.015 mg/L
Total Nitrogen:	0.2 – 0.8 mg/L
Total Phosphorous:	0 – 0.06 mg/L

Over the period 1997 to 2000, the average concentrations of nitrogen and ammonia in the Molonglo River at Oaks Estate are about 0.8mg/L and 0.3mg/L, respectively.

Contaminant Transport Model

The numerical groundwater modelling was carried out using MODFLOW, a modular finite difference groundwater flow model which simulates three dimensional flow of groundwater through a porous media, and its associated pre and post processor PMWin.

The contaminant transport modelling was achieved with MT3DMS that is a modular three dimensional multi-species transport model for simulation of advection, dispersion and chemical reactions of contaminants in groundwater systems. MT3DMS also operates with PMWin as pre and post processor. The contaminant transport model was run for a 90 year period.

Results were extracted at 35 years and 90 years to compare the contaminant distribution at present (approximately 35 years after the STP started operation) with possible distribution in the future.

For the purpose of the report it was assumed that the concentrations arising from the actual reduced flow rate of 0.4ML/day are unchanged. The modelled flow to the Jerrabomberra Creek was used with concentrations in each cell at 35 and 90 years to calculate the loads to the creek at those times. The table below indicates the results corresponding to a constant infiltration rate of 0.4ML/day.

MODELLED CONTAMINANT LOAD TO JERRABOMBERRA CREEK (0.4ML/day INFILTRATION)

Model Layer	Flow to Creek (m ³ /day)	TN Load to Creek (g/day)		Ammonia Load to Creek (g/day)	
		After 35 Years	After 90 Years	After 35 Years	After 90 Years
Layer 1	1.2	9.5	19.6	4	9
Layer 2	72	100.2	240.4	45	108

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Total	73	109.7	260.0	49	117
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Based on the reported ammonia concentrations for the plant, the ammonia load is likely to be approximately 45% of the total nitrogen load, as presented in above.

MODEL LIMITATIONS

It is emphasised that the flow model is preliminary was not calibrated against field data, except to the expected losses from the STP lagoons that were defined by a water balance study of the STP lagoon system. The groundwater model was structured so that most of the water entering the system is derived from the lagoons which were simulated using the reservoir package in MODFLOW. The reservoirs (lagoons) were simulated with constant water levels and the permeability of their base the same as that of the underlying material (i.e. no clay base to reduce leakage was simulated). A small amount of the water in the system was derived from rainfall recharge (2% of annual rainfall).

Water is removed from the system by groundwater discharge to rivers and other water courses. The main water courses, the Molonglo River and Jerrabomberra Creek were simulated using constant head cells, they remove most of the water. Two minor watercourses that drain the area north of the STP lagoons were simulated as drain cells and these remove the remainder, a smaller proportion, of the water.

No groundwater levels were measured, thus the model could only be calibrated to the lagoon leakage volume (590 m³/day) and by evaluating the groundwater distribution and flow directions to see if they appeared plausible for the area that was modelled. Based on these methods the flow model results appeared reasonable and it was used to evaluate possible contaminant transport from the STP lagoons.

The lagoons were assumed to introduce a constant concentration of contaminant. The concentrations applied were based on monitored lagoon water quality between June 1999 and June 2004. Total Nitrogen (TN) was used as the introduced contaminant and it was distributed by the model. The 1st and 2nd Stage lagoons were assumed to introduce a constant 25 mg/L, the 3rd Stage lagoon 10 mg/L and the 4th Stage lagoon 8mg/L. The background water quality was assumed to be 0.5 mg/L and rainfall was assumed to have a concentration of 0.01 mg/L.

Based on these input values the contaminants were moved with the groundwater (advection) and dispersed through the assumed porous flow path. This results in a wide plume of lower concentration migrating toward the Jerrabomberra wetlands and Molonglo River. No retardation was modelled. The background water quality may have lower concentrations than groundwater in this dairy farm environment might have. This introduces a steeper concentration gradient but also allows higher dilution. Retardation would be also expected from a variety of chemical, possible biochemical, and physiochemical (sorption) reactions, so by not including these the model results are conservative.

The preliminary model results are based on typical values for all parameters and as none of the parameters have been field tested the model cannot be verified. Accordingly, the model results are relatively uncertain. Additional testing of the aquifers' hydraulic parameters, background groundwater concentrations, confirmation of the infiltration losses from the lagoons and experimentation to evaluate the subsurface retardation characteristics would be necessary to reduce uncertainty in the model results.

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Potential Contaminant Transport

The contaminant distribution was extracted after 35 years of modelled migration and after 90 years. The results show that at present, contaminants have migrated to the Jerrabomberra Creek and that migration will probably increase over time.

The nitrogen load to the modelled section of the Jerrabomberra Creek after 35 years at 0.4ML/day infiltration is 110 g/day, this increases to 260 g/day after 90 years. These values correspond to average concentrations of the inflow, of about 1.5mg/L and 3.7mg/L, which may be compared to, for example, the water quality criteria for stock watering for total nitrate and nitrite of 40mg/L (as N) suggesting that contamination from the STP may not have a negative impact with respect to agricultural uses. The ammonia loads are about 45% of the nitrogen loads.

In summary, the preliminary groundwater flow and contaminant transport modelling predict that, for lagoon infiltration losses of 0.4ML/day, at present approximately 0.1 kg/day TN and 0.05 kg/day ammonia could be contributed from the Fyshwick STP lagoons, via groundwater, to Jerrabomberra Creek and twice those values to the combined Creek and Molonglo River systems. These values would increase with time as the contaminant spread increases through the aquifer but would still be a small proportion (less than 4%) of the loads contributed by Molonglo River (based on 2000 – 2004 data). If actual losses are significantly less than 0.4ML/day, contaminant losses will be proportionately reduced. Lining of the base and sides of the lagoons would further reduce infiltration losses. Contaminant transport has ignored retardation in the subsurface but possibly allows for high dilution as the background groundwater levels may be too low.

Groundwater impact of burying grit and screenings

Modelling of the potential impact of groundwater from burying dried grit and screenings, has not been carried out. Assuming that the materials are buried above the water table level, it is likely that the overall impact would be relatively low, compared to the potential contamination arising from the lagoons. This assessment is based on the fact that the volume of water falling as rainfall and infiltrating through the buried materials to the groundwater table, would be low compared to the volume of infiltration through the lagoons. This assessment could be confirmed by carrying out laboratory leachate testing of the materials to provide data for input as an additional source into the contaminant transport model.

3.9 Assessment of Privately Leased Sites By Coffey

Although this study has concentrated on Government owned land Coffey has previously undertaken a number of environmental site assessments of privately leased sites within the study area as listed below:

- C6792/1-AE Environmental Assessment, Block 24, Section 6, Fyshwick, June 2000
- C6373/1- AB Environmental Assessment Underground Storage Tanks 11, Nyragang Street, May 1997
- C6688/2- AC Fuel Depot Dairy Flat Road, Environmental Site Assessment, February 2000

Due to the commercially sensitive nature of the information contained within these reports we are unable to provide a summary of the reports. Based on information obtained from Environment ACT we can confirm that these sites contain or previously contained underground fuel storage tanks.

In addition it is understood that an environmental site assessment and subsequent remediation of the former DAS Fleet refuelling facility has been undertaken and a site audit statement has been issued which states that the site is suitable for continued industrial use as defined under the Territory Plan. It is understood that ongoing groundwater monitoring is required as a condition of the Audit.

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4. SITE HISTORY AND OBSERVATIONS

4.1 Site History

Information on site history was obtained by Coffey from the previous investigation reports, discussions with railway staff, a review of records held by Environment ACT, information obtained by Redbox Design Group, air photo interpretations and a site walkover completed by Coffey personnel.

European settlement of the area commenced in the 1820's following the discovery of good grazing country on the alluvial tussocky flats of the Molonglo and the establishment of Duntroon Homestead by the Campbell family in 1825. The development of Canberra commenced in 1912 with the Kingston Powerhouse being the first permanent building in the new National Capital. It was in time to generate electricity in August 1915. The railway was extended from Queanbeyan to Canberra to supply the Power House in 1914.

The development of the Causeway began with a tent camp in 1925 and later included the construction of timber cottages in 1927. The Causeway Hall was constructed in late 1925 using a 50-50 system where men supplied the labour and the Commission supplied the materials. Redevelopment of the Causeway commenced in the late 1970's and included the installation of screens to shield lavatories, hand basins in bathrooms, footpaths, a grass basketball court and playground equipment.

The majority of the remaining area remained as undeveloped grazing land until the 1960's when businesses such as the Canberra Dairy Society were established. Municipal landfills known as the Causeway Tips were established in the early 1950's and operated through to the end of the 1970's / early 1980's.

During the 1980's spoil from the construction of Parliament House placed on Section 39 of Fyshwick. Commercial development of Fyshwick in the southern part of Zone 2 continued through the 1980's and 1990's and now includes a mix of cold storage warehousing, distribution centres, food markets and office space.

A rural education centre was constructed on Dairy Road in the 1990's and cattle grazing continues in parts of the Jerrabomberra Wetlands.

4.2 Review of Environment ACT Records

The correspondence from the Environment Protection Unit (EPU) is presented in Appendix A and summarised in the attached Table 1. The EPU records indicated the presence of potential contamination associated with following main issues:

- Three "Causeway Tips" municipal landfills located to the south of Jerrabomberra Creek;
- Railway Land Municipal Landfill located on Block 2, Section 74, Fyshwick;
- Two municipal landfill located on Block 11 and 12, Section 38, Fyshwick;
- An area of uncontrolled fill on Section 30, Fyshwick
- Two service station sites, one located on Canberra Avenue and one on Wentworth Avenue;
- The DAS Fleet former refuelling facility located on Newcastle Street. Audit report indicates site is suitable for continued industrial uses under the Territory plan. On going groundwater monitoring required as condition of Audit.
- Several refuelling facilities associated with various commercial and industrial properties with in Fyshwick.

4.3 Review of Aerial Photographs

A review of the aerial photographs held by ACT Planning and Land Authority was undertaken to aid an assessment of site history. The main observations from the aerial photograph review are presented in Table 4.3 below:

TABLE 4.3– AERIAL PHOTOGRAPHS

DATE OF PHOTOGRAPH	OBSERVATIONS
02-01-1951	<p>Majority of sites show signs of rural farming, cropping and produce farming, dairy and sheep farming.</p> <p>Dairy farm adjacent to Dairy Road 600m north of the proposed Newcastle Street and Dairy Road intersection.</p> <p>Residential development at the Causeway</p> <p>Train line and associated developments present</p> <p>Commercial development present (approximately 70 buildings) through Blocks 4,5,14 and 15, Section 26 Griffith.</p>
28-04-1961	<p>Residential area fully developed at the Causeway. Houses present on Railway land adjacent Cunningham Street with a tree line buffer between houses and railway</p> <p>Railway turntable present adjacent the main line, to the east of the railway station</p> <p>Commercial area mostly undeveloped, with buildings present on Blocks 1&2 and 5 Section 26 and Block 1 Section 87 Griffith. Remaining commercial area appears to be open fields</p>
24-02-1972	<p>Lake Burley Griffin has been formed, turning a portion of Dairy Flats into wetlands. Remaining land still used for agricultural purposes such as dairy farming and cropping.</p> <p>Large landfill present in northern portion of railway site, and buildings that house the future ARHS are present, along with the adjacent railway line.</p>
09-02-1980	<p>Rural farming still present however, evidence of landfilling on site bounded by Jerrabomberra Creek, Causeway and Train tracks.</p> <p><i>Note: The fill may be connected to the construction of new parliament house.</i></p>
01-04-2001	<p>Transfer depot evident on Mildura Street. Fill dumping area now overgrown with vegetation.</p> <p>Turf farm present on western side of Monaro Highway.</p>

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4.4 Site Observations

In accordance with the brief, only Government owned land was accessed during the site walkovers. In addition general observations relating to the privately leased sites were recorded based on drive by assessments. The main observations relating to the industrial and commercial sites located in the southern portion of the site are summarised in the following Table 4.4.

TABLE 4.4– SITE OBSERVATIONS

STREET / BLOCK AND SECTION	LANDUSE/TOPOGRAPHY/CONSTRUCTION	POTENTIAL AEC'S AND CHEMICALS OF CONCERN
Mildura Street Block 9 Section 30 Fyshwick	Canberra Institute of Technology (CIT) 15yr old building articulated, constructed on fill generated during construction of Parliament House. Naturally low lying topography. Introduced grasses and weeds in maintained gardens. Pavements comprise of asphalt with concrete kerb. Site of TAFE is close to Jerrabomberra Creek, groundwater likely to be shallow. No underground storage tank evident.	Workshop contains up to 10 working bays for automotive repairs, potential contamination exists from fuel, lubricant, coolant, brake fluid and oil. TPH, BTEX, PAH and lead.
Mildura Street Block 9 Section 39 Fyshwick	Rear of IGA Warehouse Colourbond and concrete building. Surface water drainage on site. A lot of paper and cardboard waste evident on site. Above Ground 'Kleenheat' gas storage tank visible in rear carpark. Carpark comprises of asphalt and concrete.	
Mildura Street Block 7 Section 39 Fyshwick		
Mildura Street Block 6 Section 39	Back entrance to AusPost Business Mail centre	

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STREET / BLOCK AND SECTION	LANDUSE/TOPOGRAPHY/CONSTRUCTION	POTENTIAL AEC'S AND CHEMICALS OF CONCERN
Fyshwick		
Mildura Street Block 23 Section 6 Fyshwick	Residential House	
Mildura Street Block 24 Section 6 Fyshwick	M16Art Studios, Coffey Geosciences + others Previously owned by TotalCare Industries Ltd. Former uses include welding shop, including in-ground inspection pit, plumbers store, chemical store (pesticides and herbicides), fuel dispensing and underground storage tanks.	Pesticides and herbicides. Fuel: TPH, BTEX, PAH, lead, heavy metals. Acids from batteries.
Mildura Street Block 2 Section 6 Fyshwick	Bureau of Animal Health Brick Construction HAZCHEM signage	Potential storage of hazardous materials
Mildura Street Block 6 Section 6 Fyshwick	Fire Station Brick construction Asphalt and concrete pavement. Underground fuel storage tanks	TPH, BTEX, PAH and lead
Canberra Avenue Block 25 and 26 Section 6 Fyshwick	City Scape Communications tower on site	
Leeton Street Block 15 Section 6 Fyshwick	Interiors Australia DHL Brick construction possible underground storage tanks.	TPH, BTEX, PAH and lead
Leeton Street Block 19 Section 6 Fyshwick	Blue Seas seafood and Deli Nut retail outlet. Drainage evident in car park possible underground storage tanks.	TPH, BTEX, PAH and lead.
Nyrang Street Block 6 Section 39 Fyshwick	AusPost front entrance. Brick building, recent construction. Asphalt car parking.	

STREET / BLOCK AND SECTION	LANDUSE/TOPOGRAPHY/CONSTRUCTION	POTENTIAL AEC'S AND CHEMICALS OF CONCERN
	No visible drains or underground storage tanks.	
Nyrang Street Block 8 Section 39 Fyshwick	CanPrint warehouse New building comprising of brick and colourbond. Asphalt carparking. Dangerous good stores at front of building. Services present at front gate.	Inks and dyes. Potential TPH and BTEX and heavy metal contamination from dyes, thinners and cleaning agents.
Nyrang Street Block 9 Section 39 Fyshwick	IGA warehouse Colourbond and concrete building. Surface water drainage on site.	
Nyrang Street Block 4 Section 39 Fyshwick 11 Nyrang Street	Warehousing distribution Centre Food storage and furniture. Colourbond and brick warehouse Articulated vehicle parking. Poorly maintained asphalt carpark area. Evidence of wear on asphalt/settlement Underground Storage Tanks	TPH, BTEX, PAH and lead.
Nyrang Street Block 1 Section 7 Fyshwick	Fyshwick Food Markets Cold storage facilities and retail premises. Brick and colourbond construction Large surface water drainage pipe lies parallel to Nyrang Street.	
Dalby Street Block 7 Section 7 Fyshwick	Mobil Quix service station New construction post 1991, fuel bowsers, underground storage tanks, carwash and shop. Asphalt car parking and with asphalt and concrete pavement.	TPH, BTEX, PAH and lead
Dalby Street Block 3 Section 7 Fyshwick	Warehousing Storage facility for Fyshwick markets. Underground fuel storage tanks	TPH, BTEX, PAH and lead.

STREET / BLOCK AND SECTION	LANDUSE/TOPOGRAPHY/CONSTRUCTION	POTENTIAL AEC'S AND CHEMICALS OF CONCERN
Dalby Street Block 6 Section 7 Fyshwick	KFC Restaurant Brick building of recent construction	TPH, BTEX, PAH and lead.
Dalby Street Block 4 Section 7 Fyshwick	Asphalt and concrete pavement. 2 diesel underground fuel storage tanks are or were located on this block.	TPH, BTEX, PAH and lead.
Dalby Street Block 12 Section 7 Fyshwick	Kulrumbene Centre Offices Concrete building Car parking	
Dalby Street Block 9 Section 7 Fyshwick	AAMI New construction (2004) colourbond Vehicle inspection centre on site	
Leeton Street Block 19 Section 26 Griffith	Tip Top Bakeries Brick construction, probably constructed in 1950's. Underground storage tanks possible as vehicle refuelling bowser on site.	TPH, PAH, BTEX and lead.
Leeton Street Block 17 Section 26 Griffith	Media Monitors YSARAN Consulting OH and S and management consultants. Brick building, recent construction, paved pavement (tiles or formed concrete)	
Canberra Avenue Block 21 Section 1 Narrabundah	Residential	
Canberra Avenue Block 35 Section 2 Narrabundah	Residential	
Canberra Avenue Block 3 Section 1 Narrabundah	Residential	

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Three individual visits were made to the Canberra Railway Station, the Railway Museum and the Miniature Railway site. These are discussed in more detail in the following sections.

4.4.1 Canberra Railway

A site walkover was undertaken by a Senior Environmental Engineer on 24 March 2005. The site is bounded by Cunningham Street and Wentworth Avenue to the north and west with Mildura Street to the south. The rail corridor extends to the south east towards the commercial centre of Fyshwick and Queanbeyan. Jerrabomberra Creek crosses the site to the east of the main station and an area undeveloped land is present adjacent to Jerrabomberra Creek to the north east of the main station. The Railway Museum and miniature Railway sites border the Railway Station to the north east. The surface conditions comprised a mix of asphalted and grassed area with several railway lines crossing the site in an east west direction.

A municipal waste disposal area is located between Jerrabomberra Creek and the main Canberra Line.

The railway station site comprises of Canberra Train Station building and associated yards in the south western corner, with a former refuelling area located approximately 200m to the east of the station and the former Robbo's Pet Barn warehouse located adjacent to a branch line in the centre of the site. Based on discussions with rail personnel, the railway station started in 1920 and the original station building was located to the west of the current building.

The site observations may be summarised as follows:

- A new refuelling area has been constructed opposite the main station building and comprises a 55,000L above ground diesel fuel tank and a steel framed covered refuelling bay with a bunded concrete base. Based on discussions with Canberra Rail personnel it is understood that the above ground tank was installed in 2002 and has not been used to date. Trains are currently refuelled by mobile tankers on an as and when required basis. The bunded concrete refuelling bay includes a sump to collect fuel spillage or leakage during refuelling. A spill response kit and emergency eye wash facility were located adjacent to the refuelling area. An oil absorbent rubber mat was located between the rail tracks adjacent to the refuelling area. Small oil stained areas of ballast were noted in between the tracks adjacent to the refuelling area.
- A stockpile area of assorted fill was present in the western part of the site contained between rail branch lines. The fill appeared to comprise a mixture of fouled railway ballast consisting of angular gravel and cobbles in a sandy clay matrix, with some ash, clinker, rotted wood, railway sleepers and some oil stained geotextile cloth. In addition there were stockpiles of broken asphalt with concrete blocks, occasional plastic bottles, wood and timber also present. Based on discussions with rail personnel it is understood that some of the fill may have been generated following the removal of the stockpile of burnt pines previously stored in the area following the January 2003 Canberra Bushfires.
- The former refuelling area comprises an empty above ground fuel storage tank (AST), which was assessed to be approximately 50,000L in capacity, located adjacent to a rail track with delivery pipework connected to an overhead metal frame. Based on information in the PPK report it is understood that the tank has not been used for refuelling for minimum of 20 years. Three groundwater wells GW210, GW5 and GW6, which were installed during the previous investigation by PPK in 2000, were observed in the vicinity of the above ground tank. A second visit was undertaken to monitor the water level in the well in April 2005. The water level in monitoring wells GW210 and

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GW6 was recorded at 5.8m and 6.6m below ground level respectively. The third well, GW5 was broken, and therefore no level was recorded. A hydrocarbon odour was noted in monitoring well GW5. A stockpile of gravel and ash with a volume of approximately 5m³ was noted on the northern side of the AST. The vegetation in the area of the rail track and AST was overgrown and in a poor state of repair.

- An area of fill was noted along the southern boundary of the site, which according to previous investigations by PPK, is understood to include areas of fouled ballast. No waste materials were exposed at the surface during the site walkover with the exception of two broken concrete pipes which measured approximately 400mm in diameter. The surface vegetation was patchy grass with small shrubs and trees along the sides of the fill mound. The vegetation appeared to be stressed in places.
- Robbo's Pet Barn located in the centre of the railway site and is approximately 80m long by 20m wide and appeared to be constructed of brick and steel. Based on information supplied by ACTPLA it is understood previous investigations to determine the future use of the building indicated that the roof and eaves contained asbestos material and appeared to be in poor condition. A Hazardous Building Material Survey (HBMS) is therefore recommended as part of the proposed Phase 2 assessments.

4.4.2 Canberra Railway Museum

The Canberra Railway Museum is located to the north of the main railway station site and comprises of a station building converted into a museum, a covered work shed area, a dangerous goods store, coaling area and steam preparation bay. The site is generally flat and includes several sections of track, which are being used to store old trains and carriages and spare parts have been placed adjacent to the rails between the carriages. The main site observations are summarised below:

- Diesel and steam powered locomotives are operated within the site. No fuel tanks are kept on site, the diesel locomotives are refuelled by mobile tankers. A coal storage area is located to the north of the site adjacent to the miniature railway site. The ground in the vicinity of the coal store contained fragments of ash and coal.
- Several empty 220L drums of lubricating and hydraulic oil were located adjacent the coaling area and a point control box building. Stained areas of ground were also visible in the area of the oil drums.
- The works shed was being used to store carriages and locomotives, which were undergoing repair and renovation. Drums of solvents, degreasing agents and paints were stored within the shed, which had a combination of concrete hardstand and bare ground as a floor.
- A heavily stained area of track was located at the eastern end of the shed. Oil absorbent materials had been used in some areas of the shed.
- A hydraulic press was located at the corner of the south eastern corner of the workshed with a slight oil stain on the concrete base.
- The steam preparation pit comprised a concrete lined pit beneath part of the rail tracks at the eastern end of the workshed. Oil staining was evident on the base of the pit.

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- Spare parts for the train carriages and locomotives had been placed along side the tracks used to store the carriages. The spare parts included assorted metal springs, bogeys, and large lead acid batteries used to supply power to the train carriages.
- Based on discussions with Mr John Cheeseman of the Australian Railway Historical Society (ARHS) it is understood that some of the train carriages and locomotives contain asbestos materials such as insulation lagging around steam pipes.
- A small steel lockable container located between the museum and the workshop is used as a dangerous goods store. The dangerous goods contained on site comprise solvents, paints, hydraulic oil, lubricating oil and small amount of fuel.
- Due to the age of the carriages it is assessed that there is the potential for lead paints to be exposed during renovations.

4.4.3 Canberra Miniature Railway

The Miniature Railway is located adjacent to the Railway museum. The facility is understood to have been constructed in 1953 and has been owned and operated as a miniature railway since 1982. The topography of the site is flat and the surface conditions comprise mainly grasses and eucalypt trees. A seven and five inch miniature rail track has been laid around the site and both steam and petrol locomotives are used to pull carriages around the track. The site was constructed on a former municipal landfill site as indicated in Section 3. The main observations are summarised below:

- A coaling station is located in the north eastern part of the site (sub-leased from ARHS), close to the adjacent coal store on the Museum site. Fragments coal and ash were observed on the track in the vicinity of the coaling station.
- A Flammable liquids store was present on the central northern part of the site adjacent to the control room. The store included three lawnmowers and flay truck used for spraying herbicide (glyphosate) on an annual basis around the tracks. Three 20L drums of petrol were noted in the store.
- Waste materials have been encountered in the cuttings for the track. Fragments of glass bottles, plastic sheeting and asbestos cement sheeting were observed on the site within the banks.
- A galvanised steel oil store was located adjacent to the steam bay in the south west corner of the site, which contained three 20L oil drums.
- Minor oil stains and small amounts of ash were noted on the base of the steam preparation bays.
- An electricity transformer was located close to the site entrance which converts 240V to 12V. Based on the age of the transformer it was assessed that it may contain poly chlorinated biphenyls (PCB's).

4.5 Gaps in Information

Based on an assessment of aerial photos, review of previous reports, information supplied by ACTPLA, records held by EPU and site observations, it is assessed that no significant gaps in the site history have been identified for the areas of Government Owned land which could be accessed during this study. It should be noted that privately leased sites were not accessed during this study and therefore the site history is incomplete for these areas.

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5. POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

Based on the results of the limited site history study, it was assessed that there are ten main potential areas of environmental concern (AEC) within the area assessed. These AECs and associated main potential Chemicals of Concern (COCs) are listed in Table 5-1 below.

TABLE 5-1 - SUMMARY OF MAIN POTENTIAL AREAS OF ENVIRONMENTAL CONCERN AND CHEMICALS OF CONCERN

Site Feature ¹	Chemicals of Concern ²	Comments
AEC 1: ACT Rail land Block 2 Section 47 Fyshwick divided into: A: Former Fuel Storage B: Former Landfill C: Fouled Ballast and assorted Fill D: Former Turntable E: Railway Museum F: Miniature Railway	TPH, BTEX, heavy metals, asbestos, PAH, PCB, OCP TPH, BTEX, PAH, heavy metal. TPH, BTEX, PAH, heavy metal and asbestos. TPH, BTEX, PAH, heavy metal, asbestos and OCP	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil and fouled ballast. Potential contamination with heavy metals from landfill leachate. <i>NB PPK have previously undertaken an assessment of the landfill assuming an ongoing industrial use. Based on site observations it is assessed that asbestos containing materials may be present within the landfill. Groundwater contamination was identified in the vicinity of the refuelling facility.</i> Potential hydrocarbon impacts from former turntable identified from previous sampling. Further assessment required. Oil stained areas in and around workshed and coal store. Leakage from batteries and potential asbestos from train parts. Waste fill materials exposed in cuttings including potential asbestos cement board. Fuel and chemicals stored on site. Ash and clinker on track.
AEC 2: Service Station and refuelling facilities Block 2 and 3, Section 25, Griffith. Block 2, Section 26, Griffith	TPH, BTEX, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.

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Site Feature ¹	Chemicals of Concern ²	Comments
AEC 3: "Causeway Tips" Municipal Landfills Block 20, Section 6, Kingston Block 1, Section 74, Fyshwick. Block 1, Section 66, Fyshwick	TPH, BTEX, heavy metals, PCB, asbestos, PAH, nutrients, organics and others	Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses
AEC 4: Department of Agriculture, Fisheries and Forestry Field Research Station Block 2, Section 6, Fyshwick	Potential storage of Hazardous Materials	Potential contamination from chemicals/radioactive materials used on site.
AEC 5: Fuel Storage, Municipal Depot Block 15, 19, 24 and 26, Section 6, Fyshwick Block 18, Section 30, Fyshwick	TPH, BTEX, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 6: Service Station and refuelling facilities Block 6, Section 6, Fyshwick Block 4 and 7, Section 7, Fyshwick	TPH, BTEX, PAH and lead	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 7: Uncontrolled Fill Section 39 Fyshwick		Sourced from excavation for New Parliament House. May contain boulders – therefore potential geotechnical constraint. Low environmental risk.
AEC 8: Municipal Landfill Block 12 Section 38 Fyshwick	TPH, BTEX, heavy metals, PCB, asbestos, PAH, nutrients, organics and others	Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses. No information on age or depth of fill recorded during desk top study.
AEC 9: Former DAS Fleet refuelling Facility and municipal landfill (Block 11 Section 38 Fyshwick)	TPH, BTEX, heavy metals, PCB, asbestos, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil. Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses. It is understood that the site is currently subject to a Phase 2 ESA. The Auditors report has not been received by Environment ACT.

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Site Feature ¹	Chemicals of Concern ²	Comments
AEC 10: Fyshwick Sewage Treatment Works (FSTW).	Faecal coliforms, nitrogen, phosphorous, Heavy metals.	Potential contamination of soil, surface water and groundwater in the vicinity of the FSTW.

NOTES TO TABLE 1:

TPH – total petroleum hydrocarbons

BTEX – benzene, toluene, ethylbenzene, xylenes

PAH – polycyclic aromatic hydrocarbons

OCP –Organochlorine pesticides

PCB – Polychlorinated biphenyls

1. All urbanised areas generally have the potential to be impacted by contamination, to some degree. The significance of the contamination is generally dependent on the proposed landuse. In this case, we have identified the main sites/sources of potential contamination.
2. Typical main chemicals of concern associated with the identified activity/operation, note that this list is not exhaustive and other chemicals could also be present.

The location of the potential AECs is shown in Figure 3. Sites that exhibited similar attributes, which were in close in proximity to one another were merged to form a single AEC. A reassessment of the railway land investigated by PPK for residential end use has been proposed as part of the Phase 2 scope of works.

6. PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT

Based on a review of the previous investigation reports, aerial photographs, government records and the site walkover, it is assessed that there is a potential for surface or subsurface contamination of soil and/or groundwater to be present on parts of the site associated with 10 main areas of environmental concern. Further assessment of these potential AECs would be required as part of a Phase 2 ESA prior to redevelopment of these areas for residential end use. In addition the brief review of the privately leased and owned properties indicate several potentially contaminating activities and storage of chemicals of concern that could have a negative impact on human health and the environment.

7. RECOMMENDATIONS

Based on the results of the Phase 1 ESA further assessment of the potential areas of environmental concern is required prior to redevelopment of the site. The level of investigation and remediation required will be dependent on the preferred renewal option, which has yet to be determined. As the purpose of this report is to inform future planning processes an estimated cost of undertaking future investigations is provided. These indicative costings have been based on a worst case development scenario based on the opportunities and constraints identified in the associated Land Capability and Suitability Study and the costs of comparative contamination exercises undertaken in the ACT.

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On this basis it is assessed that further assessment of the Railway site (including the rail museum and miniature railway) and the municipal landfill and the former DAS Fleet refuelling facility (AECs 1, 8 and 9) will be required.

Should the commercial land use remain the same then further assessment regarding contamination issues may not be required as part of the planning or development process. Assessments may be necessary for other reasons such as due diligence purposes or future liability purposes, such as if there is a change in ownership. It should be noted that if redevelopment of the commercial area is proposed then further assessment of the other AEC's as part of a Phase 2 ESA would be required.

Coffey have had extensive experience in the assessment, validation and remediation of large industrial sites within Canberra and are currently undertaking or have recently successfully completed, a number of contamination and remediation studies on the adjacent Kingston Foreshore Development site. The following scope of works for a Phase 2 ESA has been prepared based on the results of the Phase 1 ESA and our experience of the likely Auditor requirements based on the Kingston Foreshore works.

7.1 Phase 2 ESA – Proposed Work Plan

Based on the results of the Phase 1 ESA contamination at the site is generally expected to be in the following areas:

- the upper surface soils and fill materials with some localised areas of potential deeper contamination such as above ground and underground storage tanks;
- in the vicinity of known areas of contamination in and adjoining the various sites; and
- in the vicinity of potential former areas of contamination such as around former industrial buildings, in the vicinity of underground tanks and waste storage areas etc.

As indicated above it is assessed that there are three main areas of concern associated with specific former land uses, which can be subdivided into smaller areas comprising several areas of concern, which may potentially impact on the proposed redevelopment area. The previous Phase 2 ESA of the Railway land by PPK concluded that the contamination at the site did not pose a risk to human health based on the continued industrial use of the land. The proposed redevelopment of the railway land for residential use would constitute a more sensitive land use and therefore further assessment of the Railway land would be required. The proposed scope of works would complement the information obtained during the previous PPK investigations and target the potential areas of environmental concern identified in Section 5.

It is understood that an Auditor would be engaged from commencement of the Phase 2 Stage until completion of a Site Audit Statement and Site Audit Report. This would include a review of the brief for the Phase 2 Consultancy.

7.1.1 Proposed Methodology

The proposed methodology to be used for the assessment program is that which has been successfully implemented by Coffey in the recently completed validation sampling and remediation programs at the Kingston Foreshore site. It is understood a Statement of Environmental Audit for residential land use would be required to allow for processing of a Development Application. In accordance with Environment ACT Audit guidelines the environmental audit should be completed by an NSW EPA or VIC EPA accredited auditor from an independent organisation, as nominated by the site owner. It should be noted that an Auditor Specification would be required for the validation works. The proposed methodology is based on our experience of similar



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sites, however, it should be noted that auditors are independent and have differing points of view and approaches and may not agree with our proposed methodology. Further works may therefore be required to satisfy the Site Auditor.

The proposed methodology would comprise of three (3) main tasks, as follows:

- | | |
|--------|--|
| Task 1 | Confirmation of Work Plan |
| Task 2 | Phase 2 Investigations |
| Task 3 | Data Assessment, Remediation, if required and Validation Reporting |

Tasks 1, 2 and 3 should be completed in consultation with the Auditor to ensure that requirements are met and potential time losses, associated with inadequate data collection and/or assessment, are minimised. The tasks are described in the following sections.

Task 1 –Confirmation of Work Plan

The first task to be undertaken would be submission of the preliminary Work Plan presented in this report. The Work Plan describes the field and laboratory investigative programs, sample locations, number of samples, sample intervals, field and laboratory quality assurance/quality control plans, management plans for occupational health & safety, environmental management, and site acceptance criteria to be utilised for assessing data gathered during the Validation Assessment.

The Work Plan should be submitted to the Auditor for review prior to commencing any fieldwork, thereby, gaining the Auditors upfront approval for the validation program which will permit the validation of the specific Sites in the most expeditious manner. The Auditors approval and the final work plan must be forwarded to Environment ACT for its records and should include reference to all Government approvals for works undertaken.

The Work Plan will also form part of the final Validation Assessment Report prepared for the project.

The field investigation program should be completed in accordance with the Auditor's Performance Specification and the NSW EPA Contaminated Sites "Sampling Design Guidelines" (1995) and, at this stage is expected to comprise a stratified sampling program consisting of a combination of:

- A broad grid based soil sampling program carried out across areas of the site assessed to have lower potential for contamination. This sampling would be essentially to provide data to confirm chemical quality within these areas;
- A targeted soil sampling program directed towards those areas of the site where site specific activities have been undertaken which are assessed to have the potential to result in contamination (eg fuel storage areas, chemical stores, etc) or where the previous investigations have identified (but not fully delineated) contamination;
- A groundwater sampling program to provide data on the impact of contaminants on groundwater (to supplement the results of earlier groundwater testing). Where possible existing wells would be utilised for the sampling program. Delineation of groundwater contamination, if any, will be required;
- A gas monitoring program in the areas of landfill to assess the potential presence of landfill gas.

The preliminary Work Plan, based upon our current knowledge of the site is included in the following section.



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Task 2 – Validation Investigations

Methodology

Task 2 of the study will involve implementation of the Work Plan, comprising the collection of necessary data required to characterise the contaminant conditions at the site so that any remedial measures can be implemented, and, ultimately a Statement of Audit can be issued. The fieldwork program would initially focus on targeting investigation in areas of the greatest environmental concern so that any significant contamination issues which may warrant remediation are identified early in the project, providing time for implementation of appropriate remediation strategies to permit the issue of the Audit Statement within the required timeframe.

A summary of the proposed work to be undertaken during the Task 2 contamination investigations is as follows:

- Locating sampling points corresponding to those identified in the Work Plan
- Undertaking soil, sediment and groundwater sampling using the methodology and quality assurance/quality control procedures detailed in the Work Plan
- Recording relevant information during sampling including descriptions of material type (test pit and borehole logs) encountered during sampling to define subsurface conditions.
- Decontamination of sampling equipment in accordance with Coffey's written procedures which are based on industry standard practice.
- Selection of samples for analysis and forwarding samples (under Chain-of-Custody) to the NATA registered analytical laboratory for analysis for parameters specified in the Work Plan. Laboratory analysis will be in accordance with those specified in the Work Plan.

All sampling should be conducted using documented quality assurance procedures. All fieldwork should be undertaken by experienced environmental engineers/scientists. Subsurface characteristics and field observations should be fully documented in accordance with the approved Work Plan.

Chain-of-Custody documentation should be prepared for sample transfer from the site to the analytical laboratory. Quality control checks should be conducted both in the field and laboratory. All sampling equipment should be thoroughly decontaminated to ensure that no carry over of contaminants occurs between sampling events, thereby ensuring that an accurate indication of concentration of contaminants should be obtained. All samples should be labelled in the field with unique sample identification code.

Preliminary Work Plan

Overview

The proposed preliminary Work Plan is presented in Table 3 and outlined in the following sections. This preliminary Work Plan forms the basis of our budget estimate for these works as presented in Section 8.

The preliminary Work Plan is based upon our current knowledge of the site. As discussed above, the preliminary Work Plan should be submitted to the Auditor for comment and approval prior to implementing the field program.

Soil Sampling Program

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The grid based soil sampling program proposed in this preliminary Work Plan is summarised in Table 3 and shown on Figure 4.

Soil sampling would be achieved through a combination of test pitting, and drilling programs. It is proposed that test pits will be excavated using a rubber tyred backhoe or tracked excavator to depths of about 2-3m or to natural soils or bedrock.

Soil samples will typically be collected from the following intervals: 0-0.15m; 0.5-1.0m; 1.5-2.0m and at approximately 1 m intervals to the termination of the test pit. Samples would also be collected from any layers/zones which visual/olfactory observations or field monitoring suggests the presence of contamination.

Soil samples selected for analysis will be based on the source and mechanism of contamination being investigated at each individual location and field observations and monitoring. The frequency of grid-based sampling would correspond to sampling of the site on an approximate 50m grid basis. The grid sampling would provide a general screening of the site resulting in the assessment of the presence of contaminants associated with railway activities at the site.

The target based sampling program would focus on specific areas where potentially contaminating activities are known to have been undertaken.

The Sampling and Analysis Plan is presented in the following sections and summarised in the attached Table 2. The proposed general sample locations are shown on Figure 4.

AEC1:- ACT Rail Land

The Railway land has been sub divided into 6 main areas of environmental concern based on a review of the previous investigation reports and the site walkover assessment.

A: Former Fuel Storage

The PPK investigation identified localised groundwater impacts in the location of the former refueling area, in the main station complex with three groundwater wells (GW5, GW101, GW102) recording Phase Separated Hydrocarbons to a maximum thickness of 4mm. A further 8 wells recorded dissolved TPH levels in excess of the limit of laboratory reporting of which 4 exceeded the commonly adopted average of the target and intervention values of the Dutch (1994) criteria (325µg/L).

During the site walkover three ground water wells (GW210, GW5 and GW6) were noted in the vicinity of the former refuelling area. Monitoring well GW5 was broken however, GW210 and GW6 appeared to be in a serviceable condition.

The proposed works would involve the installation of a further three groundwater monitoring wells in the vicinity of the former refuelling area and subsequent sampling from the new and existing wells.

B: Former Landfill

Based on a review of the aerial photographs and the Environment ACT records it is assessed that the area of the landfill on the railway land is approximately 15 ha. A total of 62 test pits shall be excavated on a 50m grid across the landfill area. In addition we propose to install 10 gas and groundwater monitoring wells.

The test pits shall be targeted to aid assessment of the fill material and an assessment of the capping material. An allowance for ten boreholes has been made to aid an assessment of the depth of the fill and the underlying geology in order to assess the potential migration of contamination from the waste material into the

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ground water. The wells shall also be used to assess the potential presence of landfill gas generated by the breakdown of putrescible waste.

If landfill gas is encountered further assessment of the source and potential volume and flow rates would be required.

C: Fouled Ballast and assorted Fill

Based on site observations it is assessed that the area of the fouled ballast is approximately 2000m². A total of 10 test pits shall be excavated on a 20m grid across the area would be excavated to the based of the fill (approximately 2m) to assess the potential presence of hydrocarbon contamination and assist in the assessment disposal / treatment options.

The test pits shall be targeted to aid assessment of the fill material.

D: Former Turntable

Based on a review of the PPK and URS reports it is assessed that the presence of hydrocarbon contamination in the wells located in the area of the former turntable may indicate the presence of soil contamination in the area of the turntable. A total of 8 test pits and two groundwater wells shall be excavated in the area of the turntable to assess the potential presence of soil and ground water contamination.

E: ARHS - Railway Museum

Based on the site observations and site history it is assessed that the ARHS site contains several potential areas of environmental concern. The ARHS site is located on top of the former landfill site described above. A combination of grid based sampling over the general site area and targeted sampling at the following areas of concern shall be undertaken:

- Two test pits in the vicinity of the coal store where fragments of ash and coal were observed.
- Two test pits and one groundwater well in the area of stained ground observed in the vicinity of the coaling area and a point control box building.
- Four test pits and one groundwater well within the base of the workshed where heavily stained sections of track and drums of solvents, paints and lubricating oils were observed.
- Two test pits in the vicinity of the steam preparation pit where oil staining was observed.
- Five test pits in the vicinity of the storage area for spare parts located adjacent to the rail tracks.

The remainder of the site would be sampled on a 50m grid as part of the general assessment of the ACT Rail Land.

F: Miniature Railway

Based on the site observations and site history it is assessed that the Miniature Railway site contains several potential areas of environmental concern. The Miniature Railway site is located on top of the former landfill site described above. A combination of grid based sampling over the general site area and targeted sampling at the following areas of concern shall be undertaken:

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- Two test pits in the area of the Flammable liquids store present on the central northern part of the site adjacent to the control room.
- Two test pits in the vicinity of the oil store located adjacent to the steam bay in the south west corner of the site, which contained three 20L oil drums.
- Four test pits and one groundwater well in the area of the steam preparation bays where minor oil stains and small amounts of ash were noted during the site walkover.

The remainder of the site would be sampled on a 50m grid as part of the general assessment of the ACT Rail Land.

AEC8 :- Municipal Landfill – Block 12 Section 38 Fyshwick

Based on a review of the aerial photographs and the Environment ACT records it is assessed that the area of the landfill on the railway land is approximately 1.8 ha. A total of 9 test pits shall be excavated on a 50m grid across the landfill area to enable an assessment of the nature and extent of the fill materials and capping materials. In addition we propose to install 2 gas and groundwater monitoring wells.

The test pits shall be targeted to aid assessment of the fill material and an assessment of the capping material. An allowance for two boreholes has been made to aid an assessment of the depth of the fill and the underlying geology in order to assess the potential migration of contamination from the waste material into the ground water. The wells shall also be used to assess the potential presence of landfill gas generated by the breakdown of putrescible waste.

If landfill gas is encountered further assessment of the source and potential volume and flow rates would be required.

AEC 9:- Former DAS Fleet Refuelling Facility and Municipal Landfill

It is understood that remediation of the former DAS Fleet refuelling facility is currently in progress. On this basis it is assumed that only an assessment of the municipal landfill will be required. Based on a review of the aerial photographs and the Environment ACT records it is assessed that the area of the landfill on the railway land is approximately 1.5 ha. A total of 7 test pits shall be excavated on a 50m grid across the landfill area to enable an assessment of the nature and extent of the fill materials and capping materials. In addition we propose to install 2 gas and groundwater monitoring wells.

The test pits shall be targeted to aid assessment of the fill material and an assessment of the capping material. An allowance for one borehole has been made to aid an assessment of the depth of the fill and the underlying geology in order to assess the potential migration of contamination from the waste material into the ground water. The well shall also be used to assess the potential presence of landfill gas generated by the breakdown of putrescible waste.

Groundwater Sampling Program

Existing groundwater monitoring wells should be sampled to provide data on the overall groundwater quality across the subject area as part of the validation assessment. A further fifteen (15) groundwater wells should be installed as part of the validation works.



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Groundwater samples would then be collected from the new and existing monitoring wells within the site.

Groundwater samples would be collected from each of the wells following development and purging. Field measurements during purging and sampling will include parameters such as pH, Ec, Eh, DO and temperature.

The groundwater samples would be analysed for TPH, BTEX, heavy metals total phosphorous, Total Kjeldahl Nitrogen (TKN), ammonia and PAH; selected samples would also be analysed for OCPs and phenols. In addition selected samples from the landfill areas would be analysed for total cyanide Volatile Organic Compounds (VOC's), Volatile Chlorinated Hydrocarbons (VCH's), total nitrogen, nitrite and nitrate, organo phosphorous, sulphate, sulphide. Selected samples shall also be analysed for an ionic balance to assess geochemistry of different aquifers.

Landfill Gas Monitoring

The groundwater wells within the landfill areas shall also be used to monitor landfill gas concentrations. A minimum of four rounds of gas monitoring should be undertaken, preferably under range of climatic conditions to assess the potential presence of methane gas produced by the anaerobic breakdown putrescible waste. A portable hand held gas meter (GA45 or similar) shall be used to measure concentrations of oxygen, carbon dioxide and methane.

If landfill gas were encountered further assessment of the source and potential volume and flow rates would be required.

Task 3 - Data Assessment and Reporting

Following the completion of the Task 2 Validation Investigations, an assessment of the data, including both previous data and new data should be undertaken. The assessment should be completed in accordance with the Auditor's Specifications and recommendations of the various NSW EPA published guidelines, the National Environment Protection (Assessment of Site Contamination) Measure and other Environment ACT endorsed and recommended guidelines. A preliminary report should be prepared for discussion purposes with the client and the Auditor. This preliminary report would present the assessment results as well document any remedial works. Upon completion of the required remedial works and any associated validation sampling and analysis a finalised Validation Report would be prepared.

The Validation Report would be in a single report, prepared in accordance with the NSW EPA Guidelines For Consultants Reporting on Contaminated Sites (1997) and would include:

- Executive summary;
- Details of the scope of work completed;
- Site identification information;
- Overview of the previous work;
- Summary of the site history and the site conditions and surrounding environment;
- Details of the sampling plan and methodology used in the investigations and any remedial works, including plan showing all sampling locations (including previous investigations);

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- Description of the geological and hydrogeological conditions present at the site, logs of boreholes/test pits, construction detail of monitoring wells, depth to groundwater, groundwater flow directions and rates, details of surface water conditions etc;
- The assessment criteria and site acceptance criteria relevant for the subject site;
- Tabulated results of analytical testing and comparison to appropriate threshold concentrations;
- Interpretation of the results of the field and laboratory testing programs;
- Conclusions of the validation program and a discussion of the area for its intended land use; and
- Recommendations for the management of any residual contaminants that may remain on the site.

7.1.2 Proposed Investigation Criteria

When validating a site, the results of the laboratory analyses of the soil and groundwater samples taken are compared with guideline values published in the various "Guideline" documents which are endorsed by Environment ACT and /or NSW Environment Protection Authority (EPA).

The current principal guideline document is the *National Environmental Protection (Assessment of Site Contamination) Measure - December 1999* published by the National Environment Protection Council. This relatively recent document complements the *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites - 2000*, prepared by the Australian and New Zealand Environment and Conservation Council and the National Health and Medical Research Council. These are referred to as the NEPM (1999) and the ANZECC (1992) Guidelines, respectively.

The NEPM provides contamination assessment criteria for:

- Health Investigation Levels (HILs) for soils under a range of exposure scenarios.
- Ecological Investigation Levels (EILs) to assess potential phytotoxic affects on plant life.
- Groundwater Investigation Levels (GILs) for groundwater under a range of groundwater use scenarios

A supplementary document prepared by NSW EPA is the *Guidelines for Assessing Service Station Sites. - December 1994* is generally used in the assessment of sites where the principal potential contamination is considered to result from the presence of tanks used for the storage of petroleum hydrocarbon fuels.

The threshold concentrations presented in the ANZECC (2000) are considered applicable for the protection of aquatic ecosystems of the receiving waters. As these guidelines apply to receiving waters, it is generally conservative to apply these to groundwater discharging to receiving waters.

ANZECC (2000) advocates a site-specific approach to developing guideline trigger values based on such factors as local biological affects data, the current level of disturbance of the ecosystem etc. The guidelines present 'low risk guidelines trigger values' which are defined as concentrations of key performance parameters below which there is a low risk that adverse biological effects will occur. It is important to note that these are not threshold values at which an environmental problem is likely to occur if exceeded. Rather, if the trigger values are exceeded, then further action is required which may include either further site-specific investigations to assess whether or not there is an actual problem or management / remedial action.

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The ANZECC (2000) Guideline provides concentrations of potential contaminant chemicals for a range of water usages: drinking, recreational, agricultural, industrial and ecological (for the protection of aquatic ecosystems).

The various guideline documents refer to 'Investigation levels' and 'Response Levels':

- An Investigation level for a contaminant is the concentration above which further investigation and evaluation will be required. These can be Health Investigation Levels (HILs) or Ecologically based criteria.
- A Response level is the concentration above which some form of response is required to protect human health and /or the environment.

In this validation sampling program any exceedence of the guideline concentrations is considered to indicate that the potential for contamination exists and that further investigation should be undertaken to more accurately quantify the nature and extent and/or the risk associated with the contamination, or that some management response, such as remediation, is appropriate.

The above documents emphasise that the "Guideline Values" are intended as a guide and site specific factors need to be taken into account in reaching a decision on the nature and intensity of further investigations or responses required.

In terms of the Exposure settings terminology used in the guidelines the proposed site land use categories are considered to be consistent with the following NEPM (1999) exposure scenario for soils:

- A – 'Standard' residential with garden / accessible soil (home grown produce contributing less than 10% of vegetable, and fruit intake; no poultry): this category includes children's day-care centres, kindergartens, preschools and primary schools.

The HILs are not provided for all potential contaminants. They are provided for most metals and some organic compounds. While some petroleum hydrocarbon criteria are included in the NEPM Guidelines the investigation levels provided in the Guidelines for Assessing Service Station Sites (GASS) are considered the primary criteria for the purposes of this study.

For some inorganic and organic compounds for which no guidelines are not provided in the above referenced documents and Dutch 1994 'Proposed Intervention Levels', or the laboratory detection limit, have been adopted as a comparative criteria for groundwater. The actual criteria would be approved by the Auditor as part of the Audit process.

Analytical results failing the assessment criteria will be promptly identified and remedial requirements assessed and discussed with the Client. Samples not tested will be held by the analytical laboratory pending results of the analysed samples.

7.2 Quality Assurance / Quality Control (QA/QC) Plan

The quality assurance / quality control (QA/QC) plan is designed to achieve predetermined data quality objectives (DQOs) that will demonstrate accuracy, precision, comparability, representativeness and completeness of the data generated and the procedures for assessing the DQOs are met.

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7.2.1 Field Decontamination Procedures

Coffey uses standard decontamination procedure for all environmental sampling programs. For this project, decontamination will include cleaning of all drilling and sampling items likely to come in contact with the soil prior to mobilisation to the site, cleaning of all down-hole equipment between holes and decontamination of all sampling equipment prior to each sampling. Cleaning will involve scrubbing with a solution of Decon-90, a phosphate-free detergent followed by rinsing with potable water.

A clean pair of disposable gloves will be used when handling each soil sample.

7.2.2 Field Quality Control for Other Procedures and Equipment

- Field equipment, such as the Photoionisation Detector (PID), will be calibrated to an accepted standard and batteries will be fully recharged for use;
- Samples will be collected in appropriately preserved sampling containers;
- Samples will be stored in ice cooled chests and transported to a NATA accredited environmental testing laboratory under chain of custody conditions;
- Duplicate samples will be collected at a frequency of 10% (5% interlaboratory and 5% intralaboratory) and assessed by calculating the Relative Percentage Differences (RPDs) between primary and duplicate laboratory samples using a control limit of 50% (20 interlaboratory and 20 intralaboratory duplicate sample will be taken);
- One wash blank will be collected and analysed per day of sampling (5 wash blanks); and
- One trip blank and one trip spike will be analysed per day of sampling (5 trip spike and 5 trip blanks).

7.2.3 Laboratory Quality Control and Procedures for Checking Control Data

A NATA accredited environmental testing laboratory will implement a quality control plan conforming to the National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) Schedule B(3) Guidelines for Analysis of Potentially Contaminated Soils;

The laboratory will perform reagent blanks, spike samples, duplicate spikes, matrix spikes, and surrogates spikes and duplicates to assess the laboratory quality control.

Coffey will check the laboratory quality control data as follows:

- Checking that the reporting limits and procedures are satisfactory;
- Checking that the samples are analysed within holding times;
- Checking that laboratory blanks / reagent blanks are less than the laboratory reporting limits;
- Checking the reproducibility of samples by calculating the Relative Percentage Differences (RPDs) between primary and duplicate laboratory samples using a control limit of 50%; and
- Checking that laboratory spikes, surrogate spikes, matrix spikes and duplicate matrix spike recoveries are within acceptable control limits.

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8. ESTIMATE OF FEES AND COSTS FOR PHASE 2 ASSESSMENT

In accordance with the project brief we have provided preliminary assessment of indicative budget estimates for Phase 2 costs including independent auditor costs. It should be noted that the costs have been based on the proposed preliminary Work Plan and therefore may be subject to change depending on the Auditors requirements. Due to the requirement for further Phase 2 assessment it has not been possible to prepare budget estimates for Phase 3 remedial works at present as the required scope of works cannot be assessed at present.

The budget estimate of costs (fees and expenses) to complete the Phase 2 environmental assessment as per the preliminary scope of works is presented below.

TABLE 8.1: COSTS AND FEES (EXCLUDING GST) – SEE BELOW FOR BASIS OF COSTING

TASK	COSTS (ex. GST)
1. Confirm preliminary Work Plan with Auditor	\$2,500
2. Undertake Phase 2 Investigations:	
• Project Management	
○ Liaison with Auditor	\$3,000
○ Meetings	\$2,000
• Fieldworks (including hire of equipment):	
○ Excavator hire	\$16,500
○ Drilling	\$18,000
○ Sampling and logging	\$24,000
• Laboratory Analysis:	
○ Soils	\$65,000
○ Water	\$16,000
• Equipment	\$4,000
3. Data Assessment and reporting	\$8,500
3. Obtain a Site Audit Statement under the Environment Protection Act 1997 (ACT) certifying that the site is suitable for the nominated residential uses	\$25,000
Total (excluding GST)	\$184,000
GST	\$18,400
Total (including GST)	\$202,400

Our estimate is based on the following assumptions:

- The client would arrange access for the Consultants personnel and subcontractors to the site;
- Fieldwork could be undertaken between the hours of 7.00am and 6.00pm, Monday to Friday. A surcharge would apply if night or weekend work is required;

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- Land surveying services would be provided by the clients nominated surveyor; survey of proposed assessment locations and actual assessment locations would be required;
- The Consultant would be provided with plans showing the locations of all underground services which may be a constraint to or at risk from the investigations and the client or their nominated representative/s would clear sampling locations at the site prior to excavation or drilling. Should a services locator need to be engaged to clear sampling locations prior to excavation or drilling then the cost of the services locator required to carry out the work would be charged as an additional item;
- The Consultant would have unimpeded access to the site and the fieldwork will not be affected by difficult site conditions such as concrete, rubble fill, cemented slag etc. or inclement weather;
- Restoration of sampling locations would be limited to backfilling of boreholes and test pits with soil cuttings and excavated soils. No allowance has been made for backfilling to any specific compaction standard, re-turfing of grassed areas or reinstatement of concrete;
- Decontamination of sampling equipment, including drilling equipment, would be undertaken onsite. A portable decontamination unit can be arranged at additional cost, if required;
- Water would be available onsite for use by the Consultant and its subcontractors during the field investigations;
- We have made for an allowance for monthly meetings to discuss project progress. Any additional meetings would be undertaken at our standard rates.
- The client would be able to provide a survey base plan of the study area for use in reporting.
- One environmental report will be completed following completion of all environmental investigations.

As indicated above the costs presented do not include any allowance for completion of remedial works. Any remedial works required to facilitate issue of the Audit Statement would be completed as a separate project item. The scope of any proposed remedial works would be developed in consultation with the Auditor and the client. A proposal, inclusive of detailed project costing would be provided for clients approval prior to proceeding with remedial works.

9. POTENTIAL REMEDIAL WORKS

As indicated in Section 8 it is not possible to assess potential remedial costs prior to the completion of the Phase 2 ESA. The preferred remedial option would be assessed following the completion of the Phase 2 and preparation of a Remedial Action Plan (RAP) which would be forwarded to the Auditor for approval. Soil remediation and/or management will be required for the petroleum hydrocarbon contaminated soil and groundwater and potentially contaminated waste materials within the landfill areas including asbestos impacted soils. There are several remedial options/management strategies for managing and/or remediating waste materials and petroleum hydrocarbon contaminated soil, which are locally and internationally available. Based on the information obtained during this Phase 1 ESA and discussions with Mr Mark Heckenberg of Environment ACT it is assessed that the following remedial options could be considered for soils:

- Risk Assessment and Preparation of Management Plans (Administrative control);
- Re-use of road making materials (such as bitumen and asphalt on site);
- Excavation and disposal to landfill, which can include two scenarios:

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- excavation, treatment (if required) and disposal to landfill; and
 - excavation and direct disposal to landfill;
- Excavation and reuse offsite, subject to Environment ACT waste management guidelines and licence definitions;
- Visible segregation of contaminating waste materials from soil (suitable for the soils containing pieces of bonded fibrous material potentially containing asbestos)
- Capping / encapsulation (insitu containment);
- Insitu chemical stabilisation;
- Insitu bioremediation (petroleum hydrocarbon impacted soils only);
- Exsitu bioremediation (petroleum hydrocarbon impacted soils only); and
- Soil washing.

Potential remedial options for the hydrocarbon contamination of the groundwater includes:

- Pump and treat groundwater;
- In-situ microbial degradation;
- In-situ chemical degradation;
- Monitored natural attenuation; and
- Phytoremediation.

Following completion of the Phase 2 ESA it is recommended that the above remedial methods be screened against the following criteria:

- Ability to achieve the site clean up (remediation) criteria;
- Impacts and risks on future site users;
- Ongoing maintenance and management requirements, if any;
- Direct relative cost of implementation;
- Cost of managing the treated material, if applicable;
- Restrictions on the future site use and/or development;
- Time of implementation;
- Local (i.e. Environment ACT, ACT Planning and Land Authority) legislation and requirements;
- Overall (i.e. direct and indirect) environmental impacts or benefits;
- Track record in Australia.

9.1 Preliminary Assessment of Remedial Options

Based on the results of the previous investigations and information obtained during the Phase 1 ESA a preliminary review of the above options suggests that the following may be feasible for the site:

- Excavation and disposal of contaminated soils to landfill, which can include two scenarios:

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- excavation, treatment and disposal to landfill; and
 - excavation and direct disposal to landfill;
- Capping / encapsulation (insitu containment);
- Visible segregation of contaminating materials from soil (suitable for the soils containing pieces of bonded fibrous material potentially containing asbestos)
- Exsitu bioremediation (petroleum hydrocarbon impacted soils only).

In addition a preliminary assessment of the hydrocarbon impacted groundwater suggests that a combination of pump and treat and monitored natural attenuation may provide a suitable remedial option. It should be noted that the option of monitored natural attenuation would require preparation of an Auditor endorsed Management Plan.

The final selection of the suitable options will depend on the cost effectiveness and meeting the project requirements such as future site constraints and the need for future monitoring. The following subsections briefly describe the salient features of each of the selected options;

9.1.1 Excavation and Disposal to Landfill

This option entails excavating the contaminated soil and disposing the soil at a landfill licensed to accept the waste. The key steps and the main cost items of this option are:

- Excavation of the contaminated soil;
- Temporarily stockpiling the soil on site with proper controls including sampling and analysis and waste classification of the stockpile;
- Transportation and disposal of the soils at a landfill licensed to accept the contaminated material;
- Validation of the soil remaining after excavation to check that the remediation has been achieved successfully; and
- Backfilling of the excavations, where necessary with “clean” fill.

The main advantage of this option is that contamination is removed from the site and the site is rendered clean, thus not requiring ongoing monitoring and management. Other advantages include relatively short time of implementation for small volumes of waste. It should be noted that if the materials within the municipal landfill is assessed to be contaminated the significant cost would be incurred if excavation and disposal was adopted as a remedial option .

9.1.2 Capping / Encapsulation (Insitu Containment)

Capping entails providing a barrier preventing or reducing the contact between the environment / site users and the contaminated soil. The cap also acts as a low permeability barrier, which reduces infiltration through the contaminated zone and abates the erosion and runoff of contaminated soil. The cap could be constructed of compacted clay, asphalt, geomembrane/clay composite, concrete or with the proposed building footprints and pavements. Contaminated soils would initially need to be excavated and placed in a designated area where they could be capped within an engineered disposal area or alternatively capped in the location where they currently lie.

The major cost items associated with this remedial option are:

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- Further subsurface investigation to assess the sites suitability for capping (i.e. testing the leachable nature of the contamination);
- Designing of the cap(s) with an appropriate monitoring/management program;
- Obtaining Environment ACT and/or ACTPLA approvals for the construction of the caps and or disposal cells;
- Construction of the caps with appropriate monitoring facilities (usually groundwater monitoring wells); and
- Maintenance and periodic monitoring during the life of the cap.

The advantage of this option is that materials do not have to be disposed of at a landfill, therefore saving on transportation and disposal costs, however there is ongoing maintenance and periodic monitoring required for the life of the cap and there will be notifications of the Contaminated Sites Register.

9.1.3 Visible Segregation

Visible segregation can be used to remove contaminating materials from soil. This can apply to relatively small soil volumes which contain small amounts of contaminating materials such as pieces of bonded fibrous material potentially containing asbestos.

The soil is moved slowly with excavation machinery and pieces of potentially contaminating materials are observed and hand picked from the soil. Validation sampling is also required to confirm that materials such as asbestos fibres are not contained in the soil matrix.

This option has been used previously in the ACT where potentially contaminated fill material was reused as engineered fill following completion of an assessment of the fill and segregation and removal of asbestos containing materials (ACM's). If this option is deemed suitable by the Auditor and Environment ACT it is recommended that a Contaminant Management Plan (CMP) be prepared and issued to the earthworks contractor to provide guidance on the suitable treatment of potentially contaminated material encountered during the development of the site.

9.1.4 Exsitu Bioremediation

Exsitu Bioremediation or landfarming is an effective, low-tech option for remediating volatile and semi-volatile contamination in soil involving the excavation and treatment of soil. Landfarming relies on the combined effect of volatilisation and biological decay to reduce the contaminant concentrations. It involves spreading the soil into a thin layer (0.5m or less) and tilling (turning) the soil on a regular basis to enhance the decay of contamination. The effectiveness of landfarming is dependent on many factors, which include the chemical composition of the contaminant, soil type, duration, weather, tilling frequency and nutrient availability.

Landfarming is not effective for most PAHs and heavy fraction hydrocarbons such as the TPH C₂₉-C₃₆ fractions. Bio-remediation is less efficient for longer hydrocarbons such as motor oil and is slower during wet weather and cooler temperatures. This method may be suitable for the petroleum hydrocarbon contamination observed within former refuelling area. Landfarming, when compared with landfilling for hydrocarbon impacted materials becomes significantly more cost effective as the volume increases. Generally, for volumes of less than about 250m³, landfarming may not be cost effective, if the material can be disposed of at landfill as solid waste, without pre-treatment. This remedial option may be required for the hydrocarbon impacted

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soils, should their classification not allow them to be disposed at a local landfill. Landfarming can allow the hydrocarbon concentrations to be reduced to a level where they can then be disposed of locally.

This technique has been used successfully on the adjacent Kingston Foreshore development to treat approximately 33,000m³ of hydrocarbon impacted soil from the Commonwealth Tank Farm area.

9.2 Summary

As indicated above the preferred remedial option would be assessed following the completion of the Phase 2 ESA to further assess the nature and extent of contamination at the site. A RAP should then be prepared by a suitably qualified environmental consultant and forwarded to the Auditor for approval. The RAP should include estimated remedial costs to aid an assessment of the preferred remedial option.

10. GLOSSARY OF TERMS

The following terms are used in this report:

AEC: Potential Areas of Environmental Concern

COC: Contaminants of Concern:

TPH: Total Petroleum Hydrocarbon

BTEX: Benzene, toluene, ethylbenzene, xylene

Heavy Metals: Arsenic, cadmium, chromium, copper, lead, nickel zinc, mercury

PAH: Polycyclic Aromatic Hydrocarbons

OCP: Organochlorine pesticides

PCB: Polychlorinated Biphenyls

11. REFERENCES

The reports reviewed as part of this Phase 1 ESA comprise:

PPK Reports:

- Report on Further Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor' (PPK document number 99-0885-00) in December 1999
- 'Addendum Report: Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor' 'PPK document number 01-0078-02) in March 2001.

Coffey Reports:

- C7729/1-AC Fyshwick Sewage Treatment Works, Stage 1 Assessment of Environmental Impact on Groundwater
- C6792/1-AE Environmental Assessment, Block 24, Section 6, Fyshwick, June 2000

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- C6373/1- AB Environmental Assessment Underground Storage Tanks 11, Nyrang Street, May 1997
- C6688/2- AC Fuel Depot Dairy Flat Road, Environmental Site Assessment, February 2000

The proposed Phase 2 scope of works and potential remedial options have been based on the requirements of current guidelines on contamination and remediation made or endorsed by Environment ACT. Guidelines referenced in the Environment ACT website are listed below:

- ANZECC/NHMRC (1992) Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (this Guideline is being reviewed by a technical working group. The audit will take into account any revisions which may be published by ANZECC or NH&MRC.)
- NEPC (1999) National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM).
- Contaminated sites – *Environmental Protection Policy (Nov 2000)*
- ACT's Environmental Standards: Assessment and Classification of Liquid and Non-liquid Wastes (June 2000)
- NSW EPA (December 1994) Guidelines for Assessing Service Station Sites.
- ANZECC, Financial Liability for Contaminated Site Remediation - A Position Paper, April 1994
- Swartjes F.A. and van den Berg R., Remediation of Contaminated Soil and Groundwater: Proposals for Criteria and Priority setting, (The Revised Dutch Guidelines), October 1993
- ANZECC, Guidelines for the Laboratory Analysis of Contaminated Soils, August 1996
- NSW EPA (September 1995) Sampling Design Guidelines.
- ACT Government, Strategic Plan - Contaminated Sites Management, August 1995
- ACT Government, Contaminated Sites - Discussion Paper, March 1997
- NSW EPA (January 1995) Guidelines on the Vertical Mixing of Soil on Broad-Acre Agricultural Land.
- NSW EPA (November 1997) Guidelines for Consultants Reporting on Contaminated Sites.
- NSW EPA, Provisional Water Quality Investigations Manual: Preferred Methods for Sampling and Analysis, September 1995
- South Australian Health Commission, The Health Risk Assessment of Contaminated Sites: Proceedings of a National Workshop on the Health Risk Assessment and Management of Contaminated Sites, 1991
- South Australian Health Commission, The Health Risk Assessment of Contaminated Sites: Proceedings of a National Workshop on the Health Risk Assessment and Management of Contaminated Sites, 1991
- South Australian Health Commission, The Health Risk Assessment of Contaminated Sites: Proceedings of the Second National Workshop on the Health Risk Assessment and Management of Contaminated Sites, Contaminated Sites Monograph Series No.2, 1993
- South Australian Health Commission, Identification and Assessment of Contaminated Land, Contaminated Sites Monograph Series No.3, 1994

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- South Australian Health Commission, Trace Element Concentrations in Soils, Contaminated Sites Monograph Series No.4, 1995
- South Australian Health Commission, The Health Risk Assessment of Contaminated Sites: Proceedings of the Third National Workshop on the Health Risk Assessment and Management of Contaminated Sites, Contaminated Sites Monograph Series No.5, 1996
- South Australian Health Commission, Composite Sampling, National Environmental Health Forum Monographs, Soil Series No.2, 1996
- Victorian EPA, EPA Information Bulletin 448, Classification of Wastes, May 1995

For and on behalf of

COFFEY GEOSCIENCES PTY LTD



PETER REEVES

CANBERRA OFFICE MANAGER



TABLE 2: PRELIMINARY WORK PLAN – EAST LAKE URBAN RENEWAL PROJECT

Description	Approximate Area M ²	AEC	Existing Groundwater Wells	Proposed No. of Sampling Locations	Sampling Technique		Chemicals of Concern and Analysis Schedule								Sampling Methodology
					Boreholes	Test Pits	TPH/BTEX	HVOL	PAH	Metals	OCP/OPP	Asbestos	Pheno H	PCB / Phenols	
AEC1: ACT Rail Land	493,000	General rail activities, areas of fill		129		129	97	33	97	194	64	33	12	33	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location.
A: Former Refuelling Area		PSH on groundwater	2	3	3		5		5	5					Three new groundwater wells would be targeted in the vicinity of the former refuelling area. One sample from the existing and new wells would be analysed.
B: Former Landfill Area	15,000	Municipal waste		72	10	62	72	12	33	108	33	72	12	12	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location. Ten (10) boreholes with monitoring well would be completed in this location to assess landfill gas and groundwater conditions. Samples would be obtained for VOC analysis.
C: Fouled Ballast	2,000	Oily wastes and assorted fill		10		10	15		15	15		5		5	Test pits would be completed on an approximate 20m grid basis with approximately 1.5 samples analysed from each location.

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D: Former Turntable		Ash, Oil and assorted fill		10	2	8	12		12	12		6		6	Test pits would be targeted to assess the extent of the turntable with approximately 1.5 samples analysed from each location. Two (2) boreholes with monitoring well would be completed in this location to assess groundwater conditions
E: ARHS – Railway Museum		Coal store, oil stained areas, batteries		16	1	15	22		22	22	11	11		11	Test pits would be targeted t areas of concern to assess the extent of the contamination with approximately 1.5 samples analysed from each location. One (1) borehole with monitoring well would be completed in this location to assess groundwater conditions
F: Miniature Railway		Flammable liquid store, oil stained areas		9	1	8	12		12	12	6	6		6	Test pits would be targeted t areas of concern to assess the extent of the contamination with approximately 1.5 samples analysed from each location. One (1) borehole with monitoring well would be completed in this location to assess groundwater conditions
AEC8: Municipal Landfill	18,000	Municipal waste		10	2	9	9	2	4	12	6	9	0	3	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location. Two (2) boreholes with monitoring well would be completed in this location to assess landfill gas and groundwater conditions.
AEC 9: DAS Fleet site and Landfill	15,000	Municipal waste	0	9	2	7	7	2	3	10	3	7	0	2	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location. Two (2) boreholes with monitoring well would be completed in this location to assess landfill gas and groundwater conditions.
Totals				269	21	248	255	49	203	390	123	149	24	45	

Notes:

TPH	Total Petroleum Hydrocarbons	OCP	Organochlorine Pesticides
BTEX	benzene, toluene, ethylbenzene, xylene	OPP	Organophosphate pesticides
PAH	Polycyclic Aromatic Hydrocarbons	PCB	Polychlorinated biphenyl's
Heavy Metals – arsenic, cadmium, chromium, copper, lead,		Pheno H	Phenoxy Herbicides

Information

Important information about your **Coffey** Environmental Site Assessment

Uncertainties as to what lies below the ground on potentially contaminated sites can lead to remediation costs blow outs, reduction in the value of land and to delays in the redevelopment of land. These uncertainties are an inherent part of dealing with land contamination. The following notes have been prepared by Coffey to help you interpret and understand the limitations of your environmental site assessment report.

Your report has been written for a specific purpose

Your report has been developed on the basis of a specific purpose as understood by Coffey and applies only to the site or area investigated. For example, the purpose of your report may be:

- To assess the environmental effects of an on-going operation.
- To provide due diligence on behalf of a property vendor.
- To provide due diligence on behalf of a property purchaser.
- To provide information related to redevelopment of the site due to a proposed change in use, for example, industrial use to a residential use.
- To assess the existing baseline environmental, and sometimes geological and hydrological conditions or constraints of a site prior to an activity which may alter the sites environmental, geological or hydrological condition.

For each purpose, a specific approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible, quantify risks that both recognised and unrecognised contamination pose to the proposed activity. Such risks may be both financial (for example, clean up costs or limitations to the site use) and physical (for example, potential health risks to users of the site or the general public).

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man and may change with time. For example, groundwater levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project and/or on the property.

Interpretation of factual data

Environmental site assessments identify actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from indirect field measurements and sometimes other reports on the site are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, can

reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of Coffey through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other problems encountered on site.

Your report will only give preliminary recommendations

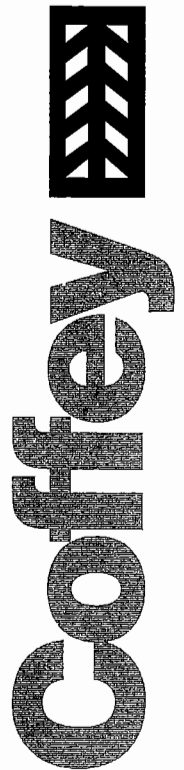
Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered with redevelopment or on-going use of the site. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. In particular, a due diligence report for a property vendor may not be suitable for satisfying the needs of a purchaser. Your report should not be applied for any purpose other than that originally specified at the time the report was issued.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other professionals who are affected by the report. Have Coffey explain the report implications to professionals affected by them and then review plans and specifications produced to see how they have incorporated the report findings.



Important information about your **Coffey** Environmental Site Assessment



Data should not be separated from the report

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

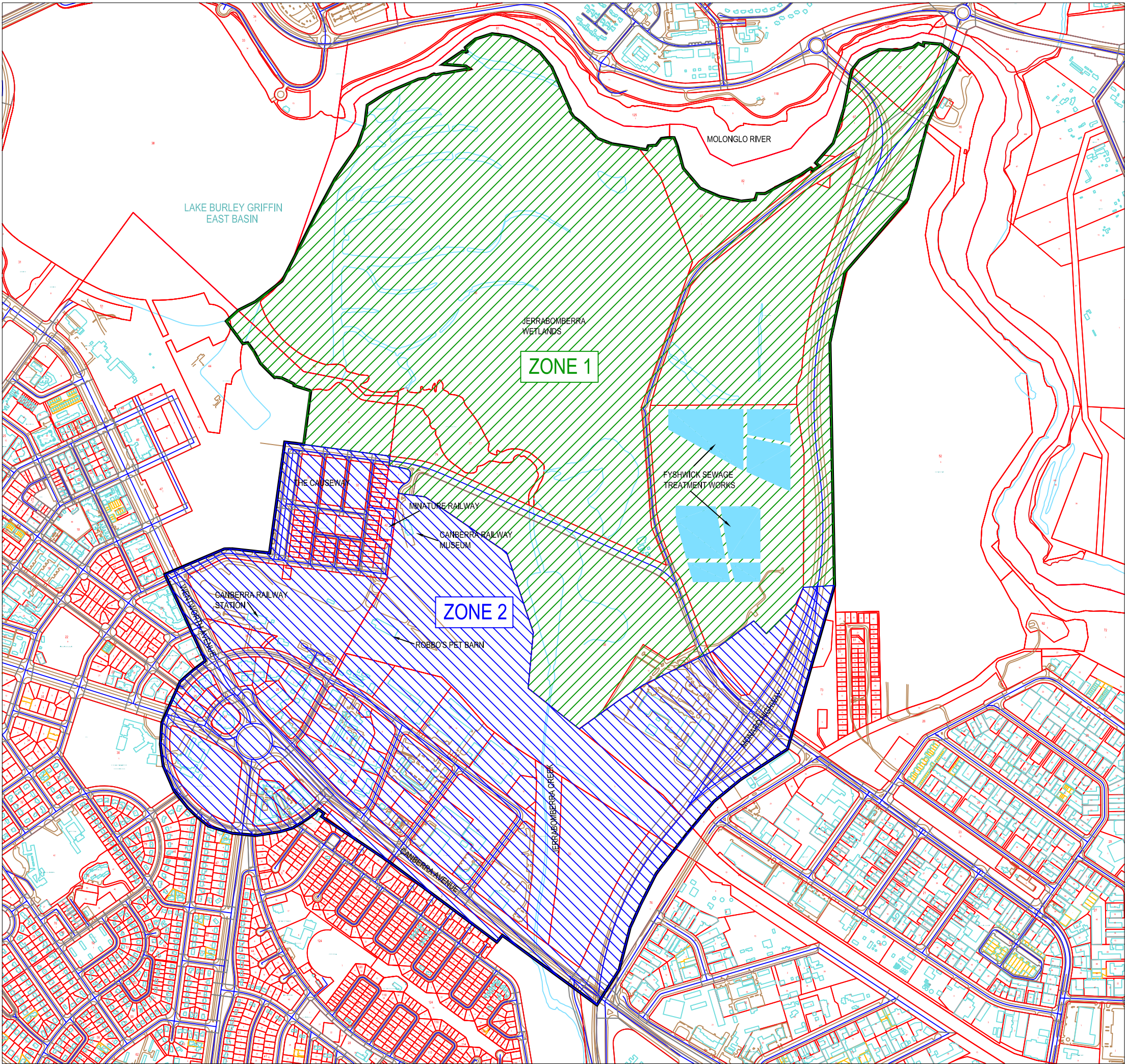
Logs, figures, laboratory data, drawings etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel), field testing and laboratory evaluation of field samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Contact Coffey for additional assistance

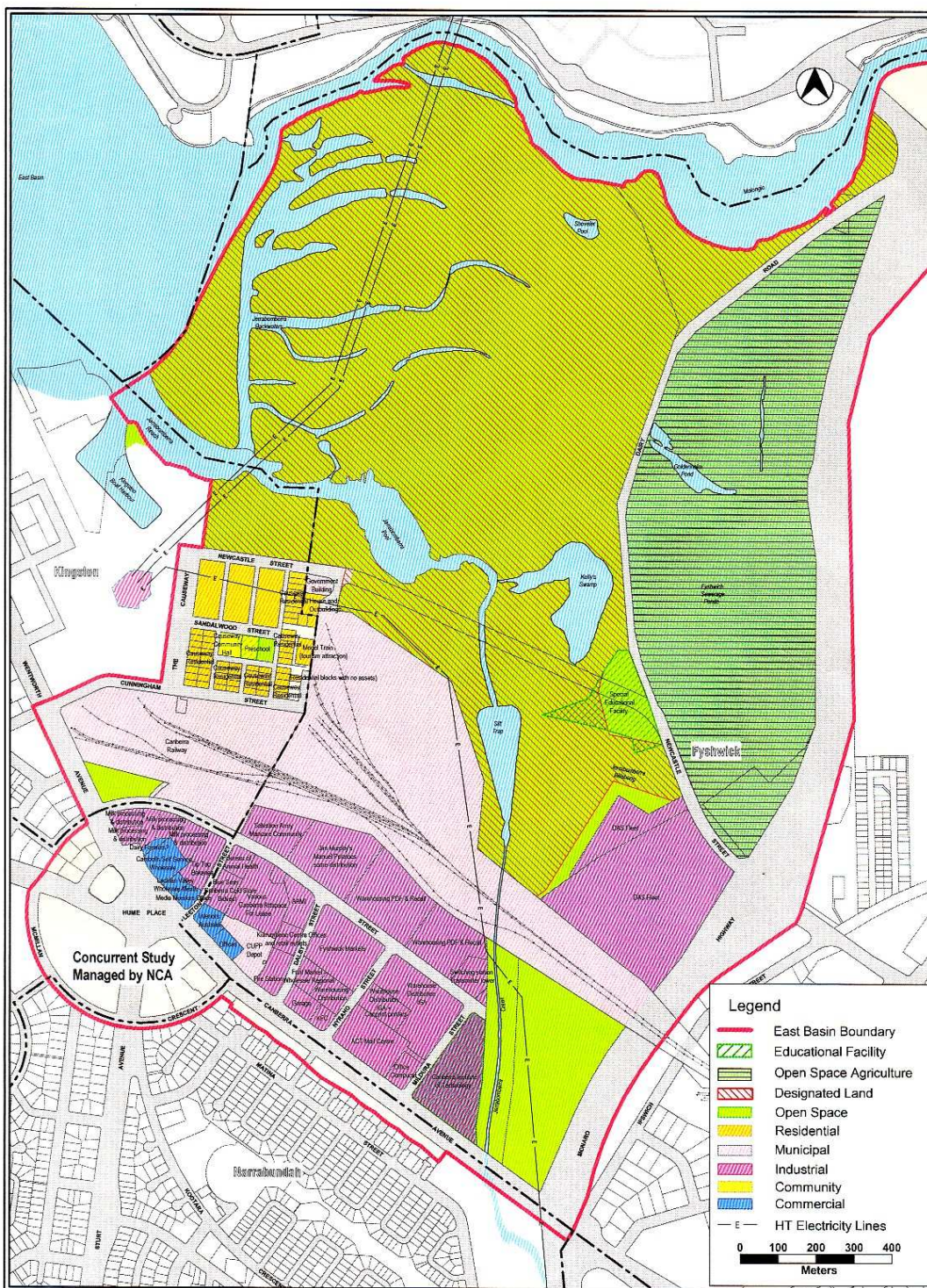
Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to land development and land use. It is common that not all approaches will be necessarily dealt with in your environmental site assessment report due to concepts proposed at that time. As a project progresses through planning and design toward construction and/or maintenance, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Environmental reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.



Coffey Geosciences Pty Ltd		ACN 056 335 516	Geotechnical Resources Environmental Technical Project Management
Drawn	PR	ACT PLANNING AND LAND AUTHORITY EAST LAKE BASIN	
Approved			
Date			
Scale	1:12500	SITE LOCALITY PLAN	
		FIGURE 1	
		Job no: C7908/1	



Coffey Geosciences Pty Ltd ACN 056 335 516

Geotechnical | **Resources** | Environmental | **Technical** | Project Management

Drawn	PJR	<p align="center">ACT PLANNING AND LAND AUTHORITY EAST LAKE URBAN RENEWAL PROJECT FYSHWICK, ACT CURRENT LAND USE MAP</p>	Figure No:
Approved			FIGURE 2
Date	09/05/2005		
Scale	N.T.S		Job No. C7908/1

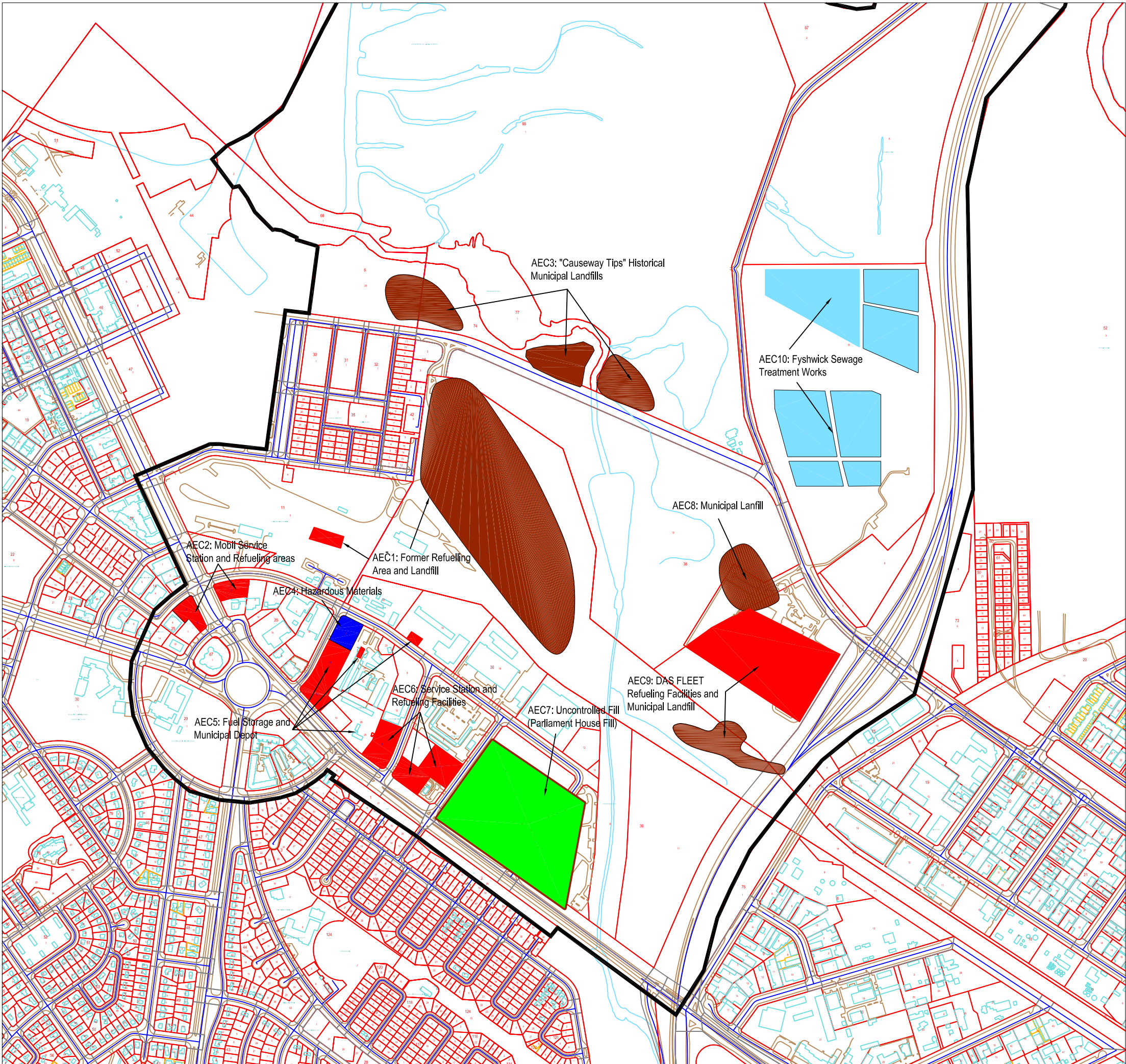


TABLE 1 - SUMMARY OF AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

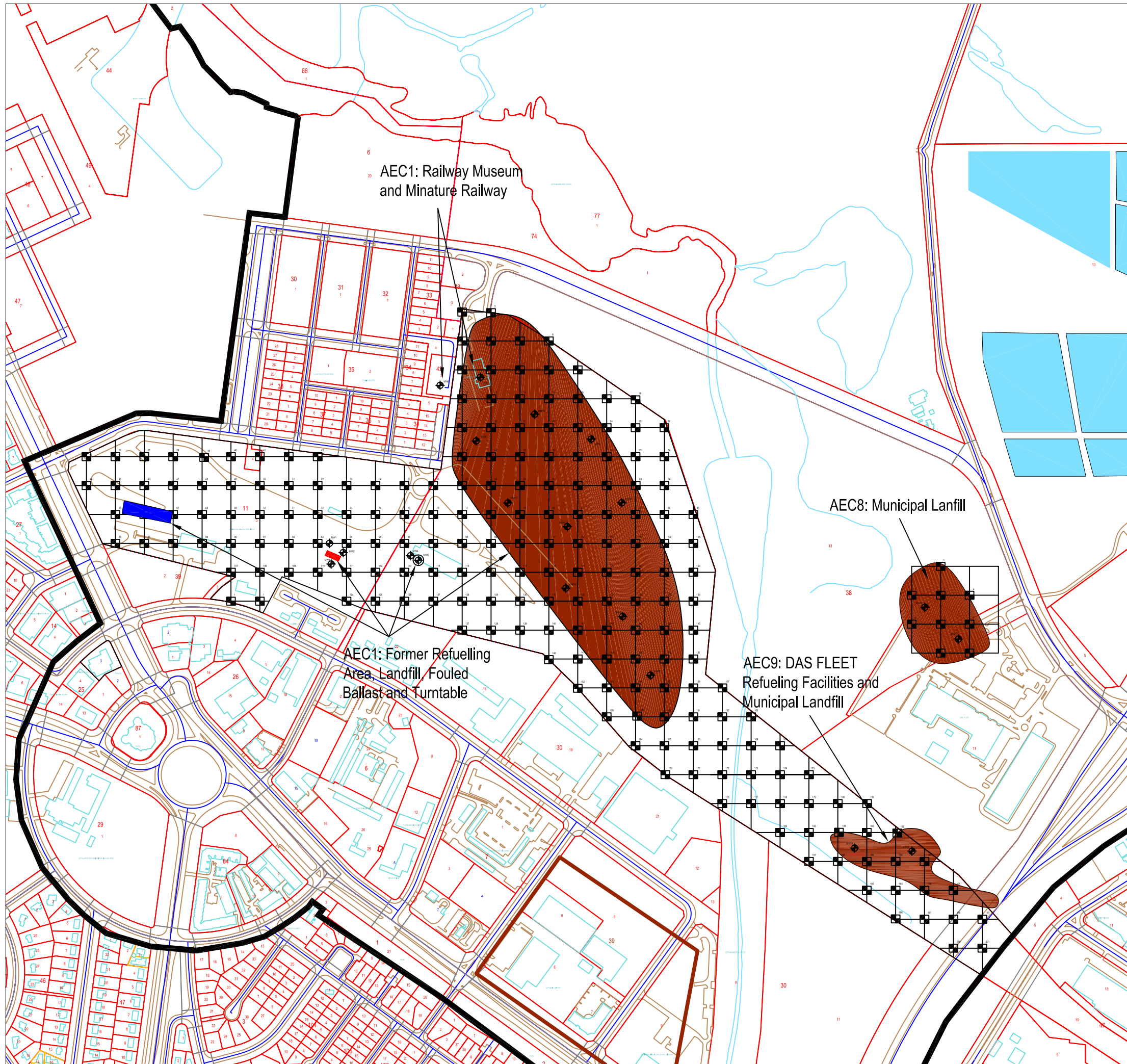
Site Feature	Chemicals of Concern	Comments
AEC 1: ACT Rail land divided into: A: Former Fuel Storage B: Former Landfill C: Fouled Ballast and assorted Fill D: Former Turntable E: Railway Museum F: Miniature Railway	TPH, BTEX, heavy metals, asbestos, PAH, PCB, OCP TPH, BTEX, PAH, heavy metal. TPH, BTEX, PAH, heavy metal and asbestos. TPH, BTEX, PAH, heavy metal, asbestos and OCP	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil and fouled ballast. Potential contamination with heavy metals from landfill leachate. NB PPK have previously undertaken an assessment of the landfill assuming and ongoing industrial use. Based on site observations it is assessed that asbestos containing materials may be present within the landfill. Groundwater contamination was identified in the vicinity of the refuelling facility. Potential hydrocarbon impacts from former turntable picked up in boreholes. Further assessment required. Oil stained areas in and around workshop and coal store. Leakage from batteries and potential asbestos from train parts. Waste fill materials exposed in cuttings including potential asbestos cement board. Fuel and chemicals stored on site. Ash and clinker on track.
AEC 2: Service Station and refuelling facilities	TPH, BTEX, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 3: "Causeway Tips" Municipal Landfills	TPH, BTEX, heavy metals, PCB, asbestos, PAH	Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses
AEC 4: Department of Agriculture, Fisheries and Forestry Field Research Station	Potential storage of Hazardous Materials	Potential contamination from chemicals/radioactive materials used on site.
AEC 5: Fuel Storage, Municipal Depot	TPH, BTEX, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 6: Service Station and refuelling facilities	TPH, BTEX, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil.
AEC 7: Uncontrolled Fill		Sourced from excavation for New Parliament House. May contain boulders – therefore potential geotechnical constraint. Low environmental risk.
AEC 8: Municipal Landfill	TPH, BTEX, heavy metals, PCB, asbestos, PAH	
AEC 9: Former DAS Fleet refuelling Facility and municipal landfill	TPH, BTEX, heavy metals, PCB, asbestos, PAH	Potential contamination from leakages or spills associated with fuel tanks or spills of hydrocarbon fuels. Potential contamination from waste oil. Potential contamination from materials within the landfill, leachate to groundwater/nearby water courses. It is understood that the site is currently subject to a Phase 2 ESA. The Auditors report has not been received by Environment ACT.
AEC 10: Fyshwick Sewage Treatment Works.	Faecal coliforms, nitrogen, phosphorous, Heavy metals	Potential contamination of soil and groundwater in the vicinity of the FSTW.

NOTES TO TABLE 1:

BTEX - benzene, toluene, ethylbenzene, xylenes
PAH - polycyclic aromatic hydrocarbons
OCP -Organochlorine pesticides
PCB - Polychlorinated biphenyls

LEGEND

- POTENTIAL HYDROCARBON CONTAMINATION
- UNCONTROLLED FILL
- MUNICIPAL WASTE LANDFILL
- POTENTIAL HAZARDOUS MATERIALS
- FYSHWICK SEWAGE TREATMENT LAGOONS



- LEGEND**
- 85 PROPOSED TEST PIT LOCATION AND NUMBER
 - PROPOSED MONITORING WELL LOCATION AND NUMBER
 - MUNICIPAL WASTE LANDFILL
 - AREA OF FOULED BALLAST
 - FORMER REFUELING AREA

Coffey Geosciences Pty Ltd		ACN 056 335 516	Geotechnical Resources Environmental Technical Project Management
Drawn	PR	ACT PLANNING AND LAND AUTHORITY EAST LAKE BASIN	
Approved			
Date		PROPOSED SAMPLING PLAN	
Scale	1:7500		
			FIGURE 4
			Job ref: C7908/1

TABLE 1 - SUMMARY OF ENVIRONMENT ACT RECORDS

Block	Section	Suburb	Listed on Register	Fuel Storage	Landfill	Municipal Depot	Other
3	25	Griffith	No	Present			Operational Service Station present on adjacent Block 2 Section 25 Griffith Service Station
2	25	Griffith	No	Present			Capitol Chilled Foods holds an environmental authorisation for the production of milk or milk products at the site. EPU is aware that underground fuel storage tanks are or were located at the site, but holds no records that indicate the status of these facilities or any incidents associated with them.
1	26	Griffith	No	Present			Capitol Chilled Foods holds an environmental authorisation for the production of milk or milk products at the site. EPU is aware that underground fuel storage tanks are or were located at the site, but holds no records that indicate the status of these facilities or any incidents associated with them.
2	26	Griffith	No	Present			Capitol Chilled Foods holds an environmental authorisation for the production of milk or milk products at the site. EPU is aware that underground fuel storage tanks are or were located at the site, but holds no records that indicate the status of these facilities or any incidents associated with them.
3	26	Griffith	No	Present			Capitol Chilled Foods holds an environmental authorisation for the production of milk or milk products at the site. EPU is aware that underground fuel storage tanks are or were located at the site, but holds no records that indicate the status of these facilities or any incidents associated with them.
4	26	Griffith	No				
5	26	Griffith	No				
9	26	Griffith	No				
14	26	Griffith	No				
15	26	Griffith	No				
17	26	Griffith	No				
19	26	Griffith	No				
5	11	Kingston	No				Forms ACT Rail land
4	11	Kingston	No				Forms ACT Rail land
2	39	Kingston	No				
20	6	Kingston	No		Present		Historic municipal landfills "Causeway Tips" located on the block and adjacent to the site on Block 1 Section 66 and Bolck 3 Section 7 (Rail Land Landfill) Fyshwick. The Causeway Tips were operated for an undefined period with records indicating they accepted household, trade, industrial and builders waste. The status and extent of the landfill on this site is unknown with no records to indicated the sites have been investigated. There was a groundwater bore installed in the vicinity of the Causeway Lanfills as part of the investigations of the ACT Rail Land (Block 3 Section 47 Fyshwick) located to the south of the Causeway Tips which indicated that chemicals normally associated with landfills are not present at this location. This does not preclude the existence of hazardous substances associated with the Causeway Tips considering the limited investigation area.
26	6	Fyshwick	No	Adj Block 24 Section 6		Adj Block 24 Section 6	
25	6	Fyshwick	No	Present		Present, adj Block 24 Section 6	
19	6	Fyshwick	No	Present			
16	6	Fyshwick	No				
15	6	Fyshwick	No	Present			
12	6	Fyshwick	No				
6	6	Fyshwick	No	Present			ACT Government Fire Station with associated refueling facilities.
2	6	Fyshwick	No				Animal Health Laboratory - may contain hazardous materials
9	39	Fyshwick	No		Present		There is a historic household (excluding putrescible waste) and builders demolition waste and clean spoil landfill recorded which may impact a portion of this site (see map). Classified as uncontrolled landfill site. The status and exact extent of the landfill detailed is unknown with no records to indicate the site has been investigated.
8	39	Fyshwick	No		Present		There is a historic household (excluding putrescible waste) and builders demolition waste and clean spoil landfill recorded which may impact the site (see map). Classified as uncontrolled landfill site. The status and exact extent of the landfill detailed is unknown with no records to indicate the site has been investigated.
7	39	Fyshwick	No		Present		There is a historic household (excluding putrescible waste) and builders demolition waste and clean spoil landfill recorded which may impact the site (see map). Classified as uncontrolled landfill site. The status and exact extent of the landfill detailed is unknown with no records to indicate the site has been investigated.
6	39	Fyshwick	No		Present		There is a historic household (excluding putrescible waste) and builders demolition waste and clean spoil landfill recorded which may impact the site (see map). Classified as uncontrolled landfill site. The status and exact extent of the landfill detailed is unknown with no records to indicate the site has been investigated.
22	30	Fyshwick	No	Adj Block 2 Section 47 ACT Rail	Adj Block 2 Section 47 ACT Rail		Historic municipal landfill and fuel storage facilitated on adj Block 2 Section 47 Fyshwick. The fuel storage facilitied have recently been removed and validated to sensitive land use criteria. Landfill ESA carried out - elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. Landfill included household, trade, industrial and builders waste. Block 2 Section 47 has ESA report.
21	30	Fyshwick	No	Adj Block 2 Section 47 ACT Rail	Adj Block 2 Section 47 ACT Rail		Historic municipal landfill and fuel storage facilitated on adj Block 2 Section 47 Fyshwick. The fuel storage facilitied have recently been removed and validated to sensitive land use criteria. Landfill ESA carried out - elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. Landfill included household, trade, industrial and builders waste. Block 2 Section 47 has ESA report.
19	30	Fyshwick	No	Adj Block 2 Section 47 ACT Rail	Adj Block 2 Section 47 ACT Rail		Historic municipal landfill and fuel storage facilitated on adj Block 2 Section 47 Fyshwick. The fuel storage facilitied have recently been removed and validated to sensitive land use criteria. Landfill ESA carried out - elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. Landfill included household, trade, industrial and builders waste. Block 2 Section 47 has ESA report.
18	30	Fyshwick	No	Adj Block 2 Section 47 ACT Rail	Adj Block 2 Section 47 ACT Rail		Historic municipal landfill and fuel storage facilitated on adj Block 2 Section 47 Fyshwick. The fuel storage facilitied have recently been removed and validated to sensitive land use criteria. Landfill ESA carried out - elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. Landfill included household, trade, industrial and builders waste. Block 2 Section 47 has ESA report.
12	30	Fyshwick	No				
11	30	Fyshwick	No	Adj Block 2 Section 47 ACT Rail	Adj Block 2 Section 47 ACT Rail		Historic municipal landfill and fuel storage facilitated on adj Block 2 Section 47 Fyshwick. The fuel storage facilitied have recently been removed and validated to sensitive land use criteria. Landfill ESA carried out - elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. Landfill included household, trade, industrial and builders waste. Block 2 Section 47 has ESA report.
9	30	Fyshwick	No		Present		Historic landfill "Causeway Tips" operated for an undefined period for household, trade, industrial and builders waste.
8	30	Fyshwick	No				
2	47	Fyshwick	No	Present			Canberra Railway Station and associated rail yards (extensive soil and groundwater investigations, indicate that elevated concentrations of hazardous materials and chemicals normally associated with rail activities and landfills are not present in significant quantities within the site), former locomotive refueling area, Historic Railway Society site, William Edwards plumbing building and former vehicle refueling facilities adjacent the William Edwards plumbing building (validated to sensitive land use) and an historic Municipal landfill (household, trade, industrial and builders waste).
13	38	Fyshwick	No	Adj Block 2 Section 47	Present, adj (inc Block 2 Section 47 and Block 12 Section 38), Block 1 Section 74, Block 1 Section 66 Fyshwick		Historic municipal landfills which impact and are located adjacent to the site, one Block 2 Section 47 and Block 12 Section 28 and the site, and three separate landfills Block 1 Section 74 and Block 1 Section 66 Fyshwick, for household, trade, industrial and builders waste. The fuel storage facilitied have recently been removed and validated to sensitive land use criteria. Landfill ESA carried out - Groundwater Bore 205 elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site.
12	38	Fyshwick	Audit in process	Adj Block 11 Section 38	Present, Adj Block 11 Section 38		Adj block contained DASFleet refueling facilities, DA has been lodged to remove the tanks, Auditors report has not yet been received. Two municipal landfills, one bon Block 11 the other on the site.
11	38	Fyshwick	Audit in process	Present	Present, Adj Block 12 Section 38		DAS Fleet refuelling facilities, leakages detected from fuel lines, currently undergoing ESA and Audit. DA has been approved for the removal of the fuel tanks
3	38	Fyshwick	No		Adj Block 19 Section 6, Adj Block 1 Section 74, Adj Block 2 Section 47	Adj Block 2 Section 38	Adj Block 2 Section 38 is listed as a municipal depot, containing hazardous materials likely to have included the storage and use of pesticides/herbicides and refueling facilities for vehicles and equipment. No current information available. There are USTs on site, how many, their size, location and fuel type are not recorded. There is an historic municipal landfill on nearby Block 19 Section 6 Kingston and Block 1 Section 74 Fyshwick. This landfill forms part of a series of small historic municipal landfills located adjacent to the Jerrabomberra Wetlands, known as the Causeway Tips, and operated for an undefined period for household, trade, industrial and builders waste. Status and extent of Causeway Landfills is unknown, results from investigation and groundwater Bore 205 indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. There are also records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick. The fuel storage facilities have recently been removed and validated to sensitive land use criteria. The Rail Land Landfill operated from
2	38	Fyshwick	No			Present	contains/contained hazardous materials associated with the operation of the site, likely to have included the storage and use of pesticides/herbicides and refuelling facilities for vehicles and equipment. Current status not available. There are USTs on site, however number, size, location and fuel type have not been recorded by Environment ACT. The status and extent of the Causeway landfills are unknown with no records to indicate the sites have been investigated. There was a groundwater bore installed in the vicinity of the landfills as part of the investigations of the ACT Rail Land (Block 2 Section 47 Kingston) which also contains an historic municipal landfill located to the south of the Causeway Tips. The results from the investigation and from Bore 205 indicate that elevated concentrations of hazardous materials and chymicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. There are also records of an historic municipal landfill (Rail Land Landfill) and fuel storage facilities on the nearby Block 2 Section 47 Fyshwick. The fuel storage facilities have recently been removed and validated to sensitive land use criteria. The Rail Land landfill has recently been
10	59	Fyshwick	No				
9	59	Fyshwick	No				
8	59	Fyshwick	No				
6	59	Fyshwick	No				
5	59	Fyshwick	No				
7	7	Fyshwick	No	Present			Currently an operational Mobil Service Station
4	7	Fyshwick	No	Present			2 diesel underground fuel storage tanks are or were located on this block. EPU have no records to indicate the status of these tanks or any incidents associated with them. Site is adjacent to an operational Mobil service station on block 6 section 9.
6	7	Fyshwick	No				Site adjacent to Block 4 Section 7 Fyshwick containing 2 underground fuel storage tanks and Block 6 Section 9 Fyshwick containing an operational Mobil service station.
3	7	Fyshwick	No				Site adjacent to Block 4 Section 7 Fyshwick containing 2 underground fuel storage tanks and Block 6 Section 9 Fyshwick containing an operational Mobil service station.
1	74	Fyshwick	No		Present		There are records of historic municipal landfills "Causeway Tips" located on the block and adjacent to the site on Block 20 Section 6, Block 1 Section 66 and Block 3 Section 47 (Rail Land Landfill) Fyshwick. The Causeway Tips were operated for an undefined period and accepted household, trade, industrial and builders waste. The Rail Land Landfill indicates it operated from the early 1950s through to the late 1970s or early 1980s and accepted household, trade, industrial and builders waste, including spoil from the New Parliament House construction site. The Rail Land Landfill has been the subject of an environmental assessment including extensive groundwater investigation. The results indicate there are no elevated levels of contaminants. The status and extent of the Causeway ladfills located on the site is unknown with no records to indicate the sites have been investigated. A groundwater bore was installed in the vicinity of the Causeway landfills as part of the investigations of the ACT Rail Land, and results indicate that there are no elevated levels of contaminants, however this does not preclude the existence of hazardous substances associated with the Causeway Tips considering the limited investigation
13	30	Fyshwick	No				
1	7	Fyshwick	No				Site adjacent to Block 4 Section 7 Fyshwick, containing 2 diesel underground fuel storage tanks.
9	6	Fyshwick	No				Site adjacent to Block 24 Section 6 Fyshwick which contained/contains hazardous materials as the site was/is a Government Works Depot where activities such as vehicle maintenance, fuel storage and dispensing are likely to have occurred.
23	6	Fyshwick	No				Formerly known as part Block 18 Section 6 Fyshwick. Site contained/contains hazardous materials as the site was/is a Government Works Depot where activities such as vehicle maintenance, fuel storage and dispensing and chemical storage is likely to have occurred.
24	6	Fyshwick	No				Formerly known as part Block 18 Section 6 Fyshwick. Site contained/contains hazardous materials as the site was/is a Government Works Depot where activities such as vehicle maintenance, fuel storage and dispensing and chemical storage is likely to have occurred.

TABLE 2: PRELIMINARY WORK PLAN – EAST LAKE URBAN RENEWAL PROJECT

Description	Approximate Area M ²	AEC	Existing Groundwater Wells	Proposed No. of Sampling Locations	Sampling Technique		Chemicals of Concern and Analysis Schedule								Sampling Methodology
					Boreholes	Test Pits	TPH/BTEX	HVOL	PAH	Metals	OCF/OPP	Asbestos	Pheno H	PCB / Phenols	
AEC1: ACT Rail Land	493,000	General rail activities, areas of fill		129		129	97	33	97	194	64	33	12	33	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location.
A: Former Refuelling Area		PSH on groundwater	2	3	3		5		5	5					Three new groundwater wells would be targeted in the vicinity of the former refuelling area. One sample from the existing and new wells would be analysed.
B: Former Landfill Area	15,000	Municipal waste		72	10	62	72	12	33	108	33	72	12	12	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location. Ten (10) boreholes with monitoring well would be completed in this location to assess landfill gas and groundwater conditions. Samples would be obtained for VOC analysis.
C: Fouled Ballast	2,000	Oily wastes and assorted fill		10		10	15		15	15		5		5	Test pits would be completed on an approximate 20m grid basis with approximately 1.5 samples analysed from each location.

D: Former Turntable		Ash, Oil and assorted fill		10	2	8	12		12	12		6		6	Test pits would be targeted to assess the extent of the turntable with approximately 1.5 samples analysed from each location. Two (2) boreholes with monitoring well would be completed in this location to assess groundwater conditions
E: ARHS – Railway Museum		Coal store, oil stained areas, batteries		16	1	15	22		22	22	11	11		11	Test pits would be targeted t areas of concern to assess the extent of the contamination with approximately 1.5 samples analysed from each location. One (1) borehole with monitoring well would be completed in this location to assess groundwater conditions
F: Miniature Railway		Flammable liquid store, oil stained areas		9	1	8	12		12	12	6	6		6	Test pits would be targeted t areas of concern to assess the extent of the contamination with approximately 1.5 samples analysed from each location. One (1) borehole with monitoring well would be completed in this location to assess groundwater conditions
AEC8: Municipal Landfill	18,000	Municipal waste		10	2	9	9	2	4	12	6	9	0	3	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location. Two (2) boreholes with monitoring well would be completed in this location to assess landfill gas and groundwater conditions.
AEC 9: DAS Fleet site and Landfill	15,000	Municipal waste	0	9	2	7	7	2	3	10	3	7	0	2	Test pits would be completed on an approximate 50m grid basis with approximately 1.5 samples analysed from each location. Two (2) boreholes with monitoring well would be completed in this location to assess landfill gas and groundwater conditions.
Totals				269	21	248	255	49	203	390	123	149	24	45	

Notes:

TPH	Total Petroleum Hydrocarbons	OCP	Organochlorine Pesticides
BTEX	benzene, toluene, ethylbenzene, xylene	OPP	Organophosphate pesticides
PAH	Polycyclic Aromatic Hydrocarbons	PCB	Polychlorinated biphenyl's
Heavy Metals – arsenic, cadmium, chromium, copper, lead, nickel, mercury, zinc		Pheno H	Phenoxy Herbicides
		VOC	Volatile Organic Compounds



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 1 Section 26 Griffith Canberra Central
Block 2 Section 26 Griffith Canberra Central
Block 3 Section 26 Griffith Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The blocks are not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

Blocks 1, 2 and 3 Griffith are currently occupied by Capitol Chilled Foods. The company currently holds an environmental authorisation for the production of milk or milk products at the site.

The EPU is aware that hazardous materials are located, or were located, on the site (underground fuel storage tanks). The EPU does not have any records that indicate the status of these facilities or any incidents associated with them.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage as past activities associated with land contamination which may pose a risk to human health and the environment.

You or your client should contact the ACT Dangerous Goods Unit, ACT Workcover who license the fuel storage facilities on (02) 6207 6355 regarding the current status of the facilities and any records of incidents at the site.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of

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contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive style with a large, stylized 'M' and 'H'.

Mark Heckenberg
Project Officer,
Environment Protection Unit

27/05/2005



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref: 97/05018

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 2 Section 39 Kingston Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The information detailed above only relates to records held by the EPU and may not represent the actual condition of the site.

At present the EPU has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

Mark Heckenberg
Project Officer,
Environment Protection Unit

27/05/2005

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ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref: 97/12302

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 7 Section 7 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The site is currently occupied by an operational Mobil service station. The EPU has no record of incidents occurring at this site.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the ACT EPA 2000, Contaminated Sites Environment Protection Policy (EPP) list service stations as activities associated with land contamination which may pose a risk to human health and the environment.

As the site is an operational service station you should also contact the ACT Dangerous Goods Unit, ACT Workcover who license the fuel storage facilities on (02) 6207 6355 regarding the current status of the facilities and any records of incidents at the site.

The information detailed above only relates to records held by the EPU and may not represent the actual condition of the site.

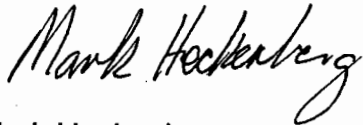
At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive style with a large, stylized 'M' and 'H'.

Mark Heckenberg
Project Officer,
Environment Protection Unit

27/05/2005



ACT Government



environment ACT
CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 20 Section 6 Kingston Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

There are records of historic municipal landfills "Causeway Tips" located on the block and adjacent to the site on Block 1 Section 74, Block 1 Section 66 and Block 3 Section 47 (Rail Land Landfill) Fyshwick. The "Causeway Tips" were operated for an undefined period with records indicating they were subject to the disposal of Household, Trade, Industrial and Builders waste. See attached map for indicative location of known landfills in area.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

The status and extent of the Causeway landfills located on Block 20 Section 6 is unknown with no records to indicate the sites have been investigated. There was however a groundwater bore installed in the vicinity of the Causeway landfills as part of the investigations of the ACT Rail Land (Block 3 Section 47 Fyshwick which also contains an historic municipal landfill) located to the south of the Causeway Tips. The

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results of the investigation and results from groundwater Bore No. 205 indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. This does not preclude the existence of hazardous substances associated with the Causeway Tips considering the limited investigation in the area.

Under the precautionary principal, blocks which contain municipal landfills would be considered potentially contaminated and would be subject to assessment and audit should development of the site be proposed. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



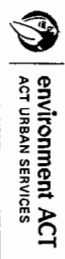
Mark Heckenberg
Project Officer,
Environment Protection Unit

27/05/2005



CONTAMINATED SITES

Causeway Tips



Contaminates

- Sheepdip
- Hydrocarbon
- Landfill
- Other

1:9,358



Meters

Scale 1:9,358



Data Copyright:
Australian Capital Territory,
October 2004.
Disclaimer:
Environment ACT does not warrant
that the data is free from errors.

CONTACT DETAILS

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ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref: 97/05018.

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 1 Section 74 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

There are records of historic municipal landfills "Causeway Tips" located on the block and adjacent to the site on Block 20 Section 6, Block 1 Section 66 and Block 3 Section 47 (Rail Land Landfill) Fyshwick. The "Causeway Tips" were operated for an undefined period with records indicating they were subject to the disposal of Household, Trade, Industrial and Builders waste. See attached map for indicative location of known landfills in area.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

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The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. The location of the landfills detailed above are detailed in the attached plan.

The status and extent of the Causeway landfills located on Block 1 Section 74 is unknown with no records to indicate the sites have been investigated. There was however a groundwater bore installed in the vicinity of the Causeway landfills as part of the investigations of the ACT Rail Land (Block 3 Section 47 Fyshwick which also contains an historic municipal landfill) located to the south of the Causeway Tips. The results of the investigation and results from groundwater Bore No. 205 indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. This does not preclude the existence of hazardous substances associated with the Causeway Tips considering the limited investigation in the area.

The following reports are recorded for Block 3 Section 47 Fyshwick:

"Environmental Audit of the Australian National Facilities, Canberra Railway Station Yards and Rail Corridor, 16 March 1998 by PPK Environmental & Infrastructure P/L"

"Major Site Environmental Audit - Canberra, 15 December 2000 by URS Australia P/L"

"Addendum: Major Site Environmental Audit - Canberra, 16 May 2001 by URS Australia P/L"

"Addendum Report: Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor, 16 August 2001 by PPK Environmental & Infrastructure P/L"

"Addendum Report: Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor, 16 March 2001 by PPK Environmental & Infrastructure P/L"

"Report on Further Soil and Groundwater Investigations Canberra Railway Station and Rail Corridor, 14 January 1999 by PPK Environmental & Infrastructure P/L"

"Report on Further Soil and Groundwater Investigations Canberra Railway Station and Rail Corridor, 17 December 1999 by PPK Environmental & Infrastructure P/L"

"Phase II Environmental Site Assessment, Canberra Railway Station and Rail Corridor, 12 November 1998 by PPK Environmental & Infrastructure P/L"

"Environmental Audit of the Australian National Facilities, Canberra Railway Station Yards and Rail Corridor, 16 March 1998 by PPK Environmental & Infrastructure P/L"

Under the precautionary principal, blocks which contain municipal landfills would be considered potentially contaminated and would be subject to assessment and audit should development of the site be proposed. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive, flowing style.

Mark Heckenberg
Project Officer,
Environment Protection Unit

26/05/2005

CONTAMINATED SITES

Causeway Tips



environment ACT
ACT URBAN SERVICES

Contaminates

- Sheepclip
- Hydrocarbon
- Landfill
- Other

1:10,000



Meters

Scale 1:9,358



Date Copyright:
Australian Capital Territory,
Canberra 2004

Disclaimer:
Environment ACT does not warrant
that the data is free from errors.

CONTACT DETAILS

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email: daniel.waters@act.gov.au

Issue Date:

20/05/2005 14:44:59





ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref: 97/05018

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 13 Section 30 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The blocks are not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The information detailed above only relates to records held by the EPU and may not represent the actual condition of the site.

At present the EPU has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

Mark Heckenberg
Project Officer,
Environment Protection Unit

26/05/2005

ENVIRONMENT ACT • ENVIRONMENT PROTECTION

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ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref: 97/06412

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 4 Section 26 Griffith Canberra Central
Block 5 Section 26 Griffith Canberra Central
Block 9 Section 26 Griffith Canberra Central
Block 14 Section 26 Griffith Canberra Central
Block 15 Section 26 Griffith Canberra Central
Block 17 Section 26 Griffith Canberra Central
Block 19 Section 26 Griffith Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The blocks are not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The information detailed above only relates to records held by the EPU and may not represent the actual condition of the site.

At present the EPU has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

Mark Heckenberg
Project Officer,
Environment Protection Unit
25/05/2005

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ACT Government



environment ACT
CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 4 Section 7 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The EPU is aware that hazardous materials are located, or were located, on this block (i.e. 2 diesel underground fuel storage tanks). The EPU does not have any records that indicate the status of these facilities or any incidents associated with them.

The block is also adjacent to an operational Mobil service station on block 6 section 9. The EPU does not have any records that indicate the status of these facilities or any incidents associated with them.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage as past activities associated with land contamination which may pose a risk to human health and the environment.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive style with a large, sweeping initial 'M'.

Mark Heckenberg
Project Officer,
Environment Protection Unit

24/05/2005



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref: 97/05018

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 3 Section 7 Fyshwick Canberra Central
Block 6 Section 7 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The above block(s) are not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The blocks are adjacent to Block 4 Section 7 Fyshwick. The EPU is aware that hazardous materials are located, or were located, on Block 4 (i.e. 2 diesel underground fuel storage tanks). The blocks are also adjacent to an operational Mobil service station on block 6 section 9. The EPU does not have any records to indicate the status of the facilities at these sites.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage as past activities associated with land contamination which may pose a risk to human health and the environment.

Although there are no records of potential or known contamination recorded for the above block(s), under the precautionary principal, all blocks adjacent to sites which contain fuel storage facilities are identified and persons making enquiries are made aware of potential for impacts from adjacent sites due to the ability of hydrocarbons to migrate through the environment.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive style with a large, stylized 'H' and a long, sweeping tail.

Mark Heckenberg
Project Officer,
Environment Protection Unit

24/05/2005



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref: 97/05018

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 1 Section 7 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The above block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

This block is adjacent to Block 4 Section 7 Fyshwick. The EPU is aware that hazardous materials are located, or were located, on Block 4 (i.e. 2 diesel underground fuel storage tanks). The EPU does not have any records to indicate the status of the facilities at the site.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage as past activities associated with land contamination which may pose a risk to human health and the environment.

Although there are no records of potential or known contamination recorded for the above block, under the precautionary principal, all blocks adjacent to sites which contain fuel storage facilities are identified and persons making enquiries are made aware of potential for impacts from adjacent sites due to the ability of hydrocarbons to migrate through the environment.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive style with a large, stylized 'M' and 'H'.

Mark Heckenberg
Project Officer,
Environment Protection Unit

24/05/2005



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref: 97/05018

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2609

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 9 Section 6 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

The above block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

This block is adjacent to Block 24 Section 6 Fyshwick. The EPU is aware that hazardous materials are located, or were located, on Block 24 (i.e. the operation, or former operation, of a Government Works Depot). Activities such as vehicle maintenance, fuel storage and dispensing are likely to have occurred at the site.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage as past activities associated with land contamination which may pose a risk to human health and the environment.

Although there are no records of potential or known contamination recorded for the above block, under the precautionary principal, all blocks adjacent to sites which contain fuel storage facilities are identified and persons making enquiries are made aware of potential for impacts from adjacent sites due to the ability of hydrocarbons to migrate through the environment.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink that reads "Mark Heckenberg". The signature is written in a cursive style with a large, stylized 'M' and 'H'.

Mark Heckenberg
Project Officer,
Environment Protection Unit

23/05/2005



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2609

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 23 Section 6 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

This block was formerly known as part Block 18 Section 6 Fyshwick.

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The EPU is aware that hazardous materials are likely to be located, or were located, on the property (i.e. the operation, or former operation, of a Government Works Depot). Activities such as vehicle maintenance, fuel storage and dispensing and chemical storage is likely to have occurred at the site. The EPU does not have any records to indicate the status of the facilities at the site.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage and chemical storage as past activities associated with land contamination which may pose a risk to human health and the environment.

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At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive style with a large, stylized 'M' and 'H'.

Mark Heckenberg
Project Officer,
Environment Protection Unit



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your search form request of 18/05/2005 enquiring about:

Block 24 Section 6 Fyshwick Canberra Central

Records held by the Environment Protection Unit (EPU) for the above block(s) indicate the following:

This block was formerly known as part Block 18 Section 6 Fyshwick.

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The EPU is aware that hazardous materials are likely to be located, or were located, on the property (i.e. the operation, or former operation, of a Government Works Depot). Activities such as vehicle maintenance, fuel storage and dispensing and chemical storage is likely to have occurred at the site. The EPU does not have any records to indicate the status of the facilities at the site.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage and chemical storage as past activities associated with land contamination which may pose a risk to human health and the environment.

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Telephone 02 6207 9777 Fax 02 6207 6084 email environmentACT@act.gov.au website www.environment.act.gov.au

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, reading "Mark Heckenberg". The signature is written in a cursive style with a large, stylized 'M' and 'H'.

Mark Heckenberg
Project Officer,
Environment Protection Unit

24/05/2005



ACT Government



environment ACT
CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 3 Section 25 Griffith Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

EP records indicate that there are fuel storage facilities located on the above block.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list fuel storage as past activities associated with land contamination. EP does not have any records that indicate the status of these facilities or any incidents associated with them. Records also indicate that the buildings roof sheeting material is asbestos. Asbestos sheeting in poor condition has the potential to present a risk to human health and the environment. EP does not have any records regarding the condition of the roof or any associated incidents.

EP records indicate an operational service station is located on the adjacent block of Block 2 Section 25 Griffith.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy 2000 list service station as activities associated with land contamination. Service stations in the past have been sources of contamination of soils and groundwater both on and off site. The EPU does not have any information to suggest that the service station has impacted the above block.

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

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At present EP has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 2 Section 25 Griffith Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block contains an operational Mobil service station.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations as activities associated in the past with land contamination which may present a risk to human health or the environment. Service stations have been sources of hydrocarbon contamination of the surrounding soils and groundwater which can result in the presence in soil of volatile liquids and vapors.

Although there are no records of known or potential contamination recorded for the block under the precautionary principal, persons making enquiries are made aware of potential for impacts from nearby sites containing known or potentially contaminating activities such as fuel storage facilities due to the ability of contaminants to migrate through the environment.

At present EP has no information on contamination of the above block(s) other than as detailed above. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, appearing to read 'D Power', written in a cursive style.

David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 5 Section 11 Kingston Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

However it, along with Block 2 Section 47 Fyshwick form the ACT Rail land. Historically railway activities have been sources of land contamination. There are no records to indicate that the rail activities have impacted Section 11 Kingston, however this would need to be verified in an environmental assessment should alternative uses be proposed for the site.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list rail activities as uses associated in the past with land contamination which may present a risk to human health or the environment.

At present EP has no information on contamination of the above block other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in cursive script, appearing to read 'D. Power'.

David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE:

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 4 Section 11 Kingston Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

However it, along with Block 2 Section 47 Fyshwick form the "ACT Rail land". Historically railway activities have been sources of land contamination. There are no records to indicate that the rail activities have impacted Section 11 Kingston, however this would need to be verified in an environmental assessment should alternative uses be proposed for the site.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list rail activities as uses associated in the past with land contamination which may present a risk to human health or the environment.

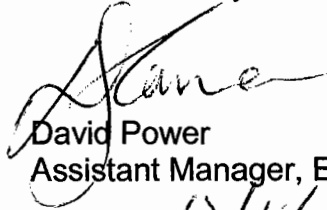
At present EP has no information on contamination of the above block other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in cursive script, appearing to read "D. Power", written in dark ink.

David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 26 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

There are activities in close proximity to the block which are associated with activities which have the potential to impact the subject site. Information recorded on these activities is detailed below.

Block 24 Section 6 Fyshwick is listed as a municipal depot. EP is aware that this site contains fuel dispensing facilities. EP does not have any records which indicate that a site assessment has been undertaken at the site.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

Although there are no records of known or potential contamination recorded for Block 26 Section 6 Fyshwick, under the precautionary principal, persons making enquiries are made aware of potential for impacts from nearby sites containing known or

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potentially contaminating activities such as landfills and fuel storage facilities due to the ability of contaminants to migrate through the environment.

At present EP has no information on contamination of the above block(s) other than as detailed above. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT
CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 25 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The site is listed as a municipal depot. Details of the current operational status of the depot are not recorded by EP. EP does not have any records which indicate that a site assessment has been undertaken at the site.

There are also activities in close proximity to the block which are associated with activities which have the potential to impact the subject site. Information recorded on these activities is detailed below.

Block 24 Section 6 Fyshwick is listed as a municipal depot. EP is aware that this site contains fuel dispensing facilities. EP does not have any records which indicate that a site assessment has been undertaken at the site.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

Although there are no records of known or potential contamination recorded for Block 26 Section 6 Fyshwick, under the precautionary principal, persons making enquiries are made aware of potential for impacts from nearby sites containing known or

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potentially contaminating activities such as landfills and fuel storage facilities due to the ability of contaminants to migrate through the environment.

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

At present EP has no information on contamination of the above block(s) other than as detailed above. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 19 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

EP records indicate that the block currently contains underground fuel storage tanks.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

At present EP has no information on contamination of the above block. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 19 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

EP records indicate that the block currently contains underground fuel storage tanks.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

At present EP has no information on contamination of the above block. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, appearing to read 'D. Power', written over the printed name.

David Power
Assistant Manager, Environment Protection

13/4/05



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 16 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

At present EP has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/305 enquiring about:

Block 15 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

Current use of the site is associated underground fuel storage tanks.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

At present EP has no information on contamination of the above block. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 12 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

At present EP has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

ENVIRONMENT ACT • ENVIRONMENT MANAGEMENT

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ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 6 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The block currently contains an ACT Government fire station with associated refueling facilities.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

At present EP has no information on contamination of the above block. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, appearing to read 'David Power', written over the printed name.

David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 2 Section 6 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

EP is aware that hazardous materials might be located on the property given its operation as an Animal Health Laboratory. Laboratories have been associated with site contamination and may pose a risk to human health and the environment.

At present EP has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

ENVIRONMENT ACT • ENVIRONMENT MANAGEMENT

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ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINTED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 9 Section 39 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

There is an historic household and builder's spoil landfill recorded which may impact a portion of Block 9 Section 39 Fyshwick as indicated on the attached map.

There is no detailed information recorded for the landfill other than references in documents held by EP to the site being formerly used for the disposal of household rubbish (excluding petrusible waste), builders demolition waste and clean spoil from excavation works in the area during development of the surrounding suburbs. The Commonwealth established and managed these sites with the area likely to have been designated as a spoil disposal site to rehabilitate or cover material previously disposed at the site. Due to the unknown nature of the material disposed of at these sites they are classified as uncontrolled dumps or landfill sites.

The status and exact extent of the landfill detailed above is unknown with no records to indicate the site has been investigated. The indicative location of the landfill is detailed in the attached map.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy (EPP), November 2000 list landfills as activities associated with land contamination.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

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Under the precautionary principal, areas impacted by uncontrolled land filling would be considered potentially contaminated. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

There is no information recorded by Environment ACT that the landfill area has adversely impacted Block 9 Section 39 Fyswick.

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

At present the EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 8 Section 39 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

There is an historic household and builder's spoil landfill recorded in the area which may impact on Block 8 Section 39 Fyshwick.

There is no detailed information recorded for the landfill other than references in documents held by EP to the site being formerly used for the disposal of household rubbish (excluding petrusible waste), builders demolition waste and clean spoil from excavation works in the area during development of the surrounding suburbs. The Commonwealth established and managed these sites with the area likely to have been designated as a spoil disposal site to rehabilitate or cover material previously disposed at the site. Due to the unknown nature of the material disposed of at these sites they are classified as uncontrolled dumps or landfill sites.

The status and exact extent of the landfill detailed above is unknown with no records to indicate the site has been investigated. The indicative location of the landfill is detailed in the attached map.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy (EPP), November 2000 list landfills as activities associated with land contamination.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

ENVIRONMENT ACT • ENVIRONMENT MANAGEMENT

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Telephone 02 6207 9777 Fax 02 6207 6084 email environmentACT@act.gov.au website www.environment.act.gov.au

Under the precautionary principal, areas impacted by uncontrolled land filling would be considered potentially contaminated. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

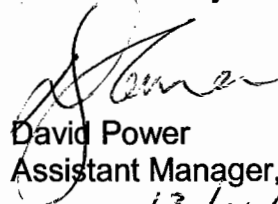
There is no information recorded by Environment ACT that the landfill area has adversely impacted the above block.

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

At present EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 7 Section 39 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

There is an historic household and builder's spoil landfill recorded in the area which may impact on Block 7 Section 39 Fyshwick.

There is no detailed information recorded for the landfill other than references in documents held by EP to the site being formerly used for the disposal of household rubbish (excluding petrusible waste), builders demolition waste and clean spoil from excavation works in the area during development of the surrounding suburbs. The Commonwealth established and managed these sites with the area likely to have been designated as a spoil disposal site to rehabilitate or cover material previously disposed at the site. Due to the unknown nature of the material disposed of at these sites they are classified as uncontrolled dumps or landfill sites.

The status and exact extent of the landfill detailed above is unknown with no records to indicate the site has been investigated. The indicative location of the landfill is detailed in the attached map.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy (EPP), November 2000 list landfills as activities associated with land contamination.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

ENVIRONMENT ACT • ENVIRONMENT MANAGEMENT

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Under the precautionary principal, areas impacted by uncontrolled land filling would be considered potentially contaminated. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

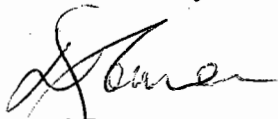
There is no information recorded by Environment ACT that the landfill area has adversely impacted the above block.

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act* 1997.

At present EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 6 Section 39 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

There is an historic household and builder's spoil landfill recorded in the area which may impact on Block 6 Section 39 Fyshwick.

There is no detailed information recorded for the landfill other than references in documents held by EP to the site being formerly used for the disposal of household rubbish (excluding petrusible waste), builders demolition waste and clean spoil from excavation works in the area during development of the surrounding suburbs. The Commonwealth established and managed these sites with the area likely to have been designated as a spoil disposal site to rehabilitate or cover material previously disposed at the site. Due to the unknown nature of the material disposed of at these sites they are classified as uncontrolled dumps or landfill sites.

The status and exact extent of the landfill detailed above is unknown with no records to indicate the site has been investigated. The indicative location of the landfill is detailed in the attached map.

The ANZECC 1992, Guidelines for the Assessment and Management of Contaminated Sites and the Contaminated Sites Environment Protection Policy (EPP), November 2000 list landfills as activities associated with land contamination.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

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Under the precautionary principal, areas impacted by uncontrolled land filling would be considered potentially contaminated. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

There is no information recorded by Environment ACT that the landfill area has adversely impacted the above block.

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

At present EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT
CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 22 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

However there are a number of activities in close proximity to the block which have been associated in the past with land contamination which have the potential to impact the subject site. Information recorded on these activities is detailed below.

There are records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site.

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The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations, fuel storage facilities and municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

Although there are no records of known or potential contamination recorded for Block 22 Section 30 Fyshwick, under the precautionary principal, persons making enquiries are made aware of potential for impacts from nearby sites containing known or potentially contaminating activities such as landfills and fuel storage facilities due to the ability of contaminants to migrate through the environment.

Should you wish further information on the assessment and audit reports undertake for the nearby Block 2 Section 47 Fyshwick please contact Mark Heckenberg on 6207 2151 to organise a time to review the reports.

At present EP has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 21 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

However there are a number of activities in close proximity to the block which have been associated in the past with land contamination which have the potential to impact the subject site. Information recorded on these activities is detailed below.

There are records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site.

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The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations, fuel storage facilities and municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

Although there are no records of known or potential contamination recorded for Block 21 Section 30 Fyshwick, under the precautionary principal, persons making enquiries are made aware of potential for impacts from nearby sites containing known or potentially contaminating activities such as landfills and fuel storage facilities due to the ability of contaminants to migrate through the environment.

Should you wish further information on the assessment and audit reports undertake for the nearby Block 2 Section 47 Fyshwick please contact Mark Heckenberg on 6207 2151 to organise a time to review the reports.

At present EP has no information on contamination of the above block(s) other than as detailed above. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LANDS SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 19 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

However there are a number of activities in close proximity to the block which have been associated in the past with land contamination which have the potential to impact the subject site. Information recorded on these activities is detailed below.

There are records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site.

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The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations, fuel storage facilities and municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

Although there are no records of known or potential contamination recorded for Block 19 Section 30 Fyshwick, under the precautionary principal, persons making enquiries are made aware of potential for impacts from nearby sites containing known or potentially contaminating activities such as landfills and fuel storage facilities due to the ability of contaminants to migrate through the environment.

Should you wish further information on the assessment and audit reports undertake for the nearby Block 2 Section 47 Fyshwick please contact Mark Heckenberg on 6207 2151 to organise a time to review the reports.

At present the Environment Protection has no information on contamination of the above block(s) other than as detailed above. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 18 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

However there are a number of activities in close proximity to the block which have been associated in the past with land contamination which have the potential to impact the subject site. Information recorded on these activities is detailed below.

There are records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site.

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The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations, fuel storage facilities and municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

Although there are no records of known or potential contamination recorded for Block 18 Section 30 Fyshwick, under the precautionary principal, persons making enquiries are made aware of potential for impacts from nearby sites containing known or potentially contaminating activities such as landfills and fuel storage facilities due to the ability of contaminants to migrate through the environment.

Should you wish further information on the assessment and audit reports undertake for the nearby Block 2 Section 47 Fyshwick please contact Mark Heckenberg on 6207 2151 to organise a time to review the reports.

At present EP has no information on contamination of the above block(s) other than as detailed above. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 12 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The information detailed above only relates to records held by EP and may not represent the actual condition of the site.

At present EP has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINTED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 11 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

There are however a number of activities in close proximity to the block which have been associated in the past with land contamination which have the potential to impact the subject site. Information recorded on these activities is detailed below.

There are records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. The location of the landfills detailed above are detailed in the attached plan.

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The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations, fuel storage facilities and municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

At present EP has no information on contamination of the above block. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 9 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

There are records of one historic municipal landfill "Causeway Tips" located on the block. The "Causeway Tips" were operated for an undefined period with records indicating they were subject to the disposal of Household, Trade, Industrial and Builders waste. See attached map for indicative location of known landfills in area.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

The status and extent of the Causeway landfill located on Block 9 Section 30 is unknown with no records to indicate the site has been investigated.

Under the precautionary principal, blocks which contain municipal landfills would be considered potentially contaminated and would be subject to assessment and audit should development of the site be proposed. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

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The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

At present EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT
CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 8 Section 30 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The information detailed above only relates to records held by EP and may not represent the actual condition of the site.

At present EP has no information on contamination of the above block(s). However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

ENVIRONMENT ACT • ENVIRONMENT MANAGEMENT

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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 2 Section 47 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

Block 2 Section 47 Fyshwick is known as the ACT Rail Land with activities including but not limited to, the Canberra Railway Station and associated rail yards, former Locomotive Refueling Area, Historic Railway Society site, William Edmunds plumbing building and vehicle refueling facilities, and an historic Municipal landfill. The block is currently not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list railways, landfills and fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Landfills and fuel storage facilities associated with rail activities have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil and groundwater of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

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There are records of vehicle fuel storage facilities adjacent to the William Edmunds plumbing building. The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria. These facilities were within the identified study area.

The rail land has recently been subject to an environmental assessment which included an extensive soil and groundwater investigation and independent audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with rail activities and landfills are not present in significant quantities within the site or migrating from the site. The location of the landfill and other facilities are detailed in the reports detailed below.

The reports detailed below were for the purpose of assessing the entire Rail Land site including the rail corridor through Fyshwick to the ACT/NSW border. There were a number of potential areas of concern both from on-site and off-site activities identified and investigated.

The independent audit of the rail land site found the areas assessed are unlikely to present a significant risk to human health or the environment for the current land use and further assessment and remediation is not warranted.

The following reports are recorded for Block 2 Section 47 Fyshwick:

"Underground Fuel Storage Tank Removal and Excavation Validation, Commonwealth Railyards, Kingston, ACT, 12 March 2002 by PPK Environmental & Infrastructure P/L"

"Environmental Audit of the Australian National Facilities, Canberra Railway Station Yards and Rail Corridor, 16 March 1998 by PPK Environmental & Infrastructure P/L"

"Major Site Environmental Audit - Canberra, 15 December 2000 by URS Australia P/L"

"Addendum: Major Site Environmental Audit - Canberra, 16 May 2001 by URS Australia P/L"

"Addendum Report: Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor, 16 August 2001 by PPK Environmental & Infrastructure P/L"

"Addendum Report: Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor, 16 March 2001 by PPK Environmental & Infrastructure P/L"

"Report on Further Soil and Groundwater Investigations Canberra Railway Station and Rail Corridor, 14 January 1999 by PPK Environmental & Infrastructure P/L"

"Report on Further Soil and Groundwater Investigations Canberra Railway Station and Rail Corridor, 17 December 1999 by PPK Environmental & Infrastructure P/L"

"Phase II Environmental Site Assessment, Canberra Railway Station and Rail Corridor, 12 November 1998 by PPK Environmental & Infrastructure P/L"

"Environmental Audit of the Australian National Facilities, Canberra Railway Station Yards and Rail Corridor, 16 March 1998 by PPK Environmental & Infrastructure P/L"

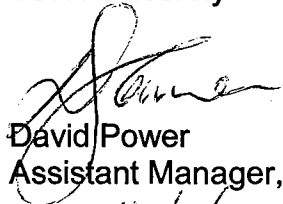
Under the precautionary principal, blocks which contain municipal landfills would be considered potentially contaminated and would be subject to assessment and audit should development of the site be proposed. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

Should you wish further information on the assessment and audit reports above please contact Mark Heckenberg on 6207 2151 to organise a time to review the documents

At present EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your of 23/03/2005 enquiring about:

Block 13 Section 38 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

There are records of historic municipal landfills which impact and are located adjacent to Block 13 Section 38 Fyshwick. Historic municipal landfills are recorded on Block 2 Section 47 and Block 12 Section 38 Fyshwick which extend into Block 13 Section 38 Fyshwick. There are also three separate historic municipal landfills "Causeway Tips" located adjacent to the site located on Block 1 Section 74 and Block 1 Section 66 Fyshwick. The "Causeway Tips" were operated for an undefined period with records indicating they were subject to the disposal of Household, Trade, Industrial and Builders waste.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

There are also records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household,

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Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. The location of the landfills detailed above are detailed in the attached plan.

The status and extent of the Causeway landfills and landfill located on Block 12 is unknown with no records to indicate the sites have been investigated. There was however a groundwater bore installed in the vicinity of the Causeway landfills as part of the investigations of the ACT Rail Land (Block 2 Section 47 Kingston which also contains an historic municipal landfill) located to the south of the Causeway Tips. The results of the investigation and results from groundwater Bore No. 205 indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. This does not preclude the existence of hazardous substances associated with the Causeway Tips considering the limited investigation in the area.

Under the precautionary principal, blocks which contain municipal landfills would be considered potentially contaminated and would be subject to assessment and audit should development of the site be proposed. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

At present EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your of 23/03/2005 enquiring about:

Block 12 Section 38 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

EP records indicate that there are two separate historic municipal landfills in the area with one impacting Blocks 11 and the other Block 12 Section 38 Fyshwick. The municipal tips occupy a large portion of Block 12 and extended into Block 11. Block 11 also contained the DAS fleet vehicle refueling facilities.

Ownership of the block has now transferred to the Territory Government and on 23 March 2004 a Development Application was approved for the removal of the fuel storage tanks. To date a final auditors report covering this project has not been received.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list landfills and fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Other than the historic landfills and the audit currently in progress EP does not have any other records of incidents or contamination of the above blocks. Should you require further information on the audit or the landfills please contact Mark Heckenberg on 62072151.

At present the EPU has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination on the site.

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I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, appearing to read 'David Power', written over the printed name.

David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



environment ACT

CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: CONTAMINATED LAND SEARCH

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 11 Section 38 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block(s) indicate the following:

EP records indicate that there is a historic municipal landfill which potentially impacts Blocks 11. The municipal tips occupies a large portion of the adjacent Block 12 and extends into Block 11.

Block 11 Section 38 Fyshwick was previously owned by the Commonwealth Government (DAS.Fleet) who ran vehicle refueling facilities on site. A voluntary assessment, remediation and audit was being undertaken of the fuel facilities as a result of leakage's detected from the fuel lines. The environmental consultant undertaking the assessment and remedial works is recorded as Coffey Geosciences P/L with the auditor recorded as Mr Chris Jewel of C.M. Jewel and Associates P/L. The nature and extent of the contamination has not been reported to date, our records indicate that the assessment and audit of the site is continuing.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list landfills and fuel storage facilities as activities associated in the past with land contamination which may present a risk to human health or the environment.

Ownership of the block has now transferred to the Territory Government and on 23 March 2004 a Development Application was approved for the removal of the fuel storage tanks. To date a final auditors report covering this project has not been received.

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The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

Other than the historic landfills and the audit currently in progress the EPU does not have any other records of incidents or contamination of the above block. Should you require further information on the audit or the landfill please contact Mark Heckenberg on 6207 2151.

At present EP has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination on the site.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power

Assistant Manager, Environment Protection

B/04/05



ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: EAST LAKE BASIN STUDY

Dear Mr Reeves

Thank you for your letter of 06/04/2005 enquiring about:

Block 3 Section 38 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

There are however a number of activities in close proximity to the Block which have been associated in the past with land contamination which have the potential to impact the subject site. Information recorded on these activities is detailed below.

The adjacent Block 2 Section 38 Fyshwick is listed as a Municipal Depot. EP is aware that hazardous materials are located, or were located, on the block associated with the operation, or former operation of the site, which is likely to have included the storage and use of pesticides/herbicides and refueling facilities for vehicles and equipment. Details of the current operational status of the depot are not recorded by EP. Records indicate there are underground fuel tank(s) located on the site. The number, size, location and fuel type stored is not recorded. The status of the tank(s) is not recorded. EP does not have any records which indicate that a site assessment has been undertaken at the site.

There are records of an historic municipal landfill on the nearby Block 19 Section 6 Kingston which extends into the adjacent Block 1 Section 74 Fyshwick. The landfill forms part of a series of small historic municipal landfills located adjacent to the Jerrabomberra Wetlands. These landfills known as the "Causeway Tips" were operated for an undefined period with records indicating they were subject to the disposal of Household, Trade, Industrial and Builders waste.

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The status and extent of the Causeway landfills is unknown with no records to indicate the sites have been investigated. There was however a groundwater bore installed in the vicinity of the landfills as part of the investigations of the ACT Rail Land (Block 2 Section 47 Kingston which also contains an historic municipal landfill) located to the south of the Causeway Tips. The results of the investigation and results from groundwater Bore No. 205 indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. This does not preclude the existence of hazardous substances associated with the Causeway Tips considering the limited investigation in the area.

There are also records of an historic municipal landfill and fuel storage facilities on the adjacent Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. The location of the landfills detailed above are detailed in the attached plan.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations, fuel storage facilities and municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

At present EP has no information on contamination of the above block. This does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

A handwritten signature in black ink, appearing to read 'D. Power', written over the printed name.

David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: EAST LAKE BASIN STUDY

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 2 Section 38 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The site is listed as a municipal depot. EP is aware that hazardous materials are located, or were located, on the block associated with the operation, or former operation of the site, which is likely to have included the storage and use of pesticides/herbicides and refueling facilities for vehicles and equipment. Details of the current operational status of the depot are not recorded by EP. Records indicate there are underground fuel tank(s) located on the site. The number, size, location and fuel type stored is not recorded. The status of the tank(s) is not recorded. EP does not have any records which indicate that a site assessment has been undertaken at the site.

There are records of an historic municipal landfill on the adjacent Block 19 Section 6 Kingston which extends into the adjacent Block 1 Section 74 Fyshwick. The landfill forms part of a series of small historic municipal landfills located adjacent to the Jerrabomberra Wetlands. These landfills known as the "Causeway Tips" were operated for an undefined period with records indicating they were subject to the disposal of Household, Trade, Industrial and Builders waste.

The status and extent of the Causeway landfills is unknown with no records to indicate the sites have been investigated. There was however a groundwater bore installed in the vicinity of the landfills as part of the investigations of the ACT Rail Land (Block 2 Section 47 Kingston which also contains an historic municipal landfill) located to the south of the Causeway Tips.

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The results of the investigation and results from groundwater Bore No. 205 indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. This does not preclude the existence of hazardous substances associated with the Causeway Tips considering the limited investigation in the area.

There are also records of an historic municipal landfill and fuel storage facilities on the nearby Block 2 Section 47 Fyshwick ("Canberra Rail Land"). The fuel storage facilities have recently been removed and an assessment and validation of the area undertaken. The excavation and imported fill associated with the fuel storage facilities was validated to sensitive land use criteria.

The limited information recorded for the Rail Land landfill indicates it operated from the early 1950's through to late 1970's or early 1980's and was subject to the disposal of Household, Trade, Industrial and Builders waste including spoil from the New Parliament House construction site.

The Rail Land landfill has recently been subject to an environmental assessment which included an extensive groundwater investigation and audit. The results of the investigations indicate that elevated concentrations of hazardous materials and chemicals normally associated with landfills are not present in significant quantities within the landfill or migrating from the site. The location of the landfills detailed above are detailed in the attached plan.

The ANZECC 1992 Guidelines for the Assessment and Management of Contaminated Sites and the Environment ACT Contaminated Sites Environment Protection Policy, November 2000 list service stations, fuel storage facilities and municipal landfills as activities associated in the past with land contamination which may present a risk to human health or the environment.

Fuel storage facilities and landfills have been sources of contamination of the surrounding soils and groundwater which can result in the presence in soil of elevated levels of hazardous substances potentially harmful to human health and the environment including volatile liquids and vapors both on and off-site.

The following reports are recorded for Block 2 Section 47 Fyshwick:

"Underground Fuel Storage Tank Removal and Excavation Validation, Commonwealth Railyards, Kingston, ACT, 12 March 2002 by PPK Environmental & Infrastructure P/L"

"Environmental Audit of the Australian National Facilities, Canberra Railway Station Yards and Rail Corridor, 16 March 1998 by PPK Environmental & Infrastructure P/L"

"Major Site Environmental Audit - Canberra, 15 December 2000 by URS Australia P/L"

"Addendum: Major Site Environmental Audit - Canberra, 16 May 2001 by URS Australia P/L"

"Addendum Report: Environmental Site Investigations and Site Remedial Works Canberra Railway Station Yards and Rail Corridor, 16 August 2001 by PPK Environmental & Infrastructure P/L"

"Addendum Report: Environmental Site Investigations and Site Remedial Works
Canberra Railway Station Yards and Rail Corridor, 16 March 2001 by PPK
Environmental & Infrastructure P/L"

"Report on Further Soil and Groundwater Investigations Canberra Railway Station and
Rail Corridor, 14 January 1999 by PPK Environmental & Infrastructure P/L"

"Report on Further Soil and Groundwater Investigations Canberra Railway Station and
Rail Corridor, 17 December 1999 by PPK Environmental & Infrastructure P/L"

"Phase II Environmental Site Assessment, Canberra Railway Station and Rail
Corridor, 12 November 1998 by PPK Environmental & Infrastructure P/L"

"Environmental Audit of the Australian National Facilities, Canberra Railway Station
Yards and Rail Corridor, 16 March 1998 by PPK Environmental & Infrastructure P/L"

Although there are no records of known contamination recorded for the block, under the precautionary principal, blocks which contain fuel storage facilities would be considered potentially contaminated and would be subject to assessment and audit should redevelopment of the site be proposed. Persons making enquiries are also made aware of potential for impacts from nearby sites due to the ability of contaminants to migrate through the environment.

Should you wish further information on the assessment and audit reports undertake for the nearby Block 2 Section 47 Fyshwick please contact Mark Heckenberg on 62072151 to organise a time to review the reports.

At present EP has no information on contamination of the above block other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely



David Power
Assistant Manager, Environment Protection

13/4/05



ACT Government



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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: EAST LAKE BASIN STUDY

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 10 Section 59 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The information detailed above only relates to records held by EP and may not represent the actual condition of the site.

At present EP has no information on contamination of the above block. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: EAST LAKE BASIN STUDY

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 9 Section 59 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The information detailed above only relates to records held by EP and may not represent the actual condition of the site.

At present EP has no information on contamination of the above block. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2509

RE: EAST LAKE BASIN STUDY

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 8 Section 59 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

The information detailed above only relates to records held by EP and may not represent the actual condition of the site.

At present EP has no information on contamination of the above block. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

ENVIRONMENT ACT • ENVIRONMENT MANAGEMENT

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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2609

RE: EAST LAKE BASIN STUDY

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 6 Section 59 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

The information detailed above only relates to records held by EP and may not represent the actual condition of the site.

At present EP has no information on contamination of the above block. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager, Environment Protection

13/4/05

ENVIRONMENT ACT • ENVIRONMENT MANAGEMENT

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CHIEF MINISTER'S DEPARTMENT

File Ref:

Mr Peter Reeves
Coffey Geosciences Pty Ltd
PO Box 152
Fyshwick ACT 2609

RE: EAST LAKE BASIN STUDY

Dear Mr Reeves

Thank you for your letter of 23/03/2005 enquiring about:

Block 5 Section 59 Fyshwick Canberra Central

Records held by Environment Protection (EP) for the above block indicate the following:

The block is not recorded on the Register of contaminated sites under section 21(A) of the Environment Protection Act 1997.

At present EP has no information on contamination of the above block. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure, you, or they, should arrange to conduct independent tests.

Yours sincerely

David Power
Assistant Manager
Environment Protection

13/4/05

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Contaminates

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- Hydrocarbon
- Landfill
- Other

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CONTACT DETAILS

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