

**SITE CONTAMINATION INVESTIGATION,  
REMEDiation AND VALIDATION  
MANAGEMENT PLAN**

**CYGNIA COVE, WATERFORD, WESTERN  
AUSTRALIA**

Prepared for:

Trustees of The Christian Brothers in Western  
Australia Incorporated  
Level 1  
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20 January 2010

Trustees of The Christian Brothers in Western Australia Incorporated  
Level 1  
189 Hay Street  
SUBIACO WA 6009

**Attention: Alex Gregg**

Dear Alex,

**RE: SITE CONTAMINATION INVESTIGATION, REMEDIATION AND VALIDATION  
MANAGEMENT PLAN, CYGNIA COVE, WATERFORD, WESTERN AUSTRALIA**

The attached Site Contamination Investigation, Remediation and Validation Management Plan for Cygnia Cove, Waterford is intended to satisfy the first component of Proponent Commitment No. 4 for Ministerial Statement 692 (*Prepare Groundwater Management Plan*). This report has been issued to you as a Version 6 and has been revised to address comments made by the site auditor.

The second component of Proponent Commitment No. 4 involves the development of a Dewatering Program. It is intended that this will be completed at a later date, and will be lodged with the application for a dewatering licence.

If you have any further queries, please contact myself or Paul Zuvela on 9355 7100.

For and on behalf of Coffey Environments Pty Ltd,



Pamela Lee  
Environmental Scientist

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## ABBREVIATIONS

<b>µm</b>	micrometres
<b>AASS</b>	Actual Acid Sulfate Soil
<b>ACM</b>	asbestos-containing material
<b>ADWG</b>	Australian Drinking Water Guidelines
<b>Al</b>	aluminium
<b>ANZECC</b>	Australian and New Zealand Environment and Conservation Council
<b>ARMCANZ</b>	Agriculture and Resource Management Council of Australia and New Zealand
<b>As</b>	arsenic
<b>AS</b>	Australian Standard
<b>ASS</b>	Acid Sulfate Soil
<b>ASSMP</b>	Acid Sulfate Soil Management Plan
<b>ASSMW</b>	Acid Sulfate Soil Monitoring Well
<b>ATA</b>	ATA Environmental
<b>B</b>	base
<b>C<sub>15-28</sub></b>	hydrocarbon chainlength fraction
<b>CAC</b>	asbestos investigation location
<b>Cd</b>	cadmium
<b>CEMP</b>	Construction Environmental Management Plan
<b>COC</b>	Chain of Custody
<b>COPC</b>	contaminants of potential concern
<b>CP</b>	Sample location nomenclature (Coffey Geosciences, 2000)
<b>Cr</b>	chromium

## ABBREVIATIONS

<b>CSM</b>	conceptual site model
<b>CSMS</b>	Contaminated Sites Management Series
<b>CTP</b>	Sample location nomenclature - Test Pits (ATA, 2001)
<b>Cu</b>	copper
<b>DAMP</b>	Dust and Asbestos Management Plan
<b>DBYD</b>	Dial Before You Dig
<b>DEC</b>	Department of Environment and Conservation
<b>DoE</b>	Department of Environment
<b>DoH</b>	Department of Health
<b>DQI</b>	data quality objective
<b>DWG</b>	Drinking Water Guidelines
<b>E</b>	east
<b>EC</b>	Electrical Conductivity
<b>EC ASS</b>	Sample location nomenclature - Acid Sulphate Soils Investigation (ATA, 2003a)
<b>ECB</b>	Sample location nomenclature - Coffey Geosciences Piezometer (ATA, 2001)
<b>ECC</b>	Sample location nomenclature - Surface water sample (ATA, 2001)
<b>ECV</b>	East Clontarf Validation
<b>EFCP</b>	electric friction cone penetrometer
<b>EHD</b>	Environmental Health Directorate
<b>EIL</b>	Ecological Investigation Level
<b>EPA</b>	Environmental Protection Authority
<b>EW</b>	east wall

## ABBREVIATIONS

<b>F</b>	floor
<b>FWG</b>	Freshwater Guidelines
<b>GME</b>	Groundwater Monitoring Event
<b>GPS</b>	Global Positioning System
<b>ha</b>	hectare
<b>Hg</b>	mercury
<b>HIL</b>	Health Investigation Level
<b>ID</b>	identification
<b>IL</b>	Investigation Level
<b>JDA</b>	JDA Consultant Hydrologists
<b>kg</b>	kilogram
<b>km</b>	kilometre
<b>LEV</b>	local exhaust ventilation
<b>LOR</b>	Limit of Reporting
<b>LTIWG</b>	Long Term Irrigation Water Guidelines
<b>LWQB</b>	Land and Water Quality Branch (DEC)
<b>m</b>	metre
<b>m<sup>2</sup></b>	square metre
<b>m<sup>3</sup></b>	cubic metre
<b>mAHD</b>	metre(s) Australian Height Datum
<b>mbgl</b>	metre(s) below ground level
<b>mbtoc</b>	metre(s) below top of casing

## ABBREVIATIONS

<b>mE</b>	metres East
<b>mg/kg</b>	milligram(s) per kilogram
<b>mg/L</b>	milligrams per litre
<b>ml</b>	millilitre
<b>mm</b>	millimetre
<b>mN</b>	metres North
<b>MoT</b>	Memorial on Title
<b>MRS</b>	Metropolitan Region Scheme
<b>MW</b>	Monitoring Well
<b>N</b>	north
<b>N/A</b>	not applicable
<b>NATA</b>	National Association of Testing Authorities
<b>NEPM</b>	National Environment Protection Measure
<b>NH<sub>3</sub>-N</b>	Free ammonia
<b>NHMRC</b>	National Health and Medical Research Council
<b>Ni</b>	nickel
<b>NRMMC</b>	Natural Resource Management Ministerial Council
<b>OHS&amp;E</b>	Occupational, Health, Safety and Environmental
<b>PASS</b>	Potential Acid Sulfate Soil
<b>Pb</b>	lead
<b>PCR</b>	Progress and Compliance Reports
<b>PER</b>	Public Environmental Review

## ABBREVIATIONS

<b>pH<sub>F</sub></b>	field pH
<b>pH<sub>ox</sub></b>	field pH peroxide
<b>POS</b>	public open space
<b>PPE</b>	personal protective equipment
<b>QA</b>	quality assurance
<b>QC</b>	quality control
<b>RA</b>	remediation area
<b>RPD</b>	Relative Percentage Difference
<b>S</b>	south
<b>S%</b>	Percent sulfate
<b>S<sub>CR</sub></b>	Chromium Reducible Sulfur
<b>SMP</b>	Site Management Plan
<b>SP</b>	Stockpile
<b>SPOCAS</b>	Suspension Peroxide Oxidation Combined Acidity and Sulfur
<b>STIWG</b>	short-term irrigation water guidelines
<b>SWL</b>	static water level
<b>TAA</b>	titratable actual acidity
<b>TDS</b>	Total Dissolved Solid
<b>TP</b>	test pit
<b>TPH</b>	Total Petroleum Hydrocarbon
<b>TSA</b>	Total Sulfidic Acidity
<b>UFI</b>	unique feature identifier



## ABBREVIATIONS

<b>USEPA</b>	United States Environmental Protection Agency
<b>V</b>	validation
<b>W</b>	west
<b>WRC</b>	Water and Rivers Commission
<b>WW</b>	west wall
<b>Zn</b>	Zinc

# EXECUTIVE SUMMARY

## Background

Cygnia Cove (the site), formerly known as the East Clontarf development site is located south of Manning Road in the suburb of Waterford and comprises Lot 9001, Lot 829 and Lot 83 Manning Road, Waterford. The site is located approximately 8km south-east of the Perth central business district, and occupies an area of approximately 20ha.

Clontarf Bay on the Canning River forms the southern boundary of the site, and approximately 30% of the site currently comprises a Resource Enhancement category consisting of wetlands UFI 13843 and UFI 13845, which trends east-west along the northern central portion of the site. The wetland drains to Clontarf Bay along a narrow drainage line situated near the western edge of the site. Curtin University is located to the north-west of the site, with Clontarf Aboriginal College to the west, and residential housing both to the north and east. There is a former municipal landfill located adjacent to the south-eastern boundary of the site.

The topography of the site has historically been modified and the original size of the wetland has been reduced. During the 1940's, pine plantations and market gardens were present at the site. Drainage channels were also created and maintained to assist in reducing ground water levels. It is understood that uncontrolled fill was imported to the site prior to 1968 in order to elevate the area occupied by the Christian Brothers' Clontarf Orphanage playing fields, in the southern portion of the site. The site also comprises a former market garden in the north-east.

The site is to be redeveloped for a residential land use comprising single residential lots and five grouped housing sites.

The site was formally assessed under the *Environmental Protection Act 1986*, and a Public Environmental Review (PER) of the proposed development was prepared and released for public comment in June 2004. Commitments were made by the proponent in the PER document to rehabilitate contaminated soil at the site to be compatible with the proposed future land uses, and to do so in a manner that would not adversely impact on environmental or human health. The Environmental Protection Authority (EPA) released Bulletin 1156 containing its report and recommendations on 6 December 2004 (EPA, 2004). In response, the East Clontarf Residential Development proposal was produced and approved by the Minister for the Environment as required under Condition 8 of Ministerial Statement No. 692 (October 2005) which states the following:

*8.1 Prior to ground-disturbing activity, the proponent shall prepare a to the requirements of the Minister for the Environment on advise of the Environmental Protection Authority with the concurrence of the Department of Health. This Plan shall be prepared in general accordance with the Department of Environment Contaminated Sites Management Series of Guidelines, and shall include:*

- 1. an Acid Sulphate Soil Management Plan; and*
- 2. an Asbestos Management Plan.*

*8.2 The proponent shall implement the Site (soil and groundwater) Contamination Investigation, Remediation and Validation Plan required by condition 8.1.*

*8.3 The proponent shall make the Site (soil and groundwater) Contamination Investigation, Remediation and Validation Plan required by condition 8.1 publicly available.*

# EXECUTIVE SUMMARY

## Objective

The objective of this management plan is to outline management strategies that will be adopted to ensure that remedial earthworks during the redevelopment phase achieve an acceptable standard of soil rehabilitation consistent with the proposed future residential use and are sufficient to satisfy Condition of Ministerial Statement No. 692 as outlined above.

## Scope of Work

This Site Contamination Investigation, Remediation and Validation Management Plan details the proposed remedial strategy (based upon review of all available information) and enables the selection of an effective management strategy, which is practical, achieves desired outcomes and is socially and environmentally acceptable. The scope of works comprised the following:

- A review and summary of all previous investigation reports;
- A summary of site characteristics;
- Presentation of proposed guidelines and risk assessment criteria;
- Presentation of remedial options and selection of remedial strategy;
- Presentation of remedial strategy; and
- Outline of the proposed validation plan.

## Summary of Previous Investigations

Information regarding soil contamination derived from the following previous site investigations was included in the PER.

1. *Environmental Assessment, East Clontarf, Manning* (ATA, 2001). ATA Environmental Report 2000/179. Prepared for Trustees of the Christian Brothers, January 2001.
2. *Preliminary Assessment, East Clontarf, Manning* (ATA, 2002a). ATA Environmental Report 2002/47. Prepared for Trustees of the Christian Brothers, May 2002.
3. *Remediation Report, Asbestos Contamination, Clontarf Aboriginal College, Manning* (ATA, 2002b). ATA Environmental Report 2002/122. Prepared for Trustees of the Christian Brothers, September 2002.
4. *Detailed Soil/Groundwater Contamination and Preliminary Acid Sulphate Soils Investigation, Sampling and Analysis Program* (ATA, 2002c). ATA Environmental Report 2002/147. Prepared for Trustees of the Christian Brothers, December 2002.
5. *Preliminary Acid Sulphate Soils Investigation, East Clontarf, Manning* (ATA, 2003a). ATA Environmental Report 2003/115. Prepared for Trustees of the Christian Brothers, August 2003.
6. *Detailed Soil and Groundwater Investigation, East Clontarf, Waterford* (ATA, 2003b). ATA Environmental Report 2003/144. Prepared for Trustees of the Christian Brothers, December 2003.

Previous investigations have identified uncontrolled fill (bricks, concrete columns, blocks and slabs, tiles, sand, wood pieces, aluminium sheets, steel rods/pipes, plastics, steel strips and steel pipes containing asbestos material over portions of the site (Coffey Geosciences, 2000). In addition, elevated concentrations of metals (arsenic, cadmium, chromium, lead) and dieldrin were recorded in nine locations.

## EXECUTIVE SUMMARY

Acid sulfate soils assessment indicated that samples from seven locations exceed the DEC action criterion.

Historically, elevated concentrations of heavy metals (Al, As, Cr, Cu, Hg, Ni, Zn), TPH, pesticides (DDE), various nutrients (total phosphorus, total nitrogen, NH<sub>3</sub>-N, chloride, sulfate, NO<sub>x</sub>-N) were recorded in groundwater.

In addition to these investigations a baseline groundwater monitoring event was undertaken in September 2008 (Coffey Environments, 2010a). Six additional groundwater monitoring wells were installed to assist in monitoring the impacts from acid sulfate soils and to provide additional evidence to show that neither the community market garden previously located in the northern part of the site adjacent to Manning Road nor the uncontrolled fill located to the south of the wetland are contributing to localised contamination of the aquifer that has not been evidenced in bores located on the boundaries of the site.

Analytical results from this groundwater monitoring event recorded similar trends to those identified in previous groundwater monitoring events. However, it is noted that contaminants were generally recorded at lower concentrations than previous monitoring events indicating an overall improvement in the general groundwater quality in the past two years.

### **Summary and Conclusions of Proposed Site Contamination, Investigation and Validation Management Plan**

Remedial options were considered in accordance with the EPA Guidance Statement for Remediation Hierarchy for Contaminated Land (No. 17, July 2000) and it was concluded on the basis that a large proportion of the uncontrolled fill material is unsuitable from a geotechnical perspective, the most applicable remedial strategy is excavation and off-site disposal of uncontrolled fill, asbestos and chemical contaminated soil. Advantages of this option include: no further restriction on the land use, reduced time delay for implementation, no requirement for an ongoing management plan upon completion of the works. Disadvantages associated with this remedial option include: the cost of disposal to landfill, risk of dust generation, risk from transport of materials and the use of valuable landfill space. With these points in mind, the following procedures are outlined to assist in the appropriate management of the site during remediation and earthworks (where necessary):

- Strategy for excavation of contaminated soil.
- Decontamination within chemical contaminated areas.
- Strategy for excavation of uncontrolled fill.
- Summary of the asbestos management strategy including procedures for controlling exposed asbestos products, asbestos waste collection and disposal, decontamination with asbestos work areas.
- Strategy for management of imported fill material.
- Soil validation sampling and nomination of action criteria.
- Contingency measures.
- Summary of dust and noise monitoring measures.
- Community Consultation requirements.

## EXECUTIVE SUMMARY

- Remediation validation reporting, training and responsibilities.

The following key management plans have been produced to complement the proposed remediation and earthworks phases of the redevelopment:

- An Acid Sulfate Management Plan (Coffey Environments, 2010b) (ASSMP) has been produced to assist in the management of acid sulfate soils (ASS) which may be disturbed during the excavation of uncontrolled fill and geotechnically unsuitable material from the remainder of the site, and linear trenching to install buried services. The report presents management strategies with due consideration to the following: strategy for excavation and treatment of ASS; liming rates; backfilling requirements; dewatering management plan; treatment of dewatering effluent; ongoing and validation monitoring of soils and groundwater with nominated action levels and contingency measures in the event that results exceed the adopted compliance criteria.
- A Dust and Asbestos Management Plan (Coffey Environments, 2009a) (DAMP) presents detailed management strategies to prevent the release of asbestos fibres whilst handling and relocating contaminated material during the remediation phase. A crucial component of this plan is to ensure that nuisance and contaminated dust, including asbestos fibres, is controlled during the remediation, bulk earthworks and construction phases of the development. The DAMP (Coffey Environments, 2009a) comprises the following key elements: description of the earthworks proposed for areas where asbestos has been identified; methodology for ensuring the removal and appropriate disposal of impacted soils; measures and practices to minimise the generation of dust; suggested air quality monitoring equipment and monitoring sites; monitoring for fine particulates; monitoring for airborne asbestos fibres; monitoring for nuisance dust; confirmatory monitoring for heavy metal particulates contained within the dust; identification of regulatory guidelines and compliance criteria; and nomination of action levels and contingency measures in the event that air quality approaches or is likely to exceed the adopted compliance criteria.
- A Noise Management Plan (Coffey Environments, 2008a) has been produced to satisfy Condition 2-1 of Ministerial Statement 692 (Proponent Commitment 8) and complement other management plans. This Noise Management Plan presents strategies to ensure that noise impacts at proposed residences within the Cygnia Cove development site, are addressed during the construction phase of the project. Additionally, potential noise management measures to address noise impacts to surrounding sensitive premises as a result of site development works are included in this Noise Management Plan.
- A Baseline Groundwater Investigation and Management Plan (Coffey Environments, 2010a) has been produced to determine the nature and extent of groundwater contamination at the site. Prior to remedial works commencing and outlines a groundwater monitoring programme and contingency measures (in accordance with the ASSMP) in the event that analytical results exceed the adopted compliance criteria.

In addition the following management plans have also been produced to assist in the overall redevelopment strategy for the site:

- A Drainage Nutrient, Irrigation and Water Quality Management Plan (Coffey Environments, 2008b) has been produced to fulfil the requirements of Ministerial Statement No. 692, Condition No. 7 which requires the protection, restoration and maintenance of the ecosystem health; biological diversity; the natural landscape; recreation; and water supply. The management plan also provides measures to maintain acceptable water quality within the wetland and the Canning River, to ensure that no



## EXECUTIVE SUMMARY

road surface run-off directly enters the wetland and to ensure that there is provision for contaminant spillage entrapment.

- A Foreshore Management Plan (Coffey Environments, 2008c) has been produced to mitigate the proposed clearing within the development and enhance linkages and habitat value. This report outlines measures to address the following: a weed eradication program; revegetating and restoring foreshore POS adjoining conservation areas with appropriate indigenous flora of the Canning River; creation of habitat and wildlife corridors; controlling vehicle and pedestrian access; fire management; water conservation principles; and monitoring the re-establishment of native and exotic plant species for a period of not less than two years followed by review.

The remedial strategy and management procedures outlined within this report are deemed sufficient to mitigate the potential risk during remedial and general redevelopment works.



## Site Summary Form – Contaminated Site Assessment

For completion by the person(s) submitting a report(s) to be assessed by the Department of Environment and Conservation (DEC) as per the information requirements of the DEC *Reporting on Site Assessments (2001)* guideline. Completing this form enables DEC to maintain accurate records for the site.

Please note: A completed site summary form must accompany each report submitted to DEC for assessment.  
Each box must be filled out appropriately. Please do not write "refer to report" in any section.  
Copies of all relevant/current Certificates of Title must accompany this form.

Site location details:

Site name (e.g. where site may be known by a common/  
business name)

East Clontarf Subdivision

Lot no. 9001, 829, 83

House no. N/A

Street Manning Road

Suburb Waterford

State WA

Postcode 6152

Crown Reserve (if applicable) N/A

Certificate(s) of Title (or  
equivalent)

Lot 9001 on Deposited Plan 44883, Volume 2598 Folio 42;  
Lot 829 on Diagram 88770, Volume 2048 Folio 180; and  
Lot 83 on Plan 2461, Volume 2048 Folio 181.

Where the subject site comprises of multiple certificates of title, please list all certificates:  
Where substances have migrated beyond the cadastral boundaries of the subject site, please provide the  
addresses, relevant Certificates of Title documentation and owners details for all offsite properties impacted  
(includes soil and/or groundwater), as an attachment to this form.

Is a hard copy of Certificate of Title and associated sketch for all listed sites attached? (Y/N) Yes

WAPC reference no. (where applicable)

Condition 8 of Ministerial Statement 692

Current Owner/Occupier details:

Site owner (Name and  
address)

Trustees of the Christian Brothers in WA, 53 Redmond Street, Manning

Site owner company ACN/ABN

Site occupier (name and  
address)

N/A - Site is currently unoccupied

Site occupier company ACN/ABN

N/A

Site status (at time of reporting):

Proposed land use (e.g. high density residential/child care  
facility)

Residential

Identified substances and relevant media  
(e.g. benzene in soil and groundwater, xylene in  
soil only)

Asbestos (uncontrolled fill), dieldrin, arsenic, cadmium, chromium and  
lead identified in soil. Acid Sulfate Soils identified. Marginally elevated  
concentrations of ammonia, chloride, copper, hydrogen sulphide,  
iron, selenium, zinc, manganese, nitrate, total nitrogen, phosphate  
and TDS recorded in groundwater exceeding FWG/ADWG/LTIWG.  
No contaminants exceeded the STIWG.

Asbestos (Y/N)

Y

Health Risk  
Assessment (Y/N)

N

Community health concerns identified  
(Y/N)

N

Radiological  
issues  
(Y/N)

N

Air quality  
issues (Y/N)

N

Past/present  
landfill (Y/N)

N

Potential human exposure to identified  
substances > DEC's health investigation  
levels or equivalent (y/n)

N

Other  
human  
health  
issues (Y/N)

Y



## Site Summary Form – Contaminated Site Assessment

For completion by the person(s) submitting a report(s) to be assessed by the Department of Environment and Conservation (DEC) as per the information requirements of the DEC *Reporting on Site Assessments (2001)* guideline. Completing this form enables DEC to maintain accurate records for the site.

Specify other health issues: NA

Where 'yes' is recorded for at least one of the above categories, please submit two copies of the report(s) (relevant documentation) to DEC for referral to the Department of Health (or Radiological Council, in the case of radiological issues)

Are site activities licensed under the Environmental Protection Act 1986?  
(Y/N)

N/A

Where laboratory analysis has been undertaken, is the laboratory NATA accredited for all analytes and analytical methodologies used? (Y/N) (If not, why not?)

Yes

Community Consultation: (as per the DEC's Community Consultation (December 2006) guideline)

Community consultation program commenced/proposed (Y/N)

Yes

Are consultation program details (e.g. community consultation plan) provided in attached report (Y/N)

Yes

History of Investigation:

Have previous site investigations been undertaken? (Y/N - if yes, please provide details below)

Yes

Report title, date and author:

- Environmental Assessment, East Clontarf, Manning (ATA, 2001). ATA Environmental Report 2000/179. Prepared for Trustees of the Christian Brothers, January 2001.
- Preliminary Assessment, East Clontarf, Manning (ATA, 2002a). ATA Environmental Report 2002/47. Prepared for Trustees of the Christian Brothers, May 2002.
- Remediation Report, Asbestos Contamination, Clontarf Aboriginal College, Manning (ATA, 2002b). ATA Environmental Report 2002/122. Prepared for Trustees of the Christian Brothers, September 2002.
- Detailed Soil/Groundwater Contamination and Preliminary Acid Sulphate Soils Investigation, Sampling and Analysis Program (ATA, 2002c). ATA Environmental Report 2002/147. Prepared for Trustees of the Christian Brothers, December 2002.
- Preliminary Acid Sulphate Soils Investigation, East Clontarf, Manning (ATA, 2003a). ATA Environmental Report 2003/115. Prepared for Trustees of the Christian Brothers, August 2003.
- Detailed Soil and Groundwater Investigation, East Clontarf, Waterford (ATA, 2003b). ATA Environmental Report 2003/144. Prepared for Trustees of the Christian Brothers, December 2003.

Declaration:

The information contained in this site summary form is a true representation of the information contained in the attached report(s)/document(s).

Full name (print)

Position held

Signature  Date

Please ensure that a hardcopy of the current Certificate(s) of Title and associated sketch accompanies the site summary form. DEC cannot proceed with the assessment of the report if this information is not provided.

-----  
DEC Registrar Only

Registrar name:  Signature:

CoT verified (Y/N)  Owner details verified (Y/N)  Complete form (Y/N)

Awaiting Classification (Y/N)   
Awaiting Re-Classification (Y/N)   
Incomplete Form (Y/N)

LWQB Assessment Officer:

Comments/Actions:

Date of data entry:

## **1 SCOPE OF WORK**

This Site Contamination Investigation, Remediation and Validation Management Plan details the proposed remedial strategy (based upon review of all available information) and enables the selection of an effective management strategy, which is practical, achieves desired outcomes and is socially and environmentally acceptable. The scope of works comprised the following:

- A review and summary of all previous investigation reports;
- A summary of site characteristics;
- Presentation of proposed guidelines and risk assessment criteria;
- Presentation of remedial options and selection of remedial strategy;
- Presentation of remedial strategy; and
- Outline of the proposed validation plan.



## **2 SITE IDENTIFICATION**

### **2.1 Site Description**

The Cygnia Cove Development (formerly known as East Clontarf) (hereinafter referred to as 'the site'), comprises Lot 9001, Lot 829 and Lot 83 Manning Road, Waterford. The site is situated south of Manning Road and west of Centenary Avenue, Waterford, Western Australia 6152. The site is bounded to the west by Clontarf Aboriginal College (295 Manning Road, Waterford, WA, 6152). Note: The site has not been assigned a street number. The Canning River (Clontarf Bay) forms the southern perimeter of the site. Centennial Park (former municipal landfill) is located adjacent to the south-eastern perimeter of the site. The coordinates of the centre of the site are approximately 395,730mE and 6,457,300mN. The site location is provided on Figure 1 and Figure 2. Copies of Certificates of Titles are provided in Appendix A.

The site occupies an area of approximately 20ha, 30% of which is categorised as a Resource Enhancement area comprising wetlands UFI 13843 and UFI 13845 (see Figure 3). The wetland trends east/west along the centre of the site. The wetland drains to Clontarf Bay on the Canning River along a narrow drainage line situated near the western perimeter of the site. The north of the site currently comprises low-lying scrub vegetation, mature trees and a stockpile of garden waste material (i.e. tree clippings and grass cuttings) (located in the north-west of the site). There is a former market garden in the north-east of the site, which is partially enclosed with 2m high cyclone wire fencing. Vegetation in this area is heavily overgrown with tall grasses and mature trees. The south-east of the site has a low-lying grass/sand surface cover with a number of dirt tracks cutting through the site. There is a stockpile of demolition material (concrete bricks and rubble). The southern portion of the site is marshy and is subject to flooding owing to the proximity of the Canning River.

The site is located approximately 8km south-east of the Perth central business district (see Figure 1 and Figure 2), and is sited within a predominantly mixed use commercial/residential area. Clontarf Aboriginal College is located adjacent to the west of the site. Curtin University Campus is located beyond Manning Road to the north of the site. Centenary Avenue runs parallel to the eastern boundary of the site beyond which are commercial/residential properties. There is a historic municipal landfill located adjacent to the south-east of the site, which currently comprises park land (Centennial Park) (see Figure 2).

### **2.2 Proposed Development**

In accordance with the current residential zoning (R20), it is proposed to subdivide the site into 189 residential allotments. Single residential lots will be comprise a minimum area of 440m<sup>2</sup> with an average lot size of 517m<sup>2</sup>. An additional five grouped housing sites are also proposed ranging from 1,185m<sup>2</sup> to 3,550m<sup>2</sup>. The proposed development and subdivision plan is provided on Figure 4 and Figure 5. Approximately 5.1ha will comprise public open space (POS). It is proposed to retain the core of the wetland, as shown in Figure 5 and Figure 6. The Canning River foreshore has been defined within the Metropolitan Region Scheme (MRS) and an additional area comprising 8,337m<sup>2</sup> is proposed to be added to the existing Foreshore Reserve, to be rehabilitated and used for minor drainage function. Significant improvements including controlled access (boardwalks), rehabilitation and signage are proposed within this area. The proposed land uses are consistent with existing MRS and Local Government zonings.

## 2.3 Background

The site was formally assessed under the *Environmental Protection Act 1986*, and a Public Environmental Review (PER) of the proposed development was prepared and released for public comment in June 2004. Reports associated with the formal assessment process include the following:

1. *Clontarf Residential Subdivision, Waterford, Public Environmental Review Environmental Scoping Document Assessment No. 1467* (ATA, 2003c). ATA Environmental Report 2003/91. Prepared for Trustees of the Christian Brothers, July 2003.
2. *Clontarf Residential Subdivision, Waterford, Public Environmental Review (EPA Assessment No. 1467)* (ATA, 2004a). ATA Environmental Report 2003/91, Version 5. Prepared for Trustees of the Christian Brothers, June 2004.
3. *Clontarf Residential Subdivision, Waterford, Responses to Submissions (EPA Assessment No. 1467)* (ATA, 2004b). ATA Environmental Report 2004/182. Prepared for Trustees of the Christian Brothers, October 2004.
4. *Clontarf Residential Subdivision, Waterford, Ministerial Statement No. 692, Section 45C Referral* (ATA, 2006). ATA Environmental Report 2006/82. Prepared for Trustees of the Christian Brothers, April 2006.

Commitments were made by the proponent in the PER document to rehabilitate contaminated soil at the site to be compatible with the proposed future land uses, and to do so in a manner that would not adversely impact on environmental or human health. The Environmental Protection Authority (EPA) released Bulletin 1156 containing its report and recommendations on 6 December 2004 (EPA, 2004). In response, the East Clontarf Residential Development proposal was produced and approved by the Minister for the Environment as required under Condition 8 of Ministerial Statement No. 692 (October 2005). A copy of Ministerial Statement No. 692 I provided in Appendix B. Condition No. 8: Site Contamination, states the following:

- 8.1 *Prior to ground-disturbing activity, the proponent shall prepare a to the requirements of the Minister for the Environment on advise of the Environmental Protection Authority with the concurrence of the Department of Health. This Plan shall be prepared in general accordance with the Department of Environment Contaminated Sites Management Series of Guidelines, and shall include:*
  1. *an Acid Sulphate Soil Management Plan; and*
  2. *an Asbestos Management Plan.*
- 8.2 *The proponent shall implement the Site (soil and groundwater) Contamination Investigation, Remediation and Validation Plan required by condition 8.1.*
- 8.3 *The proponent shall make the Site (soil and groundwater) Contamination Investigation, Remediation and Validation Plan required by condition 8.1 publicly available.*

Information regarding soil contamination derived from the following previous site investigations was included in the PER.

1. *Environmental Assessment, East Clontarf, Manning* (ATA, 2001). ATA Environmental Report 2000/179. Prepared for Trustees of the Christian Brothers, January 2001.
2. *Preliminary Assessment, East Clontarf, Manning* (ATA, 2002a). ATA Environmental Report 2002/47. Prepared for Trustees of the Christian Brothers, May 2002.

3. *Remediation Report, Asbestos Contamination, Clontarf Aboriginal College, Manning* (ATA, 2002b). ATA Environmental Report 2002/122. Prepared for Trustees of the Christian Brothers, September 2002.
4. *Detailed Soil/Groundwater Contamination and Preliminary Acid Sulphate Soils Investigation, Sampling and Analysis Program* (ATA, 2002c). ATA Environmental Report 2002/147. Prepared for Trustees of the Christian Brothers, December 2002.
5. *Preliminary Acid Sulphate Soils Investigation, East Clontarf, Manning* (ATA, 2003a). ATA Environmental Report 2003/115. Prepared for Trustees of the Christian Brothers, August 2003.
6. *Detailed Soil and Groundwater Investigation, East Clontarf, Waterford* (ATA, 2003b). ATA Environmental Report 2003/144. Prepared for Trustees of the Christian Brothers, December 2003.

Based on the findings of these investigations and in response to other conditions imposed through Ministerial Statement No. 692 (i.e. Condition 6.2, 7.1) the following Management Plans have been produced and should be read in conjunction with this plan.

- Noise Management Plan (Coffey Environments, 2008a);
- Drainage Nutrient, Irrigation and Water Quality Management Plan (Coffey Environments, 2008b);
- Foreshore Management Plan (Coffey Environments, 2008c);
- Dust and Asbestos Management Plan (Coffey Environments, 2009);
- Baseline Groundwater Investigation and Management Plan (Coffey Environments, 2010a).
- Acid Sulfate Soil management Plan (Coffey Environments, 2010b);

It should also be noted that a Construction Environmental Management Plan (CEMP) will also be produced combining the salient points of all other management plans (this report was yet to be finalised at the time of reporting). Where appropriate this Site Contamination Investigation, Remediation and Validation Management Plan incorporates management commitments that are incorporated in the management plans listed above.

### **3 ENVIRONMENTAL SETTING**

#### **3.1 Site Setting**

The site is surrounded by the following land uses: the Clontarf Aboriginal College to the west, residential to the north and east, Centennial Park (a former landfill) to the south-east and foreshore reserve and river to the south.

#### **3.2 Topography and Geology**

The topography of the site has historically been modified and the original size of the wetland has been reduced. During the 1940s, pine plantations and market gardens were present at the site. Drainage channels were also created and maintained to assist in reducing ground water levels.

The site slopes down towards the Canning River, with a maximum elevation of approximately 9mAHD near Manning Road, 2-3mAHD through wetland areas, and 1mAHD along the foreshore, and a mound of up to 6m high is present in the south-east corner of the site. The south-eastern boundary of the Cygnia Cove Estate site with the adjacent former landfill site comprises a steep 5m embankment due to the presence of built-up landfill material.

The natural surface geology over the majority of the site (excluding the wetland) is mapped by Jordan (1986) as comprising Unit S<sub>8</sub>, Bassendean Sand (of the Superficial Formation). Unit S<sub>8</sub> is described as fine- to medium-grained sub-rounded quartz sand which is very light grey at surface and yellow at depth (Jordan, 1986). The wetland in the north central portion of the site is mapped as comprising Unit S<sub>14</sub>, Alluvium, which is described as white to pale grey, medium to coarse-grained quartz sand with abundant shell fragments (Jordan, 1986).

Previous investigations at the site have identified deposits of fill in several areas at the site, including several areas to the south of the wetland and two areas on the northern margin of the wetlands, as shown in Figure 7 and Figure 9. It is estimated that the uncontrolled fill covers approximately 2ha of the site and varies in thickness between 0.1m and 1.5m (ATA, 2003b).

Natural soils encountered during site investigations included sands consistent with the description of Bassendean Sand by Jordan (1986) over large areas of the site. Extensive areas of peat were also identified (described as sandy to clayey peat) extending beneath the current wetland, along the drainage line near the western margin of the site. Geotechnical investigations at the site were used to infer the extent of peat across the site, however, instead of peat adjacent to the foreshore, Coffey Environments (as ATA) identified clayey and silty soils matching the description of Guildford Formation (Jordan, 1986) at shallow depth beneath the Bassendean Sand unit (ATA, 2002c).

#### **3.3 Hydrogeology**

##### **3.3.1 Superficial Aquifer**

The ground water flow direction in the superficial aquifer in the vicinity of the site is primarily southerly towards the Canning River. As a result groundwater flows enter the site along its northern boundary with Manning Road. There appears to be slight westerly components in the flows due either to the influence of the wetland and its discharge to the Canning River on the western side of the site or a slight topographic influence associated with the closed landfill on the south-eastern boundary of the site (Centennial Park).

Groundwater within the Superficial Formation is located between 0.373m and 3.820mAHD, and discharges to the Swan-Canning River system along the southern boundary of the site and also into the wetland along its northern boundary. Groundwater flow is typically in a southerly direction towards the Canning River. Field observations indicate that a water table gradient of approximately 1.5m exists across the wetland within the Superficial Aquifer (JDA, 2004). The depth to the water table is dependent on the surface topography and varies from around 0.5 m on the southern boundary of the site to 6-7 m along the northern boundary of the site.

The water table in the wetland and south to the Canning River is effectively controlled by the natural surface, and is in a region of groundwater discharge. There is no evidence that the peat beneath the wetland acts as a groundwater flow barrier (JDA, 2004).

### **3.3.2 Leederville Aquifer**

The Leederville Aquifer underlies the Superficial Formation at a depth of approximately 25m below the ground surface, and is up to 300m thick locally. Within the vicinity of the site, a confining layer exists between the Superficial and Leederville aquifer, and therefore leakage between the two is negligible. The Leederville Aquifer is fresh beneath the site (Davidson, 1995).

## **3.4 Surface Hydrology**

The DEC's Geomorphic Wetlands of the Swan Coastal Plain Dataset, indicates that a kidney shaped wetland extends east-west across the central to northern portion of the site and covers an area of approximately 4ha. ATA Environmental conducted site specific investigations into the extent and nature of wetlands at the site, and has designated a modified wetland boundary which have been accepted by DEC (Drainage and Nutrient Management Plan (Coffey Environments, 2008b) (see Figures 3, 5 and 6).

This wetland has been assigned a management category of Resource Enhancement consisting of wetlands UFI 13843 and UFI 13845. Resource Enhancement wetlands are partly modified but still support substantial functions and attributes (Hill et al, 1996). Management priorities for Resource Enhancement wetlands should aim at wetland restoration through the maintenance and enhancement of wetland functions and attributes (Hill et al, 1996).

The wetland receives surface water discharges from the surrounding road drainage network and therefore acts, in part, as a compensating basin for these drainage flows. The wetland functions to some extent as a flow-through wetland (JDA, 2004). The wetland has a relatively constant discharge to the Canning River from a drainage line in its south-west corner. Observations on-site over many years and at different seasons confirm that the rate of discharge is reasonably constant and in the range of 10-20 Litres/second.

The volume of discharge from the wetland to the Canning River far exceeds the surface water inputs and as a result it is concluded in the JDA investigation that there is a significant diffuse groundwater inflow to the wetland from the Superficial Formation along the wetland's northern boundary, and that drainage flow to the Canning River, is from this source rather than aquifer discharge to the drainage channel down-gradient of the wetland (JDA, 2004).

## 4 PREVIOUS REPORTS

As indicated in Section 2.3, ATA Environmental has previously investigated soil and groundwater contamination at the site, as described in the following reports:

1. *Environmental Assessment, East Clontarf, Manning* (ATA, 2001). ATA Environmental Report 2000/179. Prepared for Trustees of the Christian Brothers, January 2001.
2. *Preliminary Assessment, East Clontarf, Manning* (ATA, 2002a). ATA Environmental Report 2002/47. Prepared for Trustees of the Christian Brothers, May 2002.
3. *Remediation Report, Asbestos Contamination, Clontarf Aboriginal College, Manning* (ATA, 2002b). ATA Environmental Report 2002/122. Prepared for Trustees of the Christian Brothers, September 2002.
4. *Detailed Soil/Groundwater Contamination and Preliminary Acid Sulphate Soils Investigation, Sampling and Analysis Program* (ATA, 2002c). ATA Environmental Report 2002/147. Prepared for Trustees of the Christian Brothers, December 2002.
5. *Preliminary Acid Sulphate Soils Investigation, East Clontarf, Manning* (ATA, 2003a). ATA Environmental Report 2003/115. Prepared for Trustees of the Christian Brothers, August 2003.
6. *Detailed Soil and Groundwater Investigation, East Clontarf, Waterford* (ATA, 2003b). ATA Environmental Report 2003/144. Prepared for Trustees of the Christian Brothers, December 2003.

### 4.1 Historic Soil Assessment Criteria

The relatively stringent Ecological Investigation Levels (EILs) presented in *Assessment Levels for Soil, Sediment and Water* (DoE, 2003) were applied to the site due to the shallow depth of the groundwater table and the proximity of the site to the Canning River. The previous site investigations were completed at a time when there was no criterion set for assessing asbestos in soil. Validation criteria for the remediation phase are outlined in Section 8.4.1.

### 4.2 Summary of Previous Reports

#### • Environmental Assessment, East Clontarf, Manning (ATA, 2001)

This preliminary soil assessment was undertaken in December 2000 by ATA (now Coffey Environments Pty Ltd) in conjunction with geotechnical investigations completed by Coffey Geosciences Pty Ltd (as reported in ATA, 2001; Coffey Geosciences, 2000). The purpose of this investigation was to assess flora and fauna, wetland area and function, river foreshore and floodplain and soil and groundwater quality across the site.

Soil sampling comprised the collection of judgmental soil samples from test pits excavated during Coffey's geotechnical investigations and were limited to the test pits excavated on the 9 October 2000. No samples were obtained from within the market garden area. The locations of the test pits are provided in Figure 8. Two environmental soil samples (0.0m-0.50mbgl and 1.0mbgl) were obtained from each of the test pits (CTP1 to CTP10) i.e. twenty (20) soil samples in total. Soil samples were analysed for organochlorine pesticides, heavy metals, total petroleum hydrocarbons and asbestos. Analytical results indicated that only one soil sample (EC CTP10 (0.0-0.50mbgl)) recorded a contaminant concentrations (dieldrin) marginally in excess (0.23mg/kg) of the applicable guideline (EIL - 0.20mg/kg). No asbestos fibers were detected any soil sample submitted for analysis although asbestos-containing material was visually identified in CTP10 (Coffey Geosciences, 2000; ATA 2001).

Four groundwater monitoring bores (ECB1, ECB2, ECB3 and ECB4) were sampled and a surface water sample (ECC) was obtained on 6 November 2000. Elevated concentrations of cadmium, chromium, copper, lead, zinc, dieldrin, were recorded in one or more of the groundwater/surface water samples. The locations of the groundwater monitoring bores are presented in Figure 8.

Figure 8 also identifies the additional geotechnical investigation locations completed by Coffey Geosciences (2000) comprising electric friction cone penetrometer (EFCP) and probing with scala penetrometer rods to assess the suitability of the underlying strata from a geotechnical perspective.

Traces of building rubble (bricks, concrete slabs and blocks) were identified over portions of the site. Stockpiles of building rubble were located centrally in the southern portion of the site in the vicinity of Coffey Geosciences test pit CTP10. In addition, asbestos cement sheeting was identified to the north-east of Coffey Geosciences test pit CTP10 and immediately west of the alignment of locations CP1 and CP2

(Coffey Geosciences, 2000). The site was subdivided into six areas (2A, 2B, 3A, 3B, 3C and 3D) as shown on Figure 9, based on engineering judgment i.e. the presence of uncontrolled fill and peaty soils overlying natural soils. The subdivisions are described as follows:

- Area 2A is a slightly elevated section between the wetland and the river. This area contains uncontrolled fill over natural medium dense sand and clayey sand, sandy clay and clay of the Guildford Formation (Coffey Geosciences, 2000). The fill materials encountered in test pits CTP23 and CTP24 contained traces of plastics, brick blocks, brick fragments and steel products (Coffey Geosciences, 2000). A large stockpile of building rubble was noted within the vicinity of CTP23 and CTP16 at the time of fieldwork. Uncontrolled fill sand was also encountered in test pit CTP12 overlying sand and coffee rock at 1.8mbgl, and backhoe bucket refusal was recorded on coffee rock at 2.2mbgl (Coffey Geosciences, 2000).
- Area 2B includes the market garden area adjacent Manning Road.
- Areas 3A, 3B, 3C and 3D are low-lying areas in or adjacent to the wetland and river foreshore reserve. These areas contain uncontrolled fill and peaty soils overlying natural soils (Coffey Geosciences, 2000). The natural soils were generally medium dense sand over clayey sand, sandy clay and clay of the Guildford Formation (Coffey Geosciences, 2000). The fill materials were generally sand, but test pits CTP3, CTP7, CTP10 and CTP25 contained traces of bricks, concrete fragments, wood pieces, aluminium sheets, steel rods, plastics, steel strips, concrete slabs, concrete columns, tile bricks, concrete blocks, and steel pipes (Coffey Geosciences, 2000). Asbestos cement sheets were observed in CTP10 (Coffey Geosciences, 2000).

Generally, the uncontrolled fill material appeared to be relatively uniform in content across the site and comprised predominantly dark grey sand and varying proportions of the following materials: bricks and brick fragments; concrete blocks, slabs and rubble; glass bottle fragments; ceramic tile and fragments; burnt wood pieces; metal sheets, rods and piping; and asbestos cement sheeting fragments. The thickness of the uncontrolled fill was variable, ranging from 0.1 to 1.5m.

- **Preliminary Assessment, East Clontarf, Manning (ATA, 2002a)**

The purpose of this investigation was to assess the extent of asbestos contamination present on and adjacent to the track located on the eastern boundary of the Clontarf College (i.e. west of the site). Twenty-three (23) samples representing twelve (12) investigation locations (CAC1 to CAC12) were obtained. Samples were taken from the following intervals 0.0mbgl-0.1mbgl, 0.0mbgl-0.3mbgl or 0.5mbgl. Chrysotile and amosite asbestos was detected in 12 samples. Investigation locations are provided in Figure 8.

- **Remediation Report, Asbestos Contamination, Clontarf Aboriginal College, Manning (ATA, 2002b)**

This report describes the program implemented by ATA Environmental to remediate the asbestos-containing material identified along the access track to the west of the site. The report indicates that the entire length of the access track was excavated to a depth of approximately 0.5mbgl. Waste soils were stockpiled and disposed of to a Class I landfill.

Validation sampling was undertaken along the base and faces of the remedial excavation. Samples were referenced as ECV (East Clontarf Validation) followed by F (floor of excavation), WW (west wall of excavation), EW (east wall of excavation). Seven (7) validation samples were obtained, at 50m intervals, along the length of the track. Of the seven samples, five returned results of 'no asbestos detected'. Two samples (ECV4 EW and ECV5 EW) detected chrysotile and amosite (five fibre bundles and four fibre bundles respectively). The remedial excavation was extended in these areas and subsequent validation sampling did not detect any residual asbestos. The report indicated that there is an area beneath bitumen hardstand in the south-west of the site that contained asbestos material; however, on the basis that this area is not disturbed, it did not represent a health or environmental risk.

- **Detailed Soil/Groundwater Contamination and Preliminary Acid Sulphate Soils Investigation, Sampling and Analysis Program (ATA, 2002c)**

This report outlined a sampling and analysis for a detailed soil, groundwater and acid sulfate soils investigation. No sampling was undertaken as part of this investigation report.

- **Preliminary Acid Sulphate Soils Investigation, East Clontarf, Manning (ATA, 2003a)**

The objectives of this investigation were to determine the presence, extent and magnitude of acid sulfate soils at the site. This phase of works comprised ten (10) investigation locations (EC ASS1-EC ASS10) drilled to approximately 1.5m below the anticipated vertical extent of disturbance (based on the proposed localised draw down of the water table to 0.5m below the peat and/or uncontrolled fill level). Soil samples were collected from 0.25m intervals at each location and subjected to ASS field testing. Samples collected at 0.5m intervals that exhibited ASS characteristics (i.e.  $\text{pH}_{\text{ox}} < 4$ ) were submitted for additional laboratory analysis. Investigation locations are provided in Figure 8.

A total of 120 soil samples were subject to field testing. The natural pH of soils on the site during the investigation did not vary greatly either vertically or laterally. All  $\text{pH}_F$  values were greater than pH 5. AASS was not detected at any of the ASS soil boring locations (i.e.  $\text{pH}_F > 4$ ). Four (4) of the ten (10) boring profiles exhibited PASS based on field testing. 11 of the 120 soil samples subject to field testing exhibited PASS after field oxidation. 60 samples were selected for additional laboratory analysis ( $S_{\text{CR}}$  and TAA (either individually or as part of SPOCAS. 14 soil samples were analysed for SPOCAS in addition to  $S_{\text{CR}}$ . Based on a TSA and S% provided by  $S_F$  and  $S_{\text{CR}}$  results, eight (8) of the ten (10) soil profiles exhibited soils that trip one or more of the action criteria (either total sulphur acidity of reduced inorganic S% that triggers the requirement for a management plan. PASS is present in the silty sand or to a lesser extent, peaty soils.  $\text{SCR}\%$  ranged from 0.02 to 0.073 in the peat soils and  $< 0.012$  to 0.377 in the silty sands. PASS materials are generally present 0.5m below the water table at the time of the investigation. Groundwater monitoring conducted (reported in ATA, 2003b), indicated that the pH of groundwater at the site is slightly acidic (pH 5.9) to neutral (pH 7.0). It was noted however, that these monitoring wells were not located within areas containing PASS.

- **Detailed Soil and Groundwater Investigation, East Clontarf, Waterford (ATA, 2003b)**

This investigation aimed to further define the extent and characteristics of the uncontrolled fill material, assess the characteristics of the soil in the market garden area and determine whether the landfill



adjacent to the south-east extends into the site. Soil sampling was undertaken between 6 and 10 May 2003.

A total of 143 test pit investigation locations (referenced as TP1 to TP130, TP136 to TP143, TP1A, TP60A, TP116A, TP120A and TP124A) were excavated. TP131 to TP135 were excluded as test pit locations and correspond to groundwater monitoring wells MW1, MW2, MW3, MW4 and MW5. Soil samples were collected at 0.5m intervals to a maximum depth of 3.5 with a total of 349 primary soil samples submitted for laboratory analysis. A summary of the laboratory analytical results analyses are tabulated in Appendix C and outlined in the Table A below.

**TABLE A**  
**SOIL SAMPLES EXCEEDING ASSESSMENT CRITERIA (ATA 2003B)**

Sample Location	Depth Interval (m)	Soil Type	Contaminant	Concentration (mg/kg)	EIL <sup>1</sup> (mg/kg)
TP34	0.3	Uncontrolled fill	Asbestos chrysotile	Detected	NA
TP39	0.5	Sand	Asbestos chrysotile	Detected	NA
TP46	0.5	Uncontrolled fill	Zinc	610	200
TP48	0.2	Uncontrolled fill	Lead	460	300 (EIL and HIL-A)
TP55	0.5	Uncontrolled fill	Arsenic	22	20
TP56	0.5	Sand	Cadmium	9.4	3
TP60	0.5	Uncontrolled fill	Zinc	230	200
TP73	0.5	Uncontrolled fill	Asbestos chrysotile and crocidolite	Detected	NA
			Zinc	380	200
TP75 (Dup)	1.0	Uncontrolled fill	Dieldrin	0.2	0.2
TP76	0.2	Uncontrolled fill	Asbestos chrysotile	Detected	NA
TP90 <sup>2</sup>	1.5	Mottled sandy clay	Chromium	50	50
TP113	0.5	Mottled sandy clay	Chromium	51	50

**TABLE A**  
**SOIL SAMPLES EXCEEDING ASSESSMENT CRITERIA (ATA 2003B)**

Sample Location	Depth Interval (m)	Soil Type	Contaminant	Concentration (mg/kg)	EIL <sup>1</sup> (mg/kg)
TP120 <sup>2</sup>	0.5	Uncontrolled fill	Zinc	200	200
TP121	0.5	Uncontrolled fill	Zinc	620	200
TP139 <sup>2</sup>	1.5	Mottled sandy clay	Chromium	50	50

<sup>1</sup> Ecological Investigation Levels as listed in *Assessment Levels for Soil, Sediment and Water* (DoE, 2003), unless otherwise noted.

<sup>2</sup> It is noted that these samples are at the EIL trigger value but do not exceed it.

Locations where contamination has been identified (either via analytical results or observation of potential asbestos-containing material) are indicated on Figure 7 and Figure 8. Chrysotile and/or crocidolite asbestos were confirmed to be present in the uncontrolled fill material at sample locations TP34 (0.3m), TP39 (0.5m), TP73 (0.5m), and TP76 (0.2m). Previous reports indicate that the asbestos material was present as fibres. The scattered nature of the asbestos identified suggests that the fibres have been released from the fragments of asbestos cement sheeting present in the uncontrolled fill (ATA, 2004a; Coffey Geosciences, 2000). Most of the areas of contamination identified require excavation for geotechnical reasons, as they fall within areas of uncontrolled fill.

There are three locations where chromium is found at or slightly above the EIL of 50mg/kg in undisturbed soil comprising mottled sandy clay (locations TP90, TP113 and TP139 - Figure 8). It is considered that the slightly elevated chromium concentrations at these three locations are a result of naturally-occurring concentrations in Guildford Formation soils, as there is no evidence of anthropogenic contamination at the depths where these samples were encountered and no chromium contamination was identified in uncontrolled fill at the site. It was concluded (ATA, 2002c) that this chrome was a natural property of the clay as clays in Perth commonly exhibit elevated levels of chromium. As the concentrations of chromium do not significantly exceed the EIL value it is not considered necessary to investigate further or remediate the soils in these locations.

### 4.3 Historic Groundwater Monitoring and Assessment

Groundwater on the site has been monitored over a number of years. Five bores (MW1-MW5) were initially installed as part of the detailed site investigation (ATA, 2003b). Two additional groundwater monitoring bores MW6 and MW7 were installed along the southern margin of the site, close to the Canning River in 2006. The monitoring bore locations were selected to provide information on:

- The groundwater quality entering the site from the north with the local ground water flow (MW1-MW3).
- To identify the potential for impacts from the former landfill located adjacent to the south-eastern boundary of the site (MW4).
- The quality of groundwater exiting the site to discharge into the Canning River (MW5-MW7).

A groundwater monitoring program was undertaken in on a quarterly basis for the period of one year (2006) in order to establish the groundwater quality at the site prior to remedial works being undertaken.

Following discussions with the appointed Auditor in 2008, it was agreed that six additional groundwater monitoring bores would be installed more centrally within the site to:

1. Assist in monitoring the impacts from the implementation of the Acid Sulfate Soil Management Plan prepared for the site (ATA, 2007b);
2. Provide additional evidence to show that neither the community market garden previously located in the northern part of the site adjacent to Manning Road nor the uncontrolled fill located to the south of the wetland are contributing to localised contamination of the aquifer that has not been evidenced in bores located on the boundaries of the site.

These monitoring bores have been assigned a prefix of 'ASSMW' but numbered sequentially from 8-13 to avoid any possible confusion with the number of the existing seven monitoring bores with the MW prefix. In addition, it is noted that MW1 and MW2 were gauged in September 2008 and noted to be dry as a result of either a fall in groundwater levels or the bores were potentially damaged. Consequently, the bores were redrilled approximately 1m down hydraulic gradient and have been assigned a prefix of MW1(A) and MW2(A). All groundwater monitoring well locations are presented on Figure 8.

#### **4.4 Baseline Groundwater Monitoring**

A baseline groundwater monitoring programme was completed in September 2008. All 13 wells were gauged and sampled to establish baseline groundwater quality prior to remediation works.

##### **4.4.1 Groundwater Levels**

Static water levels (SWLs) across the area of investigation ranged between 0.545m below top of casing (mbtoc) (MW6) and 6.562mbtoc (MW2A).

#### **4.5 Groundwater Assessment Criteria**

The guidelines adopted are based on the DEC document titled "Assessment Levels for Soil, Sediment and Water" (DoE, 2003), which have been developed pursuant to the *Contaminated Sites Act 2003*. The DEC assessment levels for water are based on the "Australian Water Quality Guidelines for Fresh and Marine Water Quality" (ANZECC/ARMCANZ, 2000) and the "Australian Drinking Water Guidelines" (NHMRC/ARMCANZ, 1996a).

Field TDS concentrations (calculated from the field EC measurements by a factor of 0.65) ranged between 277mg/L (ASSMW13) and 1,112mg/L (ASSMW12), with an average of 503mg/L. A comparison with the Water and Rivers Commission (WRC, 2004) water quality guidelines indicates the highest potential beneficial use of groundwater beneath the investigation area is suitable for human drinking water purposes (<1,000mg/L). Based on the site specific variables stated, the adopted DEC guidelines include the following assessment criteria:

- Fresh Waters-Rivers Guidelines

Due to the proximity of the Canning River, the results have been compared to the Fresh Water-Rivers guidelines (FWGs) for Aquatic Ecosystems (utilising Lowland Rivers values where available, from specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ, 2000). Where values for more than one type of ecosystem have been provided, the wetland values have been selected. The assessment of metals using a hardness modification factor has also been considered.

- Australian Drinking Water Guidelines

The proposed development will be serviced by scheme water as such the Drinking Water Guidelines (DWGs) of DoE (2003) and NHMRC/ARMCANZ (1996) are not considered directly applicable but an assessment has been provided for completeness. Furthermore, the presence of former landfill along the northern boundary of the site may prevent the domestic use of groundwater at the site.

Analytical groundwater data has also been compared to the National Health and Medical Research Council Australian Drinking Water Guidelines (ADWG) Health values or Aesthetic values multiplied by a factor of 10 (ADWG x10), as it is proposed to utilise groundwater for non-recreational purposes i.e. reticulation (for the first two years of the development) and dust suppression during earthworks (National Health and Medical Research Council and Natural Resource Management Ministerial Council, 2005).

- Irrigation Guidelines

Abstracted groundwater is proposed to be allowed to infiltrate and/or used for dust suppression. It is therefore proposed to use the short-term irrigation water (STIWG) guideline (values specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ, 2000). It is considered that the assumptions used to derive the short-term trigger values are appropriate for the proposed dewatering project although they are inherently conservative. An assessment against Long Term Irrigation Water Guidelines (LTIWG) has also been undertaken for completeness.

#### **4.6 Baseline Groundwater Monitoring Analytical Results**

The following exceedances were recorded in the baseline groundwater monitoring event recently completed (October 2008) (Coffey Environments, 2010a):

- Concentrations of copper, selenium, zinc, ammonia, hydrogen sulphide, nitrate, total nitrogen and phosphate exceeded the FWG in the baseline groundwater monitoring event.
- Concentrations of iron, manganese, ammonia, chloride and TDS exceeded the ADWG whilst only iron exceeded the ADWG x10 (for non-recreational use).
- Concentrations of iron, manganese, total nitrogen and phosphate exceed the LTIWG whilst no contaminants exceeded the STIWG.

The following comments are made with respect to the exceedances recorded:

- Elevated concentrations of chloride, ammonia, iron, zinc are considered to be representative of ubiquitous background levels and do not originate solely from historical site activities given their presence in up hydraulic gradient wells.
- Elevated concentrations of nutrients (nitrate and total nitrogen) were recorded in wells principally to the north of the wetland area (MW1(A), MW2(A), MW3, ASSMW10, ASSMW11 and ASSMW13 and the highest concentrations were recorded in MW1(A), MW2(A) and MW3 along the northern boundary of the site suggesting that off-site sources are contributing to the overall nutrient loading of groundwater beneath the site.

Whilst elevated concentrations of total phosphate were recorded in both up and down hydraulic gradient wells in excess of the FWG and LTIWG, the higher concentrations were primarily recorded in monitoring bores in the north of the site. Elevated concentrations of phosphorous may be accounted for by the use of fertilizers in the north of the site associated with the former market gardens.

Concentrations of ammonia recorded in the south-east of the site (MW4 and MW5) are considered to be resulting from the adjacent landfill site and as such is arising from an off-site source. Ammonia appears to be localised along the south-eastern boundary of the site and given the groundwater flow direction (south) it is unlikely to migrate beneath the site beyond MW4 and MW5 (i.e. against the hydraulic gradient). Ammonia has a low volatility (low Henrys Law Constant) and binds to organic material further reducing its mobility. Consequently, low levels of ammonia in groundwater in the south-east of the site is not considered to represent a significant risk.

Based on the groundwater monitoring undertaken to date there appears to be little evidence that current or historical on-site activities have contributed to significant groundwater contamination.

#### 4.7 Summary of Historic Site Investigations

Table B provides the nomenclature, which has been devised for all historic site investigation locations, which are presented in Figure 8.

**TABLE B**  
**HISTORIC SITE INVESTIGATION NOMENCLATURE**

ID	Description	Report Reference	No. of Investigation Locations
<b>CTP</b>	Coffey Geosciences Test Pits	ATA, 2001	28 (10 of which were assessed for contamination purposes)
<b>SP</b>	Coffey Geosciences Probe Hole	ATA, 2001	30
<b>CP</b>	Coffey Geosciences Cone Penetrometer	ATA, 2001	15
<b>ECB</b>	Coffey Geosciences Piezometer	ATA, 2001	4
<b>CAC</b>	Asbestos Investigation Locations	ATA, 2002a	12
<b>ECV</b>	East Clontarf Asbestos Validation Sample Location	ATA, 2002b	7
<b>EC ASS</b>	Acid Sulphate Soils Investigation	ATA, 2003a	10
<b>EC ASS</b>	Acid Sulphate Soils Investigation	ATA February 2007 (reported in Coffey Environments, 2010b)	4

**TABLE B**  
**HISTORIC SITE INVESTIGATION NOMENCLATURE**

<b>ID</b>	<b>Description</b>	<b>Report Reference</b>	<b>No. of Investigation Locations</b>
<b>TP</b>	Detailed Soil and Groundwater Investigation	ATA, 2003b	143
<b>MW1-MW5</b>	Detailed Soil and Groundwater Investigation	ATA, 2003b	5
<b>MW6-MW7</b>	Completed prior to commencement of quarterly groundwater monitoring.	ATA December 2004 (reported in Coffey Environments, 2010a).	2
<b>MW1A-MW2A</b>	Baseline Groundwater Monitoring	Coffey Environments, 2010a	2
<b>ASSMW8-ASSMW13</b>	Baseline Groundwater Monitoring	Coffey Environments, 2010a	6

Using the recommended sample density (DEP, 2001), the total number of investigation locations, which included soil sampling (186), is considered sufficient to meet the recommended sampling density for the entire site.

The following investigation locations were included in this tally: CTP1-CTP10 (subtotal 10), CAC1-CAC12 (subtotal 12), ECV1 to ECV7 (subtotal 7), EC ASS1-EC ASS10 (subtotal 10), EC ASS11- EC ASS14 (subtotal four), TP1 to TP130 (subtotal 130), TP136 to TP143 (subtotal eight), TP1A, TP60A, TP116A, TP120A and TP124A (subtotal five), equating to a total of 186 soil sampling locations.

## 5 CONCEPTUAL SITE MODEL

### 5.1 Introduction

As per DEC (2006), a Conceptual Site Model (CSM) identifies the nature and extent of contaminated media and describes the pathways by which exposure to the identified contamination at a site may occur. For exposure to occur, a complete pathway must exist between the source of contamination and the receptor (i.e. the person or ecosystem components potentially affected by the contamination). Where an exposure pathway is incomplete, exposure cannot occur, leaving no risk present via that pathway. The potential for components of the CSM to change over time should be considered as part of the overall risk management strategy.

Cygnia Cove, formerly known as the East Clontarf development site, is located south of Manning Road, at the corner of Centenary Avenue, in the suburb of Waterford (Figure 1 and 2). The site encompasses an area of approximately 20ha and is bordered to the south by Clontarf Bay on the Canning River, to the west by Clontarf Aboriginal College, to the north-west by Curtin University and both to the north and east by residential housing (Figure 2). Centennial Park (a former landfill site) is east of Centennial Avenue. A Resource Enhancement category wetland trends east-west across the northern central portion of the site and a foreshore reserve forms the southern boundary between the site and Clontarf Bay. The site is currently unused and is intended to undergo remedial works to remove geotechnically unsuitable fill material (uncontrolled fill) prior to redevelopment as a residential subdivision and public open space (POS), as shown in Figure 4 and 5.

The following sections review the contaminants of potential concern identified in soil and groundwater on-site, the possible sources, receptors and exposure pathways that may pose a risk to human health or the environment prior to, and during, any remedial works on the site. Sections 5.5 and 5.6 discuss the impacts to human health and the environment, respectively. Section 5.7 discusses the changes to the CSM and the potential risk to human health and the environment following remedial works and redevelopment of the site as a residential subdivision and POS. Two Conceptual Site Models (CSM) are presented in Appendix D for the site under current/remedial conditions (Model A) and as post-remedial final land uses (Model B), respectively.

It is noted that this CSM aims to satisfy Commitment number 6 in Schedule 2 of Ministerial Statement No. 692 requiring the determination of the nature and extent of any soil or groundwater contamination present within the site which may pose a risk to human health or the environment.

### 5.2 Contaminants of Potential Concern (COPCs)

A number of soil and groundwater investigations at the site identified contaminants in soil and groundwater at concentrations equal to, or in exceedance of, relevant assessment criteria, where available. All soil samples were screened against Ecological Investigation Levels (EILs) presented in *Assessment Levels for Soil, Sediment and Water* (DoE, 2003). COPCs in exceedance of the screening criteria were found across various parts of the site, and included several metals (arsenic, cadmium, chromium, lead, and zinc), pesticides (dieldrin), and chrysotile and/or crocidolite asbestos. These COPCs have been found primarily in upper soil layers and areas of uncontrolled fill. The samples, which exceeded the assessment criteria, are summarised in Table A in Section 4.2.

Groundwater on-site naturally flows towards the south and slightly south-south-westerly. Surface water from the wetland has a relatively constant discharge to the Canning River from a drainage line in its south-west corner (Coffey Environments, 2008b). Due to the groundwater flow direction and the proximity to the Canning River, groundwater monitoring results were screened using the Fresh Waters

assessment criteria for Aquatic Ecosystems (using Lowland Rivers values where available) specified in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC and ARMCANZ, 2000). Where no Fresh Waters guidelines existed, monitoring results were screened using Drinking Water Guidelines specified in *Australian Drinking Water Guidelines* (NHMRC and ARMCANZ, 1996).

COPCs which exceeded the criteria in groundwater at various locations on the site, in one or more rounds of monitoring between 2001 and 2006, included several metals (aluminium, arsenic, cadmium, chromium, copper, mercury, nickel, zinc), pesticides (DDE, dieldrin), TPH (C<sub>15-28</sub>), and various nutrients (total phosphorus, ammonia-N, NO<sub>x</sub>-N, and total nitrogen).

The baseline groundwater monitoring event (September 2008) recorded elevated concentrations of the following contaminants:

- Concentrations of copper, selenium, zinc, ammonia, hydrogen sulphide, nitrate, total nitrogen and phosphate exceeded the FWG in the baseline groundwater monitoring event.

*Note: All 13 groundwater monitoring bores (including QC samples) recorded elevated concentrations of mercury in excess of the FWG owing to limitations associated with laboratory LORs. The laboratory has advised that it is not possible to achieve a lower LOR and as such, these exceedances may be considered to be false positives. Elevated concentrations of DDT, aldrin, chlordane, chlorpyrifos, diazinon, fenitrothion and methyl parathion were recorded in excess of FWG owing to limitations associated with laboratory LORs.*

Concentrations of iron, manganese, ammonia, chloride and TDS exceeded the ADWG whilst only iron exceeded the ADWG x10 (for non-recreational use).

- Concentrations of iron, manganese, total nitrogen and total phosphate exceed the LTIWG whilst no contaminants exceeded the STIWG.

*Note: Concentrations of chloride exceeded the LTIWG in all 13 groundwater monitoring bores owing to limitations associated with laboratory LORs.*

### 5.3 Sources

Based on previous investigations, several potential sources of COPCs in the soil and groundwater have been identified. These sources are summarised in Table C.

**TABLE C**  
**CONTAMINANT SOURCES AND AREAS OF POTENTIAL CONCERN**

Source	Area of Concern	COPCs and Environmental Media
<b>Off-Site Sources</b>		
Former and current land uses (e.g. residential septic tanks)	Up-gradient (north of the site)	Metals (Al, As, Cr, Cu, Hg, Ni, Zn), TPH, pesticides (DDE), various nutrients (total phosphorus, total nitrogen, NH <sub>3</sub> -N, NO <sub>x</sub> -N) (groundwater).



**TABLE C**  
**CONTAMINANT SOURCES AND AREAS OF POTENTIAL CONCERN**

Source	Area of Concern	COPCs and Environmental Media
Surface drainage piped into wetland	Up-gradient and slightly cross-gradient on the northern and eastern border of the site	Various nutrients (total nitrogen, total phosphorus), aluminium, dieldrin (surface water).
Former landfill site	Located on the south-eastern border	Metals (Cd, Cr, Cu, Ni, Pb, Zn), dieldrin, various nutrients (total nitrogen, total phosphorus, NH <sub>3</sub> -N, NO <sub>x</sub> -N) (groundwater); Metals (Cr) (soil).
<b>On-Site Non-Point Sources</b>		
Components of naturally occurring Guildford Formation soils	Various	Chromium (soil).
Naturally occurring acid sulfate soils	Various areas on-site, particularly surrounding wetland	Potential for increased acidity to surrounding soil and groundwater.
<b>On-Site Point Sources</b>		
Fill material	Historical placement of fill materials across the site	Asbestos, Metals (As, Cd, Cr, Pb, Zn), organochlorine pesticide (dieldrin).
Former Market Garden	Land use as community market garden (north-east corner)	Various nutrients (total nitrogen, total phosphorus, ammonia-N, NO <sub>x</sub> -N), pesticide (DDE) and metals (As, Cu, Hg, Ni, Zn) in groundwater; COPCs did not exceed criteria in soil.
Proposed temporary abstraction well	North-eastern corner of the site	Metals (Al, As, Cr, Cu, Ni, Zn), various nutrients (total phosphorus, ammonia-N, NO <sub>x</sub> -N), pesticide (DDE) in groundwater.

### 5.3.1 Off-Site Sources

Impacted groundwater migrating beneath the site may be a result of the current and former land uses of the surrounding properties. Elevated nutrients and heavy metals in groundwater entering the site across the northern boundary are likely a result of residential septic tanks or other off-site sources. TPH, detected in a single sample along the northern boundary of the site is suspected to originate from an off-site source in the near vicinity of the site or to be as a result of vandalism (Coffey Environments, 2008b/Coffey Environments, 2010a). Surface drainage from external catchments to the north (across Manning Road) and south-east of the site (across Centenary Avenue) discharge into the

wetland via drainage pipes, creating another potential off-site source of contaminants. Elevated nutrient levels in groundwater measured along the south-eastern border of the site are likely to be associated with the former municipal landfill site (Coffey Environments, 2010a).

### **5.3.2 On-Site Sources**

Areas of concern on-site include various areas of uncontrolled fill, historically brought on-site to even out the surface of the land in certain areas. These regions of uncontrolled fill are a source of asbestos and various metals. Chromium detected at elevated levels in soil at various areas on-site may be attributed to the naturally-occurring Guildford Formation in the area; however, chromium-impacted soil along the south-eastern border of the site is suspected to be a result of the adjacent former landfill. The former market garden area (north-east corner of the site) is a potential source of COPCs due to historical activities related to the community garden, although there is no evidence to support this in the soil sampling results. Finally, acid sulfate soils occur naturally on the site and are a potential source of increased acidity and elevated metals in the soil at various areas on-site, particularly surrounding the wetland area.

## **5.4 Release Mechanisms**

Movement or behaviour of the COPCs within the environment depends on the physio-chemical characteristics of the contaminants and of the media in which the COPCs are present. Physical and chemical characteristics of surrounding media may also contribute to the transport of COPCs on- and off-site. The following potential contaminant transport or release mechanisms were identified:

- Vertical migration of COPCs through dissolution in rainwater and infiltration to the subsurface and groundwater;
- Lateral migration of COPCs in groundwater along the down-gradient flow path, into the wetland, and the Canning River;
- Dispersion of COPCs in groundwater via abstraction from superficial aquifer for use in on-site irrigation and dust suppression;
- Volatilisation of COPCs in soil or open water (i.e. wetland); and
- Atmospheric transport of dust and asbestos fibres via wind currents.

## **5.5 Human Health Assessment Under Current and Remedial Site Conditions**

### **5.5.1 Receptors of Concern**

Receptors are defined as persons, structures, and utilities, which are, or may be, adversely affected by COPCs. Investigations at the site indicate that previous facilities at the site, including a market garden and sports oval, are no longer in use. The site is currently unused and is considered private property (excluding the foreshore reserve area). An access track is located along the western boundary of the site and the wetland comprises the central part of the site. The site is scheduled to undergo remedial works in order to remove geotechnically unsuitable fill material (uncontrolled fill) and asbestos from across the site. Potential receptors located on the site, near or down-hydraulic gradient from the site, with potential for exposure currently or during remedial works, are as follows:

- On-site recreational visitor (on access track);
- On-site maintenance workers (during remediation and redevelopment);

- On-site construction worker (during redevelopment);
- Off-site recreational visitor (on foreshore);
- Off-site residents/students;
- Off-site recreational swimmer; and
- Off-site recreational angler/fisherman.

#### **5.5.2 Exposure Pathways**

An exposure pathway is a means by which an ecosystem, human population or individual (receptor) may be exposed to site-derived contaminants. Exposure pathways are natural and/or man-made and are based on a review of the site geology, hydrogeology, infrastructure and land use. Adverse health effects may be associated with chemical exposure via inhalation, ingestion and/or direct contact.

An exposure pathway consists of the following elements:

- A source and mechanism for release;
- A storage and/or transport medium (e.g. contaminants stored in soil, volatilise and are transported into the atmosphere);
- An exposure point, where the receptor comes in contact with the contamination; and
- An exposure route (e.g. inhalation or dermal absorption).

The physico-chemical characteristics of the COPC and the behaviour of the population of interest will determine the method of exposure and subsequent systemic absorption. An evaluation of the potential exposure pathways previous to, and during, the site remedial works are presented in Tables D and E.

A schematic of the conceptual site model is provided in Appendix D (Model A - Pre-Remediation) presenting a general overview of the reported and observed impacts. Further discussion of on- and off-site impacts are presented in Sections 5.5.3 and 5.5.4.

**TABLE D**  
**EXPOSURE PATHWAY EVALUATION - SOIL**

Exposure Pathway				Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point	Exposure Route		
Fill material	Wind blown dust (asbestos fibres) during remediation works on-site	Outdoor air	<input checked="" type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Recreational visitor	✓
			<input type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
				<input checked="" type="checkbox"/> Off-site visitor	✓
			<input type="checkbox"/> Ingestion	<input checked="" type="checkbox"/> Off-site residents	✓
				<input type="checkbox"/> Off-site swimmer	✗
				<input type="checkbox"/> Off-site angler	✗
	Soil and fill material exposed and transported during remedial works	Direct contact	<input checked="" type="checkbox"/> Inhalation of particulate	<input type="checkbox"/> Recreational visitor	✗
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
				<input type="checkbox"/> Off-site visitor	✗
			<input checked="" type="checkbox"/> Incidental Ingestion	<input type="checkbox"/> Off-site residents	✗
				<input type="checkbox"/> Off-site swimmer	✗
				<input type="checkbox"/> Off-site angler	✗

**TABLE D**  
**EXPOSURE PATHWAY EVALUATION - SOIL**

Exposure Pathway				Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point	Exposure Route		
Guildford Formation soils	Naturally-occurring metals at depth	Direct contact	<input checked="" type="checkbox"/> Inhalation of particulate	<input type="checkbox"/> Recreational visitor	✖
				<input checked="" type="checkbox"/> Maintenance worker	✓
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Construction worker	✓
			<input checked="" type="checkbox"/> Ingestion	<input type="checkbox"/> Off-site visitor	✖
				<input type="checkbox"/> Off-site residents	✖
				<input type="checkbox"/> Off-site swimmer	✖
				<input type="checkbox"/> Off-site angler	✖
Acid Sulfate soils	Disturbance during remedial works	Direct and indirect contact	<input type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Recreational visitor	✓
				<input checked="" type="checkbox"/> Maintenance worker	✓
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Construction worker	✓
			<input checked="" type="checkbox"/> Ingestion	<input checked="" type="checkbox"/> Off-site visitor	✓
				<input type="checkbox"/> Off-site residents	✖
				<input checked="" type="checkbox"/> Off-site swimmer	✓
				<input checked="" type="checkbox"/> Off-site angler	✓

**TABLE D**  
**EXPOSURE PATHWAY EVALUATION - SOIL**

Exposure Pathway				Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point	Exposure Route		
Former landfill	Migration (leaching) onto site	Direct contact	<input type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Recreational visitor	✓
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
			<input type="checkbox"/> Ingestion	<input type="checkbox"/> Off-site visitor	✗
				<input type="checkbox"/> Off-site residents	✗
				<input checked="" type="checkbox"/> Off-site swimmer	✓
				<input checked="" type="checkbox"/> Off-site angler	✓

<sup>1</sup> Includes both current and potential pathways encountered during remedial works at the site. Refer to Sections 5.5.2 and 5.6.2 for a discussion of the complete and excluded exposure pathways.

**TABLE E**  
**EXPOSURE PATHWAY EVALUATION - GROUNDWATER**

Exposure Pathway				Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point	Exposure Route		
Off-site groundwater and stormwater (entering site across northern site boundary)	Off-site groundwater following natural flow direction towards Canning River; stormwater drainage into wetland	Direct and indirect contact	<input type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Recreational visitor	✓
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
			<input checked="" type="checkbox"/> Ingestion	<input checked="" type="checkbox"/> Off-site visitor	✓
				<input type="checkbox"/> Off-site residents	✗
				<input checked="" type="checkbox"/> Off-site swimmer	✓
				<input checked="" type="checkbox"/> Off-site angler	✓

**TABLE E**  
**EXPOSURE PATHWAY EVALUATION - GROUNDWATER**

Exposure Pathway				Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point	Exposure Route		
Former landfill site	Vertical migration or leaching into groundwater; following natural flow direction towards Canning River	Direct and indirect contact	<input type="checkbox"/> Inhalation	<input type="checkbox"/> Recreational visitor	✖
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
			<input checked="" type="checkbox"/> Ingestion	<input type="checkbox"/> Off-site visitor	✖
				<input type="checkbox"/> Off-site residents	✖
				<input checked="" type="checkbox"/> Off-site swimmer	✓
				<input checked="" type="checkbox"/> Off-site angler	✓
Temporary abstraction well (north-east corner of the site)	Abstracted groundwater used for land and garden irrigation and dust suppression	Direct and indirect contact	<input checked="" type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Recreational visitor	✓
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
			<input type="checkbox"/> Ingestion	<input type="checkbox"/> Off-site visitor	✖
				<input type="checkbox"/> Off-site residents	✖
				<input type="checkbox"/> Off-site swimmer	✖
				<input type="checkbox"/> Off-site angler	✖

**TABLE E**  
**EXPOSURE PATHWAY EVALUATION - GROUNDWATER**

Exposure Pathway				Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point	Exposure Route		
Acid Sulfate soils	Disturbance during remedial works causing leaching to wetland and Canning River	Direct and indirect contact	<input type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Recreational visitor	✓
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
			<input checked="" type="checkbox"/> Ingestion	<input checked="" type="checkbox"/> Off-site visitor	✓
				<input type="checkbox"/> Off-site residents	✗
				<input checked="" type="checkbox"/> Off-site swimmer	✓
				<input checked="" type="checkbox"/> Off-site angler	✓
Former Market Garden	Vertical and lateral migration of groundwater from this area	Direct and indirect contact	<input type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Recreational visitor	✓
			<input checked="" type="checkbox"/> Dermal	<input checked="" type="checkbox"/> Maintenance worker	✓
				<input checked="" type="checkbox"/> Construction worker	✓
			<input checked="" type="checkbox"/> Ingestion	<input checked="" type="checkbox"/> Off-site visitor	✓
				<input type="checkbox"/> Off-site residents	✗
				<input checked="" type="checkbox"/> Off-site swimmer	✓
				<input checked="" type="checkbox"/> Off-site angler	✓

<sup>1</sup> Includes both current and potential pathways encountered during remedial works at the site. Refer to Sections 3.4.3 and 3.4.4 for a discussion of the complete and excluded exposure pathways.

### 5.5.3 On-Site Impacts

An evaluation of the potential exposure pathways (Tables D and E) suggests complete exposure pathways may presently exist, or be created during proposed remedial works for on-site visitors, remediation and construction workers exposed to soil or groundwater.

Chrysotile and/or crocidolite asbestos in uncontrolled fill at various locations on the site do not pose a health risk when left undisturbed. Asbestos material is not expected to migrate on- or off-site in its current state; however, remedial works at the site, including the proposed removal of the uncontrolled fill, may result in the release of dust and asbestos fibres into the air, which then may be carried by off-site by wind currents. Inhalation of the disturbed dust and asbestos fibres may pose a health risk to



on-site maintenance and construction workers and users of the access track on-site, as well as residents and students off-site.

Maintenance workers and construction workers may also be exposed to COPCs via inhalation of particulate, incidental ingestion and dermal contact with both the soil and groundwater (via the latter two exposure routes) on-site, as a result of excavation and removal of the geotechnically unsuitable fill material and surficial soils.

Chromium detected at concentrations equal to or slightly greater than the EIL (50mg/kg) in mottled sandy clay at various locations on the site is considered to be a result of the naturally-occurring concentrations in Guildford Formation soils. As there is no evidence of anthropogenic contamination at the depths where these samples were encountered and no chromium contamination was identified in uncontrolled fill at the site. Given the depth at which the samples were detected (0.5m to 1.5m) and the natural properties of the clays, chromium is not expected to impact human health on-site.

A temporary groundwater abstraction well is scheduled for construction on the north-east corner of the site. Abstracted groundwater is intended for use as irrigation water for the lawns and gardens of the proposed residential development, as well as for dust suppression during redevelopment of the site. Groundwater abstracted from the superficial aquifer will be filtered and treated before use and is not expected to adversely impact human health.

Disturbance of acid sulfate soils on-site have the potential to cause impacts to human health through the release of acidity into the surrounding environment. In order to manage and minimise the generation and release of acidity, an Acid Sulfate Soils Management Plan has been devised and will be followed during all remedial works and development at the site.

#### **5.5.4 Off-Site Impacts**

Groundwater and surface water sampled up hydraulic gradient of the wetland and along the outlet drain to the Canning River showed lower concentrations of aluminium, dieldrin and several nutrients (total nitrogen and total phosphorous) than the water from the outlet drain. This is considered to be a result of elements being absorbed in the sediment and plant matter of the wetland or potentially a result of significant dilution effects within the wetland system.

Bores located slightly down-gradient of the former landfill area had elevated results for nutrients, arsenic and zinc. Due to the topography at the boundary of the former landfill site to the south-east, it is possible that run-off from the former landfill may flow in a north-westerly direction, and possibly introduce some component of north-westerly groundwater flow in this area of the site due to the porous nature of the Bassendean Sand.

Saline ingress is expected to impact the migration and dilution of COPCs in groundwater. Due to the proximity of the superficial groundwater system to the Canning River, it is expected to be in hydraulic conductivity with the tidal fluctuations occurring in the river. Based on the direction of groundwater flow, and as a result of the absorption and dilution effects of the wetland, and the expected dilution of groundwater discharged into the Canning River, COPCs in the groundwater on-site are not expected to adversely impact any off-site receptors.

## **5.6 Ecological**

### **5.6.1 Receptors of Concern**

Ecological receptors are defined as plants, animals, fungi or biota supporting ecological processes associated with a defined area, which are considered to be of significant societal relevance, ecological or economic significance, and are, or may be, adversely affected by COPCs.

Based on investigations at the site, the main habitats are considered to be the wetland, dominated by Bulrush and other sedges and occupying one third of the site, grassland surrounding the wetland and the Canning River including the adjoining foreshore (ATA, 2001).

The kidney-shaped wetland is assigned a management category of Resource Enhancement and is an Estuary-Peripheral wetland. Resource Enhancement wetlands are defined as wetlands that have been partially modified but still support substantial ecological attributes and functions (Hill et al, 1996).

Historically, the wetland was used as a water supply for irrigation and water consumption on-site. More recent investigations at the site indicate the natural wetland environment has been modified over time and does not provide a diverse natural environment. Currently, the wetland does not provide any recreational function, and no evidence exists suggesting it is used as a site for scientific or educational resource purposes. The wetland does not appear to serve many significant functions other than as part of a drainage system to the Canning River, in which the presence of reeds contributes to maintaining water quality within the wetland and discharge to Canning River (Coffey Environments, 2008b / Coffey Environments, 2008c).

There is no open water in the wetland area and the absence of native vegetation around the wetland has enabled weed species to become established. Several native and non-native flora species were identified at the site; however, no Declared Rare or Priority flora species were recorded during flora surveys. The wetland vegetation and its immediate surrounds are of variable condition ranging from Completely Degraded to Very Good. Large areas are mapped as Completely Degraded or Degraded to Good due to the absence of native species and the dominance of introduced species (Coffey Environments, 2008b/Coffey Environments, 2008c). No native mammals were observed on-site.

Based on previous environmental surveys and the current conditions of the wetland and Canning River, the following lists potential ecological receptors to consider:

- Frogs (various species);
- Reptiles (snakes, lizards, long-necked tortoises);
- Waterbirds (three species);
- Black Swans;
- Southern Brown Bandicoot; and
- Riparian vegetation.

### **5.6.2 Exposure Pathways**

An exposure pathway is a means by which an ecosystem, human population or individual (receptor) may be exposed to site-derived contaminants. Exposure pathways are natural and/or man-made and are based on a review of the site geology, hydrogeology, infrastructure and land use.

If a source, a transport mechanism (pathway), an exposure point and an exposure route are all present then a complete exposure pathway exists. An evaluation of the potential exposure pathways previous to, and during, the site remedial works are presented in Table F.

**TABLE F**  
**ECOLOGICAL EXPOSURE PATHWAY EVALUATION**

Exposure Pathway			Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point		
Off-site groundwater and stormwater (entering site across northern and south-eastern site boundary)	Groundwater following natural flow direction towards Canning River; stormwater drainage into wetland	Surface water and sediment in wetland and Canning River	<input checked="" type="checkbox"/> Frogs	✓
			<input checked="" type="checkbox"/> Reptiles	✓
			<input checked="" type="checkbox"/> Waterbirds	✓
			<input checked="" type="checkbox"/> Black Swans	✓
			<input checked="" type="checkbox"/> Southern Bandicoot	✓
			<input checked="" type="checkbox"/> Riparian vegetation	✓
Former landfill site	Vertical migration or leaching into groundwater; following natural flow direction towards Canning River	Surface water in Canning River	<input checked="" type="checkbox"/> Frogs	✓
			<input checked="" type="checkbox"/> Reptiles	✓
			<input checked="" type="checkbox"/> Waterbirds	✓
			<input checked="" type="checkbox"/> Black Swans	✓
			<input checked="" type="checkbox"/> Southern Bandicoot	✓
			<input checked="" type="checkbox"/> Riparian vegetation	✓
Temporary abstraction well (north-east corner of the site)	Abstracted groundwater used for land and garden irrigation and dust suppression	Infiltration to groundwater entering the wetland and the Canning River	<input checked="" type="checkbox"/> Frogs	✓
			<input checked="" type="checkbox"/> Reptiles	✓
			<input checked="" type="checkbox"/> Waterbirds	✓
			<input checked="" type="checkbox"/> Black Swans	✓
			<input checked="" type="checkbox"/> Southern Bandicoot	✓
			<input checked="" type="checkbox"/> Riparian vegetation	✓

**TABLE F**  
**ECOLOGICAL EXPOSURE PATHWAY EVALUATION**

Exposure Pathway			Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point		
Acid sulfate soils	Disturbance during remedial works causing leaching to wetland and Canning River	Sediment and soils	<input checked="" type="checkbox"/> Frogs	✓
			<input checked="" type="checkbox"/> Reptiles	✓
			<input checked="" type="checkbox"/> Waterbirds	✓
			<input checked="" type="checkbox"/> Black Swans	✓
			<input checked="" type="checkbox"/> Southern Bandicoot	✓
			<input checked="" type="checkbox"/> Riparian vegetation	✓
Former market garden	Vertical and lateral migration of groundwater from this area	Historically impacted soil in region; surface water in wetland and Canning River	<input checked="" type="checkbox"/> Frogs	✓
			<input checked="" type="checkbox"/> Reptiles	✓
			<input checked="" type="checkbox"/> Waterbirds	✓
			<input checked="" type="checkbox"/> Black Swans	✓
			<input checked="" type="checkbox"/> Southern Bandicoot	✓
			<input checked="" type="checkbox"/> Riparian vegetation	✓
Fill material	Soil and fill material excavation	Surficial soil	<input type="checkbox"/> Frogs	✗
			<input type="checkbox"/> Reptiles	✗
			<input type="checkbox"/> Waterbirds	✗
			<input type="checkbox"/> Black Swans	✗
			<input type="checkbox"/> Southern Bandicoot	✗
			<input type="checkbox"/> Riparian vegetation	✗

**TABLE F**  
**ECOLOGICAL EXPOSURE PATHWAY EVALUATION**

Exposure Pathway			Receptors	Potential for Complete Pathway <sup>1</sup>
Source	Release Mechanism	Exposure Point		
Guildford Formation soils	Naturally-occurring at depth	Subsurface soil	<input type="checkbox"/> Frogs	x
			<input type="checkbox"/> Reptiles	x
			<input type="checkbox"/> Waterbirds	x
			<input type="checkbox"/> Black Swans	x
			<input type="checkbox"/> Southern Bandicoot	x
			<input type="checkbox"/> Riparian vegetation	x

An evaluation of the potential exposure pathways (Table F) suggests complete pathways may presently exist, or be created during proposed remedial works for ecological receptors.

Groundwater entering the site from the north or south-east may adversely impact ecological receptors reliant on the wetland, the drainage channel or the Canning River as a primary source of food or shelter. The wetland is considered to be a flow through system, with approximately 83% of the total current wetland inflow coming from the superficial aquifer (JDA, 2004). Monitoring of the up hydraulic gradient groundwater (north of the wetland) and surface water along the drainage channel to the Canning River showed lower concentrations of aluminium, dieldrin and several nutrients (total nitrogen and total phosphorous) in the drainage channel. This is considered to be a result of elements being absorbed in the sediment and plant matter of the wetland or potentially a result of significant dilution effects within the wetland system.

Acid sulfate soils have been identified at various locations nearby the wetland and along the drainage channel. Acidity is primarily associated with the black peaty horizons as well as the grey silty sands. Although vulnerability of the groundwater to acidification is considered to be low, disturbance of these areas has the potential to impact ecological receptors (Coffey Environments, 2008c). In order to manage and minimise the generation and release of acidity, an Acid Sulfate Soils Management Plan has been devised and will be followed during all remedial works and development at the site.

Ecological receptors are not expected to be impacted by COPCs in the soil based on the depth and limited migration of COPCs in the soil. Any concentration of contaminant in groundwater that has the potential to reach the Canning River is expected to be diluted to the extent that it does not pose a risk to ecological or environmental health of the river.

## 5.7 Future Land Use

Following remediation, the site is intended for redevelopment as a residential subdivision, Cygnia Cove Estate. Plans for redevelopment include up to 189 single residential lots, five grouped housing sites are. Approximately 5.1ha will comprise public open space (POS) with the re-designing the wetland and rehabilitation of the foreshore area. The future land uses at the site will be residential and recreational.

The residential lots will be on scheme water and walking paths, including a boardwalk, will be constructed in the wetland area.

As the conditions and land uses at the site change, so do the parameters of the CSM. A review of the potential remaining sources, future receptors and possible exposure pathways is presented in the following sections. Model B (Appendix D) provides a schematic of the CSM under future land uses.

#### 5.7.1 Future Sources and Areas of Concern

Following remediation and redevelopment of the site, previously identified sources and areas of concern may no longer exist. Based on the proposed remediation works and future land uses, an overview of potential sources and areas of concern are presented in Table G.

**TABLE G**  
**FUTURE SOURCES AND AREAS OF POTENTIAL CONCERN**

Source	Area of Concern	Impacted Media
<b>Off-Site Sources</b>		
Former and current land uses in surrounding area	Up-gradient (across northern border of the site)	Groundwater
Former landfill site	Cross and slightly up-gradient (across north-eastern border of the site)	Groundwater
Surface drainage piped into wetland	Cross and slightly up-gradient (across north-eastern border of the site)	Surface water in wetland, drainage channel, Canning River
<b>On-Site Sources</b>		
Guildford Formation soils	Various areas at depth	Subsurface soil
Temporary abstraction well	North-eastern corner of the site	Groundwater and surficial soil

On-site sources of COPCs will be limited following remediation and redevelopment of the site. Slightly elevated concentrations of chromium detected at depth in Guildford Formation soils are considered to be naturally-occurring and are not expected to pose a risk to human health, due to their inaccessibility. The subsurface soils will be beneath the residential lots, or as part of the open public space, are unlikely to be disturbed by future residents or visitors to the site.

Groundwater entering the site from nearby off-site sources may continue to be slightly impacted by nutrients and heavy metals. Although the groundwater is considered to be consistent with typical urban water quality, mitigation activities and site management plans will be implemented in order to minimise the impact to human health and the environment. The residential development will be on scheme water and due to the limiting size of the residential lots, creation of gardens and lawns is expected to be minimal. Based on the proposed development, residents are unlikely to access bore water on-site.

As per the *Drainage, Nutrient, Irrigation and Water Quality Management Plan* (Coffey Environments, 2008b), stormwater drainage entering the site will be directed to detention storage areas and then slowly permitted to flow through the wetland, allowing sedges to naturally filter the water entering the wetland, and subsequently, the Canning River. Stormwater entering the site across the south-eastern boundary will be continually monitored to ensure it is not impacting the wetland or the Canning River.

### 5.7.2 Future Receptors of Concern

As a residential subdivision and public open space, the receptors of concern and the potential exposure pathways on- and off-site will be modified. Table H presents the potential human receptors and possible complete exposure pathways. Also listed are the relevant site management plans which, once implemented, will work to mitigate or eliminate the risk of exposure to contaminants for humans and the environment on, or near, the site.

**TABLE H**  
**HUMAN EXPOSURE PATHWAY MANAGEMENT AND ASSESSMENT**

Exposure Pathway			Complete Pathway <sup>1</sup>	Associated Management Plan(s)
Source	Release Mechanism	Potential Receptors		
Off-site groundwater and stormwater (entering site across northern and south-eastern site boundary)	Off-site groundwater following natural flow direction towards Canning River; stormwater drainage into wetland	<input checked="" type="checkbox"/> Subdivision residents	x	» Wetland Management Plan » Drainage, Nutrient, Irrigation and Water Quality Management Plan » Baseline and Groundwater Monitoring and Management Plan » Site Safety Plan
		<input checked="" type="checkbox"/> Recreational visitor	x	
		<input checked="" type="checkbox"/> Maintenance worker	x	
		<input type="checkbox"/> Off-site visitor	x	
		<input type="checkbox"/> Off-site residents	x	
		<input checked="" type="checkbox"/> Off-site swimmer	x	
		<input checked="" type="checkbox"/> Off-site angler	x	
Former landfill site	Vertical migration or leaching into groundwater; following natural flow direction towards Canning River	<input checked="" type="checkbox"/> Subdivision residents	x	» Wetland Management Plan » Drainage, Nutrient, Irrigation and Water Quality Management Plan » Baseline and Groundwater Monitoring and Management Plan » Site Safety Plan
		<input checked="" type="checkbox"/> Recreational visitor	x	
		<input checked="" type="checkbox"/> Maintenance worker	x	
		<input type="checkbox"/> Off-site visitor	x	
		<input type="checkbox"/> Off-site residents	x	
		<input checked="" type="checkbox"/> Off-site swimmer	x	
		<input checked="" type="checkbox"/> Off-site angler	x	

**TABLE H**  
**HUMAN EXPOSURE PATHWAY MANAGEMENT AND ASSESSMENT**

Exposure Pathway			Complete Pathway <sup>1</sup>	Associated Management Plan(s)
Source	Release Mechanism	Potential Receptors		
Temporary abstraction well (north-east corner of the site)	Abstracted groundwater used for land and garden irrigation	<input type="checkbox"/> Subdivision residents	✖	» Contaminated Sites Reporting Guideline for Chemicals in Groundwater (DoH, 2006) » Site Safety Plan
		<input type="checkbox"/> Recreational visitor	✖	
		<input checked="" type="checkbox"/> Maintenance worker	✖	
		<input type="checkbox"/> Off-site visitor	✖	
		<input type="checkbox"/> Off-site residents	✖	
		<input checked="" type="checkbox"/> Off-site swimmer	✖	
		<input checked="" type="checkbox"/> Off-site angler	✖	
Guildford Formation soils	Naturally-occurring metals (chromium) at depth	<input checked="" type="checkbox"/> Subdivision residents	✖	Not applicable » Site Safety Plan
		<input type="checkbox"/> Recreational visitor	✖	
		<input checked="" type="checkbox"/> Maintenance worker	✖	
		<input type="checkbox"/> Off-site visitor	✖	
		<input type="checkbox"/> Off-site residents	✖	
		<input type="checkbox"/> Off-site swimmer	✖	
		<input type="checkbox"/> Off-site angler	✖	

<sup>1</sup> Under final site conditions and land uses, following implementation of management plans and mitigating activities.

Ecological receptors on-site will not change instantly with redevelopment of the site; however, it is anticipated that the functioning of the wetland and the quality of the habitat will improve, leading to increased use and inhabitation by ecological receptors.

## 5.8 Conclusions

As recommended by the DEC (2006), a conceptual site model is a critical component of the assessment of a contaminated site and should be created in order to identify the sources and receptors with the potential to be adversely impacted by exposure to contaminants at a site.

Contaminant sources and complete exposure pathways for humans and the environment have been identified at the site. Mitigation and management of these potential risks are addressed by a suite of management plans related to the remediation, redevelopment and final land use.



It should be noted that this conceptual site model aims to satisfy Commitment Number 6 in Schedule 2 of Ministerial Statement No. 692 requiring a determination of the nature and extent of any soil or groundwater contamination present within the site which may pose a potential risk to human health or the environment.

The samples which exceed the action criteria generally comprise uncontrolled fill (comprising sand with obvious rubble). There are three locations where chromium is found at or slightly above the EIL of 50mg/kg in undisturbed soil comprising mottled sandy clay (locations TP90, TP113, and TP139). It is considered that the slightly elevated chromium concentrations at these three locations are a result of naturally-occurring concentrations in Guildford Formation soils, as there is no evidence of anthropogenic contamination at the depths where these samples were encountered and no chromium contamination was identified in uncontrolled fill at the site.

## 6 REMEDIATION OPTIONS

### 6.1 Remediation Hierarchy

The remediation hierarchy adopted by the DEC is based on the approach to remediation and management outlined in the ANZECC/NHMRC Guidelines for the Assessment and Management of Contaminated Sites in Australia and New Zealand (1992) and the EPA Guidance Statement for Remediation Hierarchy for Contaminated Land (No. 17, July 2000).

The ANZECC Guidelines provide a preferred hierarchy of options for site clean-up and/or management which are as follows:

- on-site treatment of the contamination so that it is destroyed and the associated risk is reduced to an acceptable level; and
- off-site treatment of excavated soil, so that the contamination is destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to site.

If the above can not be implemented then other options that should be considered include:

- removal of contaminated soil to an approved facility, followed, where necessary, by replacement with appropriate material; or
- consolidation and isolation of the soil on-site by containment with a properly designed barrier.

If remediation is likely to cause a greater adverse effect than would occur if left undisturbed then remediation should not proceed. In cases where it is not viable to remediate large quantities of soil with low levels of contamination alternative strategies might need to be considered or developed. The appropriateness of any particular option will vary depending on a range of local factors.

### 6.2 Remediation Option Review

There are a range of different management options and remediation approaches/technologies that are available for contaminated sites. Some of these remediation technologies are proven while others have not yet been successfully implemented, particularly in Australia and/or there is limited local expertise for implementation.

The remedial requirements for the site relate to the presence of asbestos, metals (arsenic, cadmium, lead, zinc) and an organochlorine pesticide (dieldrin) contaminated soils identified within uncontrolled fill. It is noted that the uncontrolled fill material is not suitable to be retained on-site from a geotechnical perspective.

The available soil remediation methods and technologies applicable to ACM from the *Draft Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia* (DoH, 2009) indicated the following potential options as outlined in Table I below. These options are also considered applicable to the localised heavy metal and pesticide contamination also identified in soils.

**TABLE I**  
**COMPARISON OF REMEDIAL OPTIONS**

Management Options	Description
Management in-situ	Management in-situ comprises providing a barrier (a cap) preventing or reducing the contact between site users and the contaminated soil. This SMP needs to ensure the integrity of the cap is maintained and that any work penetrating the cap is undertaken in accordance with adequate health and safety measures and environmental controls.
Treatment on-site	Treatment on-site involves hand picking, tilling or screening the soil for ACM. On-site treatment of metals and dieldrin are not considered feasible owing to the localised occurrence and marginally elevated concentrations recorded.
Excavation and on-site burial	Excavation and on-site burial involves the excavation of fully delineated contaminated areas and re-burial in another section of the site (commonly referred to as on-site encapsulation). An Asbestos and Contamination Management Plan would be required for the containment system.
Excavation and removal off-site	Excavation and removal off-site requires the contaminated soil to be excavated and disposed of at a licensed landfill following waste controls in order to reduce the risk from transport.

A comparison of the options is provided in Table J below.

**TABLE J**  
**ADVANTAGES AND DISADVANTAGES OF REMEDIAL OPTIONS**

Option	Advantages	Disadvantages
Management in-situ	<p>Minimal soil disturbance and therefore minimal dust generation.</p> <p>Less risk from transport of contaminated materials.</p> <p>Minimisation of the amount of sampling necessary.</p> <p>Lower initial costs.</p>	<p>Restrictions on land use and a Memorial on Title (MOT).</p> <p>Restrictions on-site excavations.</p> <p>Requirement for ongoing maintenance of cap.</p> <p>Requirement for ongoing management plan.</p> <p>Level of the site to be raised.</p>

**TABLE J**  
**ADVANTAGES AND DISADVANTAGES OF REMEDIAL OPTIONS**

Option	Advantages	Disadvantages
Treatment on-site (hand picking, tilling or screening)	<p>No requirement for ongoing management plan.</p> <p>No requirement for ongoing maintenance of cap.</p> <p>A MOT is not required.</p> <p>No further restriction of land use.</p> <p>Minimise the amount of validation sampling required.</p>	<p>Some risk of dust generation.</p> <p>Only applicable where ACM is in surface soils.</p> <p>Only applicable where ACM is well delineated.</p> <p>Only applicable where contamination includes a very small quantity of asbestos free fibres.</p>
Excavation and on-site burial	<p>Less risk from transport of contaminated materials.</p> <p>No contaminated material going to landfill.</p>	<p>Some risk of dust generation.</p> <p>Restrictions on land use and a MOT.</p> <p>Requirement for ongoing maintenance of cap.</p> <p>Requirement for ongoing management plan.</p>
Excavation and removal off-site	<p>No further restriction of land use.</p> <p>Reduced time delay for implementation.</p> <p>No requirement for ongoing management plan.</p> <p>In most cases a MOT is not required.</p> <p>No requirement for ongoing maintenance of cap.</p>	<p>Cost of disposal to landfill.</p> <p>Some risk of dust generation.</p> <p>Some risk from transport of materials.</p> <p>Use of valuable landfill space.</p>

### 6.3 Rationale for Selection of Preferred Remedial Strategy

In-situ management of contaminated soil is not considered a suitable strategy as there would be a requirement to effectively manage the ongoing health risk and the following limitations also apply:

- management difficulties in ensuring long term implementation of the SMP; and
- the site would be identified as 'remediated - restricted use' (asbestos being the contaminant) upon the DEC Contaminated Sites Register indefinitely with property memorials placed upon individual Certificates of Title(s).

It is generally understood that ACM in 'good' condition is generally low risk hazardous material but requires specialised handling and disposal. The excavation and removal of the asbestos and chemical impacted materials to an appropriately licensed landfill facility will address the ongoing risk. In addition,

the contamination is located within uncontrolled fill that is deemed unsuitable for retention on-site from a geotechnical perspective. On the basis that suitable management strategies will be implemented, excavation and off-site disposal is considered the most appropriate remedial option for the site.

## 7 OBJECTIVES AND SCOPE OF REMEDIAL WORKS

Remedial works will be required prior to development in order to remove geotechnically unsuitable material (uncontrolled fill) which locally exceeds the DEC's EIL guidelines (lead also exceeds the DEC's HIL-A) for metals and contains some asbestos sheeting. The objective of this report is to present strategies to effectively manage the identified soil contamination at the site.

Issues associated with the Management of Acid Sulfate Soils are dealt with in the Acid Sulfate Soil management Plan (Coffey Environments, 2010b), although in the event that earthworks result in pacification reactions that in turn mobilise contaminants, additional soil or groundwater remedial works may be triggered under this plan.

The following targets are incorporated into the Site Contamination Investigation, Remediation and Validation Plan, as per Condition 8 in the Ministerial Statement 692 (as outlined in Section 2.3) for the site:

1. In-situ characterisation of contaminated soils will be undertaken to assess the appropriate disposal route off-site.
2. Areas of soil identified as contaminated in excess of EIL/HIL-A criteria will be excavated and the base and walls of the excavations validated in accordance with relevant DEC *Contaminated Sites Management Series* guidelines.
3. A Remediation Assessment report will be submitted to auditor and the DEC on conclusion of remedial works, providing detailed information on the remediation strategy implemented, the results of validation and stockpile sampling, and details of the management of all contaminated material.

In order to meet the three targets listed above, the scope of works includes the following:

- Review of the results of the earlier soil contamination investigation and identification of soil requiring remediation;
- Description of the earthworks proposed for areas where contamination has been identified, and for fill material identified during site works;
- Methodology for ensuring the removal and appropriate disposal of impacted soils;
- Identification of soil compliance criteria;
- Presentation of a Remediation and Validation Plan for the site; and
- Submission of the management plan to DEC.

The Site Contamination Investigation, Remediation and Validation Plan has been prepared in consultation with the relevant documents from the DEC's Contaminated Sites Management Series. The following management plans will also be implemented during the remedial/redevelopment works.

- Noise Management Plan (Coffey Environments, 2008a);
- Drainage Nutrient, Irrigation and Water Quality Management Plan (Coffey Environments, 2008b);
- Foreshore Management Plan (Coffey Environments, 2008c);
- Dust and Asbestos Management Plan (Coffey Environments, 2009);
- Baseline Groundwater Investigation and Management Plan (Coffey Environments, 2010a);

- Acid Sulfate Soil management Plan (Coffey Environments, 2010b).

Following approval of the Site Contamination Investigation, Remediation and Validation Management Plan, it will be incorporated into a Construction Environmental Management Plan (CEMP), in accordance with Condition 2 (referring to proponent Commitment 1) in Ministerial Statement No. 692. The CEMP is to be implemented during and following construction works by the proponent and their appointed contractors.

## 8 REMEDIATION MANAGEMENT STRATEGIES

The following text has been written in a manner suitable for use in tender documentation and includes the following terms:

<b>Principal</b>	Trustees of the Christian Brothers in Western Australia Incorporated
<b>Civil Works Contractor</b>	Civil earthworks contractor appointed by Trustees of the Christian Brothers
<b>Principal's Environmental Consultant</b>	Environmental consultant appointed by Trustees of the Christian Brothers
<b>Superintendent</b>	Superintendent appointed by Trustees of the Christian Brothers

The following management strategy has been developed by Coffey Environments for use at the Cygnia Cove development site. The Civil Works Contractor will be responsible for ensuring that all management measures outlined in the management strategy (or as agreed otherwise) are adhered to for the duration of their contract.

### 8.1 Site Access

The site is bounded to the north by Manning Road, to the east by Centenary Avenue, to the south by privately held land and foreshore reserve, and to the west by the Clontarf Aboriginal Education and Training College. In order to limit access to the site during site works, it is anticipated that fencing will be placed around the perimeter of the site.

### 8.2 Services

A Dial Before You Dig (DBYD) database search was conducted in September 2008. Please note that **fibre optic cables** were identified within the site near its north-west corner; other infrastructure items appear to be generally adjacent Manning Road and Centenary Avenue.

It is the responsibility of the Contractor to ensure that services information is up to date prior to the commencement of earthworks, and to take appropriate actions to ensure that infrastructure is not inadvertently damaged during site works.

### 8.3 Soil Management Strategy

Remedial excavations will be undertaken in a staged approach as follows:

1. Excavation of chemical contaminants;
2. Excavation of asbestos material; and then
3. Excavation of uncontrolled fill.

Soils to be disposed of off-site (i.e. uncontrolled fill, asbestos material and soils contaminated with chemicals) will be directly loaded from the remedial excavation into haulage trucks and transported to the appropriate landfill site. In-situ waste classification will be completed in accordance with the Landfill Waste Classification and Waste Definitions 1996 (DoE, 2005) prior to the remedial works commencing in order to determine the appropriate class of landfill for the off-site disposal of uncontrolled fill and contaminated soils. Based on the results of the in-situ waste classification, the Principal's Environmental Consultant will provide the Superintendent with advice indicating the appropriate class of



landfill for the disposal of the material. In turn, the Superintendent will provide instruction to the Civil Works Contractor. It will be the Civil Works Contractor's responsibility to ensure that the material is disposed of in accordance with this advice.

### 8.3.1 Strategy for Excavation of Contaminated Soil

Within the proposed uncontrolled fill remediation areas as shown on Figure 7 and Figure 8, there are locally elevated concentrations of metals (arsenic, cadmium, lead, zinc), dieldrin and asbestos which exceed ILs. It is proposed to excavate a 10 x 10m area at each location to the depths indicated in Table K below. The final area and depth will be subject to results obtained during validation sampling.

**TABLE K**  
**REMEDIAL EXCAVATIONS INTERVALS**

Location	Excavation Interval	Contaminant
TP34	Surface - 0.4mbgl	Asbestos
TP39	Surface - 0.6mbgl	Asbestos
TP46	Surface - 0.6mbgl	Zinc
TP48	Surface - 0.3mbgl	Lead
TP55	Surface - 0.6mbgl	Arsenic
TP56	Surface - 0.6mbgl	Cadmium
TP60	Surface - 0.6mbgl	Zinc
TP73	Surface - 0.6mbgl	Asbestos, Zinc
TP75	Surface - 1.1mbgl	Dieldrin
TP76	Surface - 0.3mbgl	Asbestos
TP120	Surface - 0.6mbgl	Zinc
TP121	Surface - 0.6mbgl	Zinc

As indicated in Section 8.3 contaminated soil arising from remedial excavations will be directly loaded into trucks for off-site disposal to an appropriate class landfill. Copies of all tip dockets for material disposed of to landfill must be provided to the Superintendent and/or Principal's Environmental Consultant.

Validation samples will be collected in order to verify that residual soil in the walls and base of the excavations do not contain identified COC's. Validation sampling requirements are discussed in Sections 9.1, 9.2, 9.3 and 9.4. Remedial areas may only be backfilled upon written advice from the

Superintendent or Principal's Environmental Consultant that the validation testing results are acceptable. Section 8.3.9 provides further details on the management of imported fill material.

### **8.3.2 Decontamination Within Chemical Contaminated Areas**

- To prevent the spread of contaminated material back into remediated areas, the Civil Works Contractor will be responsible for providing a vehicle washdown area whereby all vehicles exiting contaminated areas will pass through low pressure water sprays remove any soil adhering to vehicle tyres and undercarriage.
- Any sediments which accumulate in the washdown area will be considered waste and will be disposed of off-site to landfill after sampling and analyses to determine contaminant levels. Any wastewater from the washing process will either be disposed of off-site in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004* or directed to a lined evaporation dam and residual sediments managed as above.
- The main route for vehicular traffic accessing/egressing the site will be swept down on a regular basis to maintain good housekeeping within the vicinity of the site.

Additional details regarding decontamination procedures to be implemented during soil sampling are provided in Section 9.2.2.

### **8.3.3 Strategy for Excavation of Uncontrolled Fill**

Uncontrolled fill covers an area of approximately 17,000m<sup>2</sup>, and varies in thickness from 0.1m to 1.5m. It is proposed to excavate and remove all identifiable areas of uncontrolled fill from the site as this material is not considered geotechnically suitable for the proposed development. The approximate extent of uncontrolled fill is presented on Figure 7. These areas must be located and marked prior to the commencement of earthworks at the site, to ensure that the material is managed separately from soil excavated as part of general cut and fill requirements.

Previous geotechnical investigations at the site have identified the possible presence of asbestos cement products distributed through the uncontrolled fill. Where asbestos-containing material (such as cement sheeting fragments) is identified during earthworks, it should be excavated and segregated from the remainder of the material so that it can be managed appropriately, as described in the DAMP (Coffey Environments, 2009). The remainder of the excavated uncontrolled fill will be disposed of off-site to an appropriately licensed landfill. Although asbestos fibres in soil samples have only been identified at four locations, previous investigations at the site visually identified asbestos cement fragments distributed throughout the areas of uncontrolled fill (Figure 7).

Because scattered pieces of uncontrolled fill are found as isolated items in surface soil around the main areas of buried or stockpiled uncontrolled fill, it is considered appropriate to manage potential contamination associated with these isolated fragments by incorporating a 10m radius buffer zone around identified areas to be remediated, as shown in Figure 7. The proposed area of excavation has been based on information contained within previous investigations. A 10m buffer has been allowed for on the basis that the actual extent of the fill material may deviate slightly. The remedial excavations will vertically extend 0.30m below the maximum extent of fill/asbestos in that grid/location in accordance with DoH Guidelines (DoH, 2009). The proposed area of excavation has been based on information contained within previous investigations, however a 10m buffer has been allowed for on the basis that the actual extent of the fill material may deviate slightly. On completion of the remedial excavation to the proposed lateral and vertical boundary, the Environmental Consultant and Supervising Engineer will inspect the base and sides of the excavation to verify that all uncontrolled fill has been removed. The

remedial excavation will be extended should any fill material be identified. Excavations in potential asbestos-containing areas will be visually inspected by the Civil Works Contractor and advice sought from the Principal's Environmental Consultant to confirm status and management and the need for additional remediation following removal of the uncontrolled fill. Copies of all tip dockets for material disposed of to landfill must be provided to the Superintendent and/or Principal's Environmental Consultant. The soil management strategy will be completed in accordance with procedures outlined in the DAMP (Coffey Environments, 2009).

#### **8.3.4 Asbestos Management Strategy**

It is firstly noted that all identified and unidentified uncontrolled fill material across the site is deemed geotechnically unsuitable to be retained on-site and as such will be excavated and removed as waste material. Asbestos fibres have been identified at four localised locations within the areas of uncontrolled fill material (see Figure 7) however, previous geotechnical investigations at the site suggested that asbestos cement products are likely to be distributed throughout the areas of uncontrolled fill. Consequently, all areas identified as containing uncontrolled fill will be treated as potentially containing asbestos material. In addition, it is acknowledged that there is the potential for asbestos-containing material (such as cement sheeting fragments or cement pipes) to be encountered outside identified areas of uncontrolled fill, during general site works. All asbestos encountered will be excavated and segregated from the remainder of the material and areas will be clearly identified by signage so that it can be managed according to the procedures outlined in the following section.

In order to minimise the potential for the release of asbestos fibres from the exposure and removal of any asbestos-containing material encountered, strict compliance will be maintained with the procedures outlined in Section 5 for the possible scenarios i.e. where asbestos fibres have been detected in soil, where uncontrolled fill that is potentially affected by ACM is to be excavated and where discrete quantities of ACM (e.g. sheet or pipe) are unexpectedly encountered.

#### **8.3.5 Precautionary Measures**

As a precautionary measure, the following actions will be undertaken:

The proposed remediation areas (associated with uncontrolled fill, chemicals contaminants and identified asbestos fibres) outlined in Figure 7 will be located and marked prior to the commencement of remediation works at the site, to ensure that contaminated soil, fill and ACM is managed separately from soil excavated as part of general cut to fill requirements;

- Areas with a potential for asbestos (i.e. all areas of uncontrolled fill) will be identified to the Civil Works Contractor;
- Surface soil removal will extend initially 10m from the areas defined as containing uncontrolled fill to account for any variation in the notional boundary of these areas (Figure 7). The remedial excavation will be extended as necessary based on a visual inspection undertaken by the Supervising Engineer and Environmental Consultant;
- Excavations in potential asbestos-containing areas will be visually inspected by the Civil Works Contractor and advice sought from the Environmental Supervisor to confirm status and management;
- All workers (including new employees/contractors who commence working on-site following commencement of remedial works) will undergo a site induction that informs them of the dangers of asbestos, how to recognise asbestos products and the procedures to follow should asbestos

products be uncovered. The contractor will also undertake ongoing refreshment and reinforcement of this training at site meetings and toolbox meetings;

- Asbestos fibre monitoring will be conducted in areas of the site which may potentially contain asbestos products (refer to Section 6.5 DAMP); and
- Procedures to minimise dust emissions will be employed (as outlined in Section 5.4 DAMP).

### **8.3.6 Security, Signs and Barriers**

When asbestos-containing materials are being removed, signs and barriers will be erected to warn of the danger and to prevent unauthorised people entering. The asbestos removal working area is to be clearly defined and all barriers and warning signs should remain in place until removal is complete. The location and extent of any access control areas will be agreed in discussion between the Contractor, the Supervising Engineer and the Environmental Consultant and will be established in accordance with NOHSC:2002 (2005a) *Code of Practice for the Safe Removal of Asbestos* (2<sup>nd</sup> Ed) guidelines. The extent of controlled areas will be set with the objective of preventing unacceptable exposures to personnel working in other areas of the site while maintaining the operational efficiency of the overall site.

Potential entry points to the asbestos work area should be signposted or labelled in accordance with AS 1319 (1994) *Safety Signs for the Occupational Environment* and NOHSC:2002 (2005a).

Any waste bags, skips, or vehicle trays used to store and/or transport potentially asbestos-containing material should be appropriately labelled advising handlers of the nature of the contents. Transport of asbestos must be undertaken in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004*.

### **8.3.7 Personal Protective Equipment**

Only personnel with appropriate personal protective equipment (PPE) and training will be allowed to work inside the asbestos work area. The minimum protective equipment worn for personnel will be disposable overalls and a personal air-purifying respirator. The filter type within the respirator should be Class P1 or P2, as stipulated in the *Code of Practice for the Safe Removal of Asbestos* (NOHSC, 2<sup>nd</sup> Edition, 2005a).

### **8.3.8 Contingency Response**

Asbestos fibres in soil have only been positively identified at four locations; however, previous geotechnical investigations at the site suggest that asbestos cement products are distributed throughout the areas of uncontrolled fill. As such, all areas identified as containing uncontrolled fill will be treated as potential asbestos-containing material. Where asbestos-containing material (such as cement sheeting fragments or cement pipes) is identified in non-uncontrolled fill areas during site works, it will be excavated and segregated from the remainder of the material. Where isolated fragments of asbestos-containing material are identified, the asbestos-containing material will be handpicked by personnel with an appropriate level of Personal Protective Equipment and placed in suitable heavy duty plastic bags prior to off-site disposal. Where more extensive contamination is observed, the affected soil will be excavated and segregated from the remainder of the uncontrolled fill so that it can be managed appropriately, adhering to the procedures outlined in Sections 5.3.5 and 5.3.6 of the DAMP. The soil or fill remaining after removal of the asbestos outside known areas of contamination/uncontrolled can then be handled as though it is not affected by asbestos.

### 8.3.9 Procedures for Controlling Exposed Asbestos Products

Where asbestos products such as cement sheeting fragments or piping are visibly encountered during remedial activities and bulk earthworks, the asbestos must be removed in accordance with Worksafe WA and the *Code of Practice for the Safe Removal of Asbestos* (NOHSC, 2<sup>nd</sup> Edition, 2005a). Asbestos-containing material will be excavated and segregated from the remainder of the material so that it can be managed appropriately.

The following measures are to be undertaken to prevent the release of asbestos fibres:

1. Where staff identify ACM or suspected ACM, the Site Manager should be immediately informed so that appropriate management controls can be implemented. The Site Manager will be responsible for logging the location where the material was found and the management response that was implemented.
2. All suspected contaminated material should be saturated and maintained in a wet condition prior to disturbance and/or removal. Large volumes of water applied at low pressure minimises the generation of dust from water droplets. If available, a wetting agent should be added to the water as this facilitates more rapid wetting of the asbestos-containing material.
3. In no circumstances will high-speed abrasive power or pneumatic tools such as angle grinders, sanders, saws and high speed drills be used in the removal of suspected asbestos-containing material. If cement piping suspected to contain asbestos is uncovered, and tools are required to be used for its extraction and removal, low-speed battery powered drills used in conjunction with wet methods for dust control are preferred. All tools are to be decontaminated prior to removal from site.
4. Battery-powered tools should be fitted with a local exhaust ventilation (LEV) dust control hood wherever other dust control methods (e.g. use of wet removal methods) are determined to be unsuitable (NOHSC, 2005a).
5. In the instance of surface soil removal which has been recommended to be conducted in a radius extending 10m from all areas identified as containing uncontrolled fill (Figure 6), the soil will be loaded directly into tip trucks for off-site disposal.
6. Trucks transporting ACM off-site will be covered with well maintained and tight fitting tarpaulins to prevent drying of the soil or dust lift-off from the soil during transport.
7. Any asbestos sheet fragments identified during uncontrolled fill removal or in subsequent works will be placed by hand into heavy duty 200µm (minimum thickness) polythene bags that are no more than 1,200mm and 900mm wide for ease of handling. The bags should be labelled with an appropriate warning, clearly stating that they contain asbestos and that dust creation and inhalation should be avoided. Earthmoving equipment will be operated so as to minimise ground disturbance, dust generation and asbestos breakage. Material will be sprayed with low pressure water as it is loaded into the bags, which in turn should be placed into leak proof containers.
8. A decontamination facility will be provided for personnel in direct contact with asbestos to ensure safe removal of their PPE.
9. Used disposable coveralls and masks are to be removed prior to exiting the site and placed in bags for disposal along with the other asbestos waste.
10. Asbestos fibres in the air will be continuously monitored whilst the areas identified in Figure 6 are being remediated (see Section 6.5.4 of DAMP).

### 8.3.10 Asbestos Waste Collection and Disposal

Uncontrolled waste containing minor quantities or fragments of ACM will be wetted down prior to loading into trucks which will then be covered (e.g. tarpaulins) prior to leaving the site to prevent dust emissions whilst in transit. Trucks will be washed down prior to leaving the site in a designated washdown area. (Note: any significant quantities of ACM will be handled as described in Section 5.3).

Transport and final disposal of asbestos-containing material shall be carried out in accordance with the *Occupational Safety and Health Regulations 1996* and the *Code of Practice for the Management and Control of Asbestos in Workplaces* (NOHSC, 2005b) and the *Environmental Protection (Controlled Waste) Regulations 2004*.

Asbestos-containing materials removed from the site will be disposed of to a landfill licensed to accept asbestos waste in accordance with the *Landfill Waste Classifications and Waste Definitions* (DoE, 2005). Under the *Landfill Waste Classifications and Waste Definitions* (DoE, 2005), asbestos-containing materials, including cement sheeting and/or fibres is classed as a Type 1 Special Waste.

The responsibilities of the waste producers, transporters and operators of disposal sites are outlined in the *Environmental Protection (Controlled Waste) Regulations 2004*. The transportation and disposal of any waste materials containing asbestos is controlled by the DEC. Under the *Environmental Protection (Controlled Waste) Regulations 2004*, the contractor responsible for transportation of asbestos-containing material must be licensed to undertake such activities. Asbestos may only be disposed of at a site approved by the DEC.

Material will only be transported off-site once approval has been provided by the landfill operator, with copies of all tip dockets for material disposed of to landfill to be provided to the Superintendent and/or Principal's Environmental Consultant.

### 8.3.11 Decontamination

Decontamination must include the asbestos work area as identified in Section 5.3, all tools and equipment utilised and personal decontamination. All contaminated materials, including cleaning rags, plastic sheeting and PPE etc, must be disposed of as asbestos waste (NOHSC, 2005a). The following procedures have been written utilising the decontamination procedures outlined in the *Code of Practice for the Safe Removal of Asbestos* (NOHSC, 2<sup>nd</sup> Edition, 2005a).

#### **Tools and Equipment**

At the end of removal work, all tools should be decontaminated in the following manner:

- Decontaminated using wet or dry decontamination methods as outlined in the NOHSC *Code of Practice for the Safe Removal of Asbestos* (2<sup>nd</sup> Edition, 2005a) (i.e. fully dismantled and cleaned under controlled conditions); or
- Placed in sealed containers (and used only for asbestos removal work); or
- Disposed of as asbestos waste.

If tools cannot be decontaminated within the asbestos work area, or are to be re-used on another project, they should be tagged to indicate possible contamination and double bagged in asbestos waste bags before being removed from the asbestos work area.

### **Personal Decontamination**

Personal decontamination must be undertaken each time employees leave the asbestos work area (NOHSC, 2005a). This should occur within the asbestos work area so as to not transport material off-site, but should be located within an area where re-contamination is minimised.

Throughout the asbestos removal process, asbestos contaminated PPE should not be transported outside the asbestos work area except for disposal purposes.

Before work clothes and footwear worn during asbestos work are removed from the work area, they should be thoroughly vacuumed with an asbestos vacuum cleaner to remove any asbestos fibres, and footwear should be wet wiped.

Personal respiratory protective equipment should continue to be worn until all contaminated disposable coveralls and clothing has been vacuumed and/or removed and bagged for disposal; and personal washing completed.

### **Vehicle Decontamination**

To prevent the spread of contaminated material back into remediated areas, a vehicle washdown area will be provided on the exit route from contaminated areas to remove any soil adhering to vehicle tyres and undercarriage. If required, vehicles leaving the contaminated zone will be cleaned by low pressure water sprays and brushing where necessary. Any sediments which accumulate in the washdown area will be considered waste and will be disposed of off-site to landfill after sampling and analyses to determine contaminant levels. Any wastewater from the washing process will either be disposed of off-site in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004* or directed to a lined evaporation dam.

### **8.3.12 Strategy for Management of Imported Fill**

As indicated above, it will be necessary to backfill areas where contaminated or geotechnically unsuitable soil has been removed (following validation sampling, as required). Remedial areas may only be backfilled upon written advice from the Superintendent or Principal's Environmental Consultant that the validation testing results are acceptable.

It is proposed to reuse site material beyond areas of uncontrolled fill and identified contamination to achieve finished levels and backfill remedial excavations. If sufficient suitable material is not available within the site, it will be necessary to import material from off-site.

It will be the responsibility of the Civil Works Contractor to ensure that material which is imported from off-site comprises "clean fill", defined as follows (DoE, 2005) i.e. "*Material that will have no harmful effects on the environment and which consists of rocks or soil arising from the excavation of undisturbed material. For material not from a clean excavation, it must be validated to have contaminants below the relevant human health and ecological investigation levels*" (as defined in the document *Assessment Levels for Soil, Sediment and Water*, Department of Environment, 2003).

The Principal's Environmental Consultant will undertake one or more of the following steps to confirm that the material is suitable for use on-site:

1. Request a letter from the sand supplier stating the source of the material, a brief history of the source site and the quantity supplied;
2. For material not from a clean excavation, it must be 'certified' as clean in accordance with DEC guidelines;

3. Visually inspect material delivered to the site periodically to assess if it has visual indications suggesting contamination; and
4. Collect an appropriate number of samples for analysis (as prescribed per guidelines specified in *Landfill Waste Classification and Waste Definitions 1996* (DoE, 2005)).



## **9 MONITORING**

At the time of preparation of this report, the detailed design and civil works staging and contract specifications had not yet been finalised. Accordingly, this section offers a generic framework for the development of a site specific monitoring regime by the successful Civil Works Contractor.

### **9.1 Soil Validation Sampling**

The Civil Works Contractor will liaise with the Superintendent and/or Principal's Environmental Consultant to arrange for testing of the excavated remediation areas prior to backfilling the excavations. Validation testing will be undertaken by the Principal's Environmental Consultant. The Civil Works Contractor will allow for a period of up to three weeks between notifying the Superintendent and/or Principal's Environmental Consultant and receiving the validation testing results and/or disposal advice, although every endeavour will be made to turn validation results around more quickly. Additional time will be required if initial validation samples fail to meet the criteria. To summarise, validating the remedial works will involve the following:

- Recover samples from remediation excavations;
- Perform analytical testing on validation samples;
- Assess against applicable criteria;
- Remove any soil found to contain contaminant levels above the response levels; and
- Retest or re-validate those locations where contamination is removed.

#### **9.1.1 Validation Sample Density**

##### **9.1.1.1 Validation of Contaminant Remediation Areas**

It is proposed to excavate a 10m x 10m area to the depths indicated in Table K at each location where elevated concentrations of chemical contamination were recorded. At a minimum, one validation sample will be taken from each wall within the 10m x 10m remedial excavation at the depth at which the exceedance was originally recorded and one sample will be taken from the base at the depth specified in Table K. The final area and depth will be subject to results obtained during validation sampling. Composite sampling techniques will not be utilised in the validation of chemically contaminated areas.

##### **9.1.1.2 Validation of Asbestos Remediation Areas**

The floors and walls of excavations completed for the purpose of asbestos remediation within areas of uncontrolled fill will be validated. This validation will be completed in accordance with the recommendations contained within the DoH Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (DoH, 2009) and will comprise one sample from each wall per 5m length of strata of interest (or per 1m depth). Floors will be visually inspected and if suspect will be sampled at twice the minimum density outlined in the Department of

Environment and Conservation (DEC) Contaminated Sites Management Series<sup>1</sup>.

The Civil Works Contractor will liaise with the Superintendent and/or Principal's Environmental Consultant to arrange for testing of the excavated remediation areas prior to backfilling the excavations. Validation testing will be undertaken by the Principal's Environmental Consultant. The Civil Works Contractor will allow for a period of up to three weeks between notifying the Superintendent and/or Principal's Environmental Consultant and receiving the validation testing results and/or disposal advice, although every endeavour will be made to turn validation results around more quickly. Additional time will be required if initial validation samples fail to meet the criteria. To summarise, validating the remedial works will involve the following:

- Recover samples from remediation excavations;
- Perform analytical testing on validation samples;
- Assess against applicable criteria;
- Remove any soil found to contain contaminant levels above the response levels; and
- Retest or re-validate those locations where contamination is removed.

Remediated areas will be backfilled following written advice from the Superintendent or Principal's Environmental Consultant that the validation testing results are acceptable. Further details are provided in Section 5.3.11 of the DAMP.

#### **9.1.1.3 Validation of Uncontrolled Fill Remediation Areas**

Remedial excavations associated with uncontrolled fill will be validated on a visual basis as outlined in Section 8.3.3. Where unexpected asbestos is encountered in uncontrolled fill material, the asbestos management strategy and validation sample density (as specified in Section 8.3.4 and 9.1.1.2) will be applied.

## **9.2 Soil Validation Sampling - Quality Control**

### **9.2.1 Soil Sampling Procedures**

All sampling procedures will be undertaken in accordance with Australian Standard AS 4482.1-1997 and AS 4482.2-1999: Guides to the sampling and investigation of potentially contaminated soil and also Development of Sampling and Analysis Programs (DEP, 2001).

- Samples will be collected by hand using clean latex gloves between sampling events. Where it is impractical to recover samples by hand due to depth of excavation or hard ground conditions, a hand auger will be used to recover the sample.

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<sup>1</sup> Department of Environment and Conservation (DEC) Contaminated Sites Management Series, Government of Western Australia, Perth: Assessment Level for Soil, Sediment and Water (DoE, 2003); Community Consultation (DEC, 2006a); Development of Sampling and Analysis Programs (DEP, 2001); Reporting of Site Assessments (2001); The Use of Risk Assessment in Contaminated Sites Assessment and Management - Guidance on the Overall Approach (DEC, 2006b).

- Samples will be placed into laboratory washed 250ml glass containers with teflon lids and stored on ice in an insulated container.
- Each sample will be identified by means of a label showing sample location, date, job number and depth. The proposed sample nomenclature is provided in Section 9.2.3.
- All field observations and subsurface conditions will be recorded in a field notebook. The notebook will include a description and comments regarding any apparent contamination.
- As per AS4482.1-2005 and AS4482.2-1999, all soil samples will be placed on ice within laboratory-supplied coolers immediately following recovery and chilled to 4°C. Coolers will then be transported from the site to the laboratory as soon as is practicable. Where immediate transport to the laboratory was not possible, samples will be kept in a cold storage facility on Coffey Environments premises.
- Samples will be stored at the laboratory in refrigerated conditions until extractions are performed. The laboratory will be obliged to extract samples within the applicable sample retention times as outlined in AS/NZS 5667.1:1998.

### 9.2.2 Decontamination Procedures

All non-disposable sampling equipment including hand trowels, shovels and hand augers that came into contact with soils will be decontaminated between sample locations in accordance with Coffey Environments standard operating procedures and AS 4482.1-2005. All sampling equipment will be cleaned in the following manner:

- Brushed in water containing DECON 90 (phosphate free detergent) until all visually obvious material is removed from equipment;
- Sampling equipment will then be rinsed in mains tap water;
- Sampling equipment will then be rinsed in laboratory supplied deionised water;
- Wash water will be disposed of in accordance with *Environmental Protection (Controlled Waste) Regulations 2004* as per waste water arising from the vehicle washdown.

### 9.2.3 Soil Validation Sample Nomenclature

Soil validation samples will firstly reference the remediation areas it relates to (i.e. Remediation Area 1 (RA1), RA2, RA3 or RA4) as indicated in Figure 7.

Samples will then reference a sequential validation number V1, V2, V3 etc. Each remediation area will contain its own set of sequential validation sample numbers starting at one in each instance.

Samples will then reference whether they relate to the base (B) or wall (W) of a remedial excavation. Samples obtained from the face of a remedial excavation will identify direction the face was in relation to the site i.e. north (N)/south (S)/east (E)/west (W).

The sample will also record the depth (in metres below ground level (mbgl)) at which it was obtained in addition to the date and job number.

As such each sample will be referenced in accordance with the following nomenclature e.g. RA1-V1WS (0.5mbgl).

A handheld GPS. will be used to record the co-ordinates of each sample location. Each validation sample will be recorded on a field log and a site plan will be annotated to identify its location on-site.

The sample log will also recorded which original site investigation location the validation sample relates to i.e. TP34, TP39 or TP46 etc. to facilitate cross referencing the validation of the area with the appropriate contaminants.

#### 9.2.4 Validation Sample Analysis

Soil validation samples will be tested for the specific contaminant identified at elevated concentrations at that location during the investigation phase as indicated in Table A and L and summarised below. MGT will undertake primary and duplicate sample analysis and SGS will undertake triplicate sample analysis (further details on sample quality control procedures are provided in Section 9.3).

**TABLE L**  
**SOIL VALIDATION SAMPLE ANALYSIS**

Sample Location	Analysis	Methodology	Limit of Reporting
TP55	Arsenic	USEPA 6010B/ USEPA 0020A	2.0mg/kg
TP34, TP39, TP76, TP73	Asbestos	PLM/Disp.Stain	Detected and Identified/ Non Detect
TP56	Cadmium	USEPA 6010B/ USEPA 0020A	0.50mg/kg
TP75	Dieldrin	USEPA 8080/8140/ USEPA 8270	0.05mg/kg
TP48	Lead	USEPA 6010B/ USEPA 0020A	5.0mg/kg
TP46, TP60, TP73, TP120, TP121	Zinc	USEPA 6010B/ USEPA 0020A	5.0mg/kg

### 9.3 Soil Validation - Quality Control

Quality control samples will not be identified in relation to the primary sample or the procedure they are aiming to assess (i.e. field blank/transport blank/equipment rinsate) but they shall be allocated a sequential quality control number i.e. QC1, QC2, QC3 etc. A field log will record quality control sample references. The following field and laboratory quality control samples will be undertaken during the remediation phase.

#### 9.3.1 Blank Samples

Field blanks comprise sample containers filled with laboratory deionised water, which are prepared in the field and are used to estimate contamination of a sample during the sample collection procedure.

Field blanks will be completed at a frequency of one per day. Field blanks will be analysed for COPCs (arsenic, asbestos, cadmium, dieldrin, lead and zinc).

Transport/Trip blanks are not considered necessary as COPs do not include any volatile contaminants.

### **9.3.2 Equipment Rinsate Samples**

Rinsate samples are used to provide confirmation that there has been no cross-contamination of substances from the sampling equipment used. Equipment rinsate samples comprise the waste water from the final rinse during equipment decontamination. Equipment rinsate samples will be completed at a frequency of one per sampling event. Equipment rinsate samples will be analysed for COPs (arsenic, asbestos, cadmium, dieldrin, lead and zinc).

### **9.3.3 Field Duplicate/Triplicate Samples**

The field duplicate/triplicate samples are used to assess field and analytical precision, and the precision measurement is determined using the relative percent difference (RPD) between the duplicate sample results. Generally, it is recommended that the RPD be less than 30-50% (Standards Australia, AS 4482-2005). In this instance, should the RPD not exceed 50%, then the results are considered acceptable.

A field duplicate/triplicate sample is collected at the same location as the original samples and are collected using identical recovery techniques. As no volatiles have been identified as COCs, the use of quartering technique during the preparation of duplicate and triplicate samples is considered appropriate. The duplicate will be submitted to the same laboratory as the primary samples whilst the triplicate will be submitted to an alternative laboratory.

Duplicate/triplicate samples will be collected at a frequency of one per 20 primary samples obtained and will be analysed for the same parameters as the primary sample.

### **9.3.4 Laboratory Quality Control**

The nominated laboratories are NATA registered and as such, undertake a number of quality control measures. These include reagent blanks, replicate analysis, recovery checks, internal standards and surrogate spikes. Laboratory QA/QC acceptance limits are as follows.

- Surrogates: 70% to 130% recovery
- Matrix Spikes: 70% to 130% recovery for organics or 80% to 120% recovery for inorganics
- Control Samples: 70% to 130% recovery for soil or 80% to 120% recovery for waters
- Duplicate Samples: <4PQL - +/-2PQL, 4-10PQL – 0.25 or 50%RPD, >10PQL – 0-10 or 30%RPD
- Method Blanks: <PQL

The results from these quality checks will be reported along with the sample analytical results in the test certificate.

### **9.3.5 Summary of Data Quality Indicators**

The following data quality indicators (DQI) are suggested as being appropriate for any subsequent soil sampling and are consistent with the process set out in AS 4482. The DQI defines how the quality of the data collected through the various phases of the investigation is to be assessed. These criteria are summarised in Table M and are in accordance with the DEC Contaminated Site Management Series.

**TABLE M**  
**EVALUATION CRITERIA OF THE VARIOUS FACETS OF THE INVESTIGATION**

Feature	Evaluation Criteria
Documentation and data completeness	<ul style="list-style-type: none"> <li>• Site conditions properly described.</li> <li>• Sampling locations properly described.</li> <li>• Completion of field records, calibration results, Chain of Custody documentation, laboratory test. certificates from NATA registered laboratories.</li> <li>• Samples collected from all areas of potential environmental concern identified (in consideration of works scope).</li> <li>• Samples are tested for all appropriate COC.</li> <li>• The proposed QA/QC programme will be carried out in accordance with the WA DEC CSMS.</li> </ul>
Data comparability	<ul style="list-style-type: none"> <li>• Use of appropriate techniques for the sampling, storage and transportation of samples.</li> <li>• Use of NATA certified laboratory using NEPM procedures.</li> <li>• Use of NATA certified check laboratory.</li> </ul>
Data representativeness	<ul style="list-style-type: none"> <li>• Collection of representative samples from each sampling location.</li> <li>• Collection of representative samples across the site.</li> <li>• Use of the appropriate techniques for the sampling, storage and transportation of samples.</li> <li>• Collection of equipment rinsate and field blanks at a frequency of one per day whilst undertaking soil sampling.</li> <li>• Use of duplicate and triplicate samples to be collected at a minimum rate of one in 20 primary samples.</li> <li>• Analysis of duplicate and triplicate samples for appropriate COC as per primary sample.</li> </ul>

**TABLE M**  
**EVALUATION CRITERIA OF THE VARIOUS FACETS OF THE INVESTIGATION**

Feature	Evaluation Criteria
Precision for sampling and analysis	<ul style="list-style-type: none"><li>• Use of properly trained and qualified personnel.</li><li>• RPDs to be less than 50%.</li><li>• Acceptable quality of rinsate blanks.</li></ul>
Accuracy for sampling and analysis	<ul style="list-style-type: none"><li>• Achieve laboratory QC criteria.</li><li>• Blanks returned with no contamination.</li><li>• All matrix and surrogates returned acceptable results.</li></ul>

## 9.4 Soil Validation Assessment Criteria

### 9.4.1 Chemical Contamination Validation Criteria

Soil validation sample results will be compared to the EILs and HIL-A criteria specified in *Assessment Levels for Soil, Sediment and Water* (DoE, 2003) as summarised in Table N below. These validation criteria have been adopted on the basis that the groundwater table is relatively shallow, the proximity of the Canning River and the fact that the site is proposed for a residential land use.

**TABLE N  
VALIDATION CRITERIA**

Analysis	Limit of Reporting (mg/kg)	EIL (mg/kg)	HIL-A (mg/kg)
Arsenic	2.0	20	30
Asbestos	Detected and Identified/Non Detect	zero asbestos fibres detected/ < 0.001% w/w asbestos	
Cadmium	0.50	3	20
Dieldrin	0.05	0.2	-
Lead	5.0	300	300
Zinc	5.0	200	7,000

#### 9.4.1.1 Asbestos Contamination Validation Criteria

An EnHealth publication titled *Guidelines for the Management of Asbestos in the Non-Occupational Environment* (EnHealth, 2005) proposes an assessment criteria of less than 0.001% w/w asbestos in soil as an appropriate standard for detection of asbestos in soil. *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia* (EHD, 2008) (which was released as a draft for comment), provides specific advice and recommendations on remediation and also adopts the assessment criteria proposed by EnHealth.

Both documents confirm the analytical and sampling difficulties associated with the assessment of asbestos fibers in soil, which mean that there are significant uncertainties associated with methodologies of the determination of asbestos concentrations in soil. As a result, while noting the recommended assessment criterion proposed, Coffey Environments will adopt as a remediation goal a criterion of zero asbestos fibres detected in validation samples. In the event that this is not achievable (considered unlikely), the alternative criterion of <0.001% w/w asbestos in soil will be used. In view of the known presence of fragments of asbestos sheeting and other asbestos-containing materials (ACM) on the site, an assessment goal of zero fragments of ACM as determined by a visual assessment will be adopted for assessing the successful remediation of area of the site at risk of being impacted by ACM.



## **10 CONTINGENCY RESPONSE**

### **10.1 Soil Management**

The results of the validation programme will be assessed against the proposed response levels as Where validation results exceed the response levels nominated in Table L, further remedial works will be undertaken and then the residual soil will be subjected to validation sampling. Remedial works will continue until all validation samples comply with the response level.

Additional contaminated material identified during the course of remedial works (either through the failure of validation samples, or due to other means of identification) will be excavated and subject to appropriate validation (and stockpile sampling if necessary) as for other contaminated soil.

#### **10.1.1 Stockpile Contingency Measures**

The following contingency measures will be put in place should stockpiling of contaminated soils be required.

- In order to reduce potential impacts of stockpiles on surface water quality, all stockpiles will be placed at least 30m from surface water.
- All stockpiles will be bunded to contain soil or surface run-off. Material used for bunding will be incorporated into the stockpile prior to off-site disposal.
- Any stockpiles of asbestos contaminated soil will be maintained under moist conditions and remain covered with tarpaulins at all times.
- Stockpiled material will be disposed of off-site in accordance with the Landfill Waste Classification and Waste Definitions 1996 (DoE, 2005).
- In order to confirm that all contaminated soil has been removed, validation sampling beneath 'small' stockpiles (<20m<sup>3</sup>) will comprise one composite sample analysed for COCs (as per Table L and N). Validation sampling beneath stockpiles of greater volume will be dictated by the footprint area of the stockpile and sampled in accordance with DEC guidelines using systematic grid sampling strategy for COCs.
- Validation samples from beneath stockpiles will be analysed for all identified COCs and compared against the validation criteria as outlined in Table N.

## **11 ADDITIONAL MONITORING REQUIREMENTS**

### **11.1 Dust Monitoring**

The monitoring of dust associated with excavations and/or soil screening is the subject of the DAMP (Coffey Environments, 2009).

### **11.2 Noise Monitoring**

Construction noise has the potential to impact on the health, welfare and amenity of nearby existing residents where not managed appropriately. A Noise Management Plan has been prepared (Coffey Environments, 2008a) as part of the overall Construction Environmental Management Plan (CEMP) for the site in accordance with Commitment 8, Schedule 2 of Ministerial Statement 692. The Noise Management Plan presents strategies to ensure that noise impacts at proposed residences within the Cygnia Cove development site are addressed during the construction phase of the project. Additionally, potential noise management measures to address noise impacts to surrounding sensitive premises as a result of site development works are included in the Plan. The salient points of the Noise Management Plan are summarised below.

#### **11.2.1 Noise Emissions from Construction Activities**

The management plan includes consideration of potential noise impacts from construction work on existing nearby residents and the potential for existing and future transport related noise on residences built within the subject land. With regard to construction activity, the nearest noise sensitive premises are located approximately 50m east and 150m north-east of the site boundaries. Key equipment/construction activities that can generate noise include:

- Vehicles and excavation equipment including trucks, front end loaders, excavators and semi trailer tippers; graders, scrapers, steel drum rollers;
- Dewatering plant;
- Installation of infrastructure.

#### **11.2.2 Hours of Operation**

The City of South Perth allow works to be carried out between 7.00am until 7.00pm Monday to Saturday. A further restriction of 9.00am to 3.00pm would apply to works on Manning Road due to traffic volumes during peak hours. The dewatering pumps would be required to run 24hrs/day however, they will be placed away from site boundaries.

#### **11.2.3 Out of Hours Operation**

Some 'out of hours' construction activities (i.e. before 7.00am and after 7.00pm on weekdays, weekends and public holiday) may occasionally be required to be undertaken. All construction work conducted 'out of hours' will require the submission of a separate Noise Management Plan and will be subject to approval by the City of South Perth. All construction work conducted 'out of hours' will be subject to compliance with the Noise Management and Mitigation Procedures. In the 24 hours prior to the commencement of the 'out of hours' work, the Site Superintendent will provide written notification to surrounding residents affected by the work. This written notification will include a 24 hour 'manned' telephone number for the Civil Works Contractor.

#### 11.2.4 Noise Management and Mitigation Procedures

Besides on-site earthmoving activity noise, the bulk of the earth to be excavated and removed from the site will be via an access onto Centenary Avenue located along the eastern side of the site. The following measures will be undertaken during bulk earthworks and other civil works activities during the site remediation and developments phase:

Particularly noisy activities will be scheduled for implementation in accordance with the *Environmental Protection (Noise) Regulations 1997* criteria in order to minimise public disturbance. The majority of construction activities will be undertaken within normal working hours (0700-1900 hours Monday to Saturday).

Personnel shall be trained in the operation of equipment that has the potential to generate noise emissions.

In accordance with *AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Site*, the equipment used will be the quietest reasonably available.

Personnel shall have access at all times to operational manuals for equipment being utilised and must be familiar with the procedures detailed in the operations manual.

Equipment maintenance and inspection schedules shall be implemented to ensure that all equipment is operating as per the manufacturer's instructions and within regulatory requirements. This will include ensuring all noise control equipment is correctly fitted and operating at design performance.

Locate compressors, mobile generators etc, as far away as possible from sensitive premises, where practicable.

Use silencers and noise attenuation on mobile equipment where practicable.

#### 11.2.5 Monitoring

Given the proposed management measures outlined in this Noise Management Plan, on-site monitoring during the site development phase is not proposed. However, the following measures will be implemented to ensure that the noise complaints received are recorded and where warranted, follow up investigative and remedial actions implemented:

A 24 hour manned telephone number direct to the Civil Works Contractor will be provided on perimeter signage.

The Civil Works Contractor will be responsible for the establishment and maintenance of a complaints register which will be located at the site office. All noise complaints received by the Civil Works Contractor are to be recorded in the register with the following information being recorded:

- Name of the complainant and their contact details, including telephone number and address);
- The date, time and details of the incident including an estimate of its duration.

The Civil Works Contractor will be responsible for notifying the Site Superintendent and the Principal's Environmental Consultant.

The Principal's Environmental Consultant will contact the complainant to establish the nature and cause of the complaint.

Where multiple complaints have been made, further site investigations (which may involve taking noise measurements) will be undertaken. Where on-site noise recordings are taken, the results of the measurements will be compared with relevant prescribed standards.

The Principal's Environmental Consultant will work with the Civil Works Contractor and the Site Superintendent to identify suitable corrective actions.

The Complaints Register will be updated to include information relating to the corrective action implemented and the date the corrective action was initiated.

#### **11.2.6 Noise Impact Reporting**

The progress and management of noise impacts during site remedial and development works will be reviewed and reported on an ongoing basis through established reporting regimes such as Annual Progress and Compliance Reports (PCR) to the DEC's Audit Section and the City of South Perth. The Annual PCR will be prepared for the duration of earthworks carried out on-site.

The number of noise complaints received each year will be reported to the DEC as part of PCR reporting requirements.

Where site specific noise surveys are conducted during the remedial and development works, the PCR will include:

- A summary of the results of the noise survey and discussion of any remedial actions implemented to minimise the likelihood of recurrence; and
- An assessment of the information against available previous monitoring results, licence limits or other appropriate measures (e.g. standards or guidelines).

#### **11.2.7 Complaints, Incidents and Exceedances**

A Complaints Register will be established and maintained by the Civil Works Contractor in the site office to record any complaints received, date, nature, and resolution action undertaken. Reporting of complaints to the Principal's Environmental Consultant and Principal will be the responsibility of the Civil Works Contractor.

The Principal's Environmental Consultant will contact any complainants that have concerns related to noise levels and determine the nature of the noise nuisance.

If the nuisance is of an on-going nature as deemed from the receipt of repeated valid complaints, the Civil Works Contractor and the Site Superintendent in consultation with the Principal's Environmental Consultant will take steps to ensure that any identified noise source is addressed in accordance with Incident and Exceedance Management Procedures discussed below.

Where noise surveys are conducted following repeated noise complaints, the results of all measurements will be evaluated against the prescribed standards by the Principal's Environmental Consultant. Where the emission levels are exceeded, the Civil Works Contractor and the Site Superintendent will be notified and the activity causing the problem will cease immediately.

The following corrective action should be taken prior to recommencing work:

- Recording of the date, time and reason for the incident or exceedance;
- Estimation of the period over which the exceedance occurred;

- Establishment and implementation of corrective action taken or planned to mitigate the noise exceedance; and
- Establishment of corrective action taken or planned to prevent a recurrence of the exceedance.

The Site Superintendent must advise the DEC within 24 hours of becoming aware of an exceedance of any measurement, which indicates that any prescribed limit has been exceeded. The Site Superintendent must advise the DEC in writing within 14 days of becoming aware of an exceedance of the status of corrective actions implemented to address the problem.

The Civil Works Contractor (including its employees and subcontractors) will be responsible for reporting environmental incidents and complaints on a designated Accident and Incident Report. Environmental incidents are defined as discharges or impacts that result from site works that exceed or have the potential to exceed the criteria specified in this Management Plan, and result in environmental harm.

Environmental incidents will be reported by the Civil Works Contractor to the Site Superintendent and Principal's Environmental Consultant.

Accident and Incident Reports and contact details for management of site activities will be provided in the site office while site works are being carried out. This will ensure that staff is able to immediately complete and submit a written record in the event of any environmental incident.

## 12 REMEDIATION AND VALIDATION REPORTING, TRAINING AND RESPONSIBILITY

The Principal for the East Clontarf project is The Trustees of the Christian Brothers of Western Australia, Inc. It is understood that TABEC have been appointed as the Site Superintendent, and Coffey Environments have been appointed as the Principal's Environmental Consultant. The Civil Works Contractor has yet to be appointed. For clarity, the terms Principal, Site Superintendent, Principal's Environmental Consultant, and Civil Works Contractor will be used in the following text.

### 12.1 Reporting

#### 12.1.1 General Reporting

The progress and management of remedial works will be reviewed on an ongoing basis. A summary of the review will be prepared by the Principal's Environmental Consultant with support from the Site Superintendent and Civil Works Contractor at the end of remedial works and will include:

- A summary of incidents and incident investigation results and proposed actions for mitigation of related potential environmental impacts;
- Compliance of the site works with established performance standards; and
- Suggested improvements or modifications to the Management Plan and/or procedures to address environmental issues associated with the construction works.

At the completion of works a summary of this information will be provided to the DEC in accordance with Progress and Compliance Reporting requirements.

#### 12.1.2 Soil Reporting Requirements

Project-specific reporting requirements relating to implementation of remedial and validation works prescribed in this plan are outlined in Table O.

**TABLE O**  
**SOIL REPORTING REQUIREMENTS**

Responsibility	Item	To Whom	Timing
Civil Works Contractor	Log of the remedial earthworks operation, tracking dates of excavation, location of the stockpile for each remediation area, and the management and/or disposal of excavated material.  Provision of tip dockets for all material disposed of off-site.	Site Superintendent and Principal's Environmental Consultant	At the end of remedial works.

**TABLE O**  
**SOIL REPORTING REQUIREMENTS**

<b>Responsibility</b>	<b>Item</b>	<b>To Whom</b>	<b>Timing</b>
Principal's Environmental Consultant	Soil validation testing results and disposal advice (if applicable).	Superintendent/Civil Works Contractor/Site Auditor	Within three weeks of notification of excavation.
Principal's Environmental Consultant	Close-out report.	Site Auditor, Principal and DEC	At the end of remedial works.
Principal's Environmental Consultant	Preparation of Progress and Compliance Reports.	Principal and DEC	Design, Construction and Post Construction.

Upon submission of the Close-out Report, Coffey Environments on behalf of The Christian Brothers will request that any condition(s) regarding asbestos management are formally cleared by the DEC.

## **12.2 Training and Awareness**

### **12.2.1 Site Induction**

Site inductions will be held prior to the commencement of works for all Civil Works Contractors and subcontractors involved in the project. During the site induction, potential environmental impacts and issues will be communicated to all site personnel. These communications may be in the form of training sessions and notices in a prominent position in the work place and will include:

- Overview of regulatory requirements relevant to the project;
- Information on the potential impacts of on-site works;
- Information to assist site personnel in identifying unacceptable off-site environmental impact problems;
- All workers will undergo a site induction that informs them of the dangers of asbestos, how to recognise asbestos products and the procedures to follow should asbestos products be uncovered;
- Protocols for the reporting of Occupational, Health, Safety and Environmental (OHS&E) incidents including a list of site contacts to be notified. Incidents are to be reported on an Accident and Incident Reporting Form;
- Instructions that all site personnel are responsible for reporting and where appropriate, taking action in the event of unacceptable impacts; and
- An outline of the contingency action plan that is to be used to rectify unacceptable off-site environmental impact or discharge problems.

### **12.2.2 Personnel Training**

The Civil Works Contractor will be assessed as to their ability to achieve environmental performance consistent with the requirements of this Management Plan. The Site Superintendent or delegated nominee will assess the requirements of the subcontract package and, where considered necessary, the Subcontractor(s) will be required to attend a specific training session.

The Civil Works Contractor will ensure all personnel performing duties required by this Management Plan are properly briefed. Where a need is identified, arrangements shall be made for appropriate environmental training. If necessary, assistance shall be provided initially to personnel (including sub-Civil Works Contractors) when carrying out assigned environmental duties until such time as the required training has been completed.

## **12.3 Responsibilities**

The earth works contractor is yet to be appointed. When this has been finalised, personnel details and appropriate contact numbers will be provided via an addendum to this management plan.

### **12.3.1 Principal**

The Principal or the Proponent for the project is ultimately responsible for the overall compliance with prescribed Ministerial Environmental Conditions and legislation relevant to the project.

### **12.3.2 Site Superintendent**

The Site Superintendent will ensure that the appointed Civil Works Contractor is required to prepare and implement environmental protection programs, appropriate to their activities and to cooperate in any environmental management plans implemented on the project.

The Principal's Environmental Consultant will be the main contact and conduit for ongoing liaison between regulatory authorities. Advice from the Civil Works Contractor and Site Superintendent may be sought as required.

The Civil Works Contractor will report directly to the Site Superintendent and will be responsible for implementing the Site Remediation and Validation Management Plan with assistance and direction from Principal's Environmental Consultant.

### **12.3.3 Principal's Environmental Consultant**

The Principal's Environmental Consultant will be responsible for activities associated with inspection and/or sampling of soil and dust, such as:

- Identify areas of potential asbestos soil contamination;
- Review soil validation data and provide advise with respect to appropriate management and/or off-site disposal of material;
- Review and evaluate analytical data obtained from all ongoing monitoring programs described in Section 4. The results of the monitoring will be included in a Close-Out report to be submitted to Site Auditor and the DEC as well as in accordance with post-development Progress and Compliance reporting.

The Principal's Environmental Consultant will be available to provide ongoing environmental advice and support to the Site Superintendent and Civil Works Contractor as needed.



Where necessary, the Principal's Environmental Consultant will be responsible for ongoing liaison with regulatory authorities and the community in relation to environmental issues.

The Principal's Environmental Consultant will coordinate community consultation initiatives relevant to the project, particularly the release of documentation for public review.

#### **12.3.4 Civil Works Contractor's Site Manager**

The responsibility for day-to-day site management lies with the Civil Works Contractor's Site Manager. He will be assisted by the nominated Principal's Environmental Consultant as necessary. The Civil Works Contractor's Site Manager will take overall responsibility for the environmental performance during construction and site development.

The Civil Works Contractor has responsibility to ensure activities under their direct control are completed in compliance with this Dust and Asbestos Management Plan and related Work Procedures, Inspection Plans, Procedural Checklists and Environmental Management Plans, as applicable.

In the event of absence from site, the Civil Works Contractor Site Manager will be represented by his delegate responsible for civil works.

The Civil Works Contractor is responsible for ensuring that all employees and civil works Subcontractors are fully cognisant of, and abide by, the Dust and Asbestos Management Plan.

The Civil Works Contractor will ensure all employees and Subcontractors are responsible for putting into practice the Site Remediation and Validation Plan and shall ensure that the factors which may compromise the achievement of overall project or environmental objectives are brought to the attention of the Site Superintendent and Principal's Environmental Consultant.

The Civil Works Contractor's Site Manager will:

- Be the initial central point of contact for all site related environmental issues;
- Be responsible for ensuring employee and Civil Works Contractor adherence to the Site Remediation and Validation Plan Dust;
- Maintain the content and implementation of induction training and tool box sessions;
- Keep records of who has been trained and to advise the Environmental Manager when new staff commence;
- Undertake and implement procedures and controls with respect to asbestos-containing material and dust management as outlined within Section 4 of the DAMP (Coffey Environments, 2009);
- Instigate and maintain a program of environmental recording and (as appropriate) environmental reporting against key performance objectives;
- Maintain a log of remedial earthworks operations and associated management and/or off-site disposal of material;
- Periodically inspect pollution management structures and equipment to confirm availability and completeness; and
- Be responsible for reporting all incidents of breach of this Site Contamination Investigation, Remediation and Validation Management Plan to the Site Superintendent and Environmental Consultant.

The Civil Works Contractors Site Manager and Environmental Consultant shall, in conjunction, be responsible for the follow works:

- Identification of access controlled work areas; and
- Review and management of imported fill.

#### **12.3.5 All Employees**

All employees engaged in field activities and under the direct control of Civil Works Contractor shall comply with the requirements of this Site Remediation and Validation Management Plan. Formal commitment to abide by project requirements will be ratified through the employees' respective employment contract.

## 13 COMMUNITY CONSULTATION

There has been an ongoing consultation with the community throughout the life of the project. This has included:

- The public consultation that formed part of the Environmental and Planning Approval process for the project;
- A number of information evenings held to inform the community in relation to the project; and
- Ongoing discussion with various regulatory authorities and community interest groups. A summary of the Community Consultation report is provided in PER document.

In addition, the following will be undertaken by the Civil Works Contractor:

- Prior to construction works commencing, signage will be placed at key points along the boundary of the installed on the site to inform the community that development works are commencing. Signage will include contact details in the event that dust or noise emissions are causing concern.
- A notice will be placed in the letterboxes of residents adjoining the development site. The notice will indicate who the appointed Civil Works Contractor is, provide a summary of the nature and duration of the works and provide contact details in the event that there are any concerns or issues.

### 13.1.1 Complaints, Incidents and Exceedances

Site personnel will be responsible for reporting environmental incidents and complaints on a designated Accident and Incident Report form. Environmental incidents are defined as discharges or impacts that result from site works that exceed or have the potential to exceed the criteria specified in this Management Plan, and result in environmental harm.

Any complaints received by the Civil Works Contractor Site Manager from members of the public and other key stakeholders (regulators, local authorities) will be reported Contractor to the Site Superintendent and Principal's Environmental Consultant and addressed within 24hrs.

Any environmental incidents (if they should occur) will be reported by the Civil Works Contractor Site Manager within 24 hours of occurrence to the Site Superintendent and Principal's Environmental Consultant.

The DEC will be provided with notification of any compliance breaches (where specified in individual management plans if they should occur) within 24hrs of occurrence.

Accident and Incident Reports and contact details for management of site activities will be provided in a readily accessible place while site works are being carried out. This will ensure that staff are able to immediately complete and submit a written record in the event of any environmental incident.

The Accident and Incident Report should include:

1. An *Incident Reporting Section* to be completed by the person reporting the incident. This section will require input of initial details of the incident, including:
  - the name of the person submitting the report;
  - the source of off-site impacts or discharges, including a description of the details of the operations that were being undertaken that resulted in the discharge or impact;

- the duration of the environmental incident if it results in, or had the potential to result in, unacceptable off-site impacts;
  - a description of equipment or machinery being operated at the time that caused the discharge or impact; and
  - a description of the impact management measures that were in place and being used when the discharge or impact occurred.
2. An *Assessment Section* of the Incident Form will be completed which requires the incident to be assessed in terms of urgency and actions considered appropriate to remedy the incident and minimise environmental impacts. Information to be supplied in this section includes:
- a brief assessment of the urgency and immediate impacts of the incident;
  - a description of the actions to be taken to rectify the discharges or impacts; and
  - an Action Report Section which includes:
    - details of the actions taken to immediately remedy the incident;
    - a brief report on the success of those actions; and
    - a description of changes to work practices or operations that are required to ensure that the incident will not re-occur together with a timetable for implementation of those changes.

The Accident and Incident Report will be given a sequenced identification number so that each form may be accounted for.

Coffey Environments will provide environmental management/monitoring record templates. Should the Civil Work Contractor provide alternative reporting formats/templates, they will be subject to review and approval by the environmental consultant prior to circulation for use on-site.

### **13.1.2 Public Availability of Documents**

As indicated in Condition 8.3 of Ministerial Statement No. 692 which states that '*the proponent shall make the Site (soil and groundwater) Contamination Investigation, Remediation and Validation Plan required by condition 8.1 publicly available*', all management plans will be made available to the public. Notification of the availability of all management plans will be advertised through relevant media outlets (e.g. local newspapers), and copies of all management plans will be lodged with:

- DEC Library - two copies;
- City of Canning Library - two copies;
- City of South Perth Library - two copies; and
- JS Battye Library - two copies.

## **14 SUMMARY AND CONCLUSIONS OF PROPOSED SITE CONTAMINATION, INVESTIGATION AND VALIDATION MANAGEMENT PLAN**

The site is considered to have been adequately assessed in terms of identifying the nature and extent of contamination across the site. The proposed remedial strategy is considered to be suitable on the basis that the management procedures outlined within this Site Contamination, Investigation, Remediation and Validation Management Plan, and other relevant management plans (ASSMP, DAMP, Groundwater Management Plan and Noise Management Plan) are adhered to and there are sufficient contingency measures in place to manage potential variations of the anticipated site conditions.

## 15 REFERENCES

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## **16 STATEMENT OF LIMITATIONS**

(please refer over the page)

## Important information about your **Coffey** Environmental Report

Uncertainties as to what lies below the ground on potentially contaminated sites can lead to remediation costs blow outs, reduction in the value of the 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 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).

### **Scope of Investigations**

---

The work was conducted, and the report has been prepared, in response to specific instructions from the client to whom this report is addressed, within practical time and budgetary constraints, and in reliance on certain data and information made available to Coffey. The analyses, evaluations, opinions and conclusions presented in this report are based on those instructions, requirements, data or information, and they could change if such instructions etc. are in fact inaccurate or incomplete.

### **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.

## Important information about your **Coffey** Environmental Report

### **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.

### **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**

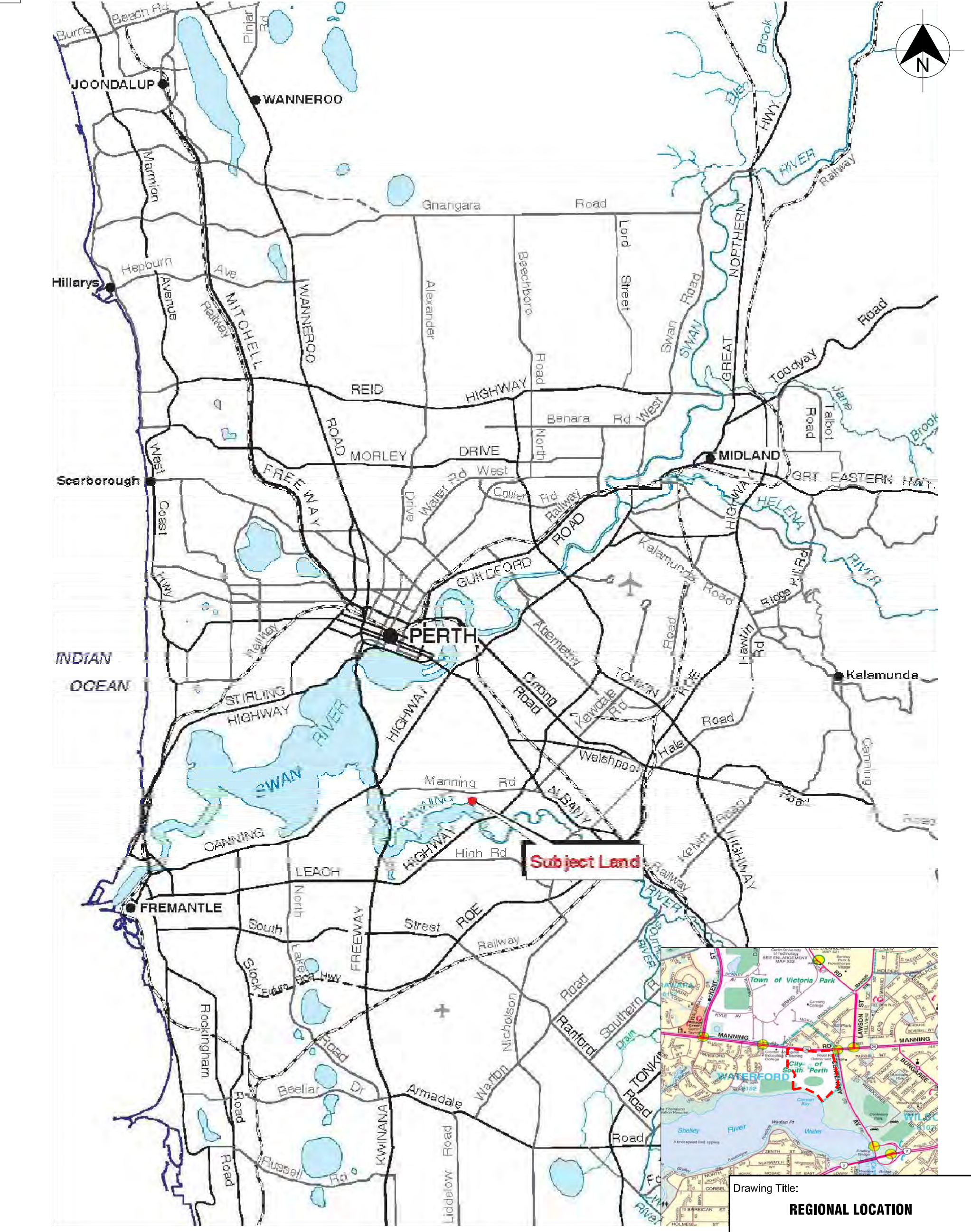
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Environmental reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than other design disciplines. This has often resulted in claims being lodged 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.

# Figures

**Site Contamination Investigation, Remediation and Validation Management Plan  
Cygnia Cove, Waterford, WA**

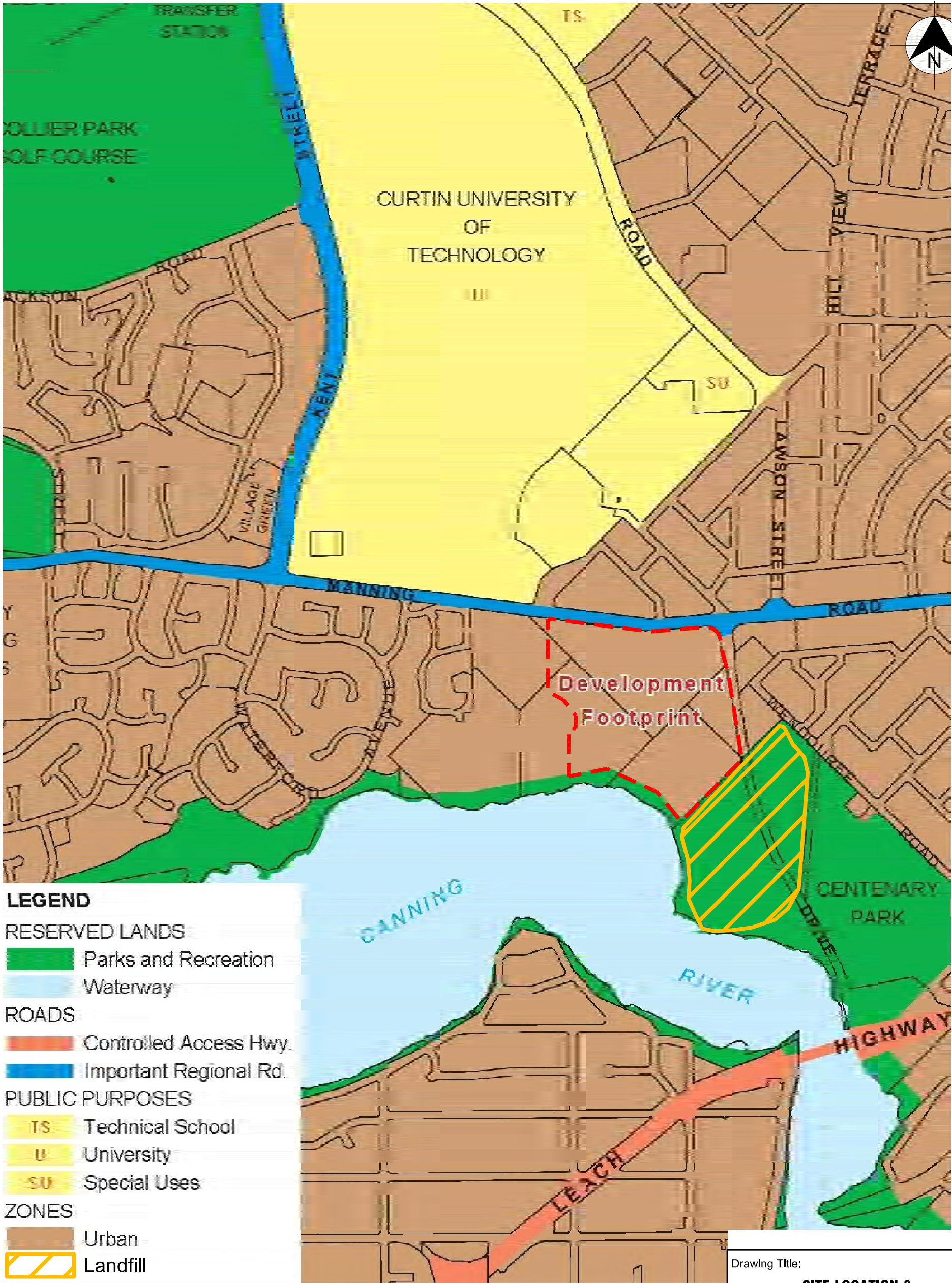




Drawing Title:  
**REGIONAL LOCATION**

<div><div>coffey</div><div>environments</div><div>SPECIALISTS IN LIVING AND WORKING PLACES</div></div>			<div>Ground Floor 89-91 Burswood Rd Burswood , WA 6100 Ph: (08) 9355 7100 Fax: (08) 9355 7197</div>			<div>Client:</div> <div>TRUSTEES OF THE CHRISTIAN BROTHERS</div>			<div>Project:</div> <div>SITE CONTAMINATION INVESTIGATION REMEDICATION &amp; VALIDATION MANAGEMENT PLAN</div>					
				<div><div>01.53.09</div><div>SCALE 1:150,000(A3) KILOMETRES</div></div>			<div>Location:</div> <div>CYGNIA COVE WATERFORD, WESTERN AUSTRALIA</div>			<div>Drawn LZ</div>		<div>Date 10.03.09</div>		
Rev	Date	Revision Details			Drn			<div>Project - Drawing No. ENVIBURW11899AA-D03</div>			<div>Figure No. 1</div>		<div>Rev. A</div>	





Drawing Title:  
**SITE LOCATION & SURROUNDING LAND USES**

<div><div><div>coffey</div><div>environments</div><div>SPECIALISTS IN LIVING AND WORKING PLACES</div></div><div><div>Ground Floor</div><div>89-91 Burswood Rd</div><div>Burswood , WA 6100</div><div>Ph: (08) 9355 7100</div><div>Fax: (08) 9355 7197</div></div></div>				<div>Client:</div> <div>TRUSTEES OF THE CHRISTIAN BROTHERS</div>				<div>Project:</div> <div>SITE CONTAMINATION INVESTIGATION REMEDATION &amp; VALIDATION MANAGEMENT PLAN</div>								
				<div><div><div>0100200300400500</div><div>SCALE1:10,000 (A3)METRES</div></div></div>				<div>Location:</div> <div>CYGNIA COVE WATERFORD, WESTERN AUSTRALIA</div>				<div>Drawn</div> <div>LZ</div>		<div>Date</div> <div>10.03.09</div>		
A	10.03.09	ISSUE		LZ					<div>Project - Drawing No.</div> <div>ENVIBURW11899AA-D03</div>		<div>Figure No.</div> <div>2</div>		<div>Rev.</div> <div>A</div>			
Rev	Date	Revision Details		Dm												





LEGEND

- Development Footprint Boundary
- Topographic Contour (m AHD)
- EPP Wetland Boundary
- Wetland Atlas Boundary (WRC, 1996)  
Conservation Category - Estuary
- ATA Environmental Wetland Boundary  
(approved by DoE, 9-3-04)
- Multiple Use Wetland Boundary,  
(DoE, 9-3-04)

Drawing Title:

**WETLANDS**

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Project:

SITE CONTAMINATION INVESTIGATION  
REMEDIATION & VALIDATION MANAGEMENT PLAN

Location:

CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

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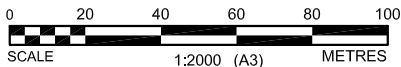
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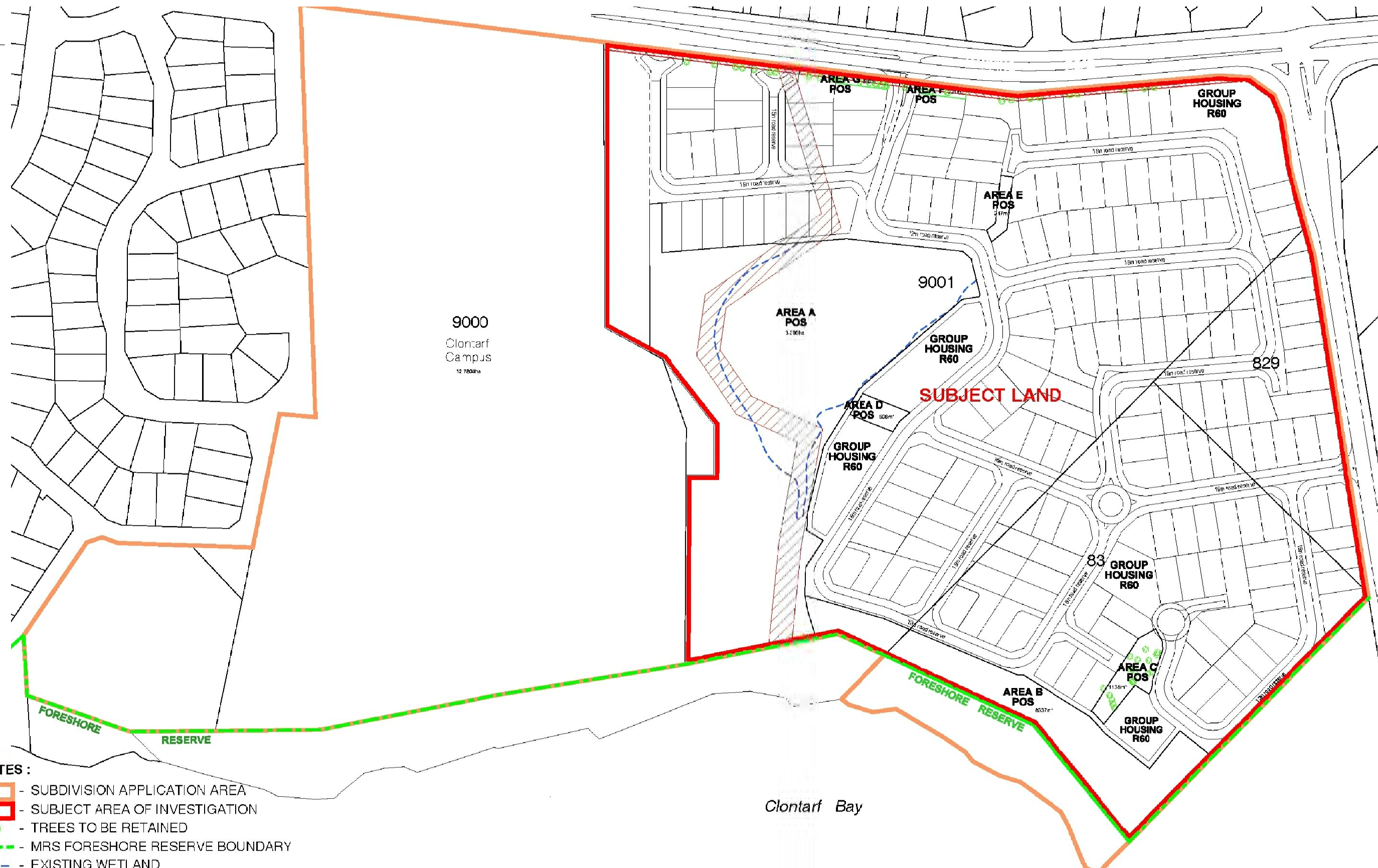
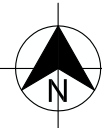
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**NOTES :**

- SUBDIVISION APPLICATION AREA
- SUBJECT AREA OF INVESTIGATION
- TREES TO BE RETAINED
- MRS FORESHORE RESERVE BOUNDARY
- EXISTING WETLAND
- EASEMENTS
- 3.5m DUAL USE PATH/ACCESS WAY
- AREAS AND DIMENSIONS SUBJECT TO SURVEY
- CARRIAGEWAYS ARE DIAGRAMMATIC ONLY

<div><div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div>coffey</div><div>environments</div><div>SPECIALISTS IN LIVING AND WORKING PLACES</div></div></div><div><div>Suite 2</div><div>53 Burswood Rd</div><div>Victoria Park, WA 6100</div><div>Ph: (08) 9355 7100</div><div>Fax: (08) 9355 7111</div></div></div>			<div>Client:</div> <div>TRUSTEES OF THE CHRISTIAN BROTHERS</div>			<div>Project:</div> <div>SITE CONTAMINATION INVESTIGATION REMEDICATION &amp; VALIDATION MANAGEMENT PLAN</div>			<div>Drawing Title:</div> <div>SUBDIVISION PLAN</div>		
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Rev	Date	Revision Details									

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<div>Drawn LZ</div>		<div>Date 10.03.09</div>	
<div>Project - Drawing No. ENVIBURW11899AA-D03</div>		<div>Figure No. 4</div>	





**LEGEND**

- Subdivision Application Area Boundary
- Development Footprint Boundary
- DEC Wetland Boundary
- Design Contours
- Easements
- Finished Lot Level
- Areas and dimensions subject to survey
- Carriageways are diagrammatic only
- Salt Marsh Area, Approximate

Drawing Title:		
SUBDIVISION PLAN		
Drawn	Date	
LZ	10.03.09	
Project - Drawing No.	Figure No.	Rev.
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Rev	Date	Revision Details
A	10.03.09	ISSUE

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Project:

SITE CONTAMINATION INVESTIGATION  
REMEDATION & VALIDATION MANAGEMENT PLAN

Location:

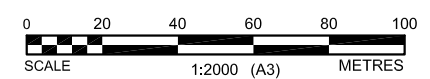
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WATERFORD, WESTERN AUSTRALIA

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SCALE1:2000 (A3)METRES

Drn





NOTE:  
ALL LOCATIONS ARE APPROXIMATE.  
DIMENSIONS IN METRES.

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Project: **SITE CONTAMINATION  
INVESTIGATION  
REMEDIATION & VALIDATION  
MANAGEMENT PLAN**

Location: **CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA**

Drawing Title:

**LANDSCAPE CONCEPT  
MASTER PLAN**

Drawn LZ	Date 10.03.09	
Project - Drawing No. ENVIBURW11899AA-D03	Figure No. 6	Rev. A





LEGEND

- Development Footprint Boundary
- Areas of Uncontrolled Fill
- Surface Soil Removal Buffer Zone
- Asbestos fibres detected: Proposed remediation area
- Analytical concentration > EIL in soil profile: Proposed remediation area

Drawing Title:		
REMEDIATION AREAS		
Drawn	Date	
LZ	10.03.09	
Project - Drawing No.	Figure No.	Rev.
ENVIBURW11899AA-D03	7	A

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Rev	Date	Revision Details	Drn
A	10.03.09	ISSUE	LZ

Client:	Project:
TRUSTEES OF THE CHRISTIAN BROTHERS	SITE CONTAMINATION INVESTIGATION REMEDIATION & VALIDATION MANAGEMENT PLAN
Location:	
CYGNIA COVE WATERFORD, WESTERN AUSTRALIA	
<div><div>020406080100</div><div>SCALE1:2000 (A3)METRES</div></div>	





LEGEND

- CTP+ COFFEY GEOSCIENCES TEST PITS (ATA ENVIRONMENTAL, JANUARY 2001)
- SPx COFFEY GEOSCIENCES PROBE HOLE (ATA ENVIRONMENTAL, JANUARY 2001)
- CPx COFFEY GEOSCIENCES CONE PENETROMETER (ATA ENVIRONMENTAL, JANUARY 2001)
- ECB COFFEY GEOSCIENCES PIEZOMETER (ATA ENVIRONMENTAL, JANUARY 2001)
- CACx CASBESTOS INVESTIGATION LOCATIONS (ATA ENVIRONMENTAL, MAY 2002)
- ECVx EAST CLONTARF ASBESTOS VALIDATION SAMPLE LOCATION (ATA ENVIRONMENTAL, SEPTEMBER 2002)
- TP DETAILED SOIL & GROUNDWATER INVESTIGATION (ATA ENVIRONMENTAL, DECEMBER 2003)
- MW1-MW5 DETAILED SOIL & GROUNDWATER INVESTIGATION (ATA ENVIRONMENTAL, DECEMBER 2003)
- MW6-MW7 DETAILED SOIL & GROUNDWATER INVESTIGATION (ATA ENVIRONMENTAL, DECEMBER 2004)
- MW1A-MW2A BASELINE GROUNDWATER MONITORING (COFFEY ENVIRONMENTS, SEPTEMBER 2008)
- ASSMW8-ASSMW13 BASELINE GROUNDWATER MONITORING (ATA ENVIRONMENTAL, SEPTEMBER 2008)
- EC ASS1-EC ASS10 ACID SULPHATE SOILS INVESTIGATION (ATA ENVIRONMENTAL, AUGUST 2003)
- EC ASS11-EC ASS14 ACID SULPHATE SOILS INVESTIGATION (ATA ENVIRONMENTAL, FEBRUARY 2007)

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Client:

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Project:

SITE CONTAMINATION INVESTIGATION  
REMEDATION & VALIDATION MANAGEMENT PLAN

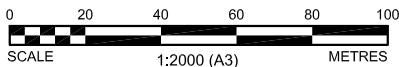
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CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

Drawing Title:

**HISTORIC SITE  
INVESTIGATION LOCATIONS**

Rev	Date	Revision Details	Drn
A	10.03.09	ISSUE	LZ



Drawn LZ	Date 10.03.09
Project - Drawing No. ENVIBURW11899AA-D03	Figure No. 8
	Rev. A





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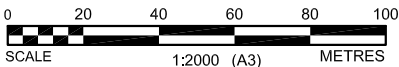
Project:

SITE CONTAMINATION INVESTIGATION  
REMEDATION & VALIDATION MANAGEMENT PLAN

Drawing Title:

**SUBDIVISION OF SITE BASED ON  
GEOTECHNICAL ASSESSMENT  
(COFFEY, 2000)**

Rev	Date	Revision Details	Dwn
A	10.03.09	ISSUE	LZ



Location:

CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

Drawn  
LZ

Date  
10.03.09

Project - Drawing No.  
ENVIBURW11899AA-D03

Figure No.  
9

Rev.  
A

# Appendix A Certificate of Titles

**Site Contamination Investigation, Remediation and Validation Management Plan  
Cygnia Cove, Waterford, WA**

WESTERN



AUSTRALIA

# RECORD OF CERTIFICATE OF TITLE UNDER THE TRANSFER OF LAND ACT 1893

REGISTER NUMBER <b>9001/DP44883</b>	
DUPLICATE EDITION <b>1</b>	DATE DUPLICATE ISSUED <b>29/7/2005</b>

VOLUME  
**2598**FOLIO  
**42**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

*RG Roberts*  
REGISTRAR OF TITLES



## LAND DESCRIPTION:

LOT 9001 ON DEPOSITED PLAN 44883

## REGISTERED PROPRIETOR: (FIRST SCHEDULE)

TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INC OF 53 REDMOND STREET,  
MANNING

(AF J356146) REGISTERED 11 JULY 2005

## LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS: (SECOND SCHEDULE)

1. A204584 EASEMENT TO CITY OF SOUTH PERTH - SEE SKETCH ON DEPOSITED PLAN 44883. REGISTERED 8.5.1969.
2. C225053 EASEMENT TO METROPOLITAN WATER SUPPLY, SEWERAGE AND DRAINAGE BOARD. SEE DEPOSITED PLAN 44883. REGISTERED 29.9.1981.
3. E874859 EASEMENT TO THE WATER AUTHORITY OF WESTERN AUSTRALIA - SEE DEPOSITED PLAN 44883. REGISTERED 6.5.1992.
4. H480522 EASEMENT TO WATER CORPORATION. SEE DEPOSITED PLAN 44883. REGISTERED 22.6.2000.
5. \*I080093 MEMORIAL HERITAGE OF WESTERN AUSTRALIA ACT 1990. AS TO PORTION ONLY. SEE DEPOSITED PLAN 44883. LODGED 19.4.2002.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.  
\* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.  
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

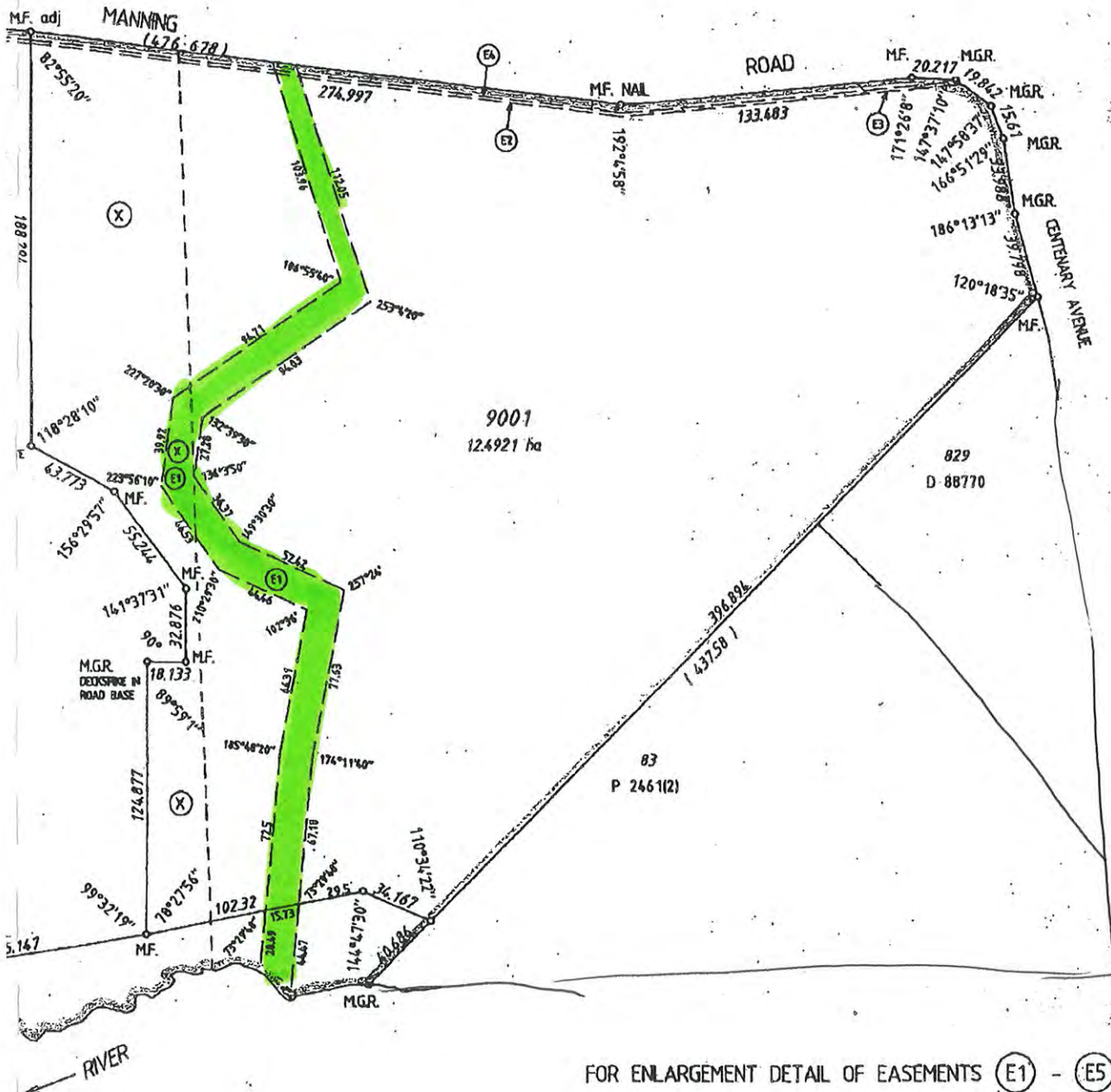
## STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP44883.  
PREVIOUS TITLE: 2222-238.  
PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.  
LOCAL GOVERNMENT AREA: CITY OF SOUTH PERTH.



DP 44883 (01)



FOR ENLARGEMENT DETAIL OF EASEMENTS (E1) - (E5) SEE SHEET 3

**SPECIAL  
SURVEY AREA  
SUBDIVISION**

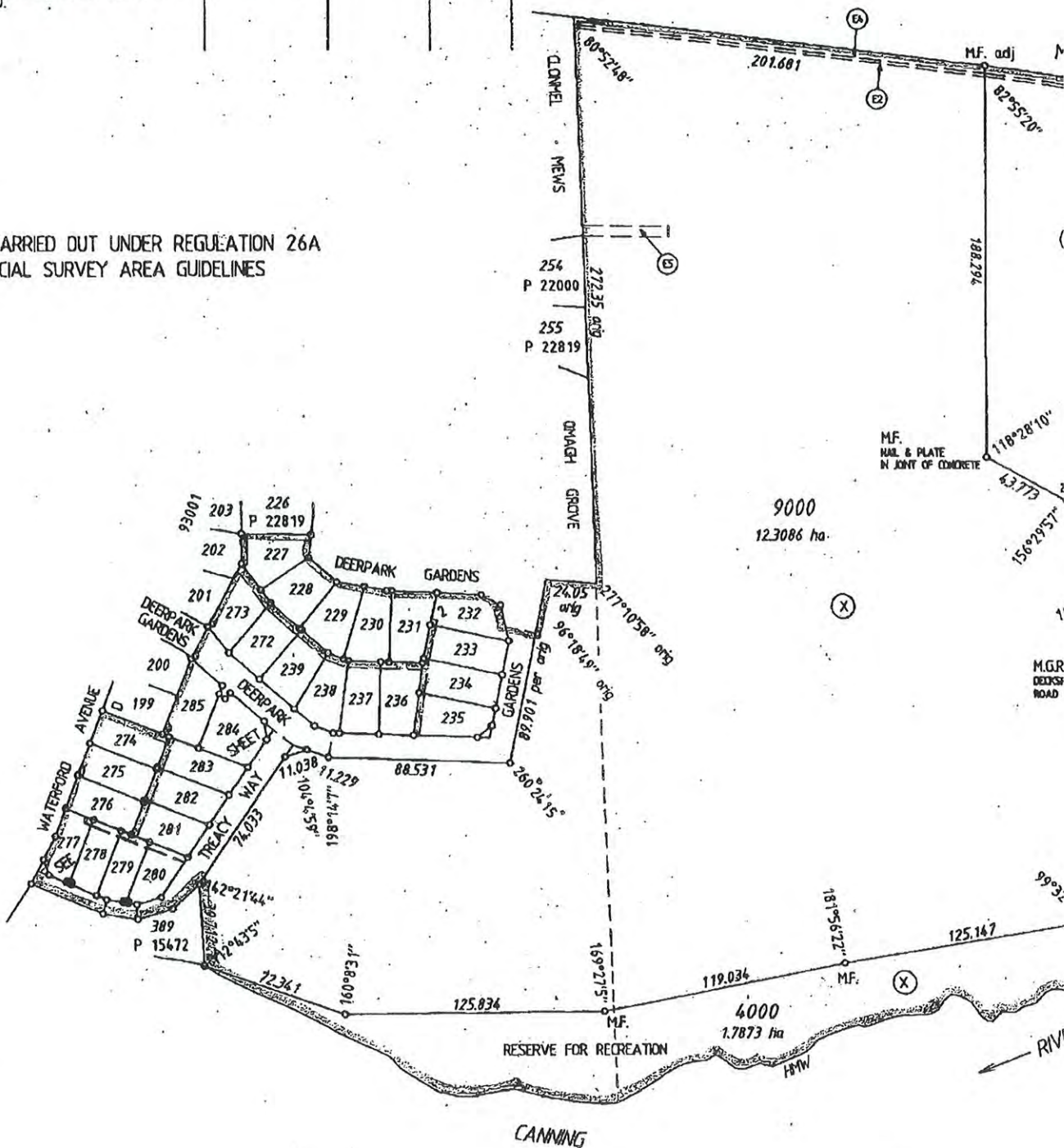
LOT	FORMER PI/TENURE	ON PLAN / DIAGRAM	TITLE
227-239, 272-274, 282-285 & 9001	Pt LOT 501	DP 30878	2222 - 238
277-279	Pt LOT 17	P 3383(2)	2205 - 650
275, 276, 280, 281 & 4000	Pt LOT 17 Pt LOT 501	P 3383(2) DP 30878	2205 - 650 2222 - 238
9000	Pt LOT 17 LOT 500	P 3383(2) DP 30878	2205 - 650 2222 - 237

<p>Reg 54</p> <p>...hereby certify survey and / or the field book lodged in accordance with the is lodged.</p> <p>10-2-05 Date</p> <p>TY LTD SET 00 1290</p>	<p>LOGGED</p> <p>DATE 10.2.05</p> <p>FEE PAID \$1662</p> <p>ASSESS No. 446732</p>	<p>TYPE OF VALIDATION</p> <p>FULL AUDIT LEGAL COMPONENT</p> <p>DOCKET 44217</p> <p>CERTIFIED CORRECT 11.4.05</p> <p>ISC</p> <p>F&amp;C 162-2005</p>	<p>IN ORDER FOR DEALINGS</p> <p>SUBJECT TO Application to Surrender under the provisions of the LGA, Sec 20 A &amp; Sec 27A of J.P.O.D. Act &amp; Sec 70 A of T.L.A.</p> <p>J. Gheorghiade 11.7.05</p> <p>FOR INSPECTOR OF PLANS &amp; SURVEYS / AUTHORIZED LAND OFFICER</p> <p>DATE</p>	<p>Department of Land Information</p> <p>DEPOSITED PLAN</p> <p>44883</p> <p>SHEET 1 OF 5</p> <p>EDITION 1 VERSION 3</p>
	<p>APPROVED BY WESTERN AUSTRALIAN PLANNING COMMISSION</p> <p>FILE 118831</p> <p>DELEGATED UNDER 320 WAPC ACT 1995</p> <p>DATE 8-7-2005</p>	<p>APPROVED REG 26A (4)</p> <p>11.07.2005</p> <p>INSPECTOR OF PLANS &amp; SURVEYS / AUTHORIZED LAND OFFICER</p> <p>DATE</p>		



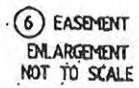
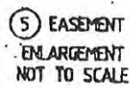
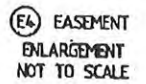
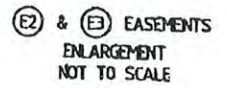
ED/VER.	AMENDMENT	BY	SIGNATURE	DATE
1-2	REGULATION 6 SEWERAGE EASEMENTS IN LOTS 276 & 277 AMENDED.	Hope & Ptnrs	RLP	8-4-2005
1/3	SURVEY SHEET (ALSO SHOWING NON STANDARD MARKING) BEING SHEET 5 NOW LODGED.	OLI		11-7-2005

SURVEY CARRIED OUT UNDER REGULATION 26A  
SPECIAL SURVEY AREA GUIDELINES



FOR INTERESTS AND NOTIFICATIONS SEE SHEET 4

TYPE.....FREEHOLD.....	FORMER TENURE SEE TABLE	SCALE 1:2000 ALL DISTANCES ARE IN METRES 0-----
PURPOSE.....SUBDIVISION.....	ON INDEX BG34(2) 15.17, 15.18	SURVEYOR'S CERTIFICATE - Reg 54 I, J D LUTLEY, hereby state that this is a correct representation of the survey and / calculations from measurements recorded in the field book for the purposes of this plan and that it complies with the relevant written law in relation to which it is lodged. J D Lutley 10-2- Licensed Surveyor Date
PLAN OF LOTS 227-239, 272-285, 4000, 9000, 9001, ROADS & EASEMENTS	SEA YES / NO	
DISTRICT.....CANNING.....TOWNSHIP.....	FIELD BOOK 94952	SURVEY FIRM P G S HOPE & PARTNERS PTY LTD 11/24 THOROGOOD STREET VICTORIA PARK WA 6100 Ph 9470 1229 Fax 9470 1280 Email pgs@llnet.net.au
FILE.....LOCALITY.....WATERFORD.....		
LOCAL AUTHORITY.....CITY OF SOUTH PERTH.....		

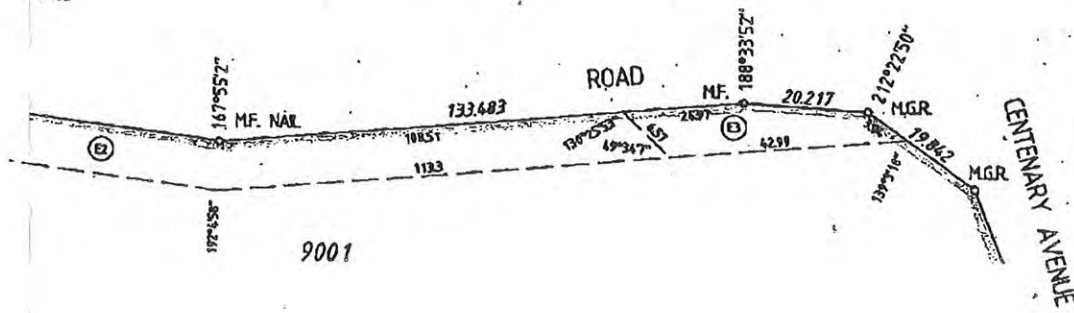




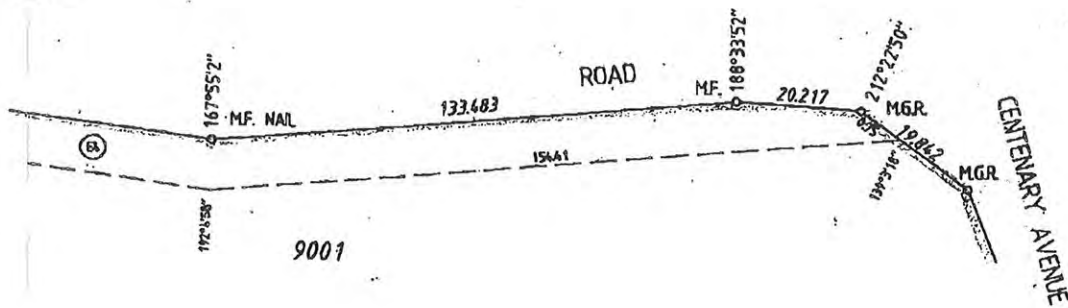
3. SEE SHEET 1



# EASEMENTS GEMENT SCALE

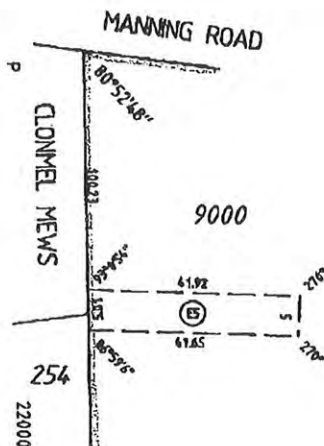


MENT  
ENT  
SCALE



(E1) EASEMENT  
ENLARGEMENT  
NOT TO SCALE

(E5) EASEMENT  
ENLARGEMENT  
NOT TO SCALE



SCALE NOT TO SCALE  
ALL DISTANCES  
ARE IN METRES

Licensed Surveyor J D Lutey Date 10-2-05

APPROVED BY  
WESTERN AUSTRALIAN PLANNING COMMISSION

FILE 118831

DELEGATED UNDER S.20 WAPC ACT 1985

DATE.....8-7-2005.....

SHEET 3 OF 5

EDITION 1 VERSION 3



Department of  
Land Information

DEPOSITED PLAN

44883

FOR HEADING SEE SHEET

## INTERESTS AND NOTIFICA

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BU
(E1)	EASEMENT		DOC ( A204584 )	LOTS 4000
(E2)	EASEMENT		DOC ( C225053 )	LOTS 9000
(E3)	EASEMENT		DOC ( E874859 )	LOT 9
(E4)	EASEMENT		DOC ( H480522 )	LOTS 9000
(E5)	EASEMENT		DOC ( H281804 )	LOT 9
(X)	MEMORIAL	SEC 56(1) HERITAGE OF W.A. ACT 1990	DOC ( 1080093 )	LOTS 9000, 90
(5)	EASEMENT (DRAINAGE)	SEC 27A OF THE T.P. & D. ACT. REG 5	THIS PLAN	LOTS 227, 272-274 &
(6)	EASEMENT (SEWERAGE)	SEC 27A OF THE T.P. & D. ACT. REG 6.	THIS PLAN	LOTS 27
LOT 4000	RESERVE FOR RECREATION NOTIFICATION	VEST IN CROWN UNDER SEC 20A OF THE T.P. & D. ACT SECTION 70A OF THE T.L.A.	THIS PLAN DOC ( J356147 )	LOTS 227-239


E SHEET 1


 DP 44883 (04)

## NOTIFICATIONS

LAND BURDENED	BENEFIT TO	COMMENTS
LOTS 4000 & 9001	CITY OF SOUTH PERTH	SEE NOTE 'Z'
LOTS 9000 & 9001	SEE DOCUMENT	SEE NOTE 'Z'
LOT 9001	SEE DOCUMENT	SEE NOTE 'Z'
LOTS 9000 & 9001	SEE DOCUMENT	SEE NOTE 'Z'
LOT 9000	WATER CORPORATION	
LOTS 9000, 9001 & 4000	HERITAGE COUNCIL OF W.A.	
LOTS 227, 232-239, 272-274 & 277-283	CITY OF SOUTH PERTH	
LOTS 276-281	WATER CORPORATION	
LOTS 227-239 & 272-285		CITY OF SOUTH PERTH

NOTE 'Z'  
THE EASEMENT DIMENSIONS AND POSITION ON THIS PLAN  
IS AN INTERPRETATION. SEE ORIGINAL DOCUMENT.

SCALE ALL DISTANCES ARE IN METRES		 Department of Land Information
Licensed Surveyor <i>J. D. Lacey</i> 10-2-05 Date APPROVED BY WESTERN AUSTRALIAN PLANNING COMMISSION FILE 118831 DELEGATED UNDER S.20 WAPC ACT 1985 DATE 8-7-2005 SHEET 4 OF 5 EDITION 1 VERSION 3		
		DEPOSITED PLAN 44883



WESTERN



AUSTRALIA

REGISTER NUMBER <b>9000/DP44883</b>	
DUPLICATE EDITION <b>1</b>	DATE DUPLICATE ISSUED <b>29/7/2005</b>

**RECORD OF CERTIFICATE OF TITLE**

UNDER THE TRANSFER OF LAND ACT 1893

VOLUME  
**2598**FOLIO  
**41**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

*RG Roberts*

REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 9000 ON DEPOSITED PLAN 44883

**REGISTERED PROPRIETOR:  
(FIRST SCHEDULE)**

TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INC OF 53 REDMOND STREET,  
MANNING

(AF J356146) REGISTERED 11 JULY 2005

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:  
(SECOND SCHEDULE)**

1. C225053 EASEMENT TO METROPOLITAN WATER SUPPLY, SEWERAGE AND DRAINAGE BOARD. SEE DEPOSITED PLAN 44883. REGISTERED 29.9.1981.
2. H281804 EASEMENT TO WATER CORPORATION. SEE DEPOSITED PLAN 44883. REGISTERED 16.11.1999.
3. H480522 EASEMENT TO WATER CORPORATION. SEE DEPOSITED PLAN 44883. REGISTERED 22.6.2000.
4. H896290 LEASE TO MARR MOODITJ FOUNDATION INC OF 295 MANNING ROAD, WATERFORD EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 12.10.2001.
5. \*H933669 CAVEAT BY THE LOTTERIES COMMISSION AS TO PORTION ONLY. LODGED 21.11.2001.
6. \*1080093 MEMORIAL. HERITAGE OF WESTERN AUSTRALIA ACT 1990. AS TO PORTION ONLY. SEE DEPOSITED PLAN 44883. LODGED 19.4.2002.

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Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP44883.  
PREVIOUS TITLE: 2222-237, 2205-650.  
PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.  
LOCAL GOVERNMENT AREA: CITY OF SOUTH PERTH.

DELEGATED UNDER S20 WAPC ACT 1985 8-7-2005 DATE		APPROVED BY 118831 WESTERN AUSTRALIAN PLANNING COMMISSION		APPROVED REG 26A (4) 11.07.2005 DATE	
FILE 118831		APPROVED BY 118831		APPROVED REG 26A (4) 11.07.2005 DATE	
ASSESS NO. 446732		ASSESS NO. 446732		APPROVED REG 26A (4) 11.07.2005 DATE	
FEE PAID \$1662		FEE PAID \$1662		APPROVED REG 26A (4) 11.07.2005 DATE	
DATE 18.2.05		DATE 18.2.05		APPROVED REG 26A (4) 11.07.2005 DATE	
LEGAL COMPONENT		LEGAL COMPONENT		APPROVED REG 26A (4) 11.07.2005 DATE	
TYPE OF VALIDATION		TYPE OF VALIDATION		APPROVED REG 26A (4) 11.07.2005 DATE	
LOADED		LOADED		APPROVED REG 26A (4) 11.07.2005 DATE	

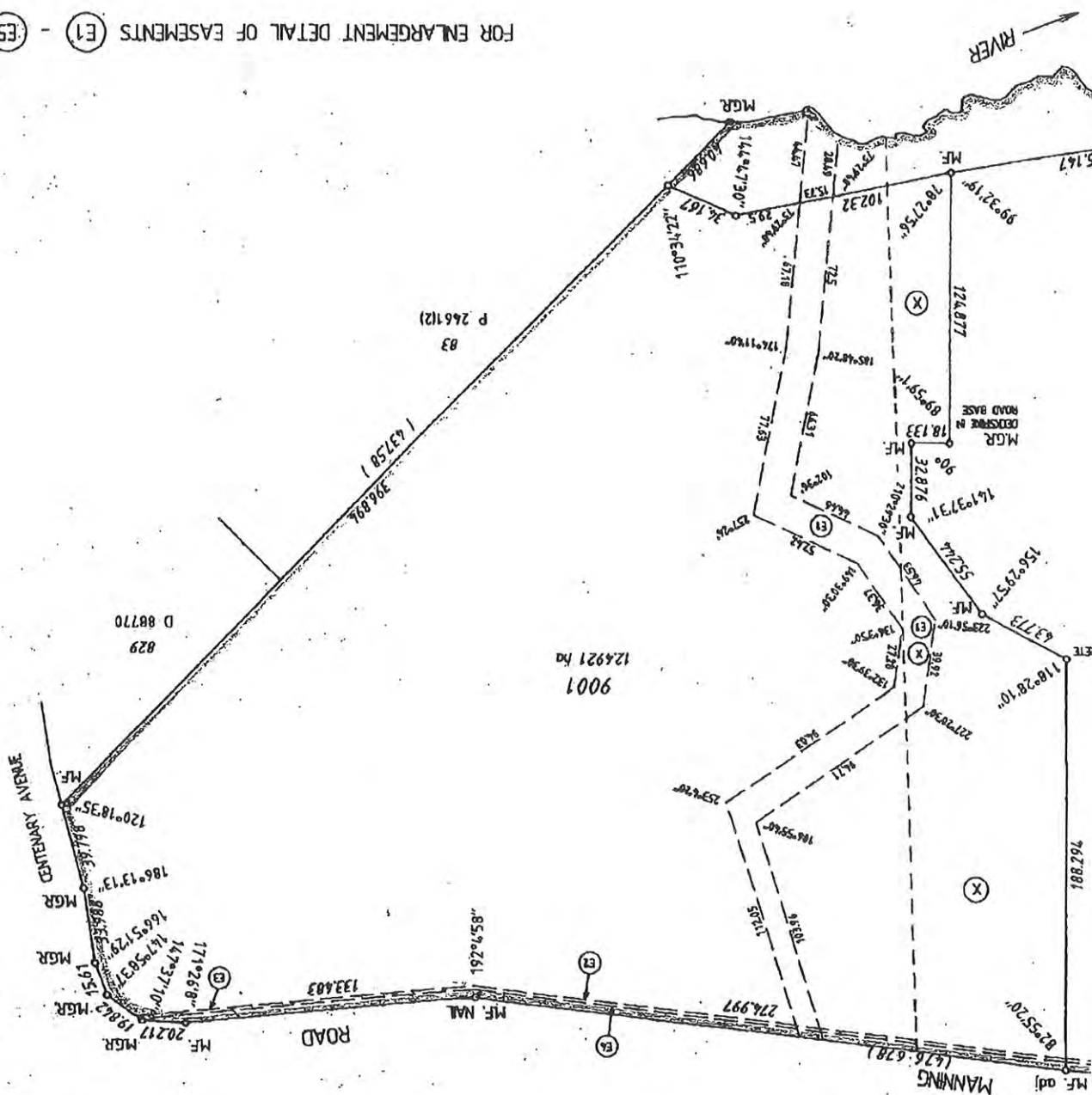
DEPARTMENT OF LAND INFORMATION  
 DEPOSITED PLAN  
 44883

IN ORDER FOR DEALINGS  
 SUBJECT TO APPLICATION TO SURVEYOR  
 11.07.05

SPECIAL SURVEY AREA  
 SUBDIVISION

LOT	FORMER PI/TENURE	ON PLAN / DIAGRAM	TITLE
227-239, 272-274, 282-285 & 9001	Pt LOT 501	DP 30878	2222 - 238
277-279	Pt LOT 17	P 3383(2)	2205 - 650
275, 276, 280	Pt LOT 17	P 3383(2)	2205 - 650
281 & 4000	Pt LOT 501	DP 30878	2222 - 238
9000	Pt LOT 17	P 3383(2)	2205 - 650
	Pt LOT 500	DP 30878	2222 - 237

FOR ENLARGEMENT DETAIL OF EASEMENTS (E1) - (E5) SEE SHEET 3



DP 44883 (01)

FOR HEADING SEE SHEET

## INTERESTS AND NOTIFICA

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BU
(E1)	EASEMENT		DOC ( A204584 )	LOTS 4000
(E2)	EASEMENT		DOC ( C225053 )	LOTS 9000
(E3)	EASEMENT		DOC ( E874859 )	LOT 9
(E4)	EASEMENT		DOC ( H480522 )	LOTS 9000
(E5)	EASEMENT		DOC ( H281804 )	LOT 9
(X)	MEMORIAL	SEC 56(1) HERITAGE OF W.A. ACT 1990	DOC ( I080093 )	LOTS 9000, 90
(5)	EASEMENT (DRAINAGE)	SEC 27A OF THE T.P. & D. ACT. REG 5	THIS PLAN	LOTS 227, 272-274 &
(6)	EASEMENT (SEWERAGE)	SEC 27A OF THE T.P. & D. ACT. REG 6.	THIS PLAN	LOTS 27
LOT 4000	RESERVE FOR RECREATION NOTIFICATION	VEST IN CROWN UNDER SEC 20A OF THE T.P. & D. ACT SECTION 70A OF THE T.L.A.	THIS PLAN DOC ( J356147 )	LOTS 227-239



E SHEET 1



## NOTIFICATIONS

LAND BURDENED	BENEFIT TO	COMMENTS
LOTS 4000 & 9001	CITY OF SOUTH PERTH	SEE NOTE 'Z'
LOTS 9000 & 9001	SEE DOCUMENT	SEE NOTE 'Z'
LOT 9001	SEE DOCUMENT	SEE NOTE 'Z'
LOTS 9000 & 9001	SEE DOCUMENT	SEE NOTE 'Z'
LOT 9000	WATER CORPORATION	
LOTS 9000, 9001 & 4000	HERITAGE COUNCIL OF W.A.	
LOTS 227, 232-239, 272-274 & 277-283	CITY OF SOUTH PERTH	
LOTS 276-281	WATER CORPORATION	
LOTS 227-239 & 272-285		CITY OF SOUTH PERTH

NOTE 'Z'

THE EASEMENT DIMENSIONS AND POSITION ON THIS PLAN IS AN INTERPRETATION. SEE ORIGINAL DOCUMENT.

## SCALE

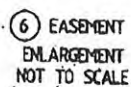
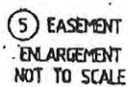
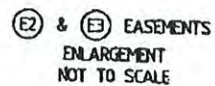
ALL DISTANCES  
ARE IN METRES

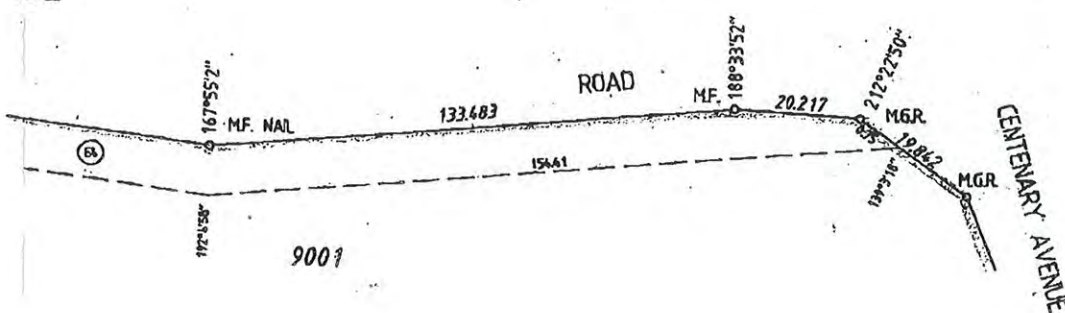
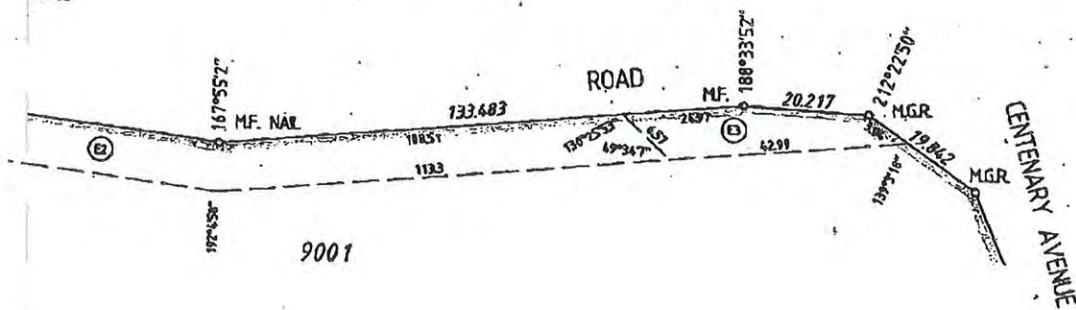
<i>J. D. Lacey</i> 10-2-05 Licensed Surveyor Date	
APPROVED BY WESTERN AUSTRALIAN PLANNING COMMISSION FILE 118831 <i>Albert</i> DELEGATED UNDER S.20 WAPC ACT 1983 DATE 8-7-2005	
SHEET 4 OF 5	EDITION 1 VERSION 3

Department of  
Land Information

DEPOSITED PLAN

44883





(E1) EASEMENT  
ENLARGEMENT  
NOT TO SCALE

(E5) EASEMENT  
ENLARGEMENT  
NOT TO SCALE



SCALE NOT TO SCALE  
ALL DISTANCES  
ARE IN METRES

.....  
 Licensed Surveyor Date

APPROVED BY  
WESTERN AUSTRALIAN PLANNING COMMISSION

FILE 118831

DELEGATED UNDER S.20 WAPC ACT 1985

DATE.....8-7-2005

SHEET 3 OF 5

EDITION 1 VERSION 3



Department of  
Land Information

DEPOSITED PLAN

44883





WESTERN



AUSTRALIA

# **RECORD OF CERTIFICATE OF TITLE** **UNDER THE TRANSFER OF LAND ACT 1893**

REGISTER NUMBER <b>829/D88770</b>	
DUPLICATE EDITION <b>N/A</b>	DATE DUPLICATE ISSUED <b>N/A</b>

VOLUME  
**2048**FOLIO  
**180**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

*RG Roberts*  
 REGISTRAR OF TITLES



## **LAND DESCRIPTION:**

LOT 829 ON DIAGRAM 88770

## **REGISTERED PROPRIETOR:** **(FIRST SCHEDULE)**

TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INC OF 53 REDMOND STREET,  
 MANNING

(T G048292 ) REGISTERED 6 DECEMBER 1995

## **LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:** **(SECOND SCHEDULE)**

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.

\* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.

Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

## **STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 2048-180.  
 PREVIOUS TITLE: 1731-311.  
 PROPERTY STREET ADDRESS: LOT 829 MANNING RD, WATERFORD.  
 LOCAL GOVERNMENT AREA: CITY OF SOUTH PERTH.

ORIGINAL—NOT TO BE REMOVED FROM OFFICE OF TITLES

Application F931159

WESTERN

AUSTRALIA

REGISTER BOOK

VOL.

FOL.

Volume 1731 Folio 311



# CERTIFICATE OF TITLE

UNDER THE "TRANSFER OF LAND ACT, 1893" AS AMENDED

CT 2048

180



I certify that the person described in the First Schedule hereto is the registered proprietor of the undermentioned estate in the undermentioned land subject to the easements and encumbrances shown in the Second Schedule hereto.

*G Jack*  
REGISTRAR OF TITLES



Dated 18th July, 1995

## ESTATE AND LAND REFERRED TO

Estate in fee simple in portion of Canning Location 1 and being Lot 829 on Diagram 88770, delineated on the map in the Third Schedule hereto.

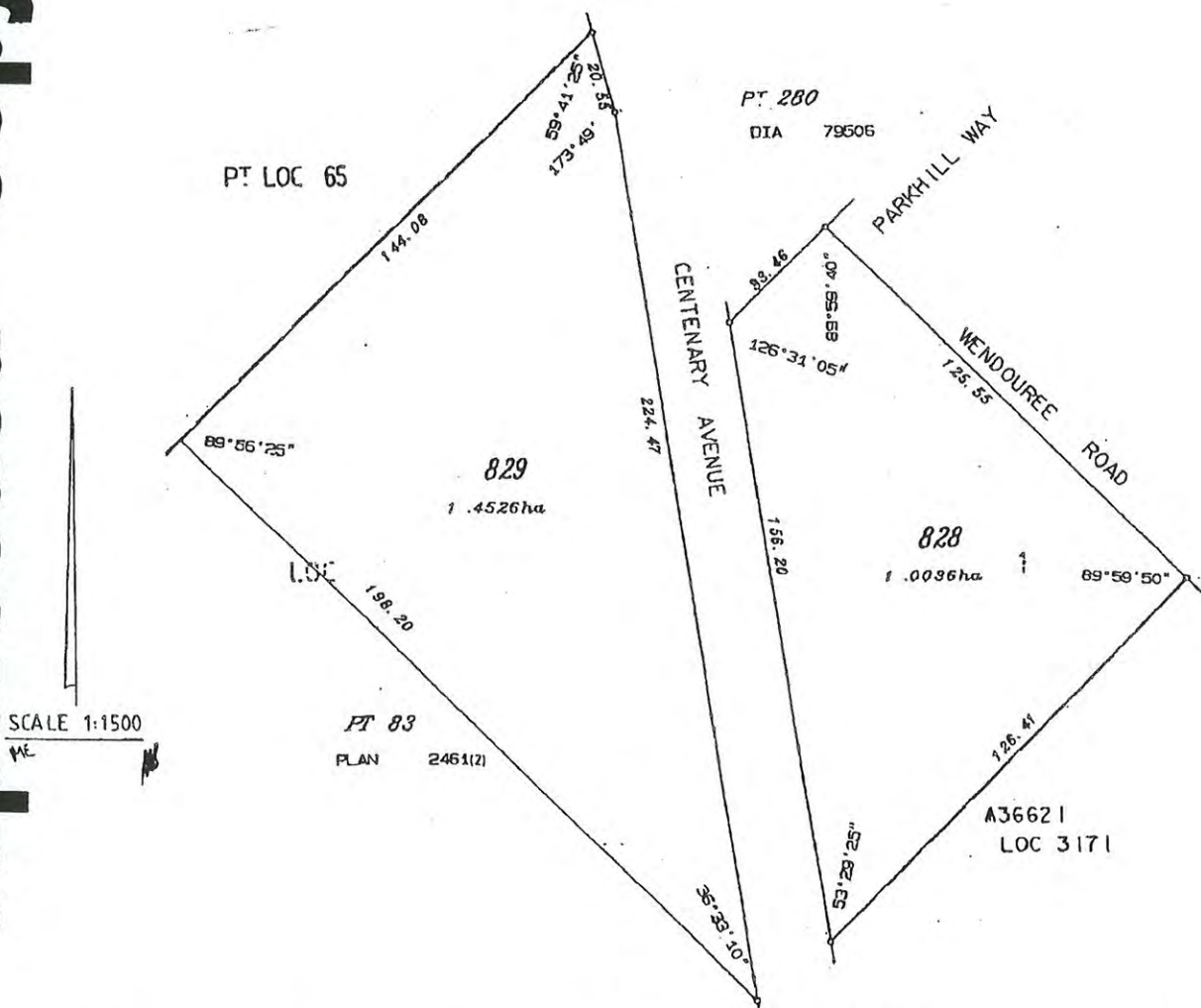
## FIRST SCHEDULE (continued overleaf)

~~Trustees of the Christian Brothers in Western Australia Inc. of 53 Redmond Street, Melbourne~~

## SECOND SCHEDULE (continued overleaf)

NIL

## THIRD SCHEDULE



NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

E67590/3/89-20M-L/4664

Superseded - Copy for Sketch Only

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON



# Superseded Copy for Sketch Only

NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS

FIRST SCHEDULE (continued)		INSTRUMENT NUMBER	NATURE	REGISTERED	TIME	SEAL	CERT. OFFICER
Multiple Sclerodsis Society of Western Australia (Inc) of Parkhill Way, Wilson.		F931161	Transfer	18.7.95	15.24		
Trustees of The Christian Brothers in Western Australia Inc. of 53 Redmond Street, Manning.		G48292	Transfer	6.12.95	11.21		

SECOND SCHEDULE (continued)		NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS									
INSTRUMENT		PARTICULARS	REGISTERED	TIME	SEAL	CERT. OFFICER	CANCELLATION	NUMBER	REGISTERED OR LODGED	SEAL	CERT. OFFICER
NATURE	NUMBER										

WESTERN



AUSTRALIA

REGISTER NUMBER <b>83/P2461</b>	
DUPLICATE EDITION <b>N/A</b>	DATE DUPLICATE ISSUED <b>N/A</b>

**RECORD OF CERTIFICATE OF TITLE**  
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME  
**2048**FOLIO  
**181**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

*RG Roberts*  
REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 83 ON PLAN 2461

**REGISTERED PROPRIETOR:**  
(FIRST SCHEDULE)

TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INC OF 53 REDMOND STREET,  
MANNING

(A F931160 ) REGISTERED 18 JULY 1995

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:**  
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE. VOL 2048 FOL 181.

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-----END OF CERTIFICATE OF TITLE-----

**STATEMENTS:**

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SKETCH OF LAND: 2048-181.  
PREVIOUS TITLE: 1731-311.  
PROPERTY STREET ADDRESS: LOT 83 MANNING RD, WATERFORD.  
LOCAL GOVERNMENT AREA: CITY OF SOUTH PERTH.



ORIGINAL—NOT TO BE REMOVED FROM OFFICE OF TITLES

Application F931160  
Volume 1731 Folio 311

WESTERN



AUSTRALIA

REGISTER BOOK  
VOL. FOL.CT 2048 181  

## CERTIFICATE OF TITLE

UNDER THE "TRANSFER OF LAND ACT, 1893" AS AMENDED

I certify that the person described in the First Schedule hereto is the registered proprietor of the undermentioned estate in the undermentioned land subject to the easements and encumbrances shown in the Second Schedule hereto.

*G. Jach*

REGISTRAR OF TITLES



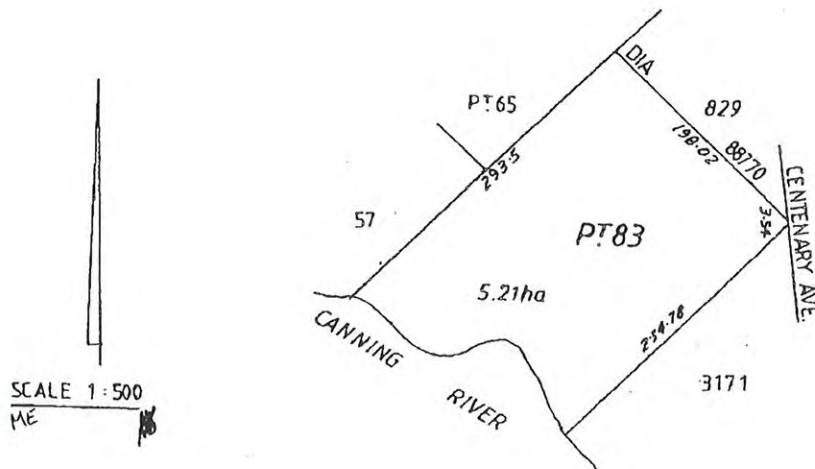
Dated 18th July, 1995

ESTATE AND LAND REFERRED TO

Estate in fee simple in portion of Canning Location 1 and being part of Lot 83 on Plan 2461 (Sheet 2), delineated on the map in the Third Schedule hereto.

FIRST SCHEDULE (continued overleaf)Trustees of the Christian Brothers in Western Australia Inc. of 53 Redmond Street, Manning.SECOND SCHEDULE (continued overleaf)

NIL

THIRD SCHEDULE

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

E67590/3/89-20H-1/4654

LT. 37

### FIRST SCHEDULE (continued)

**NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS**

**FIRST SCHEDULE (continued)**

**NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS**

**Supervised copy for owner only**

REGISTERED PROPRIETOR	INSTRUMENT NUMBER	REGISTERED TIME SEAL	CERT. OFFICER
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INSTRUMENT	REGISTERED	TIME	SEAL	CERT. OFFICER
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## SECOND SCHEDULE (continued)

**NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS**

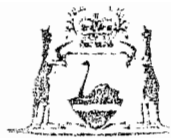
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CERTIFICATE OF TITLE VOL. FOL. 2048 181

# Appendix B

## Ministerial Statement

**Site Contamination Investigation, Remediation and Validation Management Plan  
Cygnia Cove, Waterford, WA**



GOVERNMENT OF WESTERN AUSTRALIA

**MINISTER FOR THE ENVIRONMENT; SCIENCE**

Statement No.

000692

**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED  
(PURSUANT TO THE PROVISIONS OF THE  
ENVIRONMENTAL PROTECTION ACT 1986)**

**EAST CLONTARF RESIDENTIAL DEVELOPMENT  
WATERFORD, CITY OF SOUTH PERTH**

**Proposal:** The residential development of the East Clontarf site, Waterford, as documented in schedule 1 of this statement.

**Proponent:** Trustees for The Christian Brothers in Western Australia Inc

**Proponent Address:** c/- Richard Noble and Associates, PO Box 7071 Cloisters' Square, PERTH WA 6850.

**Assessment Number:** 1467

**Report of the Environmental Protection Authority:** Bulletin 1156

The proposal referred to above may be implemented by the proponent subject to the following conditions and procedures:

**1 Implementation**

- 1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions and procedures of this statement.

**2 Proponent Commitments**

- 2-1 The proponent shall implement the environmental management commitments documented in schedule 2 of this statement.

Published on

11 OCT 2005

### **3 Proponent Nomination and Contact Details**

- 3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.
- 3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.
- 3-3 The nominated proponent shall notify the Department of Environment of any change of contact name and address within 60 days of such change.

### **4 Commencement and Time Limit of Approval**

- 4-1 The proponent shall substantially commence the proposal within five years of the date of this statement or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment will determine any dispute as to whether the proposal has been substantially commenced.

- 4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

- 1. the environmental factors of the proposal have not changed significantly;
- 2. new, significant, environmental issues have not arisen; and
- 3. all relevant government authorities have been consulted.

Note: The Minister for the Environment may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

### **5 Compliance Audit and Performance Review**

- 5-1 The proponent shall prepare an audit program and submit compliance reports to the Department of Environment which address:



1. the status of implementation of the proposal as defined in schedule 1 of this statement;
2. evidence of compliance with the conditions and commitments; and
3. the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environment is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

## **6 Wetland**

- 6-1 Within 12 months following subdivision/development approval, the proponent shall substantially commence construction of an approximately 1.9-hectare wetland shown in Figure 1 of schedule 1 as Public Open Space, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This wetland shall include the following:

1. Black Swan breeding habitat;
  2. revegetation with local indigenous species;
  3. landform recontouring;
  4. establishment and maintenance of wetland connection to Clontarf Bay and the Canning River;
  5. weed control measures;
  6. water quality and quantity monitoring; and
  7. contingency measures to maintain or improve water quality of water flowing into Clontarf Bay and the Canning River.
- 6-2 Prior to commencement of construction of the wetland required by condition 6-1, the proponent shall prepare a Wetland Management Plan which includes identification of species to be used in revegetation works on site, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.
- 6-3 The proponent shall implement the Wetland Management Plan required by condition 6-2.
- 6-4 The proponent shall make the Wetland Management Plan required by condition 6-2 publicly available.

## **7 Water Quality**

- 7-1 Prior to ground-disturbing activity, the proponent shall prepare a Drainage, Nutrient, Irrigation and Water Quality Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This Plan shall address the following environmental quality objectives as described in *Riverplan – An Environmental Management Framework for the Swan and Canning Rivers (August 2004)* to protect, restore and maintain:

1. ecosystem health;
  2. biological diversity;
  3. natural landscape;
  4. recreation; and
  5. water supply.
- 7-2 The proponent shall implement the Drainage, Nutrient, Irrigation and Water Quality Management Plan required by condition 7-1.
- 7-3 The proponent shall make the Drainage, Nutrient, Irrigation and Water Quality Management Plan required by condition 7-1 publicly available.
- 7-4 Prior to ground-disturbing activity, the proponent shall prepare an Ecotoxological Testing Plan to monitor the benthic habitat at the wetland discharge point into Clontarf Bay, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.
- 7-5 The proponent shall implement the Ecotoxological Testing Plan required by condition 7-4.
- 7-6 The proponent shall make the Ecotoxological Testing Plan required by condition 7-4 publicly available.

## **8 Site Contamination**

- 8-1 Prior to ground-disturbing activity, the proponent shall prepare a Site (Soil and Groundwater) Contamination Investigation, Remediation and Validation Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority with the concurrence of the Department of Health.

This Plan shall be prepared in general accordance with the Department of Environment *Contaminated Sites Management Series of Guidelines*, and shall include:

1. an Acid Sulfate Soil Management Plan; and
  2. an Asbestos Management Plan.
- 8-2 The proponent shall implement the Site (Soil and Groundwater) Contamination Investigation, Remediation and Validation Plan required by condition 8-1.
- 8-3 The proponent shall make the Site (Soil and Groundwater) Contamination Investigation, Remediation and Validation Plan required by condition 8-1 publicly available.

### **Procedures**

- 1 Where a condition states “to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority”, the Environmental Protection Authority will provide that advice to the Department of Environment for the preparation of written notice to the proponent.
- 2 The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environment.
- 3 Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environment.

### **Notes**

- 1 The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.

Dr Judy Edwards MLA  
MINISTER FOR THE ENVIRONMENT; SCIENCE

11 OCT 2005



**The Proposal (Assessment No. 1467)**

The proposal is for:

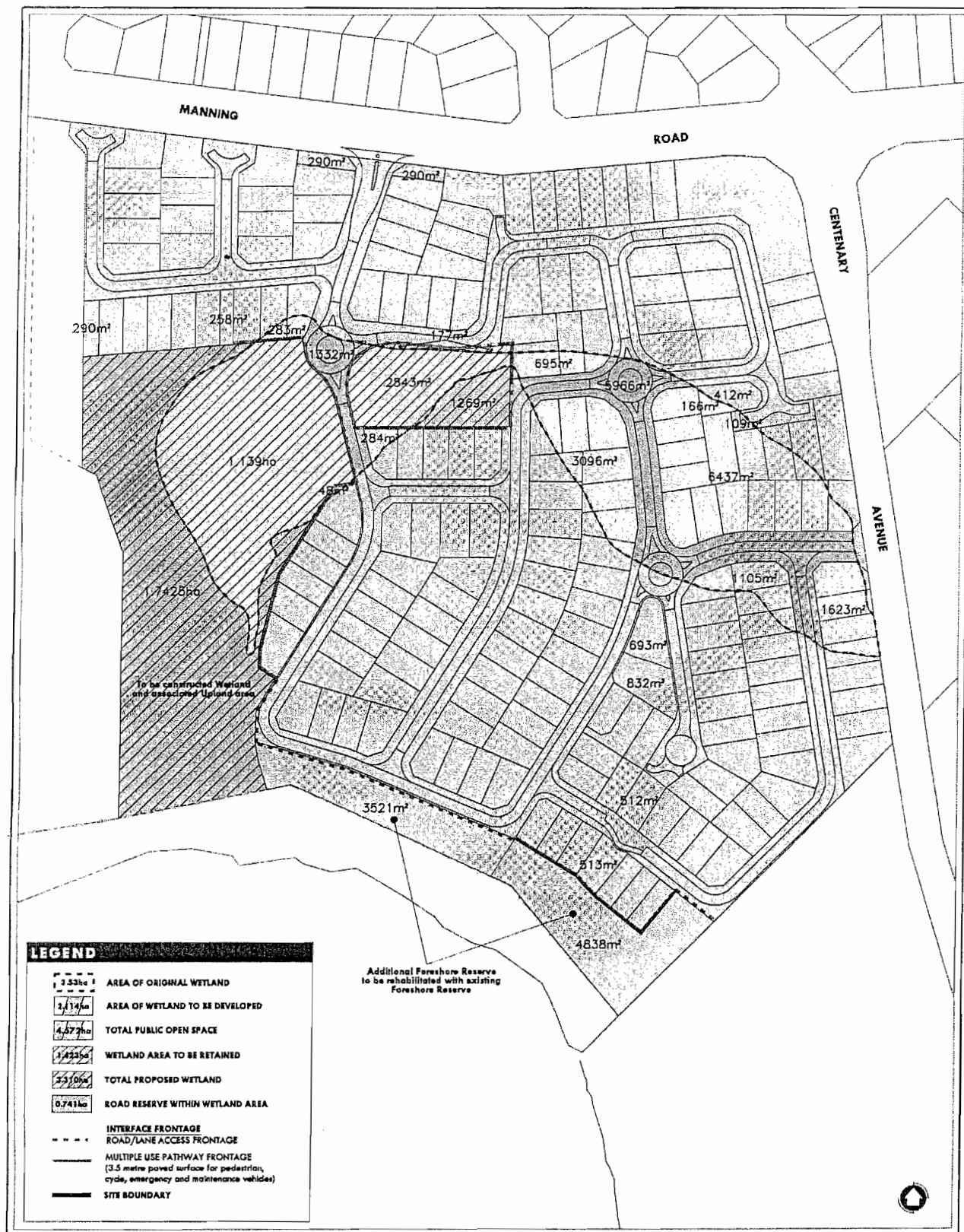
- the residential development of the 18-hectare East Clontarf site bounded by Manning Road, Centenary Avenue, the Clontarf Aboriginal Campus and the Canning River, creating up to 200 lots, as shown in Figure 1;
- the filling and draining of approximately 2.1 hectares of Resource Enhancement wetland identified in the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* and the *Draft Environmental Protection (Swan Coastal Plain Wetlands) Policy 2004*;
- the creation of an approximately 1.9-hectare wetland and associated upland vegetation adjacent to the existing wetland and Canning River;
- increasing the river foreshore area by approximately 8350 square metres;
- investigation into soil and groundwater contamination, and remediation as required;
- installation of two additional monitoring bores to perform additional ground and surface water monitoring; and
- provision of road frontage along both the wetland and the river foreshore, but not including the western section of Public Open Space which is to be a revegetated dryland buffer.

**Table 1 – Key Proposal Characteristics**

Element	Description
Proposal	Creation of up to 200 residential allotments
Area of disturbance	Approximately 16 hectares
Major components – <ul style="list-style-type: none"> <li>• Wetland modification</li> <li>• Dewatering</li> <li>• Disturbance to site hydrology</li> <li>• Remediation of site contamination</li> <li>• Additional foreshore reserve</li> <li>• Potential acid sulfate disturbance</li> <li>• Created wetland</li> <li>• Noise and dust creation</li> </ul>	<p>Draining and filling of approximately 2.1 hectares of Resource Enhancement wetland as depicted on schedule 1.</p> <p>Creation of not less than 1.9 hectares (approximately) of wetland.</p> <p>Provision of 8350 square metres of additional foreshore reserve.</p> <p>Hydrological maintenance – water quality and quantity.</p> <p>Remediation of on-site contamination.</p>

**Figure (attached).**

Figure 1 - Residential Development Plan



**Figure 1 - Residential Development Plan**

Note: The area for residential development is within the "site boundary", but excludes "Public Open Space", the "Wetland Area", and the "Area of Proposed Rehabilitated Wetland" indicated above.

**Schedule 2**

**Proponent's Environmental Management Commitments**

(September 2005)

**East Clontarf Residential Development  
Waterford, City of South Perth**

(Assessment No. 1467)

Trustees for  
The Christian Brothers in Western Australia Inc

## Proponent's Environmental Management Commitments – September 2005

### EAST CLONTARF RESIDENTIAL DEVELOPMENT, WATERFORD (Assessment No. 1467)

**Note:** The term “commitment” as used in this schedule includes the entire row of the table and its six separate parts as follows:

- a commitment number;
- a commitment topic;
- the objective of the commitment;
- the ‘action’ to be undertaken by the proponent;
- the timing requirements of the commitment; and
- the body/agency to provide technical advice to the Department of Environment.

No.	Topic	Objective	Action	Timing	Advice
1.	Construction Management	<p>To protect the remnant wetland vegetation identified for protection within <i>Bush Forever</i> adjoining the development from potential impacts associated with construction.</p> <p>To minimise (direct and indirect) impacts associated with the construction of the residential development and surrounds on fauna, surface and groundwater quality and quantity and local residents.</p>	<p>Prepare and implement a Construction Environmental Management Plan (CEMP) to the satisfaction of the DoE and the Cities of South Perth and Canning, which addresses:</p> <ol style="list-style-type: none"> <li>1. Dewatering Program;</li> <li>2. Detailed Remediation Assessment of Contaminated Soils;</li> <li>3. Acid Sulfate Soils Management Plan;</li> <li>4. Construction Noise Management Procedures; and</li> <li>5. Construction Dust Management Procedures.</li> </ol>	<p>Prepared and approved prior to construction.</p> <p>Implemented during construction.</p> <p>Audits to be completed during construction works and post-construction.</p>	<p>City of South Perth</p> <p>City of Canning</p>

No.	Topic	Objective	Action	Timing	Advice
2.	Foreshore Management	<p>To protect the conservation values identified for protection within the development adjacent to the Canning River foreshore.</p> <p>To mitigate proposed clearing within the development and enhance linkages and habitat value.</p>	<p>Prepare and implement a detailed Foreshore Management Plan to the satisfaction of the DPI, the SRT and the City of South Perth, which will include:</p> <ol style="list-style-type: none"> <li>1. Comprehensive weed eradication program;</li> <li>2. Revegetating and restoring foreshore POS adjoining conservation areas with appropriate indigenous flora of the Canning River;</li> <li>3. Increase the area contained within POS adjoining Bush Forever Site No. 333;</li> <li>4. Creation of habitat and wildlife corridors;</li> <li>5. Controlling vehicle and pedestrian access;</li> <li>6. Construction of a dog-proof fence along the existing Foreshore Reserve, if considered appropriate;</li> <li>7. Provision of public facilities;</li> <li>8. Soil and plant source material hygiene;</li> <li>9. Fire management including provision of fire hydrants;</li> <li>10. Provision of educational and interpretative materials within the area to raise awareness of JAMBA/CAMBA species which frequent the area;</li> <li>11. Encouraging community involvement and awareness by promoting control of pets (eg cats and dogs);</li> <li>12. Water conservation principles;</li> <li>13. Monitoring re-establishment or native and exotic plant species for a period of not less than 2 years followed by review;</li> <li>14. Monitoring criteria to determine the success of the revegetation and weed eradication program;</li> <li>15. Progress and compliance reporting; and</li> <li>16. Timing and implementation schedule.</li> </ol>	<p>Preparation prior to construction.</p> <p>Implementation to be as determined in schedule within the Foreshore Management Plan.</p>	<p>CALM SRT City of South Perth</p>
3.	Wetland Management	To minimise impacts on wetlands and to offset any wetland impacts to ensure no net loss of function or value.	<p>Prepare and implement a Wetland Management Plan to the satisfaction of the DoE and the City of South Perth which will include:</p> <ol style="list-style-type: none"> <li>1. Identification of existing wetland area to be retained;</li> <li>2. Avoiding direct and minimising indirect impacts on the wetland;</li> <li>3. Ensuring no net loss of wetland values and functions;</li> <li>4. Rehabilitation techniques to be employed;</li> </ol>	<p>Preparation prior to construction.</p> <p>Implementation to be as determined in schedule within the Wetland Management Plan.</p>	City of South Perth

No.	Topic	Objective	Action	Timing	Advice
			<ol style="list-style-type: none"> <li>5. Selection of appropriate local wetland and dryland species to maintain and enhance existing habitats;</li> <li>6. Mitigation strategies for loss of any vegetation will be investigated, including both on-site and off-site options;</li> <li>7. Creation of a new wetland area to be located adjacent to the existing wetland and the river foreshore suitable for Black Swan breeding habitat;</li> <li>8. adopt existing mosquito and midge management protocols currently utilised by the City of South Perth;</li> <li>9. Monitoring criteria to determine the success of the plan;</li> <li>10. Progress and compliance reporting; and</li> <li>11. Timing and implementation schedule.</li> </ol>		
4.	Groundwater Management	<p>To ensure that emissions do not adversely affect environmental values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.</p> <p>To determine the potential impacts of dewatering during the construction phase on the vegetation within the wetland areas, Canning River and groundwater quality.</p>	<p>(1) Prepare and implement a Groundwater Management Plan as a component of the CEMP to the satisfaction of the DoE, SRT and Water Corporation which will include:</p> <ol style="list-style-type: none"> <li>1. Determining the nature and extent of groundwater contamination;</li> <li>2. Installation of 2 additional monitoring bores;</li> <li>3. Quarterly sampling of both additional and existing monitoring bores for a 12-month period;</li> <li>4. Groundwater flow characteristics; and</li> <li>5. Groundwater contamination plume management.</li> </ol> <p>(2) Develop a Dewatering Program as a component of the CEMP to the satisfaction of the DoE.</p>	<p>Preparation of Groundwater Management Plan and Dewatering Program prior to construction.</p> <p>Implementation as per Plan/Program.</p> <p>Construction works to be timed and staged to minimise the volume of dewatering required.</p>	SRT Water Corporation



No.	Topic	Objective	Action	Timing	Advice
5.	Drainage, Nutrient, Irrigation and Water Quality Management	<p>To maintain acceptable water quality within the wetland and the Canning River in keeping with the Riverplan framework of management and best practice in urban stormwater management.</p> <p>To ensure that no road surface run-off directly enters the wetland.</p> <p>To ensure that there is provision for contaminant spillage entrapment.</p>	<p>Prepare and implement a Drainage, Nutrient, Irrigation and Water Quality Management Plan (DNIWQMP) to the satisfaction of the DoE, the SRT and the City of South Perth, which will include:</p> <ol style="list-style-type: none"> <li>1. Design and construction of the detention/infiltration basin;</li> <li>2. Periodic monitoring of the infiltration basin (post-construction) to ensure continued function and maintenance as required;</li> <li>3. Quarterly sampling of surface water body for a 12-month period;</li> <li>4. Maximising infiltration of uncontaminated stormwater at sources to recharge the groundwater system;</li> <li>5. Water conservation principles;</li> <li>6. Nutrient control;</li> <li>7. Prescribed fertilizer applications for areas of POS;</li> <li>8. Determination of flushing requirements, associated impacts and management options;</li> <li>9. Treating contaminated stormwater via gross pollutant and sediment traps;</li> <li>10. Directing treated stormwater into the Canning River along the south-eastern corner boundary of the site (as per DoE advice);</li> <li>11. Monitoring criteria to determine the success of the plan;</li> <li>12. Develop and implement contingency measures to be implemented in the event that monitoring criteria are exceeded;</li> <li>13. Progress and compliance reporting; and</li> <li>14. Timing and implementation schedule.</li> </ol>	<p>Preparation prior to construction.</p> <p>Implementation to be as determined within the DNIWQM Plan.</p>	SRT City of South Perth
6.	Site Contamination Assessments	To determine nature and extent of any soil or groundwater contamination present within the site which may pose a risk to human health or the environment.	<p>(1) Prepare and implement a Site Remediation (Contaminated Soils) Management Plan as a component of the CEMP to the satisfaction of the DoE.</p> <p>(2) Areas of soil identified as contaminated in excess of EIL or HIL criteria will be excavated (if directed by DoE) and the base and walls of the excavations validated in accordance with relevant DoE Guidelines for the Remediation of Contaminated Land.</p>	Preparation and implementation prior to site works in areas identified in the DSI as potentially contaminated.	DoH Worksafe City of South Perth City of Canning

No.	Topic	Objective	Action	Timing	Advice
			<p>(3) The excavated soil will then be assessed to determine the appropriate management option. A final decision on the management of excavated contaminated soils will be made once analytical results are available for excavated soil.</p> <p>(4) An alternative that may be considered is to screen the material to remove geotechnically unsuitable materials and then re-use the material as fill in appropriate areas on the site, such as POS.</p> <p>(5) A remediation assessment report will be submitted to DoE on conclusion of remediation works which provides detailed information on:</p> <ol style="list-style-type: none"> <li>1. The remediation strategy implemented;</li> <li>2. The results of validation and stockpile sampling; and</li> <li>3. Details of the management of all contaminated material.</li> </ol> <p>(6) Where areas have been identified as potentially affected by asbestos cement sheeting, prepare a specific Health and Safety Plan.</p> <p>This plan will be prepared as an appendix to the overall Site Remediation Management Plan.</p>	Before works commence	
7.	Water Conservation Principles	To conserve water.	<p>Water conservation measures will be applied within the development. These include:</p> <ol style="list-style-type: none"> <li>1. Promoting the use of plant species which have low water and fertiliser requirements;</li> <li>2. Utilising local native plant varieties in landscaping;</li> <li>3. Promoting landscape treatments sympathetic to climatic conditions and prevailing site conditions – soil types, topography, environment, wetlands etc.;</li> <li>4. Utilising "cluster or clump" plantings to provide useable shade areas and better use of reticulated water in preference to single item or symmetrical planting regimes;</li> <li>5. Irrigating POS areas at appropriate times so as to reduce evaporative loss and minimise transpiration losses; and</li> <li>6. Ensuring that the irrigation regime applied to areas of POS is responsive to prevailing weather conditions.</li> </ol>	To be considered within preparation of the Foreshore Management Plan, Groundwater Management Plan and the DNIWQMP (Commitments 3 and 9).	SRT City of South Perth

No.	Topic	Objective	Action	Timing	Advice
8.	Noise	To protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring that the noise levels meet statutory requirements and acceptable standards.	<p>Noise Management Procedures will be prepared for the site as part of the overall CEMP (see commitment 1).</p> <p>Measures to minimise noise levels received by proposed residences within the development from existing roadways will include:</p> <ol style="list-style-type: none"> <li>1. Construction of noise barriers between the roadway and residential lots;</li> <li>2. Specifying appropriate setbacks of proposed residences from existing roadways; and</li> <li>3. Specification of construction methods and materials (in keeping with “quiet house design” principles).</li> </ol>	<p>Prepared and approved prior to construction. Implemented during construction.</p> <p>Audits completed during construction works and post-construction.</p>	City of South Perth City of Canning
9.	Dust	To protect the surrounding land users such that dust and particulate emissions will not adversely impact on their welfare and amenity or cause health problems in accordance with the EPA’s Guidance Statement No. 18: Prevention of Air Quality Impacts from Land Development Sites.	<p>(1) Dust generated during construction will be minimised by the application of EPA guidelines and best practice in dust suppression.</p> <p>(2) Dust Management Procedures will be prepared for the site as part of the overall CEMP (see commitment 1).</p> <p>Measures to minimise dust levels will include:</p> <ol style="list-style-type: none"> <li>1. Watering of exposed surfaces;</li> <li>2. Minimising working surfaces at any one time; and</li> <li>3. Progressive rehabilitation of disturbed areas.</li> </ol>	<p>Prepared and approved prior to construction. Implemented during construction.</p> <p>Audits to be completed during construction works and post-construction.</p>	City of South Perth City of Canning
10.	Acid Sulfate Soil (ASS)	To plan and manage development that may potentially impact on ASS to avoid adverse effects on the natural and built environment and human activities and health.	<p>Prepare and implement an Acid Sulfate Soil Management Plan as a component of the CEMP (see commitment 1) to the satisfaction of the DoE, which will include:</p> <ol style="list-style-type: none"> <li>1. The area of PASS soils to be disturbed by excavation or dewatering will be minimised as far as possible;</li> <li>2. Where ASS must be disturbed: <ul style="list-style-type: none"> <li>• Earthworks will be completed as quickly as possible to minimise the time that the walls and base of excavations are exposed to the atmosphere;</li> </ul> </li> </ol>	<p>Prepared prior to commencement of any earthworks or dewatering in areas identified as having potential for Acid Sulfate Soils.</p> <p>To be implemented during construction.</p>	SRT

No.	Topic	Objective	Action	Timing	Advice
			<ul style="list-style-type: none"> <li>• Un-neutralised ASS/PASS will be stored for only limited periods on on-site bunded hardstand areas constructed from alkaline materials;</li> <li>• The quality of groundwater and dewatering effluents will be monitored regularly to ensure early detection of any alteration in water chemistry; and</li> <li>• if necessary, dewatering effluent will be treated to ensure that appropriate water quality is maintained; and</li> </ul> <p>3. Where excavated soils must be directed for off-site disposal, they will be directed to a site approved for acceptance and/or treatment of ASS by the DoE.</p>		
11.	Archaeological Investigations	To fulfil the requirements stipulated on the Section 18 clearance of the <i>Aboriginal Heritage Act 1972</i> .	<p>(1) Apply for clearance under Section 18 of the <i>Aboriginal Heritage Act 1972</i> to remove both previously recorded sites and any new sites that emerge as a result of earthmoving procedures located within the site which will be impacted by the development.</p> <p>(2) Also undertake further archaeological investigations if required as part of the Section 18 clearance. Such investigations may include:</p> <ol style="list-style-type: none"> <li>1. Surface recording, mapping and collection of archaeological material;</li> <li>2. Archaeological excavation and/or sub-surface evaluation;</li> <li>3. Recovery of samples for radiometric dating; and</li> <li>4. Analysis of recovered material.</li> </ol>	Site Heritage Protocol will be prepared prior to commencement of construction and implemented during construction, with any statutory processes followed as per the requirements of the <i>Aboriginal Heritage Act 1972</i> .	DIA

#### Abbreviations:

ASS - Acid sulfate soils  
 CAMBA – China-Australia Migratory Birds Agreement  
 CALM - Department of Conservation and Land Management  
 DIA - Department of Indigenous Affairs  
 DoE - Department of Environment  
 DoH - Department of Health

Assessment No. 1467

**Abbreviations continued:**

DPI – Department for Planning & Infrastructure  
DSI – Detailed site investigation  
EIL – Ecological Investigation Levels  
HIL – Health Investigation Levels  
JAMBA - Japan-Australia Migratory Birds Agreement  
PASS – Potential acid sulfate soils  
POS – Public Open Space  
SRT - Swan River Trust

# Appendix C

## Historical Soil Analytical Results

**Site Contamination Investigation, Remediation and Validation Management Plan  
Cygnia Cove, Waterford, WA**



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Environmental Assessment East Clontarf, Manning (ATA Environmental, 2001)

Sample Description	Metals (mg/kg)								Organochlorine Pesticides (mg/kg)										TPH (mg/kg)				Asbestos
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Aldrin	BHC's	Chlordane	Chlorpyrifos	Dieldrin	DDT	HCB	Heptachlor	Lindane	Total OC's	C 6-9	C 10-14	C 15-28	C 29-36	
EC CTP1 0-30cm	<5	<0.1	<1	<1	1	<0.02	<1	2	<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.01	<0.02	<0.01	<0.13	<0.02	<0.02	<0.04	<0.04	ND
EC CTP1 1m	12	<0.01	30	<1	18	0.04	1	1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.03	<0.01	<0.02	<0.01	<0.13	<0.02	<0.02	<0.04	<0.04	ND
EC CTP2 0-50cm	<5	<0.1	<1	<1	<1	0.02	<1	<1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP2 STI	<5	<0.1	<1	<1	<1	0.02	<1	<1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP3 0-50cm	<5	0.4	12	26	100	0.04	1	140	<0.01	<0.01	<0.01	<0.02	<0.01	0.04	<0.01	<0.02	<0.01	<0.15	<0.02	<0.02	<0.04	<0.04	ND
EC CTP3 1m	<5	<0.1	1	2	3	<0.02	<1	4	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP4 0-50cm	<5	0.1	6	4	7	<0.02	<1	11	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP4 1m	<5	<0.01	<1	<1	<1	<0.02	<1	<1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP5 0-50cm	NA	NA	NA	NA	NA	NA	NA	<1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	NA	NA	NA	NA	NA
EC CTP5 1m	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	NA	NA	NA	NA	NA
EC CTP6 0-50cm	<5	0.1	3	11	17	0.02	1	51	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP6 1m	<5	<0.01	1	<1	1	<0.02	<1	5	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP7 0-50cm	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	NA	NA	NA	NA	NA
EC CTP7 1m	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	NA	NA	NA	NA	NA
EC CTP8 0-50cm	<5	<0.01	3	2	5	<0.02	<1	6	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP8 1m	<5	<0.01	<1	<1	1	<0.02	<1	1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP9 0-50cm	<5	<0.01	<1	<1	1	<0.02	<1	4	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP9 1m	<5	<0.01	<1	<1	<1	<0.02	<1	3	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.02	<0.01	<0.11	<0.02	<0.02	<0.04	<0.04	ND
EC CTP10 0-50cm	<5	<0.01	4	4	110	<0.02	<1	200	<0.01	<0.01	<0.01	<0.02	0.23	0.08	<0.01	<0.02	<0.01	<0.41	<0.02	<0.02	<0.04	<0.04	ND
EC CTP10 1m	<5	<0.01	2	2	18	<0.02	<1	50	<0.01	<0.01	<0.01	<0.02	0.11	<0.01	<0.01	<0.02	<0.01	<0.21	<0.02	<0.02	<0.04	<0.04	ND
<b>ASSESMENT CRITERIA</b>																							
NEPM EIL	20	3	50	60	300	1	60	200	0.5	0.5	0.5	0.5	0.2	1.0	0.5	0.5	0.5	1	100	500	1000	NC	NC

Notes:

NA denotes "Not analysed"; ND denotes "Not detected"; NC denotes "No Criterion"

1 including metabolites

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Preliminary Assessment - Asbestos Contamination Clontarf Aboriginal College (ATA Environmental, 2002a)

Date	Sample Reference	Depth (m bgl)	Result
Mar-02	CAC1	0.0-0.1	Chrysolite Asbestos Detected. Amosite Asbestos Detected. 20 fibre bundles of varying dimensions detected in 89g of soil
Mar-02	CAC2	0.0-0.3	No Asbestos Detected
Mar-02	CAC2	0.5	No Asbestos Detected
Mar-02	CAC3	0.0-0.3	No Asbestos Detected
Mar-02	CAC3	0.5	Amosite Asbestos Detected. Chrysolite Asbestos Detected. 3 fibre bundles of varying dimensions detected in 73g of soil.
Mar-02	CAC4	0.0-0.1	Amosite Asbestos Detected. Chrysolite Asbestos Detected. 5 fibre bundles of varying dimensions detected in 86g of soil.
Mar-02	CAC4	0.3	Chrysolite Asbestos Detected. 6 fibre bundles of varying dimensions detected in 74g of soil.
Mar-02	CAC5	0.0-0.3	No Asbestos Detected
Mar-02	CAC5	0.5	No Asbestos Detected
Mar-02	CAC6	0.0-0.3	Amosite Asbestos Detected. Chrysolite Asbestos Detected. >20 fibre bundles of varying dimensions detected in 72g of soil.
Mar-02	CAC7	0.3	No Asbestos Detected
Mar-02	CAC8	0.0-0.3	Chrysolite Asbestos Detected. 2 fibre bundles of varying dimensions detected in 69g of soil.
Mar-02	CAC8	0.5	Amosite Asbestos Detected. Chrysolite Asbestos Detected. >20 fibre bundles of varying dimensions detected in 76g of soil.
Mar-02	CAC9	0.0-0.3	No Asbestos Detected
Mar-02	CAC9	0.5	Amosite Asbestos Detected. Chrysolite Asbestos Detected. 3 fibre bundles of varying dimensions detected in 72g of soil.
Mar-02	CAC10	0.0-0.1	Amosite Asbestos Detected. Chrysolite Asbestos Detected. >20 fibre bundles of varying dimensions detected in 68g of soil.
Mar-02	CAC11	0.0-0.3	Amosite Asbestos Detected. Chrysolite Asbestos Detected. >20 fibre bundles of varying dimensions detected in 68g of soil.
Mar-02	CAC11	0.5	No Asbestos Detected
Mar-02	CAC12	0.0-0.3	Amosite Asbestos Detected. Chrysolite Asbestos Detected. 4 fibre bundles of varying dimensions detected in 76g of soil.
Mar-02	CAC12	0.5	No Asbestos Detected

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria		--	500	1000	--	--	--	--	--	--	--	1
TP 1	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 1	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 1A	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 1A	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 2	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 2	0.3mDup	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 2	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 3	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 3	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 4	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 4	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 5	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 5	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 5	0.3mDup	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 6	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 6	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 7	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 7	0.3mDup	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 7	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 8	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 8	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 9	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 9	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 10	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 10	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 11	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 11	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 12	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 12	0.3mDup	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 12	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria		--	500	1000	--	--	--	--	--	--	--	1
TP 13	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 13	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 14	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 14	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 15	0.3m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 15	0.5m	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 16	0.5m	4	<1	8.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 16	1.0m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 17	0.5m	12	<1	12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 17	1.0m	3	<1	2.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 18	0.5m	14	<1	6.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 18	1.0m	12	<1	6.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 19	0.5m	8	<1	4.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 19	1.0m	3	<1	2.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 20	0.5m	55	<1	24	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 20	1.0m	16	<1	8.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 21	0.5m	22	<1	9.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 21	0.5mDup	22	<1	13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 21	1.0m	12	<1	19	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 22	0.5m	48	1	29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 22	1.0m	5	<1	2.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 23	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 23	0.5m	23	<1	17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 29	0.3m	38	1	40	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 29	0.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 29	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 30	0.3m	26	<1	16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 30	0.5m	10	<1	3.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 30	1.0m	45	<1	33	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 31	0.3m	6	2	7.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria		--	500	1000	--	--	--	--	--	--	--	1
TP 31	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 31	0.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 32	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 32	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 33	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 33	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 34	0.3m	27	<2	19	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 34	0.3mDup	17	<2	7.7	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 34	0.5m	22	<1	8.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 34	1.0m	3	<1	1.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 35	0.3m	8	<1	2.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 35	0.5m	3	<1	1.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 36	0.5m	5	<1	1.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 36	1.0m	4	<1	2.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 37	0.5m	29	<1	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 37	1.0m	25	2	9.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.35
TP 38	0.5m	5	<1	1.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 38	0.5mDup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 38	1.0m	3	<1	6.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 39	0.5m	3	<1	1.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 39	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 40	0.1m	17	<1	5.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 40	0.5m	42	<1	9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 40	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 41	0.5m	11	<1	3.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 41	0.5m Dup	17	<1	3.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 41	1.0m	29	<1	4.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 42	0.2m	7	<1	1.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 42	0.5m	44	<1	13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 42	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria										
		--	500	1000	--	--	--	--	--	--	--	1
TP 43	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 43	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 43	1.0m Dup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 44	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 44	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 45	0.3m	31	2	11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 45	0.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 45	1.0m	17	<1	6.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 46	0.5m	22	<1	5.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 46	1.0m	20	<1	6.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 46	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 47	0.5m	4	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 47	1.0m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 47	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 47	0.1m	7	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 48	0.2m	150	<2	17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 48	0.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 48	1.0m	3	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 48	1.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 49	0.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 49	1.0m	3	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 49	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 50	0.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 50	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 51	0.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 51	1.0m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 52	0.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 52	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 53	0.5m	21	<1	7.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 53	1.0m	28	<1	9.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria		--	500	1000	--	--	--	--	--	--	--	1
TP 53	1.5m	18	<1	4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 54	0.5m	4	<1	1.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 54	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 54	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 55	0.5m	21	<1	6.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 55	0.5m Dup	6	<1	1.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 55	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 55	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 56	0.5m	12	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 56	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 57	1.0m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 57	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 58	0.5m	120	<1	32	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 58	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 59	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 59	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 60	1.0m	12	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 60	1.5m	12	<1	1.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 60	0.5m	8	<1	5.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 60A	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 60A	0.5mDup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 60A	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 61	0.5m	26	<1	8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 61	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 61	1.5m	8	<1	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria		--	500	1000	--	--	--	--	--	--	--	1
TP 62	0.3m	28	<1	9.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 62	0.5m	14	<1	6.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 62	1.0m	6	<1	1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 62	1.0m Dup	4	<1	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 62	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 63	0.5m	3	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 63	1.0m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 64	0.5m	17	<1	4.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 64	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 64	1.0m	23	<1	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 65	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 65	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 65	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 66	0.2m	3	<1	2.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 66	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 66	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 67	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 67	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 68	0.5m	3	<1	1.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 68	1.0m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 69	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 69	1.0m	<1	<1	1.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 70	0.5m	40	<2	52	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 70	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 71	0.2m	8	<1	11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 71	1.0m	7	<1	14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 71	0.5m	7	<1	40	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria		--	500	1000	--	--	--	--	--	--	--	1
TP 72	0.2m	11	<1	64	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 72	0.5m	22	<1	130	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 72	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 73	0.5m	4	<1	5.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 73	1.0m	8	<1	34	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 73	1.5m	3	<1	1.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 74	0.5m	10	<1	7.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 74	0.5m Dup	8	<1	4.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 74	1.0m	16	<2	31	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 74	1.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 75	0.5m	21	<1	17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 75	0.5m Dup	10	<1	3.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 75	1.0m	14	<1	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 75	1.0m Dup	11	<1	4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 75	1.5m	34	5	87	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.35
TP 76	0.2m	21	2	80	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 76	0.5m	16	<1	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 76	1.0m	7	<1	18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 76	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 77	0.3m	33	<2	28	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 77	0.5m	49	<2	11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 77	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 78	0.5m	6	<1	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 78	1.0m	8	<1	2.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 79	0.1m	13	<1	2.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 79	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 79	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 80	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 80	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria		--	500	1000	--	--	--	--	--	--	--	1
TP 81	0.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 81	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 82	0.5m	1	<1	1.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 82	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 83	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 83	1.5m	4	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 83	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 84	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 84	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 84	1.5m	4	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 85	0.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 85	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 86	1.0m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 86	0.5m	39	<1	13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 87	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 87	1.0m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 87	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 87	1.5m Dup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 88	0.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 88	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 88	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 89	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 89	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 89	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 90	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 90	0.5m Dup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 90	1.0m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 90	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 91	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 91	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification			Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
			TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			units	units	units	units	units	units	units	units	units	units	units
EIL Assessment Criteria			--	500	1000	--	--	--	--	--	--	--	1
TP 92	0.5m		4	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 92	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 93	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 93	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 94	0.5m		30	<1	5.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 94	1.0m		1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 95	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 95	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 96	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 96	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 97	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 97	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 98	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 98	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 99	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 99	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 99	1.0m Dup		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 100	0.5m		13	<1	2.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 100	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 101	0.5m		4	<1	1.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 101	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 102	0.5m		120	6	230	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 102	1.0m		81	<1	190	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 103	0.5m		25	<2	12	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 103	1.0m		2	<1	1.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 104	0.5m		43	<1	160	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 104	1.0m		7	<1	5.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 105	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 105	1.0m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 106	0.5m		<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	--	500	1000	--	--	--	--	--	--	--	1	
TP 106	1.0m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 107	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 107	1.0m	3	<1	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 108	0.5m	30	<2	36	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 108	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 109	0.2m	<1	<1	1.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 109	0.5m	3	<1	7.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 109	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 110	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 110	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 111	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 111	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 112	0.5m	5	<1	13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 112	0.5m Dup	6	<1	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 112	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 113	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 113	1.0m	2	<1	1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 114	0.3m	25	<1	8.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 114	0.5m	1	<1	1.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 114	1.0m	3	<1	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 115	0.5m	2	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 115	1.0m	1	<1	2.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 116	0.2m	22	<1	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 116	0.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 116	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 116A	0.2m	1	<1	1.7	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 116A	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 117	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 117	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 118	0.5m	5	<1	2.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	--	500	1000	--	--	--	--	--	--	--	1	
TP 118	1.0m	61	<1	19	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 119	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 119	0.5m	24	<1	37	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 120	1.0m	13	<1	4.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 120	0.5m	39	<1	17	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 120A	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 120A	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 121	0.5m	19	<1	21	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 121	1.0m	3	<1	4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 122	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 122	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 123	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 123	0.5m	22	<1	27	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 124	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 124	0.5mDup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 124	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 124A	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 124A	1.0m	2	<1	4.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 125	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 125	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 125	0.2m	7	<1	6.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 126	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 126	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 127	0.5m	3	<1	3.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 127	1.0m	3	<1	5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 128	0.5m	21	<1	9.4	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 128	1.0m	62	3	84	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 129	0.5m	3	<1	18	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
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Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification		Total Petroleum Hydrocarbons			Polychlorinated Biphenols (PCB's)							
		TRH C29 - C36	TRH C10 - C14	TRH C15 - C28	PCB congener C28	PCB congener C52	PCB congener C101	PCB congener C138	PCB congener C118	PCB congener C153	PCB congener C180	Total PCB
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	--	500	1000	--	--	--	--	--	--	--	1	
TP 129	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 130	0.5m	4	1	7.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 130	1.0m	2	<1	2.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 136	0.3m	11	<1	20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 136	0.5m	84	<1	79	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 136	1.0m	140	<1	190	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 136	2.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 136	3.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 137	0.5m	19	<1	15	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.70
TP 137	1.0m	1	<1	1.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 137	3.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 137	2.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 138	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 138	0.5m	6	<1	2.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 138	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 139	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 139	0.5mDup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 139	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 139	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 140	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 140	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 140	1.5m	1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 141	0.5mDup	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 141	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 141	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 141	1.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 142	0.5m	1	6	3.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 142	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 143	0.5m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35
TP 143	1.0m	<1	<1	<1.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.35



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification			Polycyclic Aromatic Hydrocarbons (PAH's)															
			Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria				5	--	--	--	10	10	10	10	--	--	--	--	1	--	--
																		20
TP 1	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 1	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 1A	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 1A	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 2	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 2	0.3mDup		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 2	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 3	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 3	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 4	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 4	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 5	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 5	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 5	0.3mDup		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 6	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 6	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 7	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 7	0.3mDup		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 7	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 8	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 8	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 9	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 9	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 10	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 10	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 11	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 11	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 12	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 12	0.3mDup		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 12	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)																
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene	Total PAH's
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria			5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--
TP 13	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 13	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 14	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 14	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 15	0.3m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 15	0.5m		[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]	[NA]
TP 16	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 16	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 17	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 17	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 18	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 18	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 19	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 19	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 20	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 20	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 21	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 21	0.5mDup		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 21	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 22	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 22	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 23	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 23	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 29	0.3m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 29	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 29	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 30	0.3m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 30	0.5m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 30	1.0m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 31	0.3m		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)															
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--
units	EIL Assessment Criteria																
TP 31	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 31	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 32	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 32	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 33	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 33	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 34	0.3m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 34	0.3mDup	<0.10	<0.10	<0.10	<0.1	0.21	<0.10	0.19	0.22	0.14	0.15	0.13	<0.05	0.11	<0.10	<0.10	2.05
TP 34	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 34	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 35	0.3m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 35	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 36	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 36	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 37	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 37	1.0m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 38	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 38	0.5mDup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 38	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 39	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 39	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 40	0.1m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	0.06	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.83
TP 40	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 40	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 41	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 41	0.5m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 41	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 42	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 42	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 42	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)															
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--
units	EIL Assessment Criteria	mg/kg															
TP 43	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 43	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 43	1.0m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 44	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 44	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 45	0.3m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 45	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 45	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 46	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 46	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 46	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 47	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 47	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 47	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 47	0.1m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 48	0.2m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 48	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 48	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 48	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 49	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 49	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 49	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 50	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 50	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 51	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 51	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 52	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 52	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 53	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 53	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)																
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene	Total PAH's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--	20	
TP 53	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 54	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 54	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 54	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 55	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 55	0.5m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 55	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 55	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 56	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 56	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 57	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 57	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 58	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 58	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 59	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 59	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 60	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 60	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 60	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	0.08	<0.05	<0.05	<0.87	
TP 60A	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 60A	0.5mDup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 60A	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 61	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 61	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 61	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)																
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene	Total PAH's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria	5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--	--	20
TP 62	0.3m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 62	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.09	0.07	0.13	0.06	<0.05	0.1	0.06	<0.05	0.05	1.06
TP 62	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 62	1.0m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 62	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 63	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 63	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 64	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 64	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 64	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 65	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 65	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 65	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 66	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 66	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 66	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 67	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 67	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 68	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 68	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 69	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 69	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 70	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 70	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 71	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 71	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 71	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification			Polycyclic Aromatic Hydrocarbons (PAH's)																
			Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[ah]anthracene	Benzo[ghi]perylene	Total PAH's
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
units																			
EIL Assessment Criteria																			
TP 72	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 72	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 72	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 73	0.5m	<0.05	<0.05	<0.05	<0.05	0.15	<0.05	0.33	0.29	0.16	0.26	0.18	0.09	0.23	0.15	<0.05	0.11	2.25	
TP 73	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 73	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 74	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.06	<0.05	0.07	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	0.84	
TP 74	0.5m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.05	<0.05	0.08	<0.05	<0.05	0.07	0.06	<0.05	<0.05	0.86	
TP 74	1.0m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6		
TP 74	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 75	0.5m	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	0.23	0.21	0.13	0.18	0.13	0.06	0.17	0.1	<0.05	0.07	1.72	
TP 75	0.5m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 75	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 75	1.0m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 75	1.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6		
TP 76	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 76	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 76	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 76	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 77	0.3m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6		
TP 77	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6		
TP 77	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 78	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 78	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 79	0.1m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 79	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 79	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 80	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		
TP 80	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8		



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)																
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene	Total PAH's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria	5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--	--	20
TP 81	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 81	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 82	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 82	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 83	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 83	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 83	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 84	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 84	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 84	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 85	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 85	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 86	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 86	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 87	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 87	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 87	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 87	1.5m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 88	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 88	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 88	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 89	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 89	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 89	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 90	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 90	0.5m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 90	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 90	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 91	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 91	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)																
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene	Total PAH's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--	20	
TP 92	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 92	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 93	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 93	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 94	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 94	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 95	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 95	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 96	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 96	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 97	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 97	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 98	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 98	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 99	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 99	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 99	1.0m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 100	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 100	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 101	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 101	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 102	0.5m	<0.10	<0.10	<0.10	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6	
TP 102	1.0m	<0.10	<0.10	<0.10	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6	
TP 103	0.5m	<0.10	<0.10	<0.10	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6	
TP 103	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 104	0.5m	<0.10	<0.10	<0.10	<0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6	
TP 104	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 105	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 105	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	
TP 106	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)																
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene	Total PAH's
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--	20
TP 106	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 107	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 107	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 108	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 108	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 109	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 109	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 109	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 110	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 110	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 111	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 111	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 112	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 112	0.5m Dup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 112	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 113	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 113	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 114	0.3m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 114	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 114	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 115	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 115	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 116	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 116	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 116	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 116A	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 116A	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 117	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 117	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 118	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)															
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--
																	Total PAH's
																	mg/kg
TP 118	1.0m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 119	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 119	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 120	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 120	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	0.26	0.28	0.17	0.31	0.2	0.12	0.28	0.17	<0.10	0.14
TP 120A	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 120A	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 121	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 121	1.0m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 122	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 122	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 123	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 123	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.8
TP 124	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 124	0.5mDup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 124	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 124A	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 124A	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 125	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 125	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 125	0.2m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 126	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 126	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 127	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 127	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 128	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 128	1.0m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.7
TP 129	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Polycyclic Aromatic Hydrocarbons (PAH's)																
		Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Chrysene	Benzo[b]fluoranthene	Benzo[a]anthracene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123-cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene	Total PAH's
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		5	--	--	--	10	10	10	10	--	--	--	--	1	--	--	--	20
TP 129	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 130	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 130	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 136	0.3m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 136	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 136	1.0m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 136	2.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 136	3.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 137	0.5m	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.6
TP 137	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 137	3.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 137	2.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 138	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 138	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 138	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 139	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 139	0.5mDup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 139	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 139	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 140	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 140	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 140	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 141	0.5mDup	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 141	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 141	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 141	1.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 142	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 142	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 143	0.5m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8
TP 143	1.0m	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.8

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 1	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 1	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 1A	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 1A	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 2	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 2	0.3mDup	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 2	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 3	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 3	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 4	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 4	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 5	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 5	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 5	0.3mDup	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 6	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 6	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 7	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 7	0.3mDup	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 7	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 8	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 8	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 9	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 9	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 10	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 10	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 11	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 11	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 12	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 12	0.3mDup	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 12	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides															
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 13	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 13	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 14	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 14	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 15	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 15	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	[NA]	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 16	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 16	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 17	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 17	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 18	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 18	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 19	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 19	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 20	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 20	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 21	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 21	0.5mDup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 21	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 22	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 22	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 23	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 23	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 29	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 29	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 29	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 30	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 30	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 30	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 31	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides															
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 31	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 31	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 32	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 32	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 33	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 33	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 34	0.3m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 34	0.3mDup	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 34	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 34	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 35	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 35	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 36	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 36	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 37	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 37	1.0m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 38	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 38	0.5mDup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 38	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 39	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 39	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 40	0.1m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 40	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 40	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 41	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 41	0.5m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 41	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 42	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 42	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 42	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 43	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 43	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 43	1.0m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 44	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 44	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 45	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 45	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 45	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 46	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 46	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 46	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 47	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 47	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 47	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 47	0.1m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 48	0.2m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 48	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 48	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 48	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 49	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 49	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 49	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 50	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 50	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 51	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 51	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 52	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 52	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 53	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 53	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	0.03	<0.1	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 53	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 54	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 54	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 54	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 55	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 55	0.5m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 55	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 55	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 56	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 56	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 57	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 57	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 58	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 58	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 59	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 59	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 60	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 60	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 60	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 60A	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 60A	0.5mDup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 60A	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 61	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 61	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 61	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 62	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 62	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 62	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 62	1.0m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 62	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 63	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 63	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 64	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	0.02	<0.1	
TP 64	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 64	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 65	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 65	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 65	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 66	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 66	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 66	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 67	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 67	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 68	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 68	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 69	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 69	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 70	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 70	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 71	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 71	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 71	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	

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Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 72	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 72	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 72	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 73	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 73	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 73	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 74	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 74	0.5m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 74	1.0m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 74	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 75	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 75	0.5m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	0.01	<0.1	
TP 75	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 75	1.0m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	0.01	<0.1	
TP 75	1.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 76	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 76	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 76	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 76	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 77	0.3m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 77	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 77	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 78	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 78	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 79	0.1m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 79	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 79	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 80	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 80	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 81	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 81	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 82	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 82	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 83	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 83	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 83	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 84	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 84	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 84	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 85	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 85	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 86	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 86	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 87	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 87	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 87	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 87	1.5m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 88	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 88	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 88	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 89	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 89	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 89	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 90	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 90	0.5m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 90	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 90	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 91	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 91	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides															
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 92	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 92	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 93	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 93	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 94	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 94	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 95	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 95	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 96	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 96	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 97	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 97	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 98	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 98	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 99	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 99	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 99	1.0m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 100	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 100	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 101	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 101	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 102	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 102	1.0m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 103	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 103	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 104	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 104	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 105	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 105	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 106	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1

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Historical Soil Analytical Results  
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45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 106	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 107	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 107	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 108	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 108	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 109	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 109	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 109	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 110	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 110	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 111	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 111	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 112	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 112	0.5m Dup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 112	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 113	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 113	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 114	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 114	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 114	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 115	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 115	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 116	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 116	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 116	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 116A	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 116A	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 117	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 117	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 118	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides															
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 118	1.0m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 119	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 119	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 120	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 120	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	0.04	<0.2	0.03	<0.2
TP 120A	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 120A	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 121	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 121	1.0m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 122	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 122	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 123	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 123	0.5m	<0.02	<0.2	<0.02	<0.02	<0.20	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 124	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 124	0.5mDup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 124	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 124A	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 124A	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 125	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 125	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 125	0.2m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 126	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 126	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 127	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 127	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1
TP 128	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 128	1.0m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2
TP 129	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides																
		Methoxychlor	Ethion	Endrin Aldehyde	Endosulfan Sulphate	Endrin Ketone	HCB (Hexachlorobenzene)	alpha-BHC	beta-BHC	Lindane	Diazinon	delta-BHC	Heptachlor	Aldrin	Chlorpyrifos	Heptachlor epoxide	Bromofos Ethyl	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TP 129	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 130	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 130	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 136	0.3m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 136	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 136	1.0m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 136	2.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 136	3.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 137	0.5m	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	
TP 137	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 137	3.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 137	2.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 138	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 138	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 138	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 139	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 139	0.5mDup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 139	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 139	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 140	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 140	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 140	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 141	0.5mDup	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 141	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 141	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 141	1.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 142	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 142	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 143	0.5m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	
TP 143	1.0m	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides													
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDDD+DDE	Total OC/OP's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1	1	
TP 1	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 1	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 1A	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 1A	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 2	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 2	0.3mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 2	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 3	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 3	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 4	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 4	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 5	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 5	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 5	0.3mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 6	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 6	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 7	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 7	0.3mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 7	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 8	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 8	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 9	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 9	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 10	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 10	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	0.02	<0.04	<1
TP 11	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 11	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 12	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 12	0.3mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 12	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides												
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1
units	EIL Assessment Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TP 13	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 13	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 14	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 14	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 15	0.3m	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 15	0.5m	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 16	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 16	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 17	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 17	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 18	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 18	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 19	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 19	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 20	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 20	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 21	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 21	0.5mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 21	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 22	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 22	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 23	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 23	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 29	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 29	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 29	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 30	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 30	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 30	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 31	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides													
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE	Total OC/OP's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1	1	
TP 31	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 31	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 32	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 32	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 33	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 33	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 34	0.3m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06	<1
TP 34	0.3mDup	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06	<1
TP 34	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.01	0.01	<0.03	<1
TP 34	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 35	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 35	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 36	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 36	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 37	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 37	1.0m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06	<1
TP 38	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 38	0.5mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 38	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 39	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 39	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 40	0.1m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 40	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 40	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 41	0.5m	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 41	0.5m Dup	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 41	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 42	0.2m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 42	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 42	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

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Sample Identification		Organochlorine/Organophosphate Pesticides													
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE	Total OC/OP's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1	1	
TP 43	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 43	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 43	1.0m Dup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 44	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 44	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 45	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 45	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 45	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 46	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.02	0.02	<0.05	<1
TP 46	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 46	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 47	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 47	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 47	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 47	0.1m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 48	0.2m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06	<1
TP 48	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 48	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 48	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 49	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 49	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 49	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 50	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 50	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 51	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 51	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 52	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 52	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 53	0.5m	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 53	1.0m	<0.01	<0.01	0.02	<0.01	<0.01	0.06	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides												
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1
TP 53	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.01	<0.01	<0.03
TP 54	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 54	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 54	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 55	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 55	0.5m Dup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 55	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 55	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 56	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 56	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 57	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 57	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 58	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	0.02	0.01	0.01	<0.04
TP 58	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 59	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 59	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 60	1.0m	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 60	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 60	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.03	0.02	<0.06
TP 60A	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 60A	0.5mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 60A	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 61	0.5m	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	0.01	<0.03
TP 61	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 61	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides												
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1
units	EIL Assessment Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TP 62	0.3m	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 62	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	0.01	<0.03
TP 62	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 62	1.0m Dup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 62	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 63	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 63	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 64	0.5m	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 64	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 64	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 65	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 65	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 65	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 66	0.2m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 66	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 66	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 67	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 67	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 68	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 68	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 69	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 69	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 70	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 70	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 71	0.2m	<0.01	<0.01	0.14	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 71	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 71	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides												
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.2	0.5	0.5	1	1	1	0.5	0.5	0.5	1
TP 72	0.2m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 72	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 72	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 73	0.5m	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.01	0.02	<0.03
TP 73	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 73	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 74	0.5m	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.01	0.01	<0.03
TP 74	0.5m Dup	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.02	0.03	<0.06
TP 74	1.0m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.03
TP 74	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 75	0.5m	<0.01	<0.01	0.07	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 75	0.5m Dup	<0.01	<0.01	0.14	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	0.03	0.14	0.12	0.29
TP 75	1.0m	<0.01	<0.01	0.11	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	0.01	0.05	0.05	0.11
TP 75	1.0m Dup	<0.01	<0.01	0.2	<0.01	<0.01	0.01	<0.5	<0.1	<0.1	0.03	0.14	0.14	0.31
TP 75	1.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.03
TP 76	0.2m	<0.01	<0.01	0.16	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 76	0.5m	<0.01	<0.01	0.16	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 76	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 76	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 77	0.3m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 77	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 77	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 78	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 78	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 79	0.1m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 79	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 79	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 80	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 80	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides													
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE	Total OC/OP's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1	1	
TP 81	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 81	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 82	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 82	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 83	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 83	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 83	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 84	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 84	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 84	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 85	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 85	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 86	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 86	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 87	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 87	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 87	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 87	1.5m Dup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 88	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 88	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 88	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 89	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 89	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 89	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 90	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 90	0.5m Dup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 90	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 90	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 91	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 91	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides												
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1
units	EIL Assessment Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TP 92	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 92	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 93	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 93	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 94	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 94	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 95	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 95	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 96	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 96	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 97	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 97	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 98	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 98	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 99	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 99	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 99	1.0m Dup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 100	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 100	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 101	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 101	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 102	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 102	1.0m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 103	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 103	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 104	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 104	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 105	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 105	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 106	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides													
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE	Total OC/OP's
units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EIL Assessment Criteria	0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1	1	
TP 106	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 107	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 107	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 108	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06	<1
TP 108	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 109	0.2m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 109	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 109	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 110	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 110	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 111	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 111	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 112	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 112	0.5m Dup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 112	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 113	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 113	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 114	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 114	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 114	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 115	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 115	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 116	0.2m	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 116	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 116	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 116A	0.2m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 116A	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 117	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 117	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1
TP 118	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03	<1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides												
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		EIL Assessment Criteria	0.5	0.5	0.2	0.5	0.5	1	1	1	0.5	0.5	0.5	1
TP 118	1.0m		<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 119	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 119	0.5m		<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 120	1.0m		<0.01	<0.01	0.04	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 120	0.5m		<0.02	0.03	1.7	<0.02	<0.02	0.16	<1.0	<0.2	0.03	<0.02	0.02	<0.07
TP 120A	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 120A	1.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 121	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 121	1.0m		<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 122	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 122	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 123	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 123	0.5m		<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 124	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 124	0.5mDup		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 124	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 124A	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 124A	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 125	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 125	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 125	0.2m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	0.02	<0.01	<0.05
TP 126	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 126	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 127	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 127	1.0m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 128	0.5m		<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 128	1.0m		<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 129	0.5m		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal of above EIL criterion

Sample Identification		Organochlorine/Organophosphate Pesticides												
		alpha-Endosulfan	alpha-Chlordane	Dieldrin	Endrin	beta-Endosulfan	gamma-Chlordane	Methidathion	Fenitrothion	Malathion	p,p'-DDD	p,p'-DDE	p,p'-DDT	DDT+DDD+DDE
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		0.5	0.5	0.2	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	1
units	EIL Assessment Criteria	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TP 129	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 130	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 130	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 136	0.3m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 136	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 136	1.0m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 136	2.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 136	3.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 137	0.5m	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.2	<0.2	<0.02	<0.02	<0.02	<0.06
TP 137	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 137	3.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 137	2.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 138	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 138	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 138	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 139	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 139	0.5mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 139	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 139	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 140	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 140	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 140	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 141	0.5mDup	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 141	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 141	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 141	1.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 142	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 142	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 143	0.5m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03
TP 143	1.0m	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.5	<0.1	<0.1	<0.01	<0.01	<0.01	<0.03

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Remediation Report, Asbestos Contamination, Clontarf Aboriginal College (ATA Environmental, 2002b)

Date	Sample Reference	Result
Jul-02	ECV1 F	No Asbestos Detected
Jul-02	ECV1 NW	No Asbestos Detected
Jul-02	ECV1 SW	No Asbestos Detected
Jul-02	ECV2 F	No Asbestos Detected
Jul-02	ECV2 NW	No Asbestos Detected
Jul-02	ECV2 SW	No Asbestos Detected
Jul-02	ECV3 F	No Asbestos Detected
Jul-02	ECV3 WW	No Asbestos Detected
Jul-02	ECV3 EW	No Asbestos Detected
Jul-02	ECV4 F	No Asbestos Detected
Jul-02	ECV4 EW	Chrysolite Asbestos Detected. Amosite Asbestos Detected. 5 fibre bundles of varying dimensions detected in 110g of soil.
Jul-02	ECV4 WW	No Asbestos Detected
Jul-02	ECV5 F	No Asbestos Detected
Jul-02	ECV5 EW	Chrysolite Asbestos Detected. Amosite Asbestos Detected. 4 fibre bundles of varying dimensions detected in 75g of soil.
Jul-02	ECV5 WW	No Asbestos Detected
Jul-02	ECV6 F	No Asbestos Detected
Jul-02	ECV6 EW	No Asbestos Detected
Jul-02	ECV6 WW	No Asbestos Detected
Jul-02	ECV7 F	No Asbestos Detected
Jul-02	ECV7 EW	No Asbestos Detected
Jul-02	ECV7 WW	No Asbestos Detected
Jul-02	ECV4 EW2	No Asbestos Detected
Jul-02	ECV5 EW2	No Asbestos Detected

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 1	0.3m	120	<0.5	[NA]	[NA]	[NA]	[NA]	5	260	4	[NA]	86	[NA]	<0.02	[NA]
TP 1	0.5m	11	<0.5	[NA]	[NA]	[NA]	[NA]	<1	18	<1	[NA]	14	[NA]	<0.02	[NA]
TP 2	0.3m	74	<0.5	[NA]	[NA]	[NA]	[NA]	5	150	2	[NA]	61	[NA]	<0.02	[NA]
TP 2	0.3mDup	43	<0.5	[NA]	[NA]	[NA]	[NA]	3	80	<1	[NA]	40	[NA]	<0.02	[NA]
TP 2	0.5m	5	<0.5	[NA]	[NA]	[NA]	[NA]	<1	35	<1	[NA]	7	[NA]	<0.02	[NA]
TP 3	0.3m	11	<0.5	[NA]	[NA]	[NA]	[NA]	<1	24	<1	[NA]	10	[NA]	<0.02	[NA]
TP 3	0.5m	6	<0.5	[NA]	[NA]	[NA]	[NA]	<1	28	<1	[NA]	6	[NA]	<0.02	[NA]
TP 4	0.3m	16	<0.5	[NA]	[NA]	[NA]	[NA]	<1	31	<1	[NA]	19	[NA]	<0.02	[NA]
TP 4	0.5m	9	<0.5	[NA]	[NA]	[NA]	[NA]	<1	23	<1	[NA]	8	[NA]	<0.02	[NA]
TP 5	0.3m	340	<0.5	[NA]	[NA]	[NA]	[NA]	<1	3000	<1	[NA]	18	[NA]	<0.02	[NA]
TP 5	0.3mDup	330	<0.5	[NA]	[NA]	[NA]	[NA]	<1	2500	<1	[NA]	14	[NA]	<0.02	[NA]
TP 5	0.5m	460	<0.5	[NA]	[NA]	[NA]	[NA]	<1	3600	<1	[NA]	11	[NA]	<0.02	[NA]
TP 6	0.3m	30	<0.5	[NA]	[NA]	[NA]	[NA]	2	47	<1	[NA]	24	[NA]	<0.02	[NA]
TP 6	0.5m	6	<0.5	[NA]	[NA]	[NA]	[NA]	<1	26	<1	[NA]	<5	[NA]	<0.02	[NA]
TP 7	0.3m	130	<0.5	[NA]	[NA]	[NA]	[NA]	5	180	7	[NA]	31	[NA]	<0.02	[NA]
TP 7	0.3mDup	120	<0.5	[NA]	[NA]	[NA]	[NA]	4	160	9	[NA]	35	[NA]	<0.02	[NA]
TP 7	0.5m	6	<0.5	[NA]	[NA]	[NA]	[NA]	<1	17	<1	[NA]	<5	[NA]	<0.02	[NA]
TP 8	0.3m	9	<0.5	[NA]	[NA]	[NA]	[NA]	<1	19	1	[NA]	11	[NA]	<0.02	[NA]
TP 8	0.5m	8	<0.5	[NA]	[NA]	[NA]	[NA]	<1	21	<1	[NA]	<5	[NA]	<0.02	[NA]
TP 9	0.3m	13	<0.5	[NA]	[NA]	[NA]	[NA]	<1	26	1	[NA]	12	[NA]	<0.02	[NA]
TP 9	0.5m	8	<0.5	[NA]	[NA]	[NA]	[NA]	<1	30	<1	[NA]	<5	[NA]	<0.02	[NA]
TP 10	0.3m	13	<0.5	[NA]	[NA]	[NA]	[NA]	<1	23	<1	[NA]	7	[NA]	<0.02	[NA]
TP 10	0.5m	7	<0.5	[NA]	[NA]	[NA]	[NA]	<1	32	<1	[NA]	<5	[NA]	<0.02	[NA]
TP 11	0.3m	16	<0.5	[NA]	[NA]	[NA]	[NA]	<1	30	<1	[NA]	18	[NA]	<0.02	[NA]
TP 11	0.5m	8	<0.5	[NA]	[NA]	[NA]	[NA]	<1	23	<1	[NA]	6	[NA]	<0.02	[NA]
TP 12	0.3m	22	<0.5	[NA]	[NA]	[NA]	[NA]	<1	37	1	[NA]	46	[NA]	<0.02	[NA]
TP 12	0.3mDup	21	<0.5	[NA]	[NA]	[NA]	[NA]	<1	38	1	[NA]	34	[NA]	<0.02	[NA]
TP 12	0.5m	9	<0.5	[NA]	[NA]	[NA]	[NA]	<1	24	<1	[NA]	8	[NA]	<0.02	[NA]
TP 13	0.3m	47	<0.5	[NA]	[NA]	[NA]	[NA]	2	97	4	[NA]	56	[NA]	<0.02	[NA]
TP 13	0.5m	10	<0.5	[NA]	[NA]	[NA]	[NA]	<1	27	2	[NA]	7	[NA]	<0.02	[NA]
TP 14	0.3m	10	<0.5	[NA]	[NA]	[NA]	[NA]	<1	25	1	[NA]	25	[NA]	<0.02	[NA]
TP 14	0.5m	6	<0.5	[NA]	[NA]	[NA]	[NA]	<1	30	<1	[NA]	6	[NA]	<0.02	[NA]
TP 15	0.3m	11	<0.5	[NA]	[NA]	[NA]	[NA]	<1	34	<1	[NA]	11	[NA]	<0.02	[NA]
TP 15	0.5m	5	<0.5	[NA]	[NA]	[NA]	[NA]	<1	15	<1	[NA]	<5	[NA]	<0.02	[NA]
TP 16	0.5m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 16	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 17	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 17	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	2	[NA]	[NA]	<1	<0.02	2
TP 18	0.5m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 18	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 19	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 19	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 20	0.5m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 20	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 21	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 21	0.5mDup	[NA]	1.0	<1	0.02	3	<1	[NA]	[NA]	1	[NA]	[NA]	3	<0.02	4
TP 21	1.0m	[NA]	1.2	<1	0.03	3	<1	[NA]	[NA]	1	[NA]	[NA]	4	<0.02	3
TP 22	0.5m	[NA]	0.6	2	<0.01	2	<1	[NA]	[NA]	3	[NA]	[NA]	<1	0.02	2
TP 22	1.0m	[NA]	7.0	<1	0.02	1	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	2
TP 23	0.5m	[NA]	<0.5	2	<0.01	3	<1	[NA]	[NA]	2	[NA]	[NA]	<1	0.07	16
TP 23	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	0.03	2
TP 29	0.3m	[NA]	5.5	12	0.06	7	<1	[NA]	[NA]	10	[NA]	[NA]	10	0.04	44
TP 29	0.5m	[NA]	<0.5	2	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	4
TP 29	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 30	0.3m	[NA]	1.1	5	0.01	3	<1	[NA]	[NA]	8	[NA]	[NA]	<1	<0.02	4
TP 30	0.5m	[NA]	0.5	3	<0.01	2	<1	[NA]	[NA]	3	[NA]	[NA]	<1	<0.02	2
TP 30	1.0m	[NA]	1.3	13	0.10	11	<1	[NA]	[NA]	10	[NA]	[NA]	3	0.02	44
TP 31	0.3m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	0.02	2
TP 31	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	1
TP 31	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	2
TP 32	0.5m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 32	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 33	0.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 33	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 34	0.3m	[NA]	0.9	13	0.14	6	<1	[NA]	[NA]	17	[NA]	[NA]	26	0.03	83
TP 34	0.3mDup	[NA]	0.8	12	0.11	7	<1	[NA]	[NA]	20	[NA]	[NA]	20	0.02	67
TP 34	0.5m	[NA]	<0.5	120	0.08	4	<1	[NA]	[NA]	21	[NA]	[NA]	18	0.04	100
TP 34	1.0m	[NA]	<0.5	4	0.02	<1	<1	[NA]	[NA]	2	[NA]	[NA]	3	<0.02	7
TP 35	0.3m	[NA]	<0.5	6	0.02	6	1	[NA]	[NA]	4	[NA]	[NA]	29	<0.02	8
TP 35	0.5m	[NA]	<0.5	5	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	4
TP 36	0.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 36	1.0m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

**45** denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 37	0.5m	[NA]	<0.5	37	0.05	7	<1	[NA]	[NA]	9	[NA]	[NA]	<1	0.10	3
TP 37	1.0m	[NA]	0.7	3	0.01	11	<1	[NA]	[NA]	11	[NA]	[NA]	<1	0.04	5
TP 38	0.5m	[NA]	<0.5	<1	0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 38	0.5mDup	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 38	1.0m	[NA]	0.7	1	0.01	4	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	2
TP 39	0.5m	[NA]	0.8	5	0.01	8	<1	[NA]	[NA]	2	[NA]	[NA]	2	0.02	11
TP 39	1.0m	[NA]	<0.5	<1	<0.01	4	<1	[NA]	[NA]	<1	[NA]	[NA]	2	0.02	2
TP 40	0.1m	[NA]	<0.5	5	0.04	2	<1	[NA]	[NA]	6	[NA]	[NA]	3	<0.02	8
TP 40	0.5m	[NA]	4.0	50	0.10	7	<1	[NA]	[NA]	3	[NA]	[NA]	<1	<0.02	11
TP 40	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 41	0.5m	[NA]	<0.5	5	0.02	2	<1	[NA]	[NA]	5	[NA]	[NA]	9	<0.02	9
TP 41	0.5m Dup	[NA]	<0.5	6	0.02	2	<1	[NA]	[NA]	5	[NA]	[NA]	9	<0.02	7
TP 41	1.0m	[NA]	0.9	10	0.02	4	<1	[NA]	[NA]	3	[NA]	[NA]	1	0.02	6
TP 42	0.2m	[NA]	<0.5	3	0.01	2	<1	[NA]	[NA]	3	[NA]	[NA]	3	<0.02	6
TP 42	0.5m	[NA]	1.9	20	0.04	6	<1	[NA]	[NA]	4	[NA]	[NA]	<1	<0.02	5
TP 42	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 43	0.5m	[NA]	<0.5	<1	0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 43	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 43	1.0m Dup	[NA]	<0.5	<1	0.01	2	<1	[NA]	[NA]	1	[NA]	[NA]	<1	0.02	1
TP 44	0.5m	[NA]	<0.5	<1	0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 44	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 45	0.3m	[NA]	5.0	40	0.27	26	<1	[NA]	[NA]	41	[NA]	[NA]	14	0.08	94
TP 45	0.5m	[NA]	0.9	6	0.04	7	<1	[NA]	[NA]	2	[NA]	[NA]	3	<0.02	9
TP 45	1.0m	[NA]	0.7	3	0.02	5	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	4
TP 46	0.5m	[NA]	1.8	17	1.00	12	<1	[NA]	[NA]	35	[NA]	[NA]	15	<0.02	<b>610</b>
TP 46	1.0m	[NA]	3.1	50	0.04	6	<1	[NA]	[NA]	8	[NA]	[NA]	3	0.03	5
TP 46	1.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	5
TP 47	0.5m	[NA]	<0.5	2	0.02	2	<1	[NA]	[NA]	9	[NA]	[NA]	2	<0.02	7
TP 47	0.1m	[NA]	1.2	2	0.02	4	<1	[NA]	[NA]	10	[NA]	[NA]	4	<0.02	10
TP 47	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	12
TP 47	1.5m	[NA]	1.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	3
TP 48	0.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 48	0.2m	[NA]	1.6	22	0.15	9	<1	[NA]	[NA]	<b>460</b>	[NA]	[NA]	25	0.05	110
TP 48	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	3
TP 48	1.5m	[NA]	0.8	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	1

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

**45** denotes concentration equal or above EIL criterion

Sample Identification																
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn	
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200	
TP 49	0.5m	[NA]	0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	1	
TP 49	1.0m	[NA]	0.6	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2	
TP 49	1.5m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1	
TP 50	0.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	2	
TP 50	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	<1	
TP 51	0.5m	[NA]	<0.5	1	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	2	
TP 51	1.0m	[NA]	<0.5	<1	0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	2	
TP 52	0.5m	[NA]	3.1	25	0.14	14	2	[NA]	[NA]	7	[NA]	[NA]	36	0.02	15	
TP 52	1.0m	[NA]	2.6	14	0.07	12	1	[NA]	[NA]	3	[NA]	[NA]	28	<0.02	5	
TP 53	0.5m	[NA]	1.2	21	0.47	6	<1	[NA]	[NA]	41	[NA]	[NA]	14	<0.02	56	
TP 53	1.0m	[NA]	1.4	30	0.70	5	<1	[NA]	[NA]	31	[NA]	[NA]	12	0.02	58	
TP 53	1.5m	[NA]	0.7	17	0.12	4	<1	[NA]	[NA]	6	[NA]	[NA]	2	0.02	18	
TP 54	0.5m	[NA]	0.7	11	0.27	3	<1	[NA]	[NA]	15	[NA]	[NA]	9	0.03	34	
TP 54	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3	
TP 54	1.5m	[NA]	<0.5	<1	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3	
TP 55	0.5m	[NA]	22.0	15	0.07	4	<1	[NA]	[NA]	4	[NA]	[NA]	18	<0.02	57	
TP 55	0.5m Dup	[NA]	9.4	15	0.06	3	<1	[NA]	[NA]	6	[NA]	[NA]	15	<0.02	56	
TP 55	1.0m	[NA]	<0.5	<1	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3	
TP 55	1.5m	[NA]	<0.5	<1	0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	4	
TP 56	0.5m	[NA]	<0.5	<1	9.40	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1	
TP 56	1.0m	[NA]	0.8	<1	0.03	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1	
TP 57	0.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3	
TP 57	1.0m	[NA]	0.6	9	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	4	
TP 58	0.5m	[NA]	1.5	36	0.07	12	<1	[NA]	[NA]	12	[NA]	[NA]	2	<0.02	7	
TP 58	1.0m	[NA]	0.6	<1	0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	6	
TP 59	0.5m	[NA]	<0.5	<1	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3	
TP 59	1.0m	[NA]	10.0	1	0.03	1	<1	[NA]	[NA]	<1	[NA]	[NA]	4	<0.02	5	
TP 60	0.5m	[NA]	1.3	48	0.58	5	1	[NA]	[NA]	70	[NA]	[NA]	38	0.09	230	
TP 60	1.0m	[NA]	3.9	14	0.06	9	<1	[NA]	[NA]	12	[NA]	[NA]	16	0.07	33	
TP 60	1.5m	[NA]	1.8	24	0.04	4	<1	[NA]	[NA]	8	[NA]	[NA]	3	0.02	5	
TP 61	0.5m	[NA]	1.0	36	2.30	13	<1	[NA]	[NA]	77	[NA]	[NA]	31	0.02	160	
TP 61	1.0m	[NA]	<0.5	1	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	4	
TP 61	1.5m	[NA]	1.1	38	0.08	4	<1	[NA]	[NA]	8	[NA]	[NA]	2	0.06	4	
TP 62	0.3m	[NA]	0.9	14	0.43	5	<1	[NA]	[NA]	15	[NA]	[NA]	11	<0.02	45	
TP 62	0.5m	[NA]	1.4	24	0.42	7	<1	[NA]	[NA]	19	[NA]	[NA]	18	0.03	160	

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

**45** denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 62	1.0m	[NA]	<0.5	1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	4
TP 62	1.0m Dup	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	3
TP 62	1.5m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 63	0.5m	[NA]	<0.5	2	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	3
TP 63	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	4
TP 64	0.5m	[NA]	1.0	17	0.25	4	<1	[NA]	[NA]	31	[NA]	[NA]	19	0.02	93
TP 64	1.0m	[NA]	1.4	58	0.12	4	<1	[NA]	[NA]	16	[NA]	[NA]	5	0.05	89
TP 64	1.5m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	5
TP 65	0.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	3
TP 65	1.0m	[NA]	0.7	1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	8
TP 65	1.5m	[NA]	1.0	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	10
TP 66	0.2m	[NA]	8.2	6	0.02	14	<1	[NA]	[NA]	5	[NA]	[NA]	<1	<0.02	8
TP 66	0.5m	[NA]	<0.5	<1	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 66	1.0m	[NA]	0.7	2	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	5
TP 67	0.5m	[NA]	<0.5	1	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	4
TP 67	1.0m	[NA]	<0.5	1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	3
TP 68	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 68	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 69	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 69	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 70	0.5m	[NA]	<0.5	3	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	6
TP 70	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 71	0.2m	[NA]	1.5	6	0.03	4	<1	[NA]	[NA]	4	[NA]	[NA]	5	<0.02	8
TP 71	0.5m	[NA]	<0.5	3	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 71	1.0m	[NA]	<0.5	2	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 72	0.2m	[NA]	5.7	1	0.02	7	<1	[NA]	[NA]	3	[NA]	[NA]	1	<0.02	3
TP 72	0.5m	[NA]	<0.5	3	<0.01	1	<1	[NA]	[NA]	1	[NA]	[NA]	1	<0.02	3
TP 72	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 73	0.5m	[NA]	7.6	56	0.70	5	<1	[NA]	[NA]	90	[NA]	[NA]	13	0.02	<b>380</b>
TP 73	1.0m	[NA]	<0.5	2	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 73	1.5m	[NA]	1.6	1	0.01	5	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	1
TP 74	0.5m	[NA]	1.0	16	0.11	4	<1	[NA]	[NA]	37	[NA]	[NA]	9	<0.02	64
TP 74	0.5m Dup	[NA]	1.0	22	0.13	4	<1	[NA]	[NA]	47	[NA]	[NA]	14	0.02	190
TP 74	1.0m	[NA]	<0.5	7	0.03	3	<1	[NA]	[NA]	7	[NA]	[NA]	2	<0.02	22
TP 74	1.5m	[NA]	<0.5	3	0.01	4	<1	[NA]	[NA]	2	[NA]	[NA]	2	<0.02	5

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

45 denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 75	0.5m	[NA]	1.7	9	0.49	7	<1	[NA]	[NA]	11	[NA]	[NA]	11	0.02	70
TP 75	0.5m Dup	[NA]	1.2	6	0.31	7	<1	[NA]	[NA]	9	[NA]	[NA]	11	0.02	52
TP 75	1.0m	[NA]	2.9	9	0.28	5	<1	[NA]	[NA]	23	[NA]	[NA]	13	0.02	150
TP 75	1.0m Dup	[NA]	0.6	5	0.12	4	<1	[NA]	[NA]	20	[NA]	[NA]	3	0.02	72
TP 75	1.5m	[NA]	4.3	17	0.04	11	<1	[NA]	[NA]	9	[NA]	[NA]	3	0.02	6
TP 76	0.2m	[NA]	0.6	8	0.07	4	<1	[NA]	[NA]	6	[NA]	[NA]	8	<0.02	43
TP 76	0.5m	[NA]	0.7	8	0.10	4	<1	[NA]	[NA]	6	[NA]	[NA]	14	<0.02	42
TP 76	1.0m	[NA]	<0.5	2	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 76	1.5m	[NA]	3.7	<1	<0.01	10	<1	[NA]	[NA]	4	[NA]	[NA]	1	<0.02	4
TP 77	0.3m	[NA]	<0.5	1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 77	0.5m	[NA]	0.6	11	<0.01	4	<1	[NA]	[NA]	2	[NA]	[NA]	<1	<0.02	2
TP 77	1.0m	[NA]	<0.5	14	<0.01	6	<1	[NA]	[NA]	4	[NA]	[NA]	<1	0.02	2
TP 78	0.5m	[NA]	<0.5	3	<0.01	7	1	[NA]	[NA]	2	[NA]	[NA]	4	<0.02	6
TP 78	1.0m	[NA]	6.1	1	0.04	5	1	[NA]	[NA]	<1	[NA]	[NA]	9	<0.02	2
TP 79	0.1m	[NA]	1.1	7	0.02	17	2	[NA]	[NA]	13	[NA]	[NA]	45	<0.02	10
TP 79	0.5m	[NA]	<0.5	1	0.01	8	<1	[NA]	[NA]	1	[NA]	[NA]	2	<0.02	3
TP 79	1.0m	[NA]	0.8	2	0.01	14	1	[NA]	[NA]	4	[NA]	[NA]	2	<0.02	4
TP 80	0.5m	[NA]	<0.5	8	0.01	6	<1	[NA]	[NA]	3	[NA]	[NA]	1	<0.02	3
TP 80	1.0m	[NA]	1.4	5	0.02	33	<1	[NA]	[NA]	20	[NA]	[NA]	3	<0.02	7
TP 81	0.5m	[NA]	6.3	<1	<0.01	6	<1	[NA]	[NA]	5	[NA]	[NA]	<1	<0.02	2
TP 81	1.0m	[NA]	0.8	<1	<0.01	9	<1	[NA]	[NA]	4	[NA]	[NA]	1	<0.02	2
TP 82	0.5m	[NA]	0.9	<1	<0.01	4	<1	[NA]	[NA]	1	[NA]	[NA]	2	<0.02	2
TP 82	1.0m	[NA]	1.5	<1	0.01	11	<1	[NA]	[NA]	5	[NA]	[NA]	1	0.02	2
TP 83	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 83	1.0m	[NA]	<0.5	1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 83	1.5m	[NA]	<0.5	1	0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 84	0.5m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	2
TP 84	1.0m	[NA]	<0.5	2	0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	3
TP 84	1.5m	[NA]	0.7	1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	2
TP 85	0.5m	[NA]	1.2	1	0.01	2	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	3
TP 85	1.0m	[NA]	0.6	1	<0.01	4	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	2
TP 86	0.5m	[NA]	0.9	40	0.04	4	<1	[NA]	[NA]	5	[NA]	[NA]	1	<0.02	12
TP 86	1.0m	[NA]	<0.5	2	0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

**45** denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium,Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 87	0.5m	[NA]	<0.5	1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	4
TP 87	1.0m	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	6
TP 87	1.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	3
TP 87	1.5m Dup	[NA]	<0.5	<1	<0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	2
TP 88	0.5m	[NA]	<0.5	1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	3
TP 88	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 88	1.5m	[NA]	0.6	3	<0.01	3	<1	[NA]	[NA]	1	[NA]	[NA]	3	<0.02	5
TP 89	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 89	1.0m	[NA]	1.1	<1	<0.01	2	<1	[NA]	[NA]	2	[NA]	[NA]	<1	<0.02	3
TP 89	1.5m	[NA]	3.0	3	0.01	22	<1	[NA]	[NA]	8	[NA]	[NA]	2	0.03	4
TP 90	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 90	0.5m Dup	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	1
TP 90	1.0m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 90	1.5m	[NA]	16.0	2	0.02	50	<1	[NA]	[NA]	23	[NA]	[NA]	2	<0.02	6
TP 91	0.5m	[NA]	<0.5	1	<0.01	2	<1	[NA]	[NA]	2	[NA]	[NA]	1	<0.02	3
TP 91	1.0m	[NA]	5.5	6	0.02	37	2	[NA]	[NA]	13	[NA]	[NA]	2	0.02	5
TP 92	0.5m	[NA]	<0.5	<1	0.02	3	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	1
TP 92	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 93	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 93	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 94	0.5m	[NA]	<0.5	3	0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 94	1.0m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 95	0.5m	[NA]	<0.5	<1	0.03	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 95	1.0m	[NA]	<0.5	<1	<0.01	6	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 96	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 96	1.0m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 97	0.5m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 97	1.0m	[NA]	6.4	4	0.01	27	<1	[NA]	[NA]	17	[NA]	[NA]	1	0.02	5
TP 98	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 98	1.0m	[NA]	<0.5	3	0.01	14	<1	[NA]	[NA]	5	[NA]	[NA]	1	0.02	2
TP 99	0.5m	[NA]	<0.5	3	0.01	12	<1	[NA]	[NA]	5	[NA]	[NA]	1	0.02	2
TP 99	1.0m	[NA]	1.3	3	0.01	27	<1	[NA]	[NA]	7	[NA]	[NA]	<1	0.04	3
TP 99	1.0m Dup	[NA]	<0.5	3	0.01	17	<1	[NA]	[NA]	6	[NA]	[NA]	2	0.03	2
TP 100	0.5m	[NA]	1.3	14	0.10	11	<1	[NA]	[NA]	18	[NA]	[NA]	24	0.03	51
TP 100	1.0m	[NA]	<0.5	<1	0.01	2	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	3

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

**45** denotes concentration equal or above EIL criterion

Sample Identification																
			Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium,Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
			units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria			--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 101	0.5m		[NA]	<0.5	1	0.01	<1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 101	1.0m		[NA]	<0.5	1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 102	0.5m		[NA]	1.6	18	0.02	3	<1	[NA]	[NA]	3	[NA]	[NA]	<1	<0.02	6
TP 102	1.0m		[NA]	<0.5	2	<0.01	4	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 103	0.5m		[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 103	1.0m		[NA]	<0.5	<1	0.01	2	<1	[NA]	[NA]	3	[NA]	[NA]	<1	<0.02	14
TP 104	0.5m		[NA]	<0.5	2	0.01	2	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	11
TP 104	1.0m		[NA]	<0.5	7	0.01	4	<1	[NA]	[NA]	6	[NA]	[NA]	1	<0.02	2
TP 105	0.5m		[NA]	<0.5	<1	<0.01	5	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	2
TP 105	1.0m		[NA]	<0.5	3	0.01	9	<1	[NA]	[NA]	6	[NA]	[NA]	2	<0.02	2
TP 106	0.5m		[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	2	[NA]	[NA]	<1	<0.02	3
TP 106	1.0m		[NA]	7.7	3	0.01	21	<1	[NA]	[NA]	12	[NA]	[NA]	<1	<0.02	5
TP 107	0.5m		[NA]	<0.5	1	<0.01	2	<1	[NA]	[NA]	2	[NA]	[NA]	<1	<0.02	1
TP 107	1.0m		[NA]	2.3	1	0.01	25	<1	[NA]	[NA]	6	[NA]	[NA]	<1	<0.02	3
TP 108	0.5m		[NA]	<0.5	11	0.03	2	<1	[NA]	[NA]	1	[NA]	[NA]	3	<0.02	9
TP 108	1.0m		[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 109	0.2m		[NA]	5.9	2	0.03	14	<1	[NA]	[NA]	9	[NA]	[NA]	2	<0.02	4
TP 109	0.5m		[NA]	<0.5	3	0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 109	1.0m		[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 110	0.5m		[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 110	1.0m		[NA]	<0.5	2	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 111	0.5m		[NA]	<0.5	2	<0.01	3	<1	[NA]	[NA]	3	[NA]	[NA]	<1	<0.02	1
TP 111	1.0m		[NA]	5.7	5	0.06	32	<1	[NA]	[NA]	15	[NA]	[NA]	<1	<0.02	4
TP 112	0.5m		[NA]	0.9	4	0.01	13	<1	[NA]	[NA]	7	[NA]	[NA]	<1	0.02	2
TP 112	0.5m Dup		[NA]	<0.5	4	<0.01	11	<1	[NA]	[NA]	5	[NA]	[NA]	<1	<0.02	2
TP 112	1.0m		[NA]	3.3	4	0.01	17	<1	[NA]	[NA]	13	[NA]	[NA]	<1	0.02	3
TP 113	0.5m		[NA]	16.0	4	0.03	51	<1	[NA]	[NA]	33	[NA]	[NA]	<1	<0.02	7
TP 113	1.0m		[NA]	3.4	4	0.02	24	<1	[NA]	[NA]	11	[NA]	[NA]	2	<0.02	5
TP 114	0.3m		[NA]	11.0	82	0.31	4	<1	[NA]	[NA]	30	[NA]	[NA]	75	<0.02	170
TP 114	0.5m		[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 114	1.0m		[NA]	<0.5	3	<0.01	2	<1	[NA]	[NA]	2	[NA]	[NA]	<1	<0.02	5
TP 115	0.5m		[NA]	1.4	2	0.02	3	<1	[NA]	[NA]	4	[NA]	[NA]	2	<0.02	6
TP 115	1.0m		[NA]	1.7	3	0.02	20	<1	[NA]	[NA]	13	[NA]	[NA]	<1	0.03	3

Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

**45** denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 116	0.2m	[NA]	<0.5	5	0.10	7	<1	[NA]	[NA]	16	[NA]	[NA]	4	0.02	11
TP 116	0.5m	[NA]	2.2	4	0.03	22	1	[NA]	[NA]	10	[NA]	[NA]	2	<0.02	3
TP 116	1.0m	[NA]	14.0	2	0.01	21	<1	[NA]	[NA]	13	[NA]	[NA]	1	0.02	4
TP 117	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 117	1.0m	[NA]	<0.5	<1	<0.01	1	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 118	0.5m	[NA]	<0.5	6	0.02	5	<1	[NA]	[NA]	30	[NA]	[NA]	1	0.02	5
TP 118	1.0m	[NA]	<0.5	3	0.02	12	<1	[NA]	[NA]	7	[NA]	[NA]	<1	0.04	2
TP 119	0.5m	[NA]	3.0	27	0.08	8	<1	[NA]	[NA]	13	[NA]	[NA]	2	0.05	13
TP 119	1.0m	[NA]	10.0	<1	0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 120	0.5m	[NA]	1.4	70	0.12	6	<1	[NA]	[NA]	42	[NA]	[NA]	7	0.04	<b>200</b>
TP 120	1.0m	[NA]	1.8	7	0.02	9	<1	[NA]	[NA]	4	[NA]	[NA]	9	<0.02	9
TP 121	0.5m	[NA]	3.6	21	0.24	10	<1	[NA]	[NA]	22	[NA]	[NA]	28	0.04	<b>620</b>
TP 121	1.0m	[NA]	0.6	12	0.04	6	<1	[NA]	[NA]	12	[NA]	[NA]	2	0.05	10
TP 122	0.5m	[NA]	<0.5	2	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	2
TP 122	1.0m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	1	[NA]	[NA]	2	<0.02	2
TP 123	0.5m	[NA]	<0.5	3	0.01	4	<1	[NA]	[NA]	1	[NA]	[NA]	1	<0.02	20
TP 123	1.0m	[NA]	6.5	5	0.02	36	<1	[NA]	[NA]	11	[NA]	[NA]	2	0.02	7
TP 124	0.5m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 124	0.5mDup	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 124	1.0m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	4
TP 125	0.2m	[NA]	0.7	4	0.03	5	<1	[NA]	[NA]	5	[NA]	[NA]	6	<0.02	13
TP 125	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	1
TP 125	1.0m	[NA]	<0.5	1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 126	0.5m	[NA]	<0.5	1	<0.01	3	<1	[NA]	[NA]	1	[NA]	[NA]	<1	<0.02	3
TP 126	1.0m	[NA]	3.9	4	0.01	24	<1	[NA]	[NA]	8	[NA]	[NA]	2	<0.02	4
TP 127	0.5m	[NA]	<0.5	5	0.02	3	<1	[NA]	[NA]	2	[NA]	[NA]	3	<0.02	12
TP 127	1.0m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	3
TP 128	0.5m	[NA]	<0.5	4	0.14	4	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	5
TP 128	1.0m	[NA]	1.0	5	0.02	6	<1	[NA]	[NA]	2	[NA]	[NA]	<1	<0.02	4
TP 129	0.5m	[NA]	<0.5	<1	<0.01	4	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	5
TP 129	1.0m	[NA]	1.4	<1	0.01	5	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	2
TP 130	0.5m	[NA]	0.8	5	0.04	5	<1	[NA]	[NA]	2	[NA]	[NA]	1	<0.02	31
TP 130	1.0m	[NA]	<0.5	2	0.02	4	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	8



Appendix C - Site Contamination, Investigation, Remediation and Validation Management Plan  
Historical Soil Analytical Results  
Detailed Soil and Groundwater Investigation (ATA Environmental, 2003b)

**45** denotes concentration equal or above EIL criterion

Sample Identification															
		Aluminium, Al	Arsenic, As	Barium, Ba	Cadmium, Cd	Chromium, Cr	Cobalt, Co	Copper, Cu	Iron, Fe	Lead, Pb	Nickel, Ni	Magnesium, Mg	Manganese, Mn	Mercury, Hg	Zinc, Zn
		units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EIL Assessment Criteria		--	20	400	3	50	50	60	--	300	60	--	500	1	200
TP 136	0.3m	[NA]	<0.5	[NA]	0.02	2	[NA]	1	[NA]	7	1	[NA]	[NA]	<0.02	8
TP 136	0.5m	[NA]	<0.5	[NA]	0.01	1	[NA]	<1	[NA]	<1	2	[NA]	[NA]	<0.02	1
TP 136	1.0m	[NA]	<0.5	[NA]	<0.01	1	[NA]	<1	[NA]	<1	<1	[NA]	[NA]	<0.02	<1
TP 136	2.0m	[NA]	<0.5	[NA]	<0.01	<1	[NA]	<1	[NA]	2	<1	[NA]	[NA]	<0.02	<1
TP 136	3.0m	[NA]	3.8	[NA]	0.02	19	[NA]	2	[NA]	6	2	[NA]	[NA]	0.02	2
TP 137	0.5m	[NA]	<0.5	[NA]	<0.01	1	[NA]	<1	[NA]	<1	<1	[NA]	[NA]	<0.02	<1
TP 137	1.0m	[NA]	<0.5	[NA]	0.01	2	[NA]	<1	[NA]	<1	<1	[NA]	[NA]	<0.02	<1
TP 137	2.0m	[NA]	<0.5	[NA]	<0.01	3	[NA]	<1	[NA]	3	<1	[NA]	[NA]	<0.02	<1
TP 137	3.0m	[NA]	1.3	[NA]	0.01	28	[NA]	2	[NA]	12	2	[NA]	[NA]	0.04	2
TP 138	0.5m	[NA]	1.4	[NA]	<0.01	2	[NA]	<1	[NA]	1	<1	[NA]	[NA]	<0.02	<1
TP 138	1.0m	[NA]	9.4	[NA]	0.02	23	[NA]	3	[NA]	10	<1	[NA]	[NA]	0.02	3
TP 138	1.5m	[NA]	<0.5	[NA]	0.01	29	[NA]	4	[NA]	8	2	[NA]	[NA]	0.02	1
TP 139	0.5m	[NA]	2.6	[NA]	0.02	12	[NA]	2	[NA]	7	<1	[NA]	[NA]	<0.02	2
TP 139	0.5mDup	[NA]	1.2	[NA]	0.01	10	[NA]	1	[NA]	8	<1	[NA]	[NA]	<0.02	2
TP 139	1.0m	[NA]	2.1	[NA]	0.01	26	[NA]	4	[NA]	10	2	[NA]	[NA]	0.03	3
TP 139	1.5m	[NA]	6.5	[NA]	0.02	<b>50</b>	[NA]	7	[NA]	8	5	[NA]	[NA]	0.06	4
TP 140	0.5m	[NA]	2.3	[NA]	0.02	5	[NA]	<1	[NA]	3	<1	[NA]	[NA]	<0.02	2
TP 140	1.0m	[NA]	1.0	[NA]	0.01	24	[NA]	6	[NA]	5	1	[NA]	[NA]	<0.02	3
TP 140	1.5m	[NA]	4.9	[NA]	0.02	28	[NA]	7	[NA]	8	2	[NA]	[NA]	<0.02	3
TP 141	0.5m	[NA]	<0.5	[NA]	<0.01	1	[NA]	<1	[NA]	<1	<1	[NA]	[NA]	<0.02	<1
TP 141	0.5mDup	[NA]	<0.5	[NA]	<0.01	2	[NA]	<1	[NA]	<1	<1	[NA]	[NA]	<0.02	1
TP 141	1.0m	[NA]	<0.5	[NA]	0.01	4	[NA]	<1	[NA]	3	<1	[NA]	[NA]	<0.02	1
TP 141	1.5m	[NA]	<0.5	[NA]	<0.01	4	[NA]	<1	[NA]	4	<1	[NA]	[NA]	<0.02	<1
TP 142	0.5m	[NA]	2.0	[NA]	0.02	30	[NA]	5	[NA]	6	3	[NA]	[NA]	0.03	3
TP 142	1.0m	[NA]	7.1	[NA]	0.01	26	[NA]	5	[NA]	14	<1	[NA]	[NA]	<0.02	3
TP 143	0.5m	[NA]	<0.5	[NA]	0.01	3	[NA]	<1	[NA]	<1	<1	[NA]	[NA]	<0.02	2
TP 143	1.0m	[NA]	<0.5	[NA]	0.01	3	[NA]	<1	[NA]	2	<1	[NA]	[NA]	<0.02	1
TP 116A	0.2m	[NA]	<0.5	1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	4	<0.02	2
TP 116A	0.5m	[NA]	<0.5	<1	<0.01	2	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	2
TP 120A	0.5m	[NA]	<0.5	<1	<0.01	4	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2
TP 120A	1.5m	[NA]	0.5	<1	0.01	5	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	4
TP 124A	0.5m	[NA]	<0.5	1	0.01	5	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	5
TP 124A	1.0m	[NA]	<0.5	2	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	1	<0.02	3
TP 1A	0.3m	37	<0.5	[NA]	[NA]	[NA]	[NA]	1	73	2	[NA]	20	[NA]	<0.02	[NA]
TP 1A	0.5m	8	<0.5	[NA]	[NA]	[NA]	[NA]	<1	16	<1	[NA]	6	[NA]	<0.02	[NA]
TP 60A	0.5m	[NA]	0.6	2	0.01	4	<1	[NA]	[NA]	<1	[NA]	[NA]	3	<0.02	2
TP 60A	0.5mDup	[NA]	<0.5	1	0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	2	<0.02	3
TP 60A	1.0m	[NA]	<0.5	<1	<0.01	3	<1	[NA]	[NA]	<1	[NA]	[NA]	<1	<0.02	2

# Appendix D

## Historical Groundwater Analytical Results and Figures

**Site Contamination Investigation, Remediation and Validation Management Plan  
Cygnia Cove, Waterford, WA**

APPENDIX D - Table 1  
Summary of Historical Groundwater Analytical Results (2003/2006)

Cygnia Cove, Waterford, WA

		Inorganics & Nutrients (mg/L unless otherwise stated)															PCB (µg/L)	OC/OP Pesticides (µg/l)			
		pH (no units)	Conductivity (mS/cm)	Total Suspended Solids	Total Acidity (mgCaCO <sub>3</sub> /l)	Alkalinity (mgCaCO <sub>3</sub> /l)	Carbonate (mgCaCO <sub>3</sub> /l)	Hydroxide (mgCaCO <sub>3</sub> /l)	Hardness (mgCaCO <sub>3</sub> /l)	Chloride	Sulphate	Ammonia-N	NO <sub>3</sub> -N <sup>b</sup>	Total Kjeldahl Nitrogen	Total Nitrogen	Total Phosphorus	Polychlorinated Biphenyls	Dieldrin	DDE	Total OCs <sup>a</sup>	Total OPs <sup>a</sup>
Drinking Water Guidelines (ADWG) <sup>1</sup>		6.5-8.5*	NV	500	NV	NV	NV	NV	200*	250*	250	0.5	221	NV	NV	NV	NV	0.3 <sup>^</sup>	0.2 <sup>^</sup>	NV	NV
Drinking Water Guidelines (ADWG) X 10 <sup>-2</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	3	2	NV	NV
Fresh Waters-Rivers Guidelines FWG <sup>3</sup>		6.5-8.5	0.12-0.3	NV	NV	NV	NV	NV	NV	NV	NV	0.08	0.15	NV	1.2	0.065	NV	0.002	NV	NV	NV
Long Term Irrigation Water GuideLines (LTIWG) <sup>14</sup>		NV	NV	NV	NV	NV	NV	NV	NV	40	NV	NV	NV	NV	5	0.05	NV	NV	NV	NV	NV
Short Term Irrigation Water Guidelines (STIWG) <sup>1</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	25-125 <sup>5</sup>	0.8-12 <sup>5</sup>	NV	NV	NV	NV	NV
Sample ID	Date																				
MW1	May-03	5.9	-	-	-	-	-	-	-	-	-	-	-	-	5.9	0.16	-	<0.1	<0.1	<2.7	<0.9
MW1	Mar-06	5.7	0.43	<5	88	30	<5	<5	-	96	57	<0.2	0.35	1.0	1.0	0.07	-	<0.001	<0.001	<0.019	<0.095
MW1 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW1	Jul-06	6.0	0.48	28	80	25	<5	<5	-	110	23	0.2	0.03	0.7	0.7	0.19	-	<0.001	<0.001	<0.019	<0.095
MW1	Sep-06	6.1	0.43	33	65	47	<5	<5	56	95	10	<0.2	<0.01	1.7	1.7	0.14	-	<0.001	<0.001	<0.019	<0.095
MW2	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	3.9	0.04	-	<0.1	<0.1	<2.7	<0.9
MW2	Mar-06	6.2	0.51	<5	45	25	<5	<5	-	85	38	<0.2	9	0.9	0.9	0.03	-	<0.001	<0.001	<0.019	<0.095
MW2 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW2	Jul-06	6.3	0.54	<5	31	20	<5	<5	-	92	27	0.2	2.1	1.1	1.1	0.06	-	<0.001	<0.001	<0.019	<0.095
MW2	Sep-06	6.2	0.52	<5	21	22	<5	<5	73	94	34	<0.2	12	1.2	13	0.07	-	<0.001	<0.001	<0.019	<0.095
MW3A	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	0.69	0.17	-	<0.1	<0.1	<2.7	<0.9
MW3	Mar-06	7.0	0.48	14	<5	42	<5	<5	-	120	39	<0.2	0.39	0.6	1.0	0.72	-	<0.001	0.02	0.038	<0.095
MW3 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW3	Jul-06	6.4	0.59	<5	56	37	<5	<5	-	110	54	0.4	1.1	1.0	1.0	1.5	-	<0.001	<0.001	<0.019	<0.095
MW3	Sep-06	6.2	0.44	6	40	37	<5	<5	78	84	44	<0.2	3.6	0.7	4.3	0.19	-	<0.001	<0.001	<0.019	<0.095
MW4	May-03	6.2	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.04	<0.14	<0.1	<0.1	<2.7	<0.9
MW4	Mar-06	6.0	0.69	980	<5	630	<5	<5	-	220	49	1.1	0.29	1.9	2.2	0.23	-	0.001	0.001	0.019	<0.095
MW4 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW4	Jul-06	6.5	0.84	25	170	96	<5	<5	-	170	30	1.6	0.03	1.6	1.0	0.15	-	<0.001	<0.001	<0.019	<0.095
MW4	Sep-06	5.9	0.70	64	170	61	<5	<5	74	170	32	1.0	<0.01	2.2	2.2	0.05	-	<0.001	<0.001	<0.019	<0.095
MW5	May-03	7.0	-	-	-	-	-	-	-	-	-	1.4	-	-	15	0.03	<0.14	<0.1	<0.1	<2.7	<0.9
MW5	Mar-06	6.8	1.3	380	<5	63	<5	<5	-	220	39	19	0.1	1.7	1.8	0.2	-	<0.001	0.001	0.019	<0.095
MW5 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW5	Jul-06	7.1	1.9	34	180	150	<5	<5	-	170	17	34	0.17	34	32	0.02	-	<0.001	<0.001	<0.019	<0.095
MW5	Sep-06	6.8	1.8	59	260	770	<5	<5	540	170	<3	28	0.09	36	36	0.07	-	<0.001	<0.001	<0.019	<0.095
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	6.8	6.6	130	<5	180	<5	<5	-	320	170	0.4	0.25	0.8	1.0	0.17	-	-	-	-	-
MW6 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Jul-06	5.9	46	71	160	43	<5	<5	-	15000	430	2.0	0.03	2	1.8	<0.01	-	<0.001	<0.001	<0.019	<0.095
MW6	Sep-06	5.5	26	43	270	31	<5	<5	4000	11000	1300	0.8	0.01	1.1	1.1	0.05	-	<0.001	<0.001	<0.019	<0.095
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	7.2	1.2	<5	<5	170	<5	<5	-	21	28	<0.2	0.01	0.3	0.3	0.07	-	<0.001	<0.001	<0.019	<0.095
MW7 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Jul-06	6.8	0.61	<5	35	58	<5	<5	-	89	15	<0.2	0.02	0.2	0.2	0.06	-	<0.001	<0.001	<0.019	<0.095
MW7	Sep-06	6.3	0.50	7	64	45	<5	<5	68	98	32	<0.2	<0.01	0.6	0.6	0.09	-	<0.001	<0.001	<0.019	<0.095

Notes:  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
# Requires site specific assessment. Lowest value considered in this instance.  
\* indicates aesthetic (not health) guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated  
<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments  
<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:  
<sup>1</sup> DoE (2003) and ARMCANZ (1996)  
<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
<sup>4</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)  
<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

APPENDIX D - Table 1  
Summary of Historical Groundwater Analytical Results (2003/2006)

Cygnia Cove, Waterford, WA

		BTEX (mg/l)				TPH (mg/l)				PAH (µg/L)	Heavy Metals (mg/L)												
		Benzene	Toluene	Ethylbenzene	Xylenes	C <sub>6-8</sub>	C <sub>10-14</sub>	C <sub>15-28</sub>	C <sub>29-36</sub>	Polycyclic Aromatic Hydrocarbons <sup>a</sup>	Aluminium (pH>6.5)	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Manganese	Mercury	Nickel	Lead	Selenium	Zinc
Drinking Water Guidelines (ADWG) <sup>1</sup>		0.001	0.8 (0.025*)	0.3 (0.003*)	0.6 (0.02*)	NV	NV	NV	NV	NV	0.2*	0.007	0.7	0.002	0.05	2 (1.0*)	0.3*	0.5 (0.1*)	0.001	0.02	0.01	0.01	3*
Drinking Water Guidelines (ADWG) X 10 <sup>-2</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	2	0.07	7	0.02	0.5	20 (10*)	3	5 (1.0*)	0.01	0.2	0.1	0.1	30
Fresh Waters-Rivers Guidelines FWG <sup>3</sup>		0.95	0.003	NV	NV	NV	NV	NV	NV	3.0	0.055	0.013	NV	0.0002	0.01	0.0014	NV	1.9	0.00006	0.011	0.0034	0.005	0.008
Long Term Irrigation Water GuideLines (LTIWG) <sup>1/4</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	5	0.1	NV	0.01	0.1	0.2	0.2	0.2	0.002	0.2	2	0.02	2
Short Term Irrigation Water Guidelines (STIWG) <sup>1</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	20	2	NV	0.05	1	5	10	10	0.002	2	5	0.05	5
Sample ID	Date																						
MW1	May-03	-	-	-	-	-	-	-	-	-	0.96	0.005	-	<0.002	-	<0.01	0.46	-	<0.002	-	<0.01	-	-
MW1	Mar-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.7	<0.001	<0.05	<0.0001	0.019	0.001	0.37	0.34	<0.0001	0.01	0.004	0.001	0.025
MW1 (Filtered)		-	-	-	-	-	-	-	-	-	0.4	0.001	<0.05	<0.0001	0.001	0.001	0.50	0.33	<0.0001	0.009	<0.001	0.002	0.016
MW1	Jul-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.73	<0.001	<0.1	<0.0002	0.001	<0.001	0.99	0.06	<0.0001	<0.01	0.002	<0.001	0.027
MW1	Sep-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	0.37	<0.04	<2.5	0.7	0.001	<0.5	0.0001	0.001	0.002	1.9	0.15	<0.0001	0.003	0.001	0.001	0.006
MW2	May-03	-	-	-	-	-	-	-	-	-	0.08	0.004	-	<0.002	-	<0.01	0.065	-	<0.002	-	<0.01	-	-
MW2	Mar-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	0.01	<0.0001	0.005	<0.001	0.001	0.017
MW2 (Filtered)		-	-	-	-	-	-	-	-	-	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	<0.01	<0.0001	0.005	<0.001	0.001	0.018
MW2	Jul-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.08	<0.001	<0.1	<0.0002	<0.001	<0.001	<0.01	<0.01	<0.0001	<0.01	<0.001	<0.001	0.007
MW2	Sep-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	0.001	0.03	<0.01	<0.0001	0.001	<0.001	0.001	0.010
MW3A	May-03	-	-	-	-	-	-	-	-	-	0.11	0.003	-	<0.002	<0.01	<0.01	0.05	-	<0.002	-	<0.01	-	0.034
MW3	Mar-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.7	0.003	<0.1	<0.0002	0.002	0.016	0.45	<0.01	<0.0001	0.060	0.001	0.001	0.086
MW3 (Filtered)		-	-	-	-	-	-	-	-	-	<0.1	0.002	<0.1	<0.0002	0.001	0.016	0.08	<0.01	<0.0001	0.040	<0.001	0.002	0.084
MW3	Jul-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.09	0.026	<0.1	<0.0002	<0.001	0.002	0.09	<0.01	<0.0001	<0.01	<0.001	<0.001	0.076
MW3	Sep-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	<0.1	<0.001	<0.5	0.0001	<0.001	0.001	0.07	<0.01	<0.0001	<0.001	<0.001	0.001	<0.005
MW4	May-03	-	-	-	-	-	-	-	-	-	-	0.003	-	<0.002	<0.01	<0.01	-	0.37	<0.002	<0.01	<0.01	-	0.16
MW4	Mar-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	2.8	0.002	0.3	<0.0002	0.001	0.001	22	0.58	<0.0001	0.080	<0.001	0.003	0.049
MW4 (Filtered)		-	-	-	-	-	-	-	-	-	<0.1	0.001	<0.1	<0.0002	<0.001	0.001	<0.01	0.44	<0.0001	0.050	<0.001	0.003	0.050
MW4	Jul-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.02	0.001	<0.1	<0.0002	<0.001	<0.001	9.5	0.34	<0.0001	<0.01	<0.001	<0.001	0.028
MW4	Sep-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	<0.001	9.3	0.35	<0.0001	0.004	<0.001	<0.001	0.015
MW5	May-03	-	-	-	-	-	<0.03	<0.10	<0.10	<0.8	-	0.011	-	0.003	<0.01	<0.01	-	0.08	<0.002	<0.01	<0.01	-	0.031
MW5	Mar-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	2.0	0.003	0.2	<0.0002	0.001	0.001	21	0.15	<0.0001	0.030	<0.001	0.002	0.006
MW5 (Filtered)		-	-	-	-	-	-	-	-	-	<0.1	0.001	<0.1	<0.0002	0.001	0.002	0.01	0.01	<0.0001	0.020	<0.001	0.003	0.005
MW5	Jul-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.02	0.003	0.2	<0.0002	0.001	0.001	8.3	0.07	<0.0001	<0.01	<0.001	0.002	0.005
MW5	Sep-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	<0.1	0.001	<0.5	0.0001	<0.001	0.001	8.9	0.17	<0.0001	0.001	<0.001	<0.001	0.005
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	-	-	-	-	-	-	-	-	<2.5	1.1	0.004	0.4	0.0002	0.001	0.003	15	1.9	<0.0001	0.100	<0.001	0.008	0.130
MW6 (Filtered)		-	-	-	-	-	-	-	-	-	<0.1	<0.001	0.3	<0.0002	0.001	0.002	<0.01	1.7	<0.0001	0.090	<0.001	0.020	0.14
MW6	Jul-06	<0.001	<0.001	<0.001	<0.003	-	<0.03	<0.10	<0.10	<2.5	0.01	<0.001	0.2	0.0002	0.008	0.007	9.2	8.6	<0.0001	0.04	<0.001	0.003	0.039
MW6	Sep-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	<0.1	<0.001	<0.5	0.0001	0.001	0.007	8.8	6.8	<0.0001	0.09	0.006	<0.001	0.035
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	<0.1	0.005	<0.1	<0.0002	<0.001	0.001	0.68	0.09	<0.0001	0.01	<0.001	0.005	0.010
MW7 (Filtered)		-	-	-	-	-	-	-	-	-	<0.1	<0.001	<0.1	<0.0002	0.001	0.001	0.26	<0.01	<0.0001	0.01	<0.001	0.020	0.008
MW7	Jul-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.05	0.003	<0.1	<0.0002	<0.001	0.001	0.88	0.02	<0.0001	<0.01	0.001	<0.001	0.089
MW7	Sep-06	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	0.2	0.002	<0.5	0.0001	<0.001	<0.001	1.7	0.02	<0.0001	0.001	<0.001	<0.001	0.007

Notes:

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

\* Requires site specific assessment. Lowest value considered in this instance.

\* indicates aesthetic (not health) guideline

« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments

<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)

<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

<sup>4</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)

<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

APPENDIX D - Table 2  
Historical Groundwater Analytical Results - Exceedances of ADWG (2003/2006)

Cygnia Cove, Waterford, WA

		Inorganics & Nutrients (mg/L unless otherwise stated)														PCB (µg/L)	OC/OP Pesticides (µg/l)				BTEX (mg/l)				TPH (mg/l)				
		pH (no units)	Conductivity (mS/cm)	Total Suspended Solids	Total Acidity (mgCaCO <sub>3</sub> /l)	Alkalinity (mgCaCO <sub>3</sub> /l)	Carbonate (mgCaCO <sub>3</sub> /l)	Hydroxide (mgCaCO <sub>3</sub> /l)	Hardness (mgCaCO <sub>3</sub> /l)	Chloride	Sulphate	Ammonia-N	NO <sub>x</sub> -N <sup>b</sup>	Total Kjeldahl Nitrogen	Total Nitrogen		Total Phosphorus	Polychlorinated Biphenyls	Dieldrin	DDE	Total OCs <sup>a</sup>	Total OPs <sup>a</sup>	Benzene	Toluene	Ethylbenzene	Xylenes	C <sub>6-9</sub>	C <sub>10-14</sub>	C <sub>15-28</sub>
Drinking Water Guidelines (ADWG) <sup>1</sup> (Health)		NV	NV	500	NV	NV	NV	NV	NV	250	0.5	221	NV	NV	NV	NV	NV	0.3 <sup>a</sup>	0.2 <sup>b</sup>	NV	NV	0.001	0.8	0.3	0.6	NV	NV	NV	NV
Drinking Water Guidelines (ADWG) <sup>1</sup> (Aesthetic)		6.5-8.5*	NV	NV	NV	NV	NV	NV	200*	250*	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	0.025*	0.003*	0.02*	NV	NV	NV	NV	
Sample ID	Date																												
MW1	May-03	5.9	-	-	-	-	-	-	-	-	-	-	-	5.9	0.16	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	
MW1	Mar-06	5.7	0.43	<5	88	30	<5	<5	-	96	57	<0.2	0.35	1.0	1.0	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW1 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW1	Jul-06	6.0	0.48	28	80	25	<5	<5	-	110	23	0.2	0.03	0.7	0.7	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW1	Sep-06	6.1	0.43	33	65	47	<5	<5	56	95	10	<0.2	<0.01	1.7	1.7	0.14	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	0.37	<0.04
MW2	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	3.9	0.04	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-
MW2	Mar-06	6.2	0.51	<5	45	25	<5	<5	-	85	38	<0.2	9	0.9	0.9	0.03	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW2 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW2	Jul-06	6.3	0.54	<5	31	20	<5	<5	-	92	27	0.2	2.1	1.1	1.1	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW2	Sep-06	6.2	0.52	<5	21	22	<5	<5	73	94	34	<0.2	12	1.2	13	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW3A	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	0.69	0.17	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-
MW3	Mar-06	7.0	0.48	14	<5	42	<5	<5	-	120	39	<0.2	0.39	0.6	1.0	0.72	-	<0.001	0.02	0.038	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW3 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW3	Jul-06	6.4	0.59	<5	56	37	<5	<5	-	110	54	0.4	1.1	1.0	1.0	1.5	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW3	Sep-06	6.2	0.44	6	40	37	<5	<5	78	84	44	<0.2	3.6	0.7	4.3	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW4	May-03	6.2	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.04	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-
MW4	Mar-06	6.0	0.69	980	<5	630	<5	<5	-	220	49	1.1	0.29	1.9	2.2	0.23	-	0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW4 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW4	Jul-06	6.5	0.84	25	170	96	<5	<5	-	170	30	1.6	0.03	1.6	1.0	0.15	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW4	Sep-06	5.9	0.70	64	170	61	<5	<5	74	170	32	1.0	<0.01	2.2	2.2	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW5	May-03	7.0	-	-	-	-	-	-	-	-	-	1.4	-	-	15	0.03	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	<0.03	<0.10	<0.10	<0.10
MW5	Mar-06	6.8	1.3	380	<5	63	<5	<5	-	220	39	19	0.1	1.7	1.8	0.2	-	<0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW5 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW5	Jul-06	7.1	1.9	34	180	150	<5	<5	-	170	17	34	0.17	34	32	0.02	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW5	Sep-06	6.8	1.8	59	260	770	<5	<5	540	170	<3	28	0.09	36	36	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	6.8	6.6	130	<5	180	<5	<5	-	320	170	0.4	0.25	0.8	1.0	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Jul-06	5.9	46	71	160	43	<5	<5	-	15000	430	2.0	0.03	2	1.8	<0.01	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	-	<0.03	<0.10	<0.10
MW6	Sep-06	5.5	26	43	270	31	<5	<5	4000	11000	1300	0.8	0.01	1.1	1.1	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	7.2	1.2	<5	<5	170	<5	<5	-	21	28	<0.2	0.01	0.3	0.3	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW7 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Jul-06	6.8	0.61	<5	35	58	<5	<5	-	89	15	<0.2	0.02	0.2	0.2	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW7	Sep-06	6.3	0.50	7	64	45	<5	<5	68	98	32	<0.2	<0.01	0.6	0.6	0.09	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04

Notes:  
⊠ Implies that the LOR is greater than the adopetd IL  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
  
# Requires site specific assessment. Lowest value considered in this instance.  
  
\* indicates aesthetic (not health) guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated  
  
<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments  
<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:  
<sup>1</sup> DoE (2003) and ARMCANZ (1996)  
<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
  
<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
  
<sup>4</sup> Australian and New Zealand Guidleines for Fresh and Marine Water Quality (2000)  
<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

Exceeds Drinking Water Guidelines (ADWG)<sup>1</sup> (Health)

Drinking Water Guidelines (ADWG)<sup>1</sup> (Aesthetic)

APPENDIX D - Table 2  
Historical Groundwater Analytical Results - Exceedances of ADWG (2003/2006)

Cygnia Cove, Waterford, WA

		PAH (µg/L)	Heavy Metals (mg/L)												
		Polycyclic Aromatic Hydrocarbons <sup>a</sup>	Aluminium (pH>6.5)	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Manganese	Mercury	Nickel	Lead	Selenium	Zinc
Drinking Water Guidelines (ADWG) <sup>1</sup> (Health)		NV	NV	0.007	0.7	0.002	0.05	2	NV	0.5	0.001	0.02	0.01	0.01	NV
Drinking Water Guidelines (ADWG) <sup>1</sup> (Aesthetic)		NV	0.2*	NV	NV	NV	NV	1*	0.3*	0.1*	NV	NV	NV	NV	3*
Sample ID	Date														
MW1	May-03	-	0.96	0.005	-	<0.002	-	<0.01	0.46	-	<0.002 <sup>a</sup>	-	<0.01	-	-
MW1	Mar-06	<2.5	0.7	<0.001	<0.05	<0.0001	0.019	0.001	0.37	0.34	<0.0001	0.01	0.004	0.001	0.025
MW1 (Filtered)		-	0.4	0.001	<0.05	<0.0001	0.001	0.001	0.50	0.33	<0.0001	0.009	<0.001	0.002	0.016
MW1	Jul-06	<2.5	0.73	<0.001	<0.1	<0.0002	0.001	<0.001	0.99	0.06	<0.0001	<0.01	0.002	<0.001	0.027
MW1	Sep-06	<2.5	0.7	0.001	<0.5	0.0001	0.001	0.002	1.9	0.15	<0.0001	0.003	0.001	0.001	0.006
MW2	May-03	-	0.08	0.004	-	<0.002	-	<0.01	0.065	-	<0.002 <sup>a</sup>	-	<0.01	-	-
MW2	Mar-06	<2.5	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	0.01	<0.0001	0.005	<0.001	0.001	0.017
MW2 (Filtered)		-	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	<0.01	<0.0001	0.005	<0.001	0.001	0.018
MW2	Jul-06	<2.5	0.08	<0.001	<0.01	<0.0002	<0.001	<0.001	<0.01	<0.01	<0.0001	<0.01	<0.001	<0.001	0.007
MW2	Sep-06	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	0.001	0.03	<0.01	<0.0001	0.001	<0.001	0.001	0.010
MW3A	May-03	-	0.11	0.003	-	<0.002	<0.01	<0.01	0.05	-	<0.002 <sup>a</sup>	-	<0.01	-	0.034
MW3	Mar-06	<2.5	0.7	0.003	<0.1	<0.0002	0.002	0.016	0.45	<0.01	<0.0001	0.060	0.001	0.001	0.086
MW3 (Filtered)		-	<0.1	0.002	<0.1	<0.0002	0.001	0.016	0.08	<0.01	<0.0001	0.040	<0.001	0.002	0.084
MW3	Jul-06	<2.5	0.09	0.026	<0.1	<0.0002	<0.001	0.002	0.09	<0.01	<0.0001	<0.01	<0.001	<0.001	0.076
MW3	Sep-06	<2.5	<0.1	<0.001	<0.5	0.0001	<0.001	0.001	0.07	<0.01	<0.0001	<0.001	<0.001	0.001	<0.005
MW4	May-03	-	-	0.003	-	<0.002	<0.01	<0.01	-	0.37	<0.002 <sup>a</sup>	<0.01	<0.01	-	0.16
MW4	Mar-06	<2.5	2.8	0.002	0.3	<0.0002	0.001	0.001	22	0.58	<0.0001	0.080	<0.001	0.003	0.049
MW4 (Filtered)		-	<0.1	0.001	<0.1	<0.0002	<0.001	0.001	<0.01	0.44	<0.0001	0.050	<0.001	0.003	0.050
MW4	Jul-06	<2.5	0.02	0.001	<0.1	<0.0002	<0.001	<0.001	9.5	0.34	<0.0001	<0.01	<0.001	<0.001	0.028
MW4	Sep-06	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	<0.001	9.3	0.35	<0.0001	0.004	<0.001	<0.001	0.015
MW5	May-03	<0.8	-	0.011	-	0.003	<0.01	<0.01	-	0.08	<0.002 <sup>a</sup>	<0.01	<0.01	-	0.031
MW5	Mar-06	<2.5	2.0	0.003	0.2	<0.0002	0.001	0.001	21	0.15	<0.0001	0.030	<0.001	0.002	0.006
MW5 (Filtered)		-	<0.1	0.001	<0.1	<0.0002	0.001	0.002	0.01	0.01	<0.0001	0.020	<0.001	0.003	0.005
MW5	Jul-06	<2.5	0.02	0.003	0.2	<0.0002	0.001	0.001	8.3	0.07	<0.0001	<0.01	<0.001	0.002	0.005
MW5	Sep-06	<2.5	<0.1	0.001	<0.5	0.0001	<0.001	0.001	8.9	0.17	<0.0001	0.001	<0.001	<0.001	0.005
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	<2.5	1.1	0.004	0.4	0.0002	0.001	0.003	15	1.9	<0.0001	0.100	<0.001	0.008	0.130
MW6 (Filtered)		-	<0.1	<0.001	0.3	<0.0002	0.001	0.002	<0.01	1.7	<0.0001	0.090	<0.001	0.020	0.14
MW6	Jul-06	<2.5	0.01	<0.001	0.2	0.0002	0.008	0.007	9.2	8.6	<0.0001	0.04	<0.001	0.003	0.039
MW6	Sep-06	<2.5	<0.1	<0.001	<0.5	0.0001	0.001	0.007	8.8	6.8	<0.0001	0.09	0.006	<0.001	0.035
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	<2.5	<0.1	0.005	<0.1	<0.0002	<0.001	0.001	0.68	0.09	<0.0001	0.01	<0.001	0.005	0.010
MW7 (Filtered)		-	<0.1	<0.001	<0.1	<0.0002	0.001	0.001	0.26	<0.01	<0.0001	0.01	<0.001	0.020	0.008
MW7	Jul-06	<2.5	0.05	0.003	<0.1	<0.0002	<0.001	0.001	0.88	0.02	<0.0001	<0.01	0.001	<0.001	0.089
MW7	Sep-06	<2.5	0.2	0.002	<0.5	0.0001	<0.001	<0.001	1.7	0.02	<0.0001	0.001	<0.001	<0.001	0.007

Notes:

⊞ Implies that the LOR is greater than the adopedt IL

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

<sup>#</sup> Requires site specific assessment. Lowest value considered in this instance.

\* indicates aesthetic (not health) guideline

« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments

<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

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<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

	Exceeds Drinking Water Guidelines (ADWG) <sup>1</sup> (Health)
	Drinking Water Guidelines (ADWG) <sup>1</sup> (Aesthetic)

APPENDIX D - Table 3  
Historical Groundwater Analytical Results  
Exceedances of Drinking Water Guidleines (ADWG) X 10 (2003/2006)

Cygnia Cove, Waterford, WA

		Inorganics & Nutrients (mg/L unless otherwise stated)														PCB (µg/L)	OC/OP Pesticides (µg/l)				BTEX (mg/l)				TPH (mg/l)				
		pH (no units)	Conductivity (mS/cm)	Total Suspended Solids	Total Acidity (mgCaCO <sub>3</sub> /l)	Alkalinity (mgCaCO <sub>3</sub> /l)	Carbonate (mgCaCO <sub>3</sub> /l)	Hydroxide (mgCaCO <sub>3</sub> /l)	Hardness (mgCaCO <sub>3</sub> /l)	Chloride	Sulphate	Ammonia-N	NO <sub>3</sub> -N <sup>b</sup>	Total Kjeldahl Nitrogen	Total Nitrogen	Total Phosphorus	Polychlorinated Biphenyls	Dieldrin	DDE	Total OCs <sup>a</sup>	Total OPs <sup>a</sup>	Benzene	Toluene	Ethylbenzene	Xylenes	C <sub>6-9</sub>	C <sub>10-14</sub>	C <sub>15-28</sub>	C <sub>29-36</sub>
Drinking Water Guidelines (ADWG) X 10 <sup>-2</sup> (Health)		NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	3	2	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Drinking Water Guidelines (ADWG) X 10 <sup>-2</sup> (Aesthetic)		NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Sample ID	Date																												
MW1	May-03	5.9	-	-	-	-	-	-	-	-	-	-	-	-	5.9	0.16	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-
MW1	Mar-06	5.7	0.43	<5	88	30	<5	<5	-	96	57	<0.2	0.35	1.0	1.0	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW1 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW1	Jul-06	6.0	0.48	28	80	25	<5	<5	-	110	23	0.2	0.03	0.7	0.7	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW1	Sep-06	6.1	0.43	33	65	47	<5	<5	56	95	10	<0.2	<0.01	1.7	1.7	0.14	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	0.37	<0.04
MW2	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	3.9	0.04	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-
MW2	Mar-06	6.2	0.51	<5	45	25	<5	<5	-	85	38	<0.2	9	0.9	0.9	0.03	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW2 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW2	Jul-06	6.3	0.54	<5	31	20	<5	<5	-	92	27	0.2	2.1	1.1	1.1	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW2	Sep-06	6.2	0.52	<5	21	22	<5	<5	73	94	34	<0.2	12	1.2	13	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW3A	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	0.69	0.17	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-
MW3	Mar-06	7.0	0.48	14	<5	42	<5	<5	-	120	39	<0.2	0.39	0.6	1.0	0.72	-	<0.001	0.02	0.038	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW3 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW3	Jul-06	6.4	0.59	<5	56	37	<5	<5	-	110	54	0.4	1.1	1.0	1.0	1.5	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW3	Sep-06	6.2	0.44	6	40	37	<5	<5	78	84	44	<0.2	3.6	0.7	4.3	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW4	May-03	6.2	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.04	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-
MW4	Mar-06	6.0	0.69	980	<5	630	<5	<5	-	220	49	1.1	0.29	1.9	2.2	0.23	-	0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW4 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW4	Jul-06	6.5	0.84	25	170	96	<5	<5	-	170	30	1.6	0.03	1.6	1.0	0.15	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW4	Sep-06	5.9	0.70	64	170	61	<5	<5	74	170	32	1.0	<0.01	2.2	2.2	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW5	May-03	7.0	-	-	-	-	-	-	-	-	-	1.4	-	-	15	0.03	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	<0.03	<0.10	<0.10
MW5	Mar-06	6.8	1.3	380	<5	63	<5	<5	-	220	39	19	0.1	1.7	1.8	0.2	-	<0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW5 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW5	Jul-06	7.1	1.9	34	180	150	<5	<5	-	170	17	34	0.17	34	32	0.02	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW5	Sep-06	6.8	1.8	59	260	770	<5	<5	540	170	<3	28	0.09	36	36	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	6.8	6.6	130	<5	180	<5	<5	-	320	170	0.4	0.25	0.8	1.0	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Jul-06	5.9	46	71	160	43	<5	<5	-	15000	430	2.0	0.03	2	1.8	<0.01	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	-	<0.03	<0.10	<0.10
MW6	Sep-06	5.5	26	43	270	31	<5	<5	4000	11000	1300	0.8	0.01	1.1	1.1	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	7.2	1.2	<5	<5	170	<5	<5	-	21	28	<0.2	0.01	0.3	0.3	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW7 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Jul-06	6.8	0.61	<5	35	58	<5	<5	-	89	15	<0.2	0.02	0.2	0.2	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04
MW7	Sep-06	6.3	0.50	7	64	45	<5	<5	68	98	32	<0.2	<0.01	0.6	0.6	0.09	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04

Notes:

- Implies that the LOR is greater than the adopetd IL
- = Analysis not completed
- NV = No Value / IL
- NA = Not Applicable
- ^ Value for both dieldrin and aldrin
- # Requires site specific assessment. Lowest value considered in this
- \* indicates aesthetic (not health) guideline
- « = All constituent analyte concentrations are less than LOR and RPD cannot be calculated
- <sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments
- <sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

<sup>2</sup> National Health and Medical Research Council and Natural Resource Managemement Ministerial Council (2005)

<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

<sup>4</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)

<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

	Exceeds Drinking Water Guidelines (ADWG) X 10 <sup>2</sup> (Health)
	Exceeds Drinking Water Guidelines (ADWG) X 10 <sup>2</sup> (Aesthetic)

APPENDIX D - Table 3  
Historical Groundwater Analytical Results  
Exceedances of Drinking Water Guidleines (ADWG) X 10 (2003/2006)

Cygnia Cove, Waterford, WA

		PAH (µg/L)	Heavy Metals (mg/L)												
		Polycyclic Aromatic Hydrocarbons <sup>a</sup>	Aluminium (pH>6.5)	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Manganese	Mercury	Nickel	Lead	Selenium	Zinc
Drinking Water Guidleines (ADWG) X 10 <sup>2</sup> (Health)		NV	2	0.07	7	0.02	0.5	20	3	5	0.01	0.2	0.1	0.1	30
Drinking Water Guidleines (ADWG) X 10 <sup>2</sup> (Aesthetic)		NV	NV	NV	NV	NV	NV	10	30	1	NV	NV	NV	NV	NV
Sample ID	Date														
MW1	May-03	-	0.96	0.005	-	<0.002	-	<0.01	0.46	-	<0.002	-	<0.01	-	-
MW1	Mar-06	<2.5	0.7	<0.001	<0.05	<0.0001	0.019	0.001	0.37	0.34	<0.0001	0.01	0.004	0.001	0.025
MW1 (Filtered)		-	0.4	0.001	<0.05	<0.0001	0.001	0.001	0.50	0.33	<0.0001	0.009	<0.001	0.002	0.016
MW1	Jul-06	<2.5	0.73	<0.001	<0.1	<0.0002	0.001	<0.001	0.99	0.06	<0.0001	<0.01	0.002	<0.001	0.027
MW1	Sep-06	<2.5	0.7	0.001	<0.5	0.0001	0.001	0.002	1.9	0.15	<0.0001	0.003	0.001	0.001	0.006
MW2	May-03	-	0.08	0.004	-	<0.002	-	<0.01	0.065	-	<0.002	-	<0.01	-	-
MW2	Mar-06	<2.5	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	0.01	<0.0001	0.005	<0.001	0.001	0.017
MW2 (Filtered)		-	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	<0.01	<0.0001	0.005	<0.001	0.001	0.018
MW2	Jul-06	<2.5	0.08	<0.001	<0.01	<0.0002	<0.001	<0.001	<0.01	<0.01	<0.0001	<0.01	<0.001	<0.001	0.007
MW2	Sep-06	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	0.001	0.03	<0.01	<0.0001	0.001	<0.001	0.001	0.010
MW3A	May-03	-	0.11	0.003	-	<0.002	<0.01	<0.01	0.05	-	<0.002	-	<0.01	-	0.034
MW3	Mar-06	<2.5	0.7	0.003	<0.1	<0.0002	0.002	0.016	0.45	<0.01	<0.0001	0.060	0.001	0.001	0.086
MW3 (Filtered)		-	<0.1	0.002	<0.1	<0.0002	0.001	0.016	0.08	<0.01	<0.0001	0.040	<0.001	0.002	0.084
MW3	Jul-06	<2.5	0.09	0.026	<0.1	<0.0002	<0.001	0.002	0.09	<0.01	<0.0001	<0.01	<0.001	<0.001	0.076
MW3	Sep-06	<2.5	<0.1	<0.001	<0.5	0.0001	<0.001	0.001	0.07	<0.01	<0.0001	<0.001	<0.001	0.001	<0.005
MW4	May-03	-	-	0.003	-	<0.002	<0.01	<0.01	-	0.37	<0.002	<0.01	<0.01	-	0.16
MW4	Mar-06	<2.5	2.8	0.002	0.3	<0.0002	0.001	0.001	22	0.58	<0.0001	0.080	<0.001	0.003	0.049
MW4 (Filtered)		-	<0.1	0.001	<0.1	<0.0002	<0.001	0.001	<0.01	0.44	<0.0001	0.050	<0.001	0.003	0.050
MW4	Jul-06	<2.5	0.02	0.001	<0.1	<0.0002	<0.001	<0.001	9.5	0.34	<0.0001	<0.01	<0.001	<0.001	0.028
MW4	Sep-06	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	<0.001	9.3	0.35	<0.0001	0.004	<0.001	<0.001	0.015
MW5	May-03	<0.8	-	0.011	-	0.003	<0.01	<0.01	-	0.08	<0.002	<0.01	<0.01	-	0.031
MW5	Mar-06	<2.5	2.0	0.003	0.2	<0.0002	0.001	0.001	21	0.15	<0.0001	0.030	<0.001	0.002	0.006
MW5 (Filtered)		-	<0.1	0.001	<0.1	<0.0002	0.001	0.002	0.01	0.01	<0.0001	0.020	<0.001	0.003	0.005
MW5	Jul-06	<2.5	0.02	0.003	0.2	<0.0002	0.001	0.001	8.3	0.07	<0.0001	<0.01	<0.001	0.002	0.005
MW5	Sep-06	<2.5	<0.1	0.001	<0.5	0.0001	<0.001	0.001	8.9	0.17	<0.0001	0.001	<0.001	<0.001	0.005
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	<2.5	1.1	0.004	0.4	0.0002	0.001	0.003	15	1.9	<0.0001	0.100	<0.001	0.008	0.130
MW6 (Filtered)		-	<0.1	<0.001	0.3	<0.0002	0.001	0.002	<0.01	1.7	<0.0001	0.090	<0.001	0.020	0.14
MW6	Jul-06	<2.5	0.01	<0.001	0.2	0.0002	0.008	0.007	9.2	8.6	<0.0001	0.04	<0.001	0.003	0.039
MW6	Sep-06	<2.5	<0.1	<0.001	<0.5	0.0001	0.001	0.007	8.8	6.8	<0.0001	0.09	0.006	<0.001	0.035
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	<2.5	<0.1	0.005	<0.1	<0.0002	<0.001	0.001	0.68	0.09	<0.0001	0.01	<0.001	0.005	0.010
MW7 (Filtered)		-	<0.1	<0.001	<0.1	<0.0002	0.001	0.001	0.26	<0.01	<0.0001	0.01	<0.001	0.020	0.008
MW7	Jul-06	<2.5	0.05	0.003	<0.1	<0.0002	<0.001	0.001	0.88	0.02	<0.0001	<0.01	0.001	<0.001	0.089
MW7	Sep-06	<2.5	0.2	0.002	<0.5	0.0001	<0.001	<0.001	1.7	0.02	<0.0001	0.001	<0.001	<0.001	0.007

Notes:

□ Implies that the LOR is greater than the adopetd IL

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

# Requires site specific assessment. Lowest value considered in this

\* indicates aesthetic (not health) guideline

« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments

<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)

<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

<sup>4</sup> Australian and New Zealand Guidleines for Fresh and Marine Water Quality (2000)

<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

	Exceeds Drinking Water Guidleines (ADWG) X 10 <sup>2</sup> (Health)
	Exceeds Drinking Water Guidleines (ADWG) X 10 <sup>2</sup> (Aesthetic)



APPENDIX D - Table 4  
Historical Groundwater Analytical Results  
Exceedances of Fresh Water Guidelines (2003/2006)

Cygnia Cove, Waterford, WA

		Inorganics & Nutrients (mg/L unless otherwise stated)															PCB (µg/L)	OC/OP Pesticides (µg/l)				BTEX (mg/l)				TPH (mg/l)				PAH (µg/L)
		pH (no units)	Conductivity (mS/cm)	Total Suspended Solids	Total Acidity (mgCaCO <sub>3</sub> /l)	Alkalinity (mgCaCO <sub>3</sub> /l)	Carbonate (mgCaCO <sub>3</sub> /l)	Hydroxide (mgCaCO <sub>3</sub> /l)	Hardness (mgCaCO <sub>3</sub> /l)	Chloride	Sulphate	Ammonia-N	NO <sub>3</sub> -N <sup>b</sup>	Total Kjeldahl Nitrogen	Total Nitrogen	Total Phosphorus	Polychlorinated Biphenyls	Dieldrin	DDE	Total OCs <sup>a</sup>	Total OPs <sup>a</sup>	Benzene	Toluene	Ethylbenzene	Xylenes	C <sub>6-9</sub>	C <sub>10-14</sub>	C <sub>15-28</sub>	C <sub>29-36</sub>	Polycyclic Aromatic Hydrocarbons <sup>a</sup>
Fresh Waters-Rivers Guidelines FWG <sup>3</sup>		6.5-8.5	0.12-0.3	NV	NV	NV	NV	NV	NV	NV	0.08	0.15	NV	1.2	0.065	NV	0.002	NV	NV	NV	0.95	0.003	NV	NV	NV	NV	NV	NV	NV	3.0
Sample ID	Date																													
MW1	May-03	5.9	-	-	-	-	-	-	-	-	-	-	-	5.9	0.16	-	-	<0.1 <sup>a</sup>	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-
MW1	Mar-06	5.7	0.43	<5	88	30	<5	<5	-	96	57	<0.2 <sup>a</sup>	0.35	1.0	1.0	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW1 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW1	Jul-06	6.0	0.48	28	80	25	<5	<5	-	110	23	0.2	0.03	0.7	0.7	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW1	Sep-06	6.1	0.43	33	65	47	<5	<5	56	95	10	<0.2 <sup>a</sup>	<0.01	1.7	1.7	0.14	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	0.37	<0.04	<2.5
MW2	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	3.9	0.04	-	-	<0.1 <sup>a</sup>	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-
MW2	Mar-06	6.2	0.51	<5	45	25	<5	<5	-	85	38	<0.2 <sup>a</sup>	9	0.9	0.9	0.03	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW2 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW2	Jul-06	6.3	0.54	<5	31	20	<5	<5	-	92	27	0.2	2.1	1.1	1.1	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW2	Sep-06	6.2	0.52	<5	21	22	<5	<5	73	94	34	<0.2 <sup>a</sup>	12	1.2	13	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW3A	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	0.69	0.17	-	-	<0.1 <sup>a</sup>	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-
MW3	Mar-06	7.0	0.48	14	<5	42	<5	<5	-	120	39	<0.2 <sup>a</sup>	0.39	0.6	1.0	0.72	-	<0.001	0.02	0.038	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW3 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW3	Jul-06	6.4	0.59	<5	56	37	<5	<5	-	110	54	0.4	1.1	1.0	1.0	1.5	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW3	Sep-06	6.2	0.44	6	40	37	<5	<5	78	84	44	<0.2 <sup>a</sup>	3.6	0.7	4.3	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW4	May-03	6.2	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.04	<0.14	<0.1 <sup>a</sup>	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-
MW4	Mar-06	6.0	0.69	980	<5	630	<5	<5	-	220	49	1.1	0.29	1.9	2.2	0.23	-	0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW4 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW4	Jul-06	6.5	0.84	25	170	96	<5	<5	-	170	30	1.6	0.03	1.6	1.0	0.15	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW4	Sep-06	5.9	0.70	64	170	61	<5	<5	74	170	32	1.0	<0.01	2.2	2.2	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW5	May-03	7.0	-	-	-	-	-	-	-	-	-	1.4	-	-	15	0.03	<0.14	<0.1 <sup>a</sup>	<0.1	<2.7	<0.9	-	-	-	-	-	<0.03	<0.10	<0.10	<0.8
MW5	Mar-06	6.8	1.3	380	<5	63	<5	<5	-	220	39	19	0.1	1.7	1.8	0.2	-	<0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW5 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW5	Jul-06	7.1	1.9	34	180	150	<5	<5	-	170	17	34	0.17	34	32	0.02	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW5	Sep-06	6.8	1.8	59	260	770	<5	<5	540	170	<3	28	0.09	36	36	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	6.8	6.6	130	<5	180	<5	<5	-	320	170	0.4	0.25	0.8	1.0	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.5
MW6 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Jul-06	5.9	46	71	160	43	<5	<5	-	15000	430	2.0	0.03	2	1.8	<0.01	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	-	<0.03	<0.10	<0.10	<2.5
MW6	Sep-06	5.5	26	43	270	31	<5	<5	4000	11000	1300	0.8	0.01	1.1	1.1	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	7.2	1.2	<5	<5	170	<5	<5	-	21	28	<0.2 <sup>a</sup>	0.01	0.3	0.3	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW7 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Jul-06	6.8	0.61	<5	35	58	<5	<5	-	89	15	<0.2 <sup>a</sup>	0.02	0.2	0.2	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5
MW7	Sep-06	6.3	0.50	7	64	45	<5	<5	68	98	32	<0.2 <sup>a</sup>	<0.01	0.6	0.6	0.09	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5

Notes:

□ Implies that the LOR is greater than the adopetd IL

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

<sup>#</sup> Requires site specific assessment. Lowest value considered in this

<sup>\*</sup> indicates aesthetic (not health) guideline

« = All constituent analyte concentrations are less than LOR and

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey

Environments

<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)

<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

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<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

Exceeds the Fresh Waters-Rivers  
Guidelines FWG<sup>3</sup>

APPENDIX D - Table 4  
Historical Groundwater Analytical Results  
Exceedances of Fresh Water Guidelines (2003/2006)

Cygnia Cove, Waterford, WA

		Heavy Metals (mg/L)												
		Aluminium (pH>6.5)	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Manganese	Mercury	Nickel	Lead	Selenium	Zinc
Fresh Waters-Rivers Guidelines FWG <sup>3</sup>		0.055	0.013	NV	0.0002	0.01	0.0014	NV	1.9	0.00006	0.011	0.0034	0.005	0.008
Sample ID	Date													
MW1	May-03	0.96	0.005	-	<0.002▣	-	<0.01	0.46	-	<0.002▣	-	<0.01	-	-
MW1	Mar-06	0.7	<0.001	<0.05	<0.0001	0.019	0.001	0.37	0.34	<0.0001▣	0.01	0.004	0.001	0.025
MW1 (Filtered)		0.4	0.001	<0.05	<0.0001	0.001	0.001	0.50	0.33	<0.0001▣	0.009	<0.001	0.002	0.016
MW1	Jul-06	0.73	<0.001	<0.1	<0.0002	0.001	<0.001	0.99	0.06	<0.0001▣	<0.01	0.002	<0.001	0.027
MW1	Sep-06	0.7	0.001	<0.5	0.0001	0.001	0.002	1.9	0.15	<0.0001▣	0.003	0.001	0.001	0.006
MW2	May-03	0.08	0.004	-	<0.002▣	-	<0.01	0.065	-	<0.002▣	-	<0.01	-	-
MW2	Mar-06	<0.1▣	<0.001	<0.05	<0.0001	0.001	0.001	0.02	0.01	<0.0001▣	0.005	<0.001	0.001	0.017
MW2 (Filtered)		<0.1▣	<0.001	<0.05	<0.0001	0.001	0.001	0.02	<0.01	<0.0001▣	0.005	<0.001	0.001	0.018
MW2	Jul-06	0.08	<0.001	<0.01	<0.0002	<0.001	<0.001	<0.01	<0.01	<0.0001▣	<0.01	<0.001	<0.001	0.007
MW2	Sep-06	0.2	<0.001	<0.5	0.0001	<0.001	0.001	0.03	<0.01	<0.0001▣	0.001	<0.001	0.001	0.010
MW3A	May-03	0.11	0.003	-	<0.002▣	<0.01	<0.01	0.05	-	<0.002▣	-	<0.01	-	0.034
MW3	Mar-06	0.7	0.003	<0.1	<0.0002	0.002	0.016	0.45	<0.01	<0.0001▣	0.060	0.001	0.001	0.086
MW3 (Filtered)		<0.1▣	0.002	<0.1	<0.0002	0.001	0.016	0.08	<0.01	<0.0001▣	0.040	<0.001	0.002	0.084
MW3	Jul-06	0.09	0.026	<0.1	<0.0002	<0.001	0.002	0.09	<0.01	<0.0001▣	<0.01	<0.001	<0.001	0.076
MW3	Sep-06	<0.1	<0.001	<0.5	0.0001	<0.001	0.001	0.07	<0.01	<0.0001▣	<0.001	<0.001	0.001	<0.005
MW4	May-03	-	0.003	-	<0.002▣	<0.01	<0.01	-	0.37	<0.002▣	<0.01	<0.01	-	0.16
MW4	Mar-06	2.8	0.002	0.3	<0.0002	0.001	0.001	22	0.58	<0.0001▣	0.080	<0.001	0.003	0.049
MW4 (Filtered)		<0.1▣	0.001	<0.1	<0.0002	<0.001	0.001	<0.01	0.44	<0.0001▣	0.050	<0.001	0.003	0.050
MW4	Jul-06	0.02	0.001	<0.1	<0.0002	<0.001	<0.001	9.5	0.34	<0.0001▣	<0.01	<0.001	<0.001	0.028
MW4	Sep-06	0.2	<0.001	<0.5	0.0001	<0.001	<0.001	9.3	0.35	<0.0001▣	0.004	<0.001	<0.001	0.015
MW5	May-03	-	0.011	-	0.003▣	<0.01	<0.01	-	0.08	<0.002▣	<0.01	<0.01	-	0.031
MW5	Mar-06	2.0	0.003	0.2	<0.0002	0.001	0.001	21	0.15	<0.0001▣	0.030	<0.001	0.002	0.006
MW5 (Filtered)		<0.1▣	0.001	<0.1	<0.0002	0.001	0.002	0.01	0.01	<0.0001▣	0.020	<0.001	0.003	0.005
MW5	Jul-06	0.02	0.003	0.2	<0.0002	0.001	0.001	8.3	0.07	<0.0001▣	<0.01	<0.001	0.002	0.005
MW5	Sep-06	<0.1▣	0.001	<0.5	0.0001	<0.001	0.001	8.9	0.17	<0.0001▣	0.001	<0.001	<0.001	0.005
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	1.1	0.004	0.4	0.0002	0	0.003	15	1.9	<0.0001▣	0.100	<0.001	0.008	0.130
MW6 (Filtered)		<0.1▣	<0.001	0.3	<0.0002	0.001	0.002	<0.01	1.7	<0.0001▣	0.090	<0.001	0.020	0.14
MW6	Jul-06	0.01	<0.001	0.2	0.0002	0.008	0.007	9.2	8.6	<0.0001▣	0.04	<0.001	0.003	0.039
MW6	Sep-06	<0.1▣	<0.001	<0.5	0.0001	0.001	0.007	8.8	6.8	<0.0001▣	0.09	0.006	<0.001	0.035
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	<0.1▣	0.005	<0.1	<0.0002	<0.001	0.001	0.68	0.09	<0.0001▣	0.01	<0.001	0.005	0.010
MW7 (Filtered)		<0.1▣	<0.001	<0.1	<0.0002	0.001	0.001	0.26	<0.01	<0.0001▣	0.01	<0.001	0.020	0.008
MW7	Jul-06	0.05	0.003	<0.1	<0.0002	<0.001	0.001	0.88	0.02	<0.0001▣	<0.01	0.001	<0.001	0.089
MW7	Sep-06	0.2	0.002	<0.5	0.0001	<0.001	<0.001	1.7	0.02	<0.0001▣	0.001	<0.001	<0.001	0.007

Notes:

▣ Implies that the LOR is greater than the adopetd IL

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

# Requires site specific assessment. Lowest value considered in this

\* indicates aesthetic (not health) guideline

« = All constituent analyte concentrations are less than LOR and

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey

Environments

<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)

<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

<sup>4</sup> Australian and New Zealand Guidleines for Fresh and Marine Water Quality (2000)

<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

Exceeds the Fresh Waters-Rivers  
Guidelines FWG<sup>3</sup>

APPENDIX D - Table 5  
Historical Groundwater Analytical Results  
Exceedances of Long Term Irrigation Guidelines (2003/2006)

Cygnia Cove, Waterford, WA

		Inorganics & Nutrients (mg/L unless otherwise stated)														PCB (µg/L)	OC/OP Pesticides (µg/l)				BTEX (mg/l)				TPH (mg/l)					
		pH (no units)	Conductivity (mS/cm)	Total Suspended Solids	Total Acidity (mgCaCO <sub>3</sub> /l)	Alkalinity (mgCaCO <sub>3</sub> /l)	Carbonate (mgCaCO <sub>3</sub> /l)	Hydroxide (mgCaCO <sub>3</sub> /l)	Hardness (mgCaCO <sub>3</sub> /l)	Chloride	Sulphate	Ammonia-N	NO <sub>x</sub> -N <sup>b</sup>	Total Kjeldahl Nitrogen	Total Nitrogen	Total Phosphorus	Polychlorinated Biphenyls	Dieldrin	DDE	Total OCs <sup>a</sup>	Total OPs <sup>a</sup>	Benzene	Toluene	Ethylbenzene	Xylenes	C <sub>6-9</sub>	C <sub>10-14</sub>	C <sub>15-28</sub>	C <sub>29-36</sub>	
Long Term Irrigation Water GuideLines (LTIWG) <sup>1/4</sup>		NV	NV	NV	NV	NV	NV	NV	NV	40	NV	NV	NV	NV	5	0.05	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Sample ID	Date																													
MWI	May-03	5.9	-	-	-	-	-	-	-	-	-	-	-	-	5.9	0.16	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	
MW1	Mar-06	5.7	0.43	<5	88	30	<5	<5	-	96	57	<0.2	0.35	1.0	1.0	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW1 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW1	Jul-06	6.0	0.48	28	80	25	<5	<5	-	110	23	0.2	0.03	0.7	0.7	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW1	Sep-06	6.1	0.43	33	65	47	<5	<5	56	95	10	<0.2	<0.01	1.7	1.7	0.14	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	0.37	<0.04	
MW2	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	3.9	0.04	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	
MW2	Mar-06	6.2	0.51	<5	45	25	<5	<5	-	85	38	<0.2	9	0.9	0.9	0.03	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW2 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW2	Jul-06	6.3	0.54	<5	31	20	<5	<5	-	92	27	0.2	2.1	1.1	1.1	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW2	Sep-06	6.2	0.52	<5	21	22	<5	<5	73	94	34	<0.2	12	1.2	13	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW3A	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	0.69	0.17	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	
MW3	Mar-06	7.0	0.48	14	<5	42	<5	<5	-	120	39	<0.2	0.39	0.6	1.0	0.72	-	<0.001	0.02	0.038	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW3 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW3	Jul-06	6.4	0.59	<5	56	37	<5	<5	-	110	54	0.4	1.1	1.0	1.0	1.5	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW3	Sep-06	6.2	0.44	6	40	37	<5	<5	78	84	44	<0.2	3.6	0.7	4.3	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW4	May-03	6.2	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.04	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	
MW4	Mar-06	6.0	0.69	980	<5	630	<5	<5	-	220	49	1.1	0.29	1.9	2.2	0.23	-	0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW4 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW4	Jul-06	6.5	0.84	25	170	96	<5	<5	-	170	30	1.6	0.03	1.6	1.0	0.15	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW4	Sep-06	5.9	0.70	64	170	61	<5	<5	74	170	32	1.0	<0.01	2.2	2.2	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW5	May-03	7.0	-	-	-	-	-	-	-	-	-	1.4	-	-	15	0.03	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	<0.03	<0.10	<0.10	
MW5	Mar-06	6.8	1.3	380	<5	63	<5	<5	-	220	39	19	0.1	1.7	1.8	0.2	-	<0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW5 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW5	Jul-06	7.1	1.9	34	180	150	<5	<5	-	170	17	34	0.17	34	32	0.02	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW5	Sep-06	6.8	1.8	59	260	770	<5	<5	540	170	<3	28	0.09	36	36	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW6	Mar-06	6.8	6.6	130	<5	180	<5	<5	-	320	170	0.4	0.25	0.8	1.0	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW6 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW6	Jul-06	5.9	46	71	160	43	<5	<5	-	15000	430	2.0	0.03	2	1.8	<0.01	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	-	<0.03	<0.10	<0.10	
MW6	Sep-06	5.5	26	43	270	31	<5	<5	4000	11000	1300	0.8	0.01	1.1	1.1	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW7	Mar-06	7.2	1.2	<5	<5	170	<5	<5	-	21	28	<0.2	0.01	0.3	0.3	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW7 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW7	Jul-06	6.8	0.61	<5	35	58	<5	<5	-	89	15	<0.2	0.02	0.2	0.2	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	
MW7	Sep-06	6.3	0.50	7	64	45	<5	<5	68	98	32	<0.2	<0.01	0.6	0.6	0.09	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	

Notes:  
▣ Implies that the LOR is greater than the adopedt IL  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
  
# Requires site specific assessment. Lowest value considered in this instance.  
  
\* indicates aesthetic (not health) guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments  
<sup>u</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:  
<sup>1</sup> DoE (2003) and ARMCANZ (1996)  
<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
<sup>4</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)

<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

Exceeds Long Term Irrigation Water GuideLines (LTIWG)<sup>1/4</sup>

APPENDIX D - Table 5  
Historical Groundwater Analytical Results  
Exceedances of Long Term Irrigation Guidelines (2003/2006)

Cygnia Cove, Waterford, WA

		PAH (µg/L)	Heavy Metals (mg/L)												
		Polycyclic Aromatic Hydrocarbons <sup>a</sup>	Aluminium (pH>6.5)	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Manganese	Mercury	Nickel	Lead	Selenium	Zinc
Long Term Irrigation Water GuideLines (LTIWG) <sup>14</sup>		NV	5	0.1	NV	0.01	0.1	0.2	0.2	0.2	0.002	0.2	2	0.02	2
Sample ID	Date														
MW1	May-03	-	0.96	0.005	-	<0.002	-	<0.01	0.46	-	<0.002	-	<0.01	-	-
MW1	Mar-06	<2.5	0.7	<0.001	<0.05	<0.0001	0.019	0.001	0.37	0.34	<0.0001	0.01	0.004	0.001	0.025
MW1 (Filtered)		-	0.4	0.001	<0.05	<0.0001	0.001	0.001	0.50	0.33	<0.0001	0.009	<0.001	0.002	0.016
MW1	Jul-06	<2.5	0.73	<0.001	<0.1	<0.0002	0.001	<0.001	0.99	0.06	<0.0001	<0.01	0.002	<0.001	0.027
MW1	Sep-06	<2.5	0.7	0.001	<0.5	0.0001	0.001	0.002	1.9	0.15	<0.0001	0.003	0.001	0.001	0.006
MW2	May-03	-	0.08	0.004	-	<0.002	-	<0.01	0.065	-	<0.002	-	<0.01	-	-
MW2	Mar-06	<2.5	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	0.01	<0.0001	0.005	<0.001	0.001	0.017
MW2 (Filtered)		-	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	<0.01	<0.0001	0.005	<0.001	0.001	0.018
MW2	Jul-06	<2.5	0.08	<0.001	<0.01	<0.0002	<0.001	<0.001	<0.01	<0.01	<0.0001	<0.01	<0.001	<0.001	0.007
MW2	Sep-06	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	0.001	0.03	<0.01	<0.0001	0.001	<0.001	0.001	0.010
MW3A	May-03	-	0.11	0.003	-	<0.002	<0.01	<0.01	0.05	-	<0.002	-	<0.01	-	0.034
MW3	Mar-06	<2.5	0.7	0.003	<0.1	<0.0002	0.002	0.016	0.45	<0.01	<0.0001	0.060	0.001	0.001	0.086
MW3 (Filtered)		-	<0.1	0.002	<0.1	<0.0002	0.001	0.016	0.08	<0.01	<0.0001	0.040	<0.001	0.002	0.084
MW3	Jul-06	<2.5	0.09	0.026	<0.1	<0.0002	<0.001	0.002	0.09	<0.01	<0.0001	<0.01	<0.001	<0.001	0.076
MW3	Sep-06	<2.5	<0.1	<0.001	<0.5	0.0001	<0.001	0.001	0.07	<0.01	<0.0001	<0.001	<0.001	0.001	<0.005
MW4	May-03	-	-	0.003	-	<0.002	<0.01	<0.01	-	0.37	<0.002	<0.01	<0.01	-	0.16
MW4	Mar-06	<2.5	2.8	0.002	0.3	<0.0002	0.001	0.001	22	0.58	<0.0001	0.080	<0.001	0.003	0.049
MW4 (Filtered)		-	<0.1	0.001	<0.1	<0.0002	<0.001	0.001	<0.01	0.44	<0.0001	0.050	<0.001	0.003	0.050
MW4	Jul-06	<2.5	0.02	0.001	<0.1	<0.0002	<0.001	<0.001	9.5	0.34	<0.0001	<0.01	<0.001	<0.001	0.028
MW4	Sep-06	<2.5	0.2	<0.001	<0.5	0.0001	<0.001	<0.001	9.3	0.35	<0.0001	0.004	<0.001	<0.001	0.015
MW5	May-03	<0.8	-	0.011	-	0.003	<0.01	<0.01	-	0.08	<0.002	<0.01	<0.01	-	0.031
MW5	Mar-06	<2.5	2.0	0.003	0.2	<0.0002	0.001	0.001	21	0.15	<0.0001	0.030	<0.001	0.002	0.006
MW5 (Filtered)		-	<0.1	0.001	<0.1	<0.0002	0.001	0.002	0.01	0.01	<0.0001	0.020	<0.001	0.003	0.005
MW5	Jul-06	<2.5	0.02	0.003	0.2	<0.0002	0.001	0.001	8.3	0.07	<0.0001	<0.01	<0.001	0.002	0.005
MW5	Sep-06	<2.5	<0.1	0.001	<0.5	0.0001	<0.001	0.001	8.9	0.17	<0.0001	0.001	<0.001	<0.001	0.005
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	<2.5	1.1	0.004	0.4	0.0002	0.001	0.003	15	1.9	<0.0001	0.100	<0.001	0.008	0.130
MW6 (Filtered)		-	<0.1	<0.001	0.3	<0.0002	0.001	0.002	<0.01	1.7	<0.0001	0.090	<0.001	0.020	0.14
MW6	Jul-06	<2.5	0.01	<0.001	0.2	0.0002	0.008	0.007	9.2	8.6	<0.0001	0.04	<0.001	0.003	0.039
MW6	Sep-06	<2.5	<0.1	<0.001	<0.5	0.0001	0.001	0.007	8.8	6.8	<0.0001	0.09	0.006	<0.001	0.035
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	<2.5	<0.1	0.005	<0.1	<0.0002	<0.001	0.001	0.68	0.09	<0.0001	0.01	<0.001	0.005	0.010
MW7 (Filtered)		-	<0.1	<0.001	<0.1	<0.0002	0.001	0.001	0.26	<0.01	<0.0001	0.01	<0.001	0.020	0.008
MW7	Jul-06	<2.5	0.05	0.003	<0.1	<0.0002	<0.001	0.001	0.88	0.02	<0.0001	<0.01	0.001	<0.001	0.089
MW7	Sep-06	<2.5	0.2	0.002	<0.5	0.0001	<0.001	<0.001	1.7	0.02	<0.0001	0.001	<0.001	<0.001	0.007

Notes:  
□ Implies that the LOR is greater than the adopedt IL  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
  
# Requires site specific assessment. Lowest value considered in this instance.  
  
\* indicates aesthetic (not health) guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated  
  
<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey Environments  
<sup>u</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)  
**References:**  
<sup>1</sup> DoE (2003) and ARMCANZ (1996)  
<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
<sup>4</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)  
  
<sup>5</sup> USEPA, Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

Exceeds Long Term Irrigation Water GuideLines (LTIWG)<sup>1/4</sup>

## Exceedances of Short Term Irrigation Guidelines (2003/2006)

## Cygnia Cove, Waterford, WA

		Inorganics & Nutrients (mg/L unless otherwise stated)														PCB (µg/L)	OC/OP Pesticides (µg/l)				BTEX (mg/l)				TPH (mg/l)				PAH (µg/l)		
		pH (no units)	Conductivity (mS/cm)	Total Suspended Solids	Total Acidity (mgCaCO <sub>3</sub> /l)	Alkalinity (mgCaCO <sub>3</sub> /l)	Carbonate (mgCaCO <sub>3</sub> /l)	Hydroxide (mgCaCO <sub>3</sub> /l)	Hardness (mgCaCO <sub>3</sub> /l)	Chloride	Sulphate	Ammonia-N	NO <sub>x</sub> -N <sup>b</sup>	Total Kjeldahl Nitrogen	Total Nitrogen	Total Phosphorus	Polychlorinated Biphenyls	Dieldrin	DDE	Total OCs <sup>a</sup>	Total OPs <sup>a</sup>	Benzene	Toluene	Ethylbenzene	Xylenes	C <sub>6-9</sub>	C <sub>10-14</sub>	C <sub>15-28</sub>	C <sub>29-36</sub>	Polycyclic Aromatic Hydrocarbons <sup>a</sup>	
Short Term Irrigation Water Guidelines (STIWG) <sup>d</sup>		NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	25-125 <sup>d</sup>	0.8-12 <sup>d</sup>	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV	NV
Sample ID	Date																														
MW1	May-03	5.9	-	-	-	-	-	-	-	-	-	-	-	-	5.9	0.16	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-	-
MW1	Mar-06	5.7	0.43	<5	88	30	<5	<5	-	96	57	<0.2	0.35	1.0	1.0	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW1 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW1	Jul-06	6.0	0.48	28	80	25	<5	<5	-	110	23	0.2	0.03	0.7	0.7	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW1	Sep-06	6.1	0.43	33	65	47	<5	<5	56	95	10	<0.2	<0.01	1.7	1.7	0.14	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	0.37	<0.04	<2.5	
MW2	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	3.9	0.04	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-	-
MW2	Mar-06	6.2	0.51	<5	45	25	<5	<5	-	85	38	<0.2	9	0.9	0.9	0.03	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW2 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW2	Jul-06	6.3	0.54	<5	31	20	<5	<5	-	92	27	0.2	2.1	1.1	1.1	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW2	Sep-06	6.2	0.52	<5	21	22	<5	<5	73	94	34	<0.2	12	1.2	13	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW3A	May-03	6.3	-	-	-	-	-	-	-	-	-	-	-	-	0.69	0.17	-	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-	-
MW3	Mar-06	7.0	0.48	14	<5	42	<5	<5	-	120	39	<0.2	0.39	0.6	1.0	0.72	-	<0.001	0.02	0.038	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW3 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW3	Jul-06	6.4	0.59	<5	56	37	<5	<5	-	110	54	0.4	1.1	1.0	1.0	1.5	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW3	Sep-06	6.2	0.44	6	40	37	<5	<5	78	84	44	<0.2	3.6	0.7	4.3	0.19	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW4	May-03	6.2	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.04	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	-	-	-	-	-
MW4	Mar-06	6.0	0.69	980	<5	630	<5	<5	-	220	49	1.1	0.29	1.9	2.2	0.23	-	0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW4 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW4	Jul-06	6.5	0.84	25	170	96	<5	<5	-	170	30	1.6	0.03	1.6	1.0	0.15	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW4	Sep-06	5.9	0.70	64	170	61	<5	<5	74	170	32	1.0	<0.01	2.2	2.2	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW5	May-03	7.0	-	-	-	-	-	-	-	-	-	1.4	-	-	15	0.03	<0.14	<0.1	<0.1	<2.7	<0.9	-	-	-	-	-	<0.03	<0.10	<0.10	<0.8	
MW5	Mar-06	6.8	1.3	380	<5	63	<5	<5	-	220	39	19	0.1	1.7	1.8	0.2	-	<0.001	0.001	0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW5 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW5	Jul-06	7.1	1.9	34	180	150	<5	<5	-	170	17	34	0.17	34	32	0.02	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW5	Sep-06	6.8	1.8	59	260	770	<5	<5	540	170	<3	28	0.09	36	36	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	6.8	6.6	130	<5	180	<5	<5	-	320	170	0.4	0.25	0.8	1.0	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.5
MW6 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Jul-06	5.9	46	71	160	43	<5	<5	-	15000	430	2.0	0.03	2	1.8	<0.01	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	-	<0.03	<0.10	<0.10	<2.5	
MW6	Sep-06	5.5	26	43	270	31	<5	<5	4000	11000	1300	0.8	0.01	1.1	1.1	0.05	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	7.2	1.2	<5	<5	170	<5	<5	-	21	28	<0.2	0.01	0.3	0.3	0.07	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW7 (Filtered)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Jul-06	6.8	0.61	<5	35	58	<5	<5	-	89	15	<0.2	0.02	0.2	0.2	0.06	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	
MW7	Sep-06	6.3	0.50	7	64	45	<5	<5	68	98	32	<0.2	<0.01	0.6	0.6	0.09	-	<0.001	<0.001	<0.019	<0.095	<0.001	<0.001	<0.001	<0.003	<0.02	<0.02	<0.04	<0.04	<2.5	

**Notes:**

- Implies that the LOR is greater than the adopted IL

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

# Requires site specific assessment. Lowest value considered in this instance.

\* indicates aesthetic (not health) guideline

« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey

<sup>b</sup> Conversion factor applied ( $\text{Nmg/L} = 14/62 \times \text{NO}_3\text{mg/L}^{-1}$ )

### References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)

<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

<sup>4</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)

<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

Exceeds Short Term Irrigation Water  
GuideLines (LTIWG)<sup>4</sup>

APPENDIX D - Table 6  
Historical Groundwater Analytical Results  
Exceedances of Short Term Irrigation Guidelines (2003/2006)

Cygnia Cove, Waterford, WA

		Heavy Metals (mg/L)												
		Aluminium (pH>6.5)	Arsenic	Barium	Cadmium	Chromium	Copper	Iron	Manganese	Mercury	Nickel	Lead	Selenium	Zinc
Short Term Irrigation Water Guidelines (STIWG) <sup>4</sup>		20	2	NV	0.05	1	5	10	10	0.002	2	5	0.05	5
Sample ID	Date													
MW1	May-03	0.96	0.005	-	<0.002	-	<0.01	0.46	-	<0.002	-	<0.01	-	-
MW1	Mar-06	0.7	<0.001	<0.05	<0.0001	0.019	0.001	0.37	0.34	<0.0001	0.01	0.004	0.001	0.025
MW1 (Filtered)		0.4	0.001	<0.05	<0.0001	0.001	0.001	0.50	0.33	<0.0001	0.009	<0.001	0.002	0.016
MW1	Jul-06	0.73	<0.001	<0.1	<0.0002	0.001	<0.001	0.99	0.06	<0.0001	<0.01	0.002	<0.001	0.027
MW1	Sep-06	0.7	0.001	<0.5	0.0001	0.001	0.002	1.9	0.15	<0.0001	0.003	0.001	0.001	0.006
MW2	May-03	0.08	0.004	-	<0.002	-	<0.01	0.065	-	<0.002	-	<0.01	-	-
MW2	Mar-06	<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	0.01	<0.0001	0.005	<0.001	0.001	0.017
MW2 (Filtered)		<0.1	<0.001	<0.05	<0.0001	0.001	0.001	0.02	<0.01	<0.0001	0.005	<0.001	0.001	0.018
MW2	Jul-06	0.08	<0.001	<0.01	<0.0002	<0.001	<0.001	<0.01	<0.01	<0.0001	<0.01	<0.001	<0.001	0.007
MW2	Sep-06	0.2	<0.001	<0.5	0.0001	<0.001	0.001	0.03	<0.01	<0.0001	0.001	<0.001	0.001	0.010
MW3A	May-03	0.11	0.003	-	<0.002	<0.01	<0.01	0.05	-	<0.002	-	<0.01	-	0.034
MW3	Mar-06	0.7	0.003	<0.1	<0.0002	0.002	0.016	0.45	<0.01	<0.0001	0.060	0.001	0.001	0.086
MW3 (Filtered)		<0.1	0.002	<0.1	<0.0002	0.001	0.016	0.08	<0.01	<0.0001	0.040	<0.001	0.002	0.084
MW3	Jul-06	0.09	0.026	<0.1	<0.0002	<0.001	0.002	0.09	<0.01	<0.0001	<0.01	<0.001	<0.001	0.076
MW3	Sep-06	<0.1	<0.001	<0.5	0.0001	<0.001	0.001	0.07	<0.01	<0.0001	<0.001	<0.001	0.001	<0.005
MW4	May-03	-	0.003	-	<0.002	<0.01	<0.01	-	0.37	<0.002	<0.01	<0.01	-	0.16
MW4	Mar-06	2.8	0.002	0.3	<0.0002	0.001	0.001	22	0.58	<0.0001	0.080	<0.001	0.003	0.049
MW4 (Filtered)		<0.1	0.001	<0.1	<0.0002	<0.001	0.001	<0.01	0.44	<0.0001	0.050	<0.001	0.003	0.050
MW4	Jul-06	0.02	0.001	<0.1	<0.0002	<0.001	<0.001	9.5	0.34	<0.0001	<0.01	<0.001	<0.001	0.028
MW4	Sep-06	0.2	<0.001	<0.5	0.0001	<0.001	<0.001	9.3	0.35	<0.0001	0.004	<0.001	<0.001	0.015
MW5	May-03	-	0.011	-	0.003	<0.01	<0.01	-	0.08	<0.002	<0.01	<0.01	-	0.031
MW5	Mar-06	2.0	0.003	0.2	<0.0002	0.001	0.001	21	0.15	<0.0001	0.030	<0.001	0.002	0.006
MW5 (Filtered)		<0.1	0.001	<0.1	<0.0002	0.001	0.002	0.01	0.01	<0.0001	0.020	<0.001	0.003	0.005
MW5	Jul-06	0.02	0.003	0.2	<0.0002	0.001	0.001	8.3	0.07	<0.0001	<0.01	<0.001	0.002	0.005
MW5	Sep-06	<0.1	0.001	<0.5	0.0001	<0.001	0.001	8.9	0.17	<0.0001	0.001	<0.001	<0.001	0.005
MW6	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-
MW6	Mar-06	1.1	0.004	0.4	0.0002	0.001	0.003	15	1.9	<0.0001	0.100	<0.001	0.008	0.130
MW6 (Filtered)		<0.1	<0.001	0.3	<0.0002	0.001	0.002	<0.01	1.7	<0.0001	0.090	<0.001	0.020	0.14
MW6	Jul-06	0.01	<0.001	0.2	0.0002	0.008	0.007	9.2	8.6	<0.0001	0.04	<0.001	0.003	0.039
MW6	Sep-06	<0.1	<0.001	<0.5	0.0001	0.001	0.007	8.8	6.8	<0.0001	0.09	0.006	<0.001	0.035
MW7	May-03	-	-	-	-	-	-	-	-	-	-	-	-	-
MW7	Mar-06	<0.1	0.005	<0.1	<0.0002	<0.001	0.001	0.68	0.09	<0.0001	0.01	<0.001	0.005	0.010
MW7 (Filtered)		<0.1	<0.001	<0.1	<0.0002	0.001	0.001	0.26	<0.01	<0.0001	0.01	<0.001	0.020	0.008
MW7	Jul-06	0.05	0.003	<0.1	<0.0002	<0.001	0.001	0.88	0.02	<0.0001	<0.01	0.001	<0.001	0.089
MW7	Sep-06	0.2	0.002	<0.5	0.0001	<0.001	<0.001	1.7	0.02	<0.0001	0.001	<0.001	<0.001	0.007

Notes:

▣ Implies that the LOR is greater than the adopetd IL

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

<sup>#</sup> Requires site specific assessment. Lowest value considered in this instance.

<sup>\*</sup> indicates aesthetic (not health) guideline

« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

<sup>a</sup> Total OCs / OPs / PAHs are summations undertaken by Coffey

<sup>b</sup> Conversion factor applied (Nmg/L = 14/62xNO<sub>3</sub>mg/L<sup>-1</sup>)

References:

<sup>1</sup> DoE (2003) and ARMCANZ (1996)

<sup>2</sup> National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)

<sup>3</sup> Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

<sup>4</sup> Australian and New Zealand Guidleines for Fresh and Marine Water Quality (2000)

<sup>5</sup> USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

Exceeds Short Term Irrigation Water GuideLines (LTIWG)<sup>4</sup>

**APPENDIX D - Table 7**  
**Historical Groundwater Analytical Results**  
**Exceedances of Fresh Water Guidelines for Metals with Hardness Modification Factor (2003/2006)**  
**Cygnia Cove, Waterford, WA**

	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF
	Cadmium (mg/L)		Chromium (mg/L)		Copper (mg/L)		Lead (mg/L)		Nickel (mg/L)		Zinc (mg/L)	
<b>MW1</b>	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
<b>May-03</b>	<0.002		-		<0.01		<0.01		-		-	
<b>Mar-06</b>	<0.0001		0.019		0.001		0.004		0.01		0.025	
	<0.0001 (filtered)		0.001 (filtered)		0.001 (filtered)		<0.001 (filtered)		0.009 (filtered)		0.016 (filtered)	
<b>Jul-06</b>	<0.0002		0.001		<0.001		0.002		<0.01		0.027	
<b>Sep-06</b>	0.0001		0.001		0.002		0.001		0.003		0.006	
<b>MW2</b>	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
<b>May-03</b>	<0.002		-		<0.01		<0.01		-		-	
<b>Mar-06</b>	<0.0001		0.001		0.001		<0.001		0.005		0.017	
	<0.0001 (filtered)		0.001 (filtered)		0.001 (filtered)		<0.001 (filtered)		0.005 (filtered)		0.018 (filtered)	
<b>Jul-06</b>	<0.0002		<0.001		<0.001		<0.001		<0.01		0.007	
<b>Sep-06</b>	0.0001		<0.001		0.001		<0.001		0.001		0.01	
<b>MW3</b>	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
<b>May-03</b>	<0.002		<0.01		<0.01		<0.01		-		0.034	
<b>Mar-06</b>	<0.0002		0.002		0.016		0.001		0.06		0.086	
	<0.0002 (filtered)		0.001 (filtered)		0.016 (filtered)		<0.001 (filtered)		0.04 (filtered)		0.084 (filtered)	
<b>Jul-06</b>	<0.0002		<0.001		0.002		<0.001		<0.01		0.076	
<b>Sep-06</b>	0.0001		<0.001		0.001		<0.001		<0.001		<0.005	
<b>MW4</b>	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
<b>May-03</b>	<0.002		<0.01		<0.01		<0.01		<0.01		0.16	
<b>Mar-06</b>	<0.0002		0.001		0.001		<0.001		0.08		0.049	
	<0.0002 (filtered)		<0.001 (filtered)		0.001 (filtered)		<0.001 (filtered)		0.05 (filtered)		0.05 (filtered)	
<b>Jul-06</b>	<0.0002		<0.001		<0.001		<0.001		<0.01		0.028	
<b>Sep-06</b>	0.0001		<0.001		<0.001		<0.001		0.004		0.015	
<b>MW5</b>	0.0002	0.002	0.01	0.084	0.0014	0.0126	0.0034	0.09078	0.011	0.099	0.008	0.072
<b>May-03</b>	0.003		<0.01		<0.01		<0.01		<0.01		0.031	
<b>Mar-06</b>	<0.0002		0.001		0.001		<0.001		0.03		0.006	
	<0.0002 (filtered)		0.001 (filtered)		0.002 (filtered)		<0.001 (filtered)		0.02 (filtered)		0.005 (filtered)	
<b>Jul-06</b>	<0.0002		0.001		0.001		<0.001		<0.01		0.005	
<b>Sep-06</b>	0.0001		<0.001		0.001		<0.001		0.001		0.005	
<b>MW6</b>	0.0002	0.002	0.01	0.084	0.0014	0.0126	0.0034	0.09078	0.011	0.099	0.008	0.072
<b>May-03</b>	-		-		-		-		-		-	
<b>Mar-06</b>	0.0002		0.001		0.003		<0.001		0.1		0.13	
	<0.0002 (filtered)		0.001 (filtered)		0.002 (filtered)		<0.001 (filtered)		0.09 (filtered)		0.14 (filtered)	
<b>Jul-06</b>	0.0002		0.008		0.007		<0.001		0.04		0.039	
<b>Sep-06</b>	0.0001		0.001		0.007		0.006		0.09		0.035	
<b>MW7</b>	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
<b>May-03</b>	-		-		-		-		-		-	
<b>Mar-06</b>	<0.0002		<0.001		0.001		<0.001		0.01		0.01	
	<0.0002 (filtered)		0.001 (filtered)		0.001 (filtered)		<0.001 (filtered)		0.01 (filtered)		0.008 (filtered)	
<b>Jul-06</b>	<0.0002		<0.001		0.001		0.001		<0.01		0.089	
<b>Sep-06</b>	0.0001		<0.001		<0.001		<0.001		0.001		0.007	

FWG = Fresh Water-Rivers guidelines (FWGs) for Aquatic Ecosystems (utilising Lowland Rivers values where available) as specified within Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000).

FWGHMF = Fresh Water-Rivers guidelines Hardness Modification Factor for Aquatic Ecosystems (utilising Lowland Rivers values where available) as specified within Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 20

	Cells shaded yellow denotes that the concentration exceeds the FWG
	Cells shaded yellow denotes that the concentration exceeds the FWG with HMF
	Cells shaded orange denotes that the concentration exceeds both the FWG and FWG with HMF

APPENDIX D - Table 8 (Part A)  
Summary of Baseline Groundwater Analytical Results (2008)

Cygnia Cove, Waterford, WA

Sample ID								MW1(A)	MW2(A)	QC1 (Duplicate of MW2(A))	RPD	QC2 (Triplicate of MW2(A))	RPD	MW3	MW4	MW5	MW6	MW7	ASSMW8	ASSMW9	ASSMW10	ASSMW11	ASSMW12	ASSMW13	
Laboratory Reference								08-Oc11070	08-Oc11067	08-Oc11069		65170		08-Oc11068	08-Oc11081	08-Oc11080	08-Oc11079	08-Oc11073	08-Oc11078	08-Oc11077	08-Oc11065	08-Oc11066	08-Oc11071	08-Oc11072	
Date Sampled								28/10/2008	28/10/2008	28/10/2008		28/10/2008		28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008
Analytes	LOR (MGt)	LOR (SGS)	Drinking Water Guidelines (ADWG) <sup>1</sup>	Drinking Water Guidelines (ADWG)X10 <sup>2</sup>	Fresh Waters-Rivers Guidelines FWG <sup>3</sup>	Long Term Irrigation Water GuideLines (LTIWG) <sup>1/4</sup>	Short Term Irrigation Water Guidelines (STIWG) <sup>4</sup>	mg/L	mg/L	mg/L	%	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Heavy Metals																									
Aluminium	0.01	0.001	0.2*	2	0.055	5	20	0.25	0.1	0.1		0.11		0.07		< 0.01	0.04	< 0.01	0.01	0.04	0.01	0.02	0.05	1.5	0.02
Arsenic	0.0007	0.001	0.007	0.07	0.013	0.1	2	<0.0007	<0.0007	<0.0007	«	<0.0007	«	<0.0007	<0.0007	0.0027	0.0058	0.0029	<0.0007	0.0059	<0.0007	<0.0007	<0.0007	<0.0007	
Cadmium	0.0002	0.0001	0.002	0.02	0.0002	0.01	0.05	< 0.0002	< 0.0002	< 0.0002	«	<0.0001	«	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	
Calcium	5	0.1	NE	NE	NE	NE	NE	13	18	18	«	18	«	22	11	30	82	35	38	< 5	26	19	35	< 5	
Chromium	0.001	0.001	0.05	0.5	0.01	0.1	1	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	0.002	< 0.001	
Copper	0.001	0.001	2 (1.0*)	20 (10*)	0.0014	0.2	5	0.004	0.002	0.002	«	<0.001	16.67	0.004	0.003	0.003	0.005	0.003	0.001	0.002	0.002	0.006	0.003	0.003	
Iron	0.05	0.005	0.3*	3	NV	0.2	10	0.25	0.15	0.19	5.88	0.024	38.79	0.56	61	3.6	39	1.9	3.2	80	0.31	0.8	0.61	2.8	
Lead	0.001	0.001	0.01	0.1	0.0034	2	5	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	
Magnesium	5	0.1	NE	NE	NE	NE	NE	7.1	5.7	5.8	0.43	5.6	0.88	6.3	19	11	240	11	13	11	7.8	< 5	27	11	
Manganese	0.005	0.001	0.5 (0.1*)	5 (1.0*)	1.9	0.2	10	0.01	< 0.005	< 0.005	«	0.001	33.33	< 0.005	0.28	0.044	0.42	0.01	0.023	0.02	< 0.005	< 0.005	< 0.005	< 0.005	
Mercury	0.0001	0.0005	0.001	0.01	0.00006	0.002	0.002	< 0.0001	< 0.0001	< 0.0001	«	<0.0005	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Nickel	0.001	0.001	0.02	0.2	0.011	0.2	2	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	0.008	0.001	0.001	0.002	0.001	< 0.001	0.004	< 0.001	
Potassium	5	0.2	NE	NE	NE	NE	NE	< 5	8.9	7.4	4.60	7.6	0.67	5.8	11	13	93	5.1	5.1	5.5	< 5	7.3	6.6	< 5	
Selenium	0.001	0.002	0.01	0.1	0.005	0.02	0.05	0.002	< 0.001	0.002	16.67	<0.002	«	< 0.001	0.002	< 0.001	0.02	< 0.001	0.001	0.003	< 0.001	0.002	0.001	< 0.001	
Sodium	0.5	0.1	NE	NE	NE	NE	NE	100	58	57	0.43	43	7.00	55	100	110	1600	68	120	80	75	60	230	56	
Zinc	0.001	0.001	3*	30	0.008	2	5	0.1	0.091	0.085	1.70	0.082	0.90	0.068	0.07	0.039	0.068	0.052	0.049	0.075	0.084	0.061	0.071	0.072	
Carbamate Pesticides																									
Aldicarb	0.01	-	NV	NV	NV	NV	NV	< 0.01	< 0.01	< 0.01	«	-	«	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Bendiocarb	0.01	0.001	NV	NV	NV	NV	NV	< 0.01	< 0.01	< 0.01	«	<0.001	«	< 0.01	< 0.01	< 0.01	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Carbaryl	0.01	0.001	NV	NV	NV	NV	NV	< 0.01	< 0.01	< 0.01	«	<0.001	«	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Carbofuran	0.01	-	NV	NV	NV	NV	NV	< 0.01	< 0.01	< 0.01	«	-	«	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Methomyl	0.01	0.001	NV	NV	NV	NV	NV	< 0.01	< 0.01	< 0.01	«	<0.001	«	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Oxamyl	0.01	0.001	NV	NV	NV	NV	NV	< 0.01	< 0.01	< 0.01	«	<0.001	«	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Thiobencarb	0.01	0.001	NV	NV	NV	NV	NV	< 0.01	< 0.01	< 0.01	«	<0.001	«	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
OC/OP Pesticides																									
4,4'-DDD	0.00001	0.0002	NV	NV	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
4,4'-DDE	0.00001	0.0002	0.2 <sup>5</sup>	2	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
4,4'-DDT	0.0001	0.0002	NV	0.02	0.000006	NV	NV	< 0.0001	< 0.0001	< 0.0001	«	<0.0002	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
a-BHC	0.00001	0.0002	NV	NV	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
Aldrin	0.00001	0.0002	0.0003 <sup>5</sup>	NV	0.00001	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
b-BHC	0.00001	0.0002	NV	NV	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
Chlordane	0.0002	0.0002	0.001	NV	0.00003	NV	NV	< 0.0002	< 0.0002	< 0.0002	«	<0.0002	«	< 0.0002	< 0.0005	< 0.0005	< 0.002	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0002	< 0.0005	
d-BHC	0.00001	0.0002	NV	NV	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
Dieldrin	0.00001	0.0002	0.0003 <sup>5</sup>	3	0.002	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
Endosulfan I	0.00001	0.0002	NV	NV	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002	
Endosulfan II	0.00001	0.0002	NV	NV	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002		
Endosulfan sulphate	0.0001	0.0002	NV	NV	NV	NV	NV	< 0.0001	< 0.0001	< 0.0001	«	<0.0002	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	
Endrin	0.00001	0.0002	NV	NV	NV	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002		
Endrin aldehyde	0.00001	0.0002	NV	NV	NV	NV	NV</																		



APPENDIX D - Table 8 (Part B)  
Summary of Baseline Groundwater Analytical Results (2008)  
Cygnia Cove, Waterford, WA

Sample ID								MW1(A)	MW2(A)	QC1 (Duplicate of MW2(A))	RPD	QC2 (Triplicate of MW2(A))	RPD	MW3	MW4	MW5	MW6	MW7	ASSMW8	ASSMW9	ASSMW10	ASSMW11	ASSMW12	ASSMW13
Laboratory Reference								08-Oc11070	08-Oc11067	08-Oc11069		65170		08-	08-	08-Oc11080	08-Oc11079	08-Oc11073	08-	08-Oc11077	08-Oc11065	08-Oc11066	08-Oc11071	08-Oc11072
Date Sampled								28/10/2008	28/10/2008	28/10/2008		28/10/2008		28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008
Analytes	LOR (MGT)	LOR (SGS)	Drinking Water Guidelines (ADWG) <sup>1</sup>	Drinking Water GuideLines (ADWG)X10 <sup>2</sup>	Fresh Waters Rivers Guidelines FWG <sup>3</sup>	Long Term Irrigation Water GuideLines (LTIWG) <sup>1/4</sup>	Short Term Irrigation Water Guidelines (STIWG) <sup>4</sup>	mg/L	mg/L	mg/L	%	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
OC/OP Pesticides																								
Bolstar	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Chlorpyrifos	0.002	0.0002	0.01	NV	0.00001	NV	NV	< 0.002	< 0.002	< 0.002	«	<0.0002	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Coumaphos	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Demeton-O	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Diazinon	0.002	-	0.003	NV	0.00001	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Dichlorvos	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Disulfoton	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Ethion	0.002	0.0002	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	<0.0002	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Ethoprop	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Fenitrothion	0.002	0.0002	0.01	NV	0.0002	NV	NV	< 0.002	< 0.002	< 0.002	«	<0.0002	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Fensulfothion	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Fenthion	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Merphos	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Methyl azinphos	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Methyl parathion	0.002	-	0.01	NV	0.000004	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Mevinphos	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Naled	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Phorate	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Ronnel	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Tokuthion	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Trichloronate	0.002	-	NV	NV	NV	NV	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	
Monocyclic Aromatic Hydrocarbons																								
Benzene	0.001	N/A	0.001	NV	0.95	NV	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Toluene	0.001	N/A	0.8 (0.025*)	NV	0.003	NV	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ethylbenzene	0.001	N/A	0.3 (0.003*)	NV	NV	NV	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Xylenes(o,m,p)	0.001	N/A	0.6 (0.02*)	NV	NV	NV	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Recoverable Hydrocarbons																								
TRH C <sub>6</sub> -C <sub>9</sub>	0.02	N/A	NV	NV	NV	NV	NV	< 0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TRH C <sub>10</sub> -C <sub>14</sub>	0.05	N/A	NV	NV	NV	NV	NV	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TRH C <sub>15</sub> -C <sub>28</sub>	0.1	N/A	NV	NV	NV	NV	NV	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TRH C <sub>29</sub> -C <sub>36</sub>	0.1	N/A	NV	NV	NV	NV	NV	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Phenolics																								
2-Chlorophenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
2-Methylphenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
2-Nitrophenol	0.0005	N/A	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	
2,4-Dichlorophenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
2,4-Dimethylphenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
2,4,6-Trichlorophenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
2,6-Dichlorophenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
3&4-Methylphenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
4-Chloro-3-methylphenol	0.0001	N/A	NV	NV	NV	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	
Pentachlorophenol	0.0005	N/A	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	
Phenol	0.0001	N/A	NV	NV	0.32	NV	NV	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	

Notes:  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
# Requires site specific assessment. Lowest value considered in this instance.  
\* indicates aesthetic (not health) guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated  
b Conversion factor applied (Nmg/L = 14/62xNO3mg/L-1)

References:  
1 DoE (2003) and ARMCANZ (1996)  
2 National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
3 Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
4 Australian and New Zealand Guideleines for Fresh and Marine Water Quality (2000)

APPENDIX D - Table 8 (Part C)  
Summary of Baseline Groundwater Analytical Results (2008)  
Cygnia Cove, Waterford, WA

Sample ID								MW1(A)	MW2(A)	QC1 (Duplicate of MW2(A))	RPD	QC2 (Triplicate of MW2(A))	RPD	MW3	MW4	MW5	MW6	MW7	ASSMW8	ASSMW9	ASSMW10	ASSMW11	ASSMW12	ASSMW13
Laboratory Reference								08-Oct1070	08-Oct1067	08-Oct1069		65170		08-Oct1068	08-Oct1081	08-Oct1080	08-Oct1079	08-Oct1073	08-Oct1078	08-Oct1077	08-Oct1065	08-Oct1066	08-Oct1071	08-Oct1072
Date Sampled								28/10/2008	28/10/2008	28/10/2008		28/10/2008		28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008
Analytes	LOR (MGT)	LOR (SGS)	Drinking Water Guidelines (ADWG) <sup>1</sup>	Drinking Water Guidelines (ADWG)X10 <sup>2</sup>	Fresh Waters- Rivers Guidelines FWG <sup>3</sup>	Long Term Irrigation Water GuideLines (LTIWG) <sup>1/4</sup>	Short Term Irrigation Water Guidelines (STIWG) <sup>4</sup>	mg/L	mg/L	mg/L	%	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Polycyclic Aromatic Hydrocarbons																								
Acenaphthene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Acenaphthylene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Anthracene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	0.00001	-	0.00001	NV	NV	NV	NV	< 0.00001	-	-	-	-	-	-	< 0.00001	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Chrysene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Fluoranthene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Fluorene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Naphthalene	0.0005	-	NV	NV	0.016	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Phenanthrene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Pyrene	0.0005	-	NV	NV	NV	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Total PAH	0.0005	-	NV	NV	0.003	NV	NV	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Major Anions & Cations																								
Acidity	0.01	0.01	NV	NV	NV	NV	NV	53	50	40	22.22	33	40.96	23	190	80	150	53	83	190	53	23	43	350
Ammonia(N)	0.05	0.01	0.5	NV	0.08	NV	NV	< 0.05	< 0.05	0.19	116.67	<0.01	«	0.05	1.1	6	0.37	0.08	0.15	1.3	< 0.05	< 0.05	< 0.05	0.58
Chloride	0.1	0.5	250*	NV	NV	40	NV	150	78	80	2.53	77	1.29	85	200	170	3100	110	190	160	110	70	460	88
Hydrogen Sulphide	0.05	0.5	0.05	NV	0.001	NV	NV	< 0.05	< 0.05	< 0.05	«	<0.5	«	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate & Nitrite (N)	0.05	0.05	NV	NV	NV	NV	NV	3.2	8.5	7.1	17.95	7	19.35	3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	5.7	2.3	0.12	0.53
Nitrate (N)	0.02	0.05	NV	NV	0.16	NV	NV	3.1	8.5	7.1	17.95	7	19.35	3	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	5.7	2.3	0.11	0.52
Nitrite (N)	0.02	0.05	NV	NV	NV	NV	NV	< 0.02	< 0.02	< 0.02	«	<0.05	«	< 0.02	< 0.02	< 0.02	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Phosphate total (P)	0.05	0.05	NV	NV	0.065	0.05	0.8-12 <sup>†</sup>	0.14	0.12	0.17	34.48	0.06	66.67	0.27	< 0.05	0.18	< 0.05	0.07	< 0.05	< 0.05	0.35	0.12	< 0.05	0.05
Sulphate (S)	5	-	250	NV	NV	NV	NV	11	10	11	9.52	-	N/A	9.9	10	5	65	13	30	21	16	13	30	13
Total Dissolved Solids	10	5	500	NV	NV	NV	NV	360	250	280	11.32	270	7.69	270	510	470	5600	360	510	430	310	240	950	240
Total Kjeldahl Nitrogen (N)	0.1	0.2	NV	NV	NV	NV	NV	0.8	0.7	0.6	15.38	0.3	80.00	0.5	1.2	6.6	0.7	0.3	1.1	1.3	0.3	0.4	0.3	0.3
Total Nitrogen (N)	0.2	0.2	NV	NV	1.2	5	25-125 <sup>†</sup>	4	9.2	7.7	17.75	7.3	23.03	3.5	1.2	6.6	0.7	0.3	1.1	1.3	6	2.7	0.4	0.8
Bicarbonate Alkalinity-mg CaCO3/L	10	2.00	NV	NV	NV	NV	NV	20	30	30	«	52	53.66	44	140	150	32	100	56	70	38	42	< 10	10
Carbonate Alkalinity-mg CaCO3/L	10	2.00	NV	NV	NV	NV	NV	< 10	< 10	< 10	«	<2	«	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Alkalinity as CaCO3	20	2.00	NV	NV	NV	NV	NV	20	30	30	«	42	33.33	44	140	150	32	100	56	70	38	42	< 20	< 20

Notes:  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
# Requires site specific assessment. Lowest value considered in this instance.  
\* indicates aesthetic (not health) drinking water guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

References:  
1 DoE (2003) and ARMCANZ (1996)  
2 National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
3 Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
4 Australian and New Zealand Guideleins for Fresh and Marine Water Quality (2000)  
5 USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

APPENDIX D - Table 9  
Baseline Groundwater Analytical Results in Excess of ADWG and ADWGX10 (for non recreational use) (2008)  
Cygnia Cove, Waterford, WA

Sample ID					MW1(A)	MW2(A)	QC1 (Duplicate of MW2(A))	RPD	QC2 (TriPLICATE of MW2(A))	RPD	MW3	MW4	MW5	MW6	MW7	ASSMW8	ASSMW9	ASSMW10	ASSMW11	ASSMW12	ASSMW13
Laboratory Reference					08-Oc11070	08-Oc11067	08-Oc11069		65170		08-Oc11068	08-Oc11081	08-Oc11080	08-Oc11079	08-Oc11073	08-Oc11078	08-Oc11077	08-Oc11065	08-Oc11066	08-Oc11071	08-Oc11072
Date Sampled					28/10/2008	28/10/2008	28/10/2008		28/10/2008		28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008
Analytes	LOR (MGt)	LOR (SGS)	Drinking Water Guidelines (ADWG) <sup>1</sup>	Drinking Water Guidelines (ADWG)X10 <sup>2</sup>	mg/L	mg/L	mg/L	%	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminium	0.01	0.001	0.2 <sup>3</sup>	2	0.25	0.1	0.1		0.11		0.07	< 0.01	0.04	< 0.01	0.01	0.04	0.01	0.02	0.05	1.5	0.02
Arsenic	0.001	0.001	0.007	0.07	<0.0007	<0.0007	<0.0007	«	<0.0007	«	<0.0007	<0.0007	0.0027	0.0058	0.0029	<0.0007	0.0059	<0.0007	<0.0007	<0.0007	<0.0007
Cadmium	0.0002	0.0001	0.002	0.02	< 0.0002	< 0.0002	< 0.0002	«	<0.0001	«	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	0.001	0.05	0.5	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	0.002	< 0.001
Copper	0.001	0.001	2 (1.0 <sup>4</sup> )	20 (10 <sup>4</sup> )	0.004	0.002	0.002	«	<0.001	16.67	0.004	0.003	0.003	0.005	0.003	0.001	0.002	0.002	0.006	0.003	0.003
Iron	0.05	0.005	0.3 <sup>4</sup>	3	0.25	0.15	0.19	5.88	0.024	38.79	0.56	61	3.6	39	1.9	3.2	80	0.31	0.8	0.61	2.8
Lead	0.001	0.001	0.01	0.1	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001
Magnesium	5	0.1	NE	NE	7.1	5.7	5.8	0.43	5.6	0.88	6.3	19	11	240	11	13	11	7.8	< 5	27	11
Manganese	0.005	0.001	0.5 (0.1 <sup>5</sup> )	5 (1.0 <sup>5</sup> )	0.01	< 0.005	< 0.005	«	0.001	33.33	< 0.005	0.28	0.044	0.42	0.01	0.023	0.02	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	0.0005	0.001	0.01	< 0.0001	< 0.0001	< 0.0001	«	<0.0005	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	0.001	0.02	0.2	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	0.008	0.001	0.001	0.002	0.001	< 0.001	0.004	< 0.001
Selenium	0.001	0.002	0.01	0.1	0.002	< 0.001	0.002	16.67	<0.002	«	< 0.001	0.002	< 0.001	0.02	< 0.001	0.001	0.003	< 0.001	0.002	0.001	< 0.001
Zinc	0.001	0.001	3 <sup>4</sup>	30	0.1	0.091	0.085	1.70	0.082	0.90	0.068	0.07	0.039	0.068	0.052	0.049	0.075	0.084	0.061	0.071	0.072
4,4'-DDD	0.00001	0.0002	0.2 <sup>5</sup>	2	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
4,4'-DDE	0.00001	0.0002	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
4,4'-DDT	0.0001	0.0002	NV	0.02	< 0.0001	< 0.0001	< 0.0001	«	<0.0002	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
a-BHC	0.00001	0.0002	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
Aldrin	0.00001	0.0002	0.0003 <sup>4</sup>	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
b-BHC	0.00001	0.0002	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
Chlordane	0.0002	0.0002	0.001	NV	< 0.0002	< 0.0002	< 0.0002	«	<0.0002	«	< 0.0002	< 0.0005	< 0.0005	< 0.002	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0002	< 0.0005
d-BHC	0.00001	0.0002	NV	NV	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
Dieldrin	0.00001	0.0002	0.0003 <sup>4</sup>	3	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
Chlorpyrifos	0.002	0.0002	0.01	NV	< 0.002	< 0.002	< 0.002	«	<0.0002	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Diazinon	0.002	-	0.003	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Fenitrothion	0.002	0.0002	0.01	NV	< 0.002	< 0.002	< 0.002	«	<0.0002	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Methyl parathion	0.002	-	0.01	NV	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene	0.001	-	0.001	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	0.001	-	0.8 (0.025 <sup>4</sup> )	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.001	-	0.3 (0.003 <sup>4</sup> )	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes(o,m, p)	0.001	-	0.6 (0.02 <sup>4</sup> )	NV	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	0.0005	-	0.00001	NV	< 0.00001	-	-	-	-	-	-	< 0.00001	-	-	-	-	-	-	-	-	-
Ammonia(N)	0.05	0.01	0.5	NV	< 0.05	< 0.05	0.19	116.67	<0.01	«	0.05	1.1	6	0.37	0.08	0.15	1.3	< 0.05	< 0.05	< 0.05	0.58
Chloride	0.1	0.5	250 <sup>4</sup>	NV	150	78	80	2.53	77	1.29	85	200	170	3100	110	190	160	110	70	460	88
Hydrogen Sulphide	0.05	0.5	0.05	NV	< 0.05	< 0.05	< 0.05	«	< 0.05	«	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Sulphate (S)	5	-	250	NV	11	10	11	9.52	-	N/A	9.9	10	5	65	13	30	21	16	13	30	13
Total Dissolved Solids	10	5	500	NV	360	250	280	11.32	270	7.69	270	510	470	5600	360	510	430	310	240	850	240

Assessment of analytes with ILs only summarised.  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
# Requires site specific assessment. Lowest value considered in this instance.  
\* indicates aesthetic (not health) drinking water guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

References:  
1 DoE (2003) and ARMCANZ (1996)  
2 National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
3 Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
4 Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)  
5 USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

APPENDIX D - Table 10  
Baseline Groundwater Analytical Results in Excess of FWG (2008)  
Cygnia Cove, Waterford, WA

Sample ID				MW1(A)	MW2(A)	QC1 (Duplicate of MW2(A))	RPD	QC2 (Triplicate of MW2(A))	RPD	MW3	MW4	MW5	MW6	MW7	ASSMW8	ASSMW9	ASSMW10	ASSMW11	ASSMW12	ASSMW13
Laboratory Reference				08-Oc11070	08-Oc11067	08-Oc11069		65170		08-Oc11068	08-Oc11081	08-Oc11080	08-Oc11079	08-Oc11073	08-Oc11078	08-Oc11077	08-Oc11065	08-Oc11066	08-Oc11071	08-Oc11072
Date Sampled				28/10/2008	28/10/2008	28/10/2008		28/10/2008		28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008
Analytes	LOR (MGT)	LOR (SGS)	Fresh Waters-Rivers Guidelines FWG <sup>3</sup>	mg/L	mg/L	mg/L	%	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminium	0.01	0.001	0.055	0.25	0.1	0.1		0.11		0.07	< 0.01	0.04	< 0.01	0.01	0.04	0.01	0.02	0.05	1.5	0.02
Arsenic	0.001	0.001	0.013	<0.0007	<0.0007	<0.0007	«	<0.0007	«	<0.0007	<0.0007	0.0027	0.0058	0.0029	<0.0007	0.0059	<0.0007	<0.0007	<0.0007	<0.0007
Manganese	0.005	0.001	1.9	0.01	< 0.005	< 0.005	«	0.001	33.33	< 0.005	0.28	0.044	0.42	0.01	0.023	0.02	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	0.0005	0.00006	< 0.0001	< 0.0001	< 0.0001	«	<0.0005	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Selenium	0.001	0.002	0.005	0.002	< 0.001	0.002	16.67	<0.002	«	< 0.001	0.002	< 0.001	0.02	< 0.001	0.001	0.003	< 0.001	0.002	0.001	< 0.001
4,4'-DDT	0.0001	0.0002	0.000006	< 0.0001	< 0.0001	< 0.0001	«	<0.0002	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aldrin	0.00001	0.0002	0.00001	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
Chlordane	0.0002	0.0002	0.00003	< 0.0002	< 0.0002	< 0.0002	«	<0.0002	«	< 0.0002	< 0.0005	< 0.0005	< 0.002	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0002	< 0.0005
Dieldrin	0.00001	0.0002	0.002	< 0.00001	< 0.00001	< 0.00001	«	<0.0002	«	< 0.00001	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00001	< 0.00002
Chlorpyrifos	0.002	0.0002	0.00001	< 0.002	< 0.002	< 0.002	«	<0.0002	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Diazinon	0.002	-	0.00001	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Fenitrothion	0.002	0.0002	0.0002	< 0.002	< 0.002	< 0.002	«	<0.0002	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Methyl parathion	0.002	-	0.000004	< 0.002	< 0.002	< 0.002	«	-	«	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene	0.001	-	0.95	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	0.001	-	0.003	< 0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	0.0001	-	0.32	< 0.0001	-	-	-	-	-	-	< 0.0001	-	-	-	-	-	-	-	-	-
Naphthalene	0.0005	-	0.016	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Total PAH	0.0005	-	0.003	< 0.0005	-	-	-	-	-	-	< 0.0005	-	-	-	-	-	-	-	-	-
Ammonia(N)	0.05	0.01	0.08	< 0.05	< 0.05	0.19	116.67	<0.01	«	0.05	1.1	6	0.37	0.08	0.15	1.3	< 0.05	< 0.05	< 0.05	0.58
Hydrogen Sulphide	0.05	0.5	0.001	<0.05	<0.05	<0.05	«	<0.5	«	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05
Nitrate (N)	0.02	0.05	0.16	3.1	8.5	7.1	17.95	7	19.35	3	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	5.7	2.3	0.11	0.52
Phosphate total (P)	0.05	-	0.065	0.14	0.12	0.17	34.48	0.06	66.67	0.27	< 0.05	0.18	< 0.05	0.07	< 0.05	< 0.05	0.35	0.12	< 0.05	0.05
Total Nitrogen (N)	0.2	0.2	1.2	4	9.2	7.7	17.75	7.3	23.03	3.5	1.2	6.6	0.7	0.3	1.1	1.3	6	2.7	0.4	0.8

Assessment of analytes with ILs only summarised.

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

# Requires site specific assessment. Lowest value considered in this instance.

\* indicates aesthetic (not health) drinking water guideline

« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

References:

1 DoE (2003) and ARMCANZ (1996)

2 National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)

3 Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).

4 Australian and New Zealand Guideielines for Fresh and Marine Water Quality (2000)

5 USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

**APPENDIX D - Table 11**  
**Baseline Groundwater Analytical Results in Excess of FWG with HMF Assessment (2008)**  
**Cygnia Cove, Waterford, WA**

	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF	FWG	FWGHMF
	Cadmium (mg/L)		Chromium (mg/L)		Copper (mg/L)		Lead (mg/L)		Nickel (mg/L)		Zinc (mg/L)	
MW1(A)	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
	< 0.0002		< 0.001		0.004		< 0.001		< 0.001		0.1	
MW2(A)	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
	< 0.0002		< 0.001		0.002		< 0.001		< 0.001		0.091	
MW3	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
	< 0.0002		< 0.001		0.004		< 0.001		< 0.001		0.068	
MW4	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
	< 0.0002		0.003		0.003		< 0.001		0.003		0.07	
MW5	0.0002	0.002	0.01	0.084	0.0014	0.0126	0.0034	0.09078	0.011	0.099	0.008	0.072
	< 0.0002		0.003		0.003		< 0.001		0.003		0.039	
MW6	0.0002	0.002	0.01	0.084	0.0014	0.0126	0.0034	0.09078	0.011	0.099	0.008	0.072
	< 0.0002		< 0.001		0.005		< 0.001		0.008		0.068	
MW7	0.0002	0.00054	0.01	0.025	0.0014	0.0035	0.0034	0.0136	0.011	0.0275	0.008	0.02
	< 0.0002		< 0.001		0.003		< 0.001		0.001		0.052	
MW8	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
	< 0.0002		< 0.001		0.001		< 0.001		0.001		0.049	
MW9	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
	< 0.0002		0.002		0.002		< 0.001		0.002		0.075	
MW10	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
	< 0.0002		< 0.001		0.002		< 0.001		0.001		0.084	
MW11	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
	< 0.0002		< 0.001		0.006		< 0.001		< 0.001		0.061	
MW12	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
	< 0.0002		0.002		0.003		0.002		0.004		0.071	
MW13	0.0002	0.0002	0.01	0.01	0.0014	0.0014	0.0034	0.0034	0.011	0.011	0.008	0.008
	< 0.0002		< 0.001		0.003		< 0.001		< 0.001		0.072	

	Exceeds FWG (Fresh Water-Rivers guidelines (FWGs) for Aquatic Ecosystems (utilising Lowland Rivers values where available) as specified within Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000)).
	Exceeds FWGHMF (Fresh Water-Rivers guidelines Hardness Modification Factor for Aquatic Ecosystems (utilising Lowland Rivers values where available) as specified within Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000)).

APPENDIX D - Table 12  
Baseline Groundwater Analytical Results in Excess of LTIWG (2008)  
Cygnia Cove, Waterford, WA

Sample ID				MW1(A)	MW2(A)	QC1 (Duplicate of MW2(A))	RPD	QC2 (Triplicate of MW2(A))	RPD	MW3	MW4	MW5	MW6	MW7	ASSMW8	ASSMW9	ASSMW10	ASSMW11	ASSMW12	ASSMW13
Laboratory Reference				08-Oc11070	08-Oc11067	08-Oc11069		65170		08-Oc11068	08-Oc11081	08-Oc11080	08-Oc11079	08-Oc11073	08-Oc11078	08-Oc11077	08-Oc11065	08-Oc11066	08-Oc11071	08-Oc11072
Date Sampled				28/10/2008	28/10/2008	28/10/2008		28/10/2008		28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008
Analytes	LOR (MGT)	LOR (SGS)	Long Term Irrigation Water GuideLines (LTIWG) <sup>1/4</sup>	mg/L	mg/L	mg/L	%	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminium	0.01	0.001	5	0.25	0.1	0.1	0	0.11	2.38	0.07	< 0.01	0.04	< 0.01	0.01	0.04	0.01	0.02	0.05	1.5	0.02
Arsenic	0.001	0.001	0.1	<0.0007	<0.0007	<0.0007	«	<0.0007	«	<0.0007	<0.0007	0.0027	0.0058	0.0029	<0.0007	0.0059	<0.0007	<0.0007	<0.0007	<0.0007
Cadmium	0.0002	0.0001	0.01	< 0.0002	< 0.0002	< 0.0002	«	<0.0001	«	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	0.001	0.1	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	0.002	< 0.001
Copper	0.001	0.001	0.2	0.004	0.002	0.002	«	<0.001	16.67	0.004	0.003	0.003	0.005	0.003	0.001	0.002	0.002	0.006	0.003	0.003
Iron	0.05	0.005	0.2	0.25	0.15	0.19	5.88	0.024	38.79	0.56	61	3.6	39	1.9	3.2	80	0.31	0.8	0.61	2.8
Lead	0.001	0.001	2	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001
Manganese	0.005	0.001	0.2	0.01	< 0.005	< 0.005	«	0.001	33.33	< 0.005	0.28	0.044	0.42	0.01	0.023	0.02	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	0.0005	0.002	< 0.0001	< 0.0001	< 0.0001	«	<0.0005	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	0.001	0.2	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	0.008	0.001	0.001	0.002	0.001	< 0.001	0.004	< 0.001
Selenium	0.001	0.002	0.02	0.002	< 0.001	0.002	16.67	<0.002	«	< 0.001	0.002	< 0.001	0.02	< 0.001	0.001	0.003	< 0.001	0.002	0.001	< 0.001
Zinc	0.001	0.001	2	0.1	0.091	0.085	1.70	0.082	0.90	0.068	0.07	0.039	0.068	0.052	0.049	0.075	0.084	0.061	0.071	0.072
Chloride	0.1	0.5	40	150	78	80	2.53	77	1.29	85	200	170	3100	110	190	160	110	70	460	88
Phosphate total (P)	0.05	-	0.05	0.14	0.12	0.17	34.48	0.06	66.67	0.27	< 0.05	0.18	< 0.05	0.07	< 0.05	< 0.05	0.35	0.12	< 0.05	0.05
Total Nitrogen (N)	0.2	0.2	5	4	9.2	7.7	17.75	7.3	23.03	3.5	1.2	6.6	0.7	0.3	1.1	1.3	6	2.7	0.4	0.8

Assessment of analytes with ILs only summarised.

- = Analysis not completed

NV = No Value / IL

NA = Not Applicable

^ Value for both dieldrin and aldrin

# Requires site specific assessment. Lowest value considered in this instance.

\* indicates aesthetic (not health) drinking water guideline

« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

References:

1 DoE (2003) and ARMCANZ (1996)

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5 USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)

APPENDIX D - Table 13  
Baseline Groundwater Analytical Results in Excess of STIWG (2008)  
Cygnia Cove, Waterford, WA

Sample ID				MW1(A)	MW2(A)	QC1 (Duplicate of MW2(A))	RPD	QC2 (Triplicate of MW2(A))	RPD	MW3	MW4	MW5	MW6	MW7	ASSMW8	ASSMW9	ASSMW10	ASSMW11	ASSMW12	ASSMW13
Laboratory Reference				08-Oc11070	08-Oc11067	08-Oc11069		65170		08-Oc11068	08-Oc11081	08-Oc11080	08-Oc11079	08-Oc11073	08-Oc11078	08-Oc11077	08-Oc11065	08-Oc11066	08-Oc11071	08-Oc11072
Date Sampled				28/10/2008	28/10/2008	28/10/2008		28/10/2008		28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008	28/10/2008
Analytes	LOR (MGT)	LOR (SGS)	Short Term Irrigation Water Guidelines (STIWG) <sup>4</sup>	mg/L	mg/L	mg/L	%	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminium	0.01	0.001	20	0.25	0.1	0.1	0	0.11	2.38	0.07	< 0.01	0.04	< 0.01	0.01	0.04	0.01	0.02	0.05	1.5	0.02
Arsenic	0.001	0.001	2	<0.0007	<0.0007	<0.0007	«	<0.0007	«	<0.0007	<0.0007	0.0027	0.0058	0.0029	<0.0007	0.0059	<0.0007	<0.0007	<0.0007	<0.0007
Cadmium	0.0002	0.0001	0.05	< 0.0002	< 0.0002	< 0.0002	«	<0.0001	«	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	0.001	1	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	0.002	< 0.001
Copper	0.001	0.001	5	0.004	0.002	0.002	«	<0.001	16.67	0.004	0.002	0.003	0.005	0.003	0.001	0.002	0.002	0.006	0.003	0.003
Iron	0.05	0.005	10	0.25	0.15	0.19	5.88	0.024	38.79	0.56	61	3.6	39	1.9	3.2	80	0.31	0.8	0.61	2.8
Lead	0.001	0.001	5	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001
Manganese	0.005	0.001	10	0.01	< 0.005	< 0.005	«	0.001	33.33	< 0.005	0.28	0.044	0.42	0.01	0.023	0.02	< 0.005	< 0.005	< 0.005	< 0.005
Mercury	0.0001	0.0005	0.002	< 0.0001	< 0.0001	< 0.0001	«	<0.0005	«	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	0.001	2	< 0.001	< 0.001	< 0.001	«	<0.001	«	< 0.001	0.003	0.003	0.008	0.001	0.001	0.002	0.001	< 0.001	0.004	< 0.001
Selenium	0.001	0.002	0.05	0.002	< 0.001	0.002	16.67	<0.002	«	< 0.001	0.002	< 0.001	0.02	< 0.001	0.001	0.003	< 0.001	0.002	0.001	< 0.001
Zinc	0.001	0.001	5	0.1	0.091	0.085	1.70	0.082	0.90	0.068	0.07	0.039	0.068	0.052	0.049	0.075	0.084	0.061	0.071	0.072
Phosphate total (P)	0.05	-	0.8-12 <sup>#</sup>	0.14	0.12	0.17	34.48	0.06	66.67	0.27	< 0.05	0.18	< 0.05	0.07	< 0.05	< 0.05	0.35	0.12	< 0.05	0.05
Total Nitrogen (N)	0.2	0.2	25-125 <sup>#</sup>	4	9.2	7.7	17.75	7.3	23.03	3.5	1.2	6.6	0.7	0.3	1.1	1.3	6	2.7	0.4	0.8

Assessment of analytes with ILs only summarised.  
- = Analysis not completed  
NV = No Value / IL  
NA = Not Applicable  
^ Value for both dieldrin and aldrin  
# Requires site specific assessment. Lowest value considered in this instance.  
\* indicates aesthetic (not health) drinking water guideline  
« = All constituent analyte concentrations are less than LOR and RPD cannot be calculated

References:  
1 DoE (2003) and ARMCANZ (1996)  
2 National Health and Medical Research Council and Natural Resource Management Ministerial Council (2005)  
3 Fresh Water and Lowland Rivers guidelines, from ANZECC (2000).  
4 Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)  
5 USEPA. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites (2008)





**LEGEND**

- Subject Land Boundary
- Cadastral Boundary
- MW5** Monitoring Well Location
- DTSWL Depth to static water level
- SWL Static Water Level
- mAHd Metres Australian Height Datum
- Inferred groundwater elevation contour (mAHd)
- ➔ Inferred groundwater flow direction

<b>coffey</b> environments <small>SPECIALISTS IN LIVING AND WORKING PLACES</small>		Ground Floor 89-91 Burswood Rd Burswood, WA 6100 Ph: (08) 9355 7100 Fax: (08) 9355 7197
Rev	Date	Revision Details
A	17.12.08	ISSUE

Client: TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INCORPORATED

Project: CYGNIA COVE

Location: CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

Scale: 0 20 40 60 80 100 METRES  
1:2000 (A3)

Drawing Title: <b>POTENTIOMETRIC GROUNDWATER CONTOURS (2006)</b>			
Drawn LZ	Date 17.12.08		
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN		Figure No. 1	Rev. A



A3



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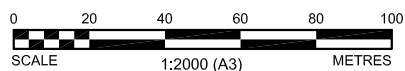
Client:  
TRUSTEES OF THE CHRISTIAN  
BROTHERS IN WESTERN  
AUSTRALIA INCORPORATED

Project:  
CYGNIA COVE

Location:  
CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

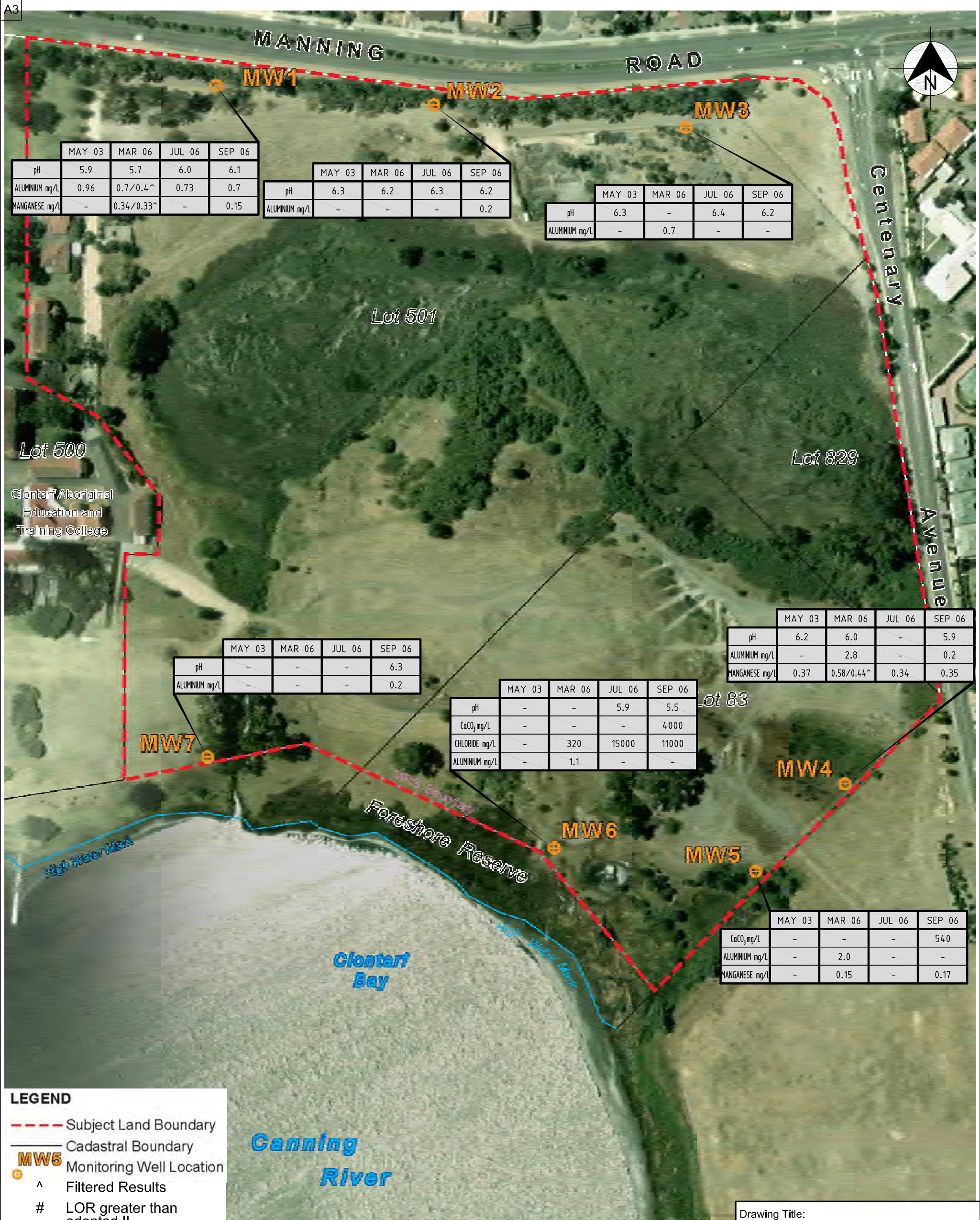
Drawing Title:  
**CONTAMINANT CONCENTRATIONS IN  
GROUNDWATER EXCEEDING DRINKING  
WATER GUIDELINES (2003/2006)**

Rev	Date	Revision Details	Dwn
A	17.12.08	ISSUE	LZ



Drawn LZ	Date 17.12.08
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 2
	Rev. A





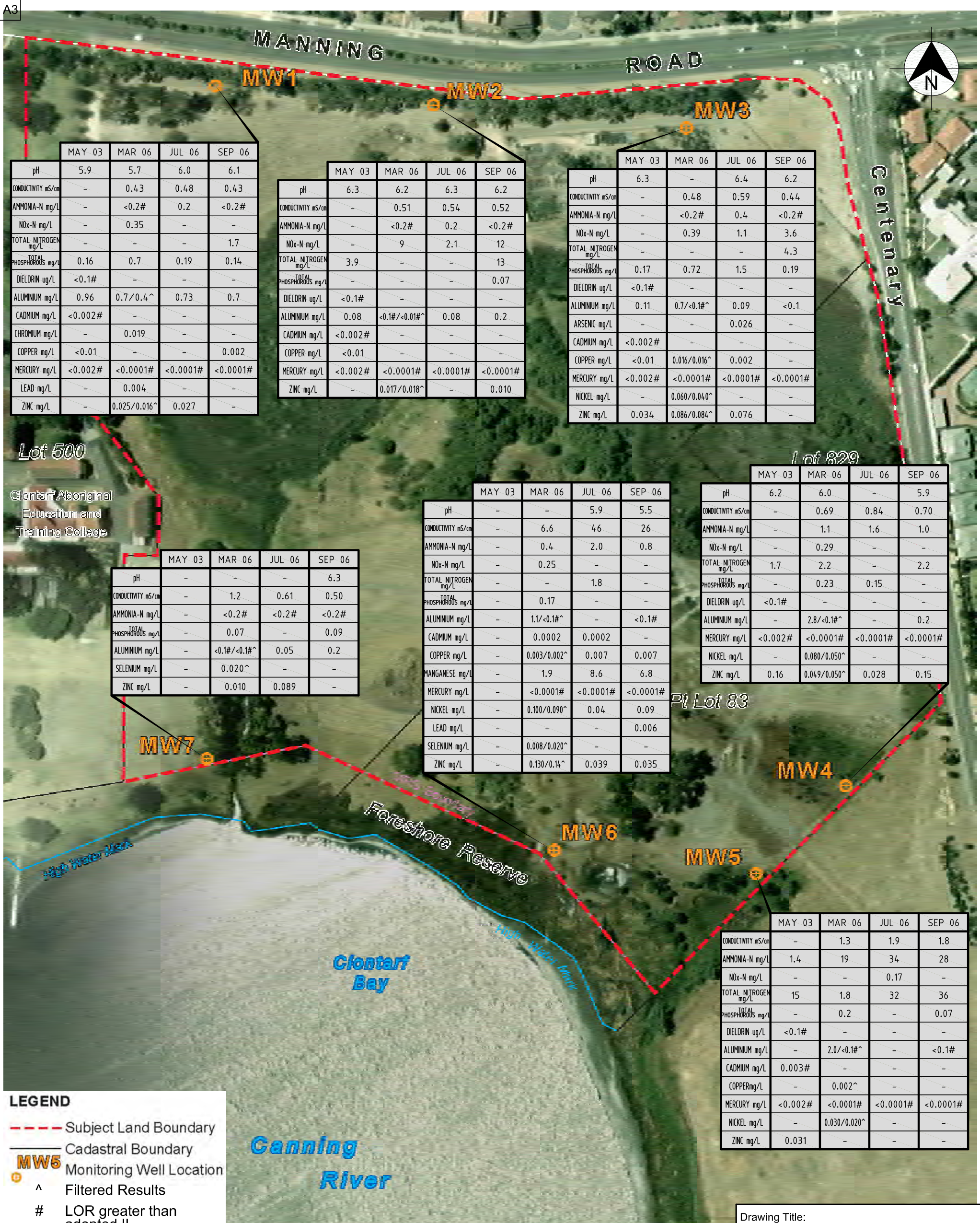
<div><div>coffey</div><div>environments</div><div>SPECIALISTS IN LIVING AND WORKING PLACES</div></div> <div>Ground Floor 89-91 Burswood Rd Burswood, WA 6100 Ph: (08) 9355 7100 Fax: (08) 9355 7197</div>			
A	17.12.08	ISSUE	LZ
Rev	Date	Revision Details	Drn

Client: TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INCORPORATED	
<div><div>020406080100</div><div>SCALE1:2000 (A3)METRES</div></div>	

Project: CYGNIA COVE	
Location: CYGNIA COVE WATERFORD, WESTERN AUSTRALIA	

Drawing Title: CONTAMINANT CONCENTRATIONS IN GROUNDWATER EXCEEDING DRINKING WATER GUIDELINES (x10) FOR NON-RECREATIONAL USE (2003/2006)			
Drawn LZ		Date 17.12.08	
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN		Figure No. 3	Rev. A





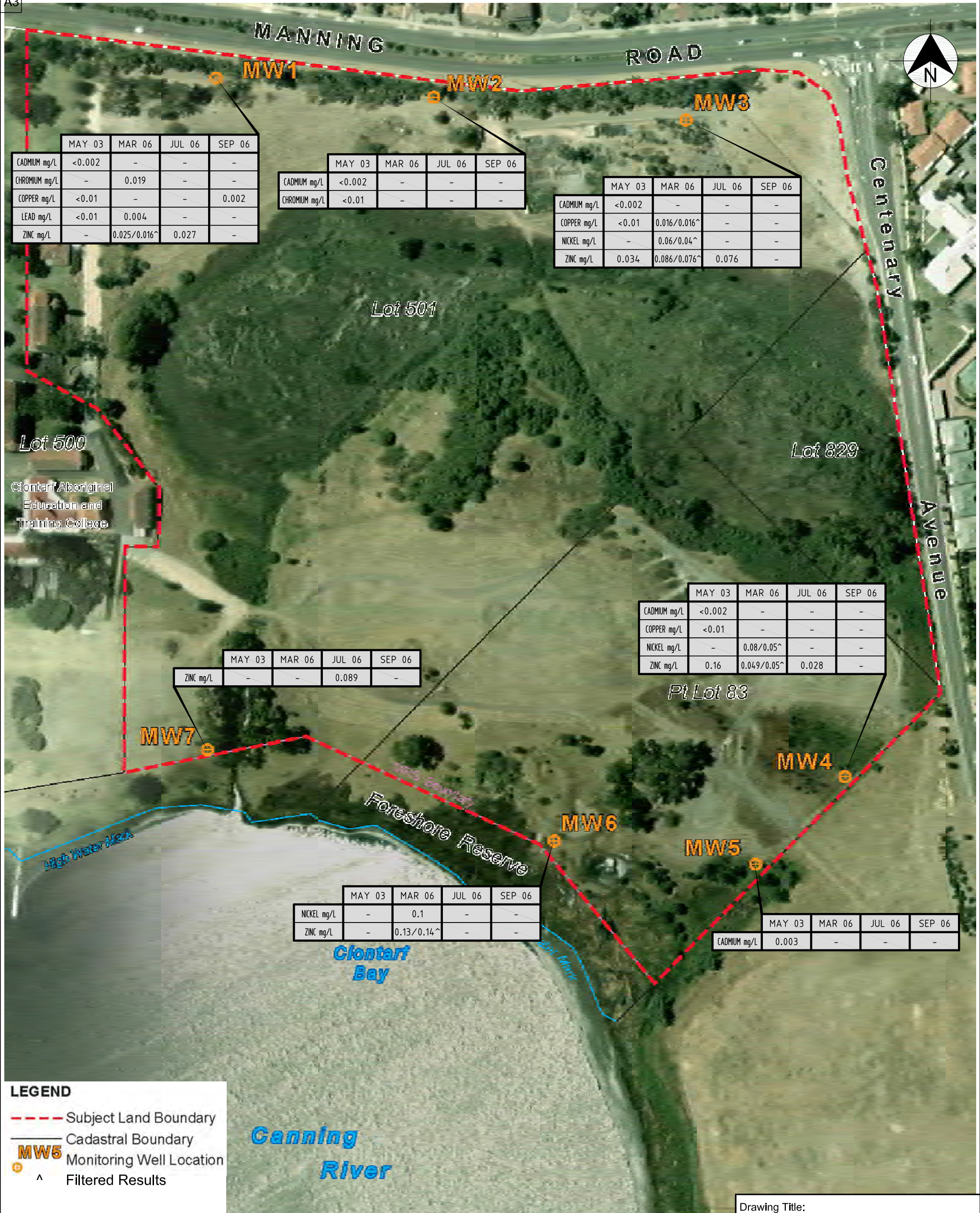
Drawing Title:  
**CONTAMINANT CONCENTRATIONS IN  
GROUNDWATER EXCEEDING FRESH  
WATER GUIDELINES (2003/2006)**

Drawn LZ	Date 17.12.08
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 4
	Rev. A

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Rev	Date	Revision Details	Drn	

020406080100  
SCALE1:2000 (A3)METRES

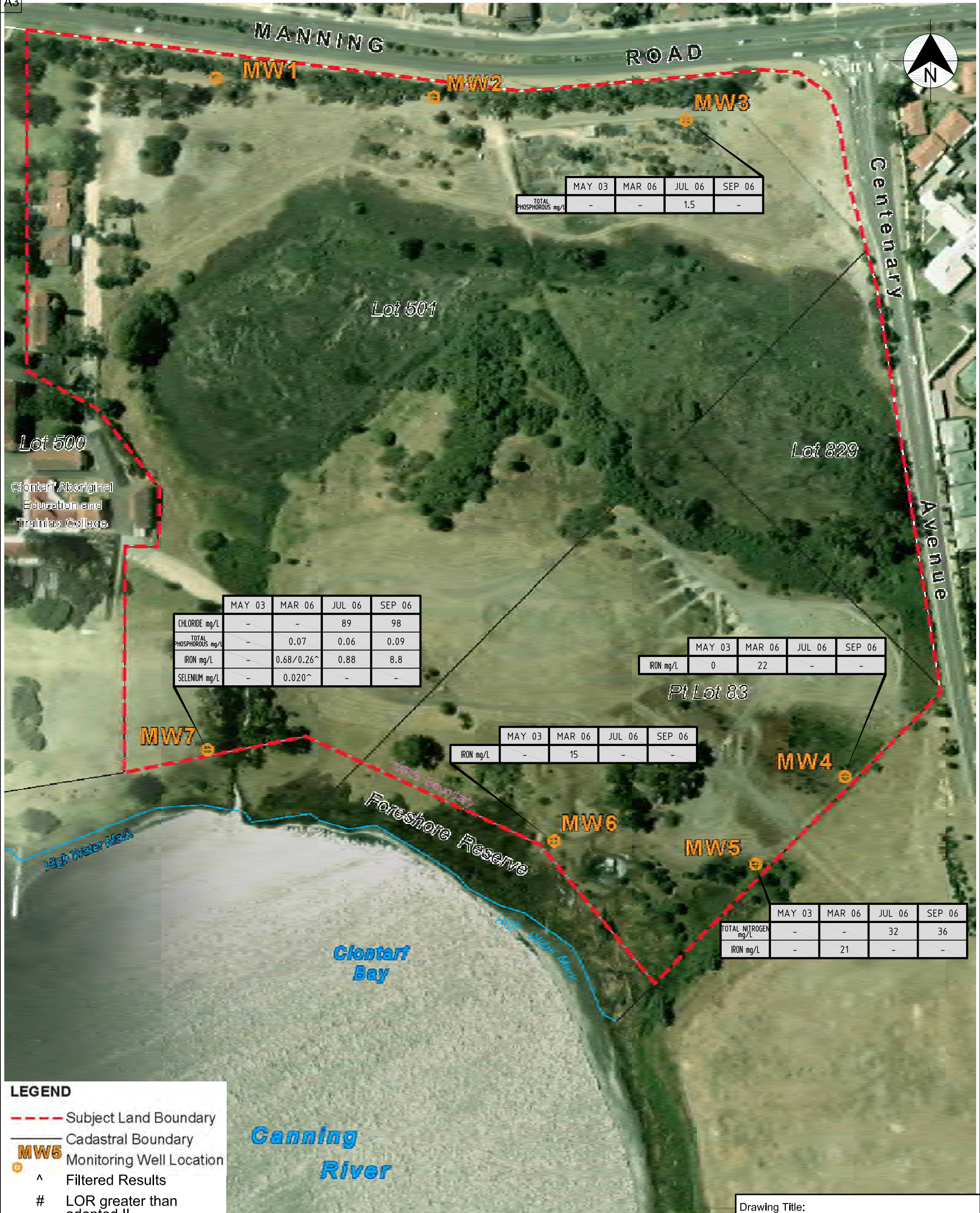
















**LEGEND**

- Subject Land Boundary
- Cadastral Boundary
- MW5** Monitoring Well Location
- DTSWL Depth to static water level
- SWL Static Water Level
- mAHd Metres Australian Height Datum
- Inferred groundwater elevation contour (mAHd)
- ➔ Inferred groundwater flow direction

<b>coffey</b> environments <small>SPECIALISTS IN LIVING AND WORKING PLACES</small>		Ground Floor 89-91 Burswood Rd Burswood, WA 6100 Ph: (08) 9355 7100 Fax: (08) 9355 7197
Rev	Date	Revision Details
A	17.12.08	ISSUE

Client: TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INCORPORATED

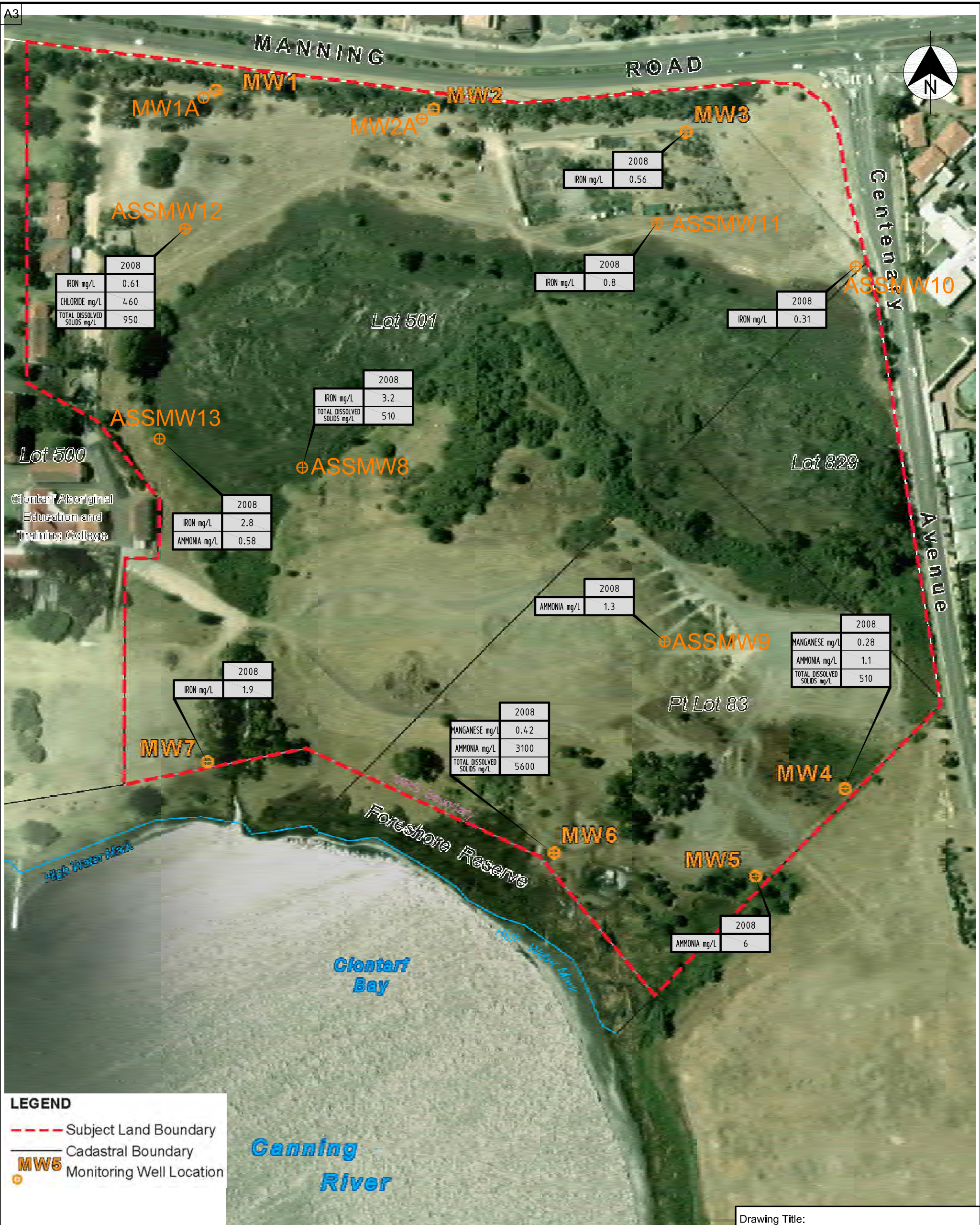
Project: CYGNIA COVE

Location: CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

Scale: 0 20 40 60 80 100  
SCALE 1:2000 (A3) METRES

Drawing Title: <b>POTENTIOMETRIC GROUNDWATER CONTOURS (2008)</b>		
Drawn LZ	Date 17.12.08	
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 8	Rev. A





**LEGEND**

- Subject Land Boundary
- Cadastral Boundary
- MW5 Monitoring Well Location

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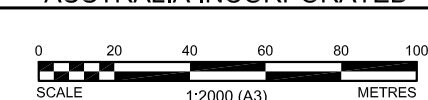
Ground Floor  
89-91 Burswood Rd  
Burswood, WA 6100  
Ph: (08) 9355 7100  
Fax: (08) 9355 7197

Client:  
TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INCORPORATED

Project:  
CYGNIA COVE

Drawing Title:  
**CONTAMINANT CONCENTRATIONS IN GROUNDWATER EXCEEDING DRINKING WATER GUIDELINES (2008)**

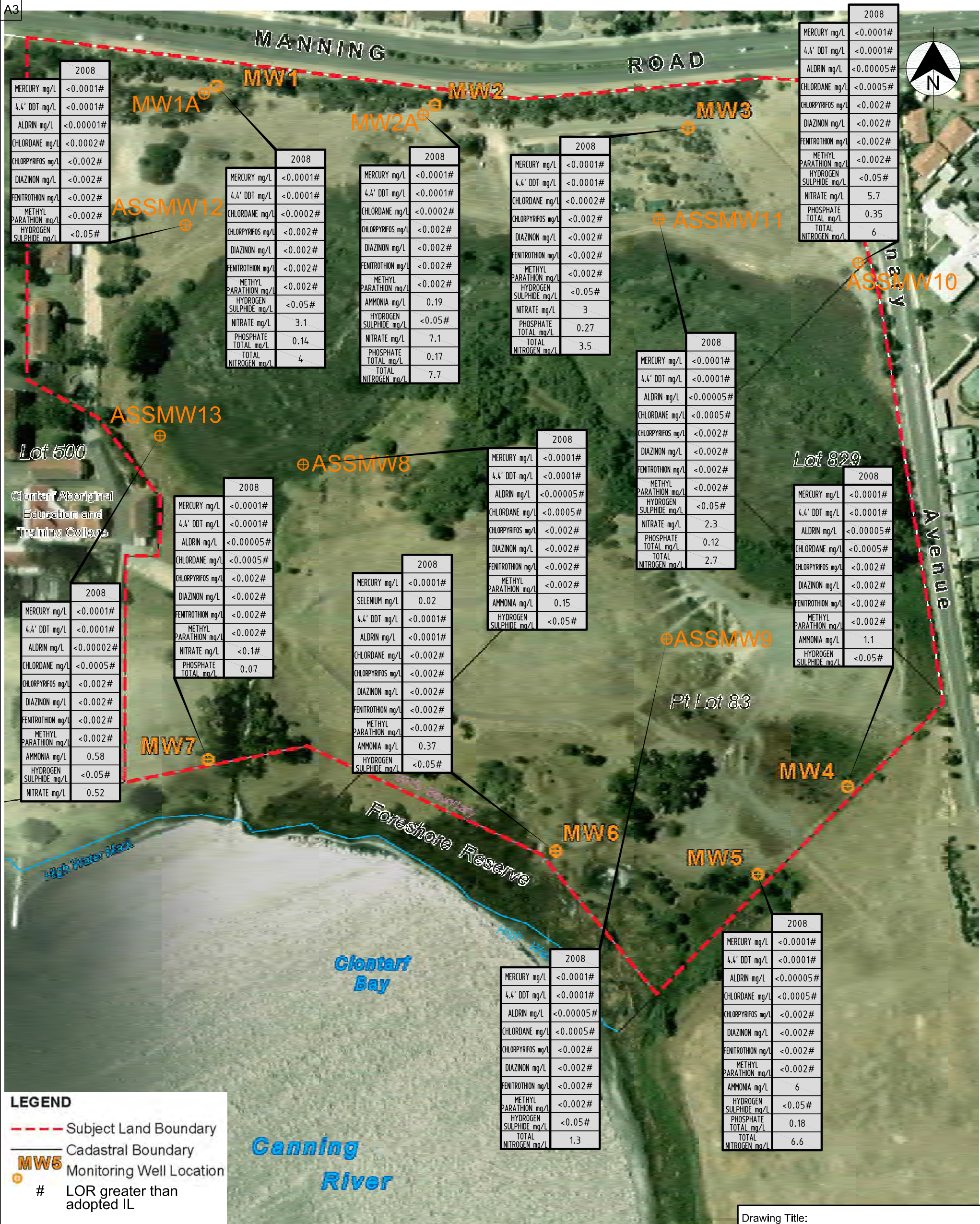
Rev	Date	Revision Details	Drm
A	17.12.08	ISSUE	LZ



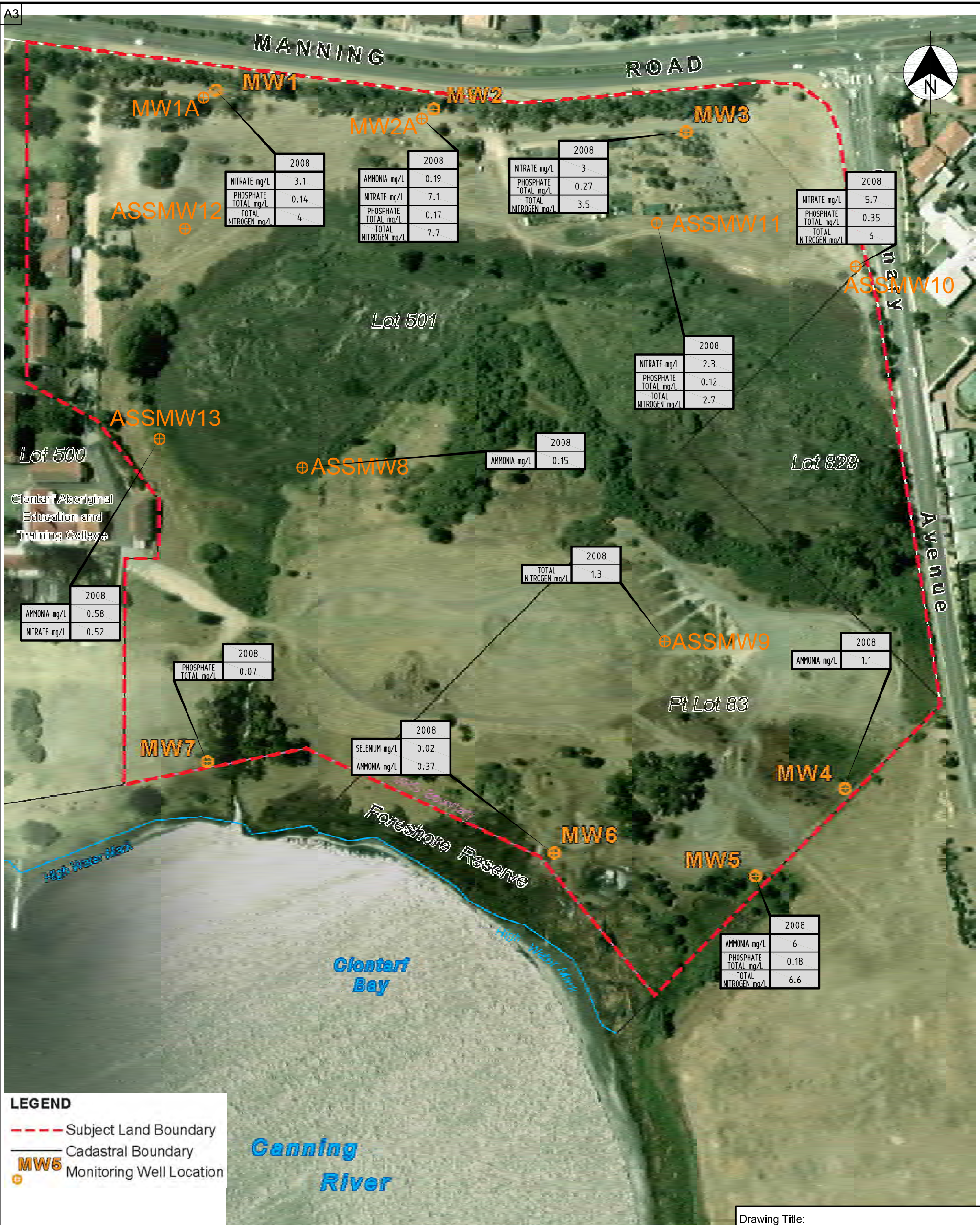
Location:  
CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

Drawn LZ	Date 17.12.08
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 9
	Rev. A









**LEGEND**

--- Subject Land Boundary

--- Cadastral Boundary

MW5 Monitoring Well Location

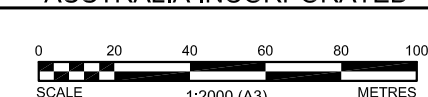
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Burswood, WA 6100  
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Client:  
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Project:  
CYGNIA COVE

Rev	Date	Revision Details	Drn
A	17.12.08	ISSUE	LZ

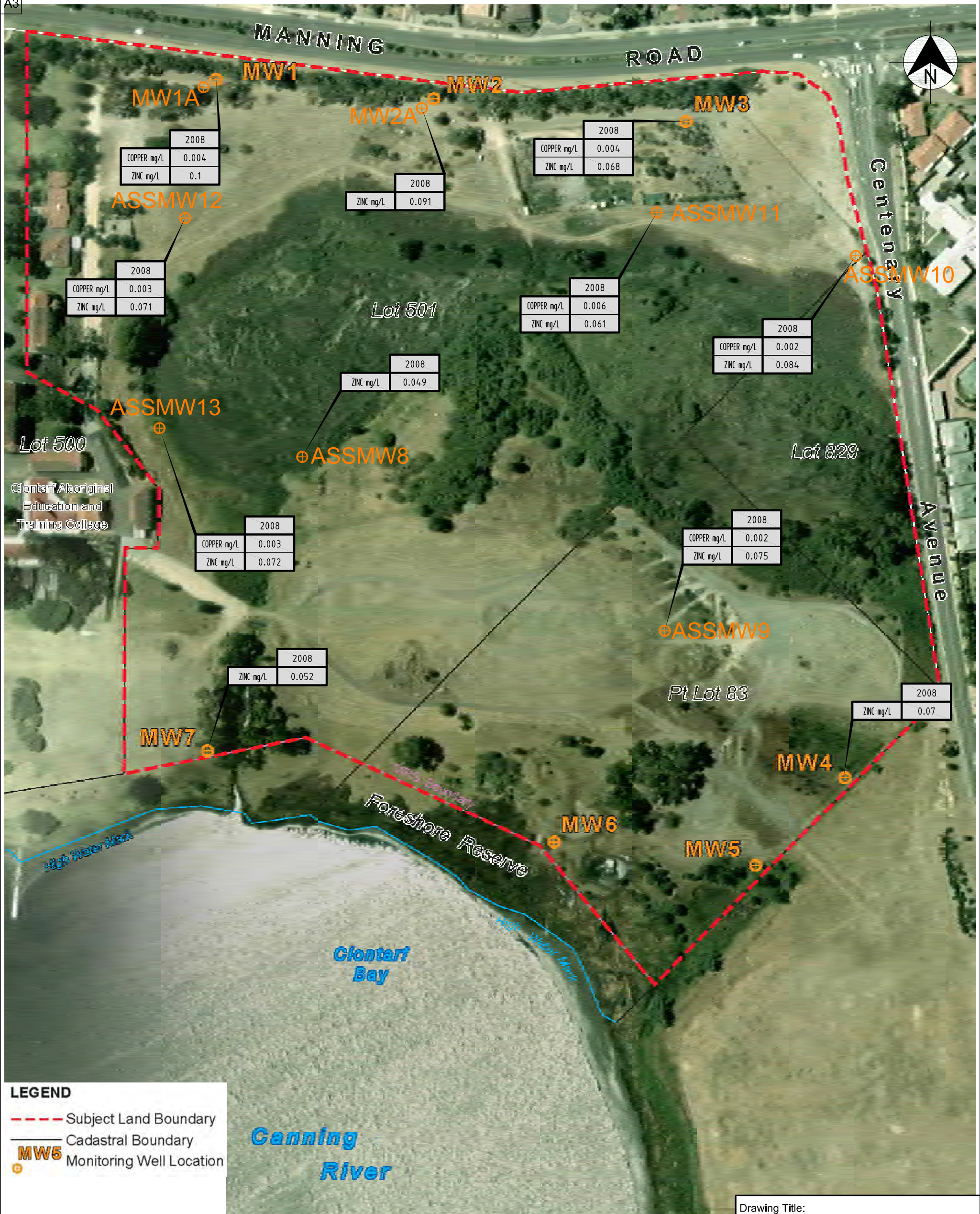


Location:  
CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

Drawing Title:  
**CONTAMINANT CONCENTRATIONS IN GROUNDWATER EXCEEDING FRESH WATER GUIDELINES (2008) (EXCEEDANCES >LOR ONLY)**

Drawn LZ	Date 17.12.08
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 11
	Rev. A





**LEGEND**

--- Subject Land Boundary

--- Cadastral Boundary

**MW5** Monitoring Well Location

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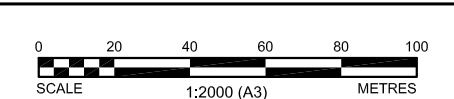
Client:  
TRUSTEES OF THE CHRISTIAN  
BROTHERS IN WESTERN  
AUSTRALIA INCORPORATED

Project:  
CYGNIA COVE

Location:  
CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA

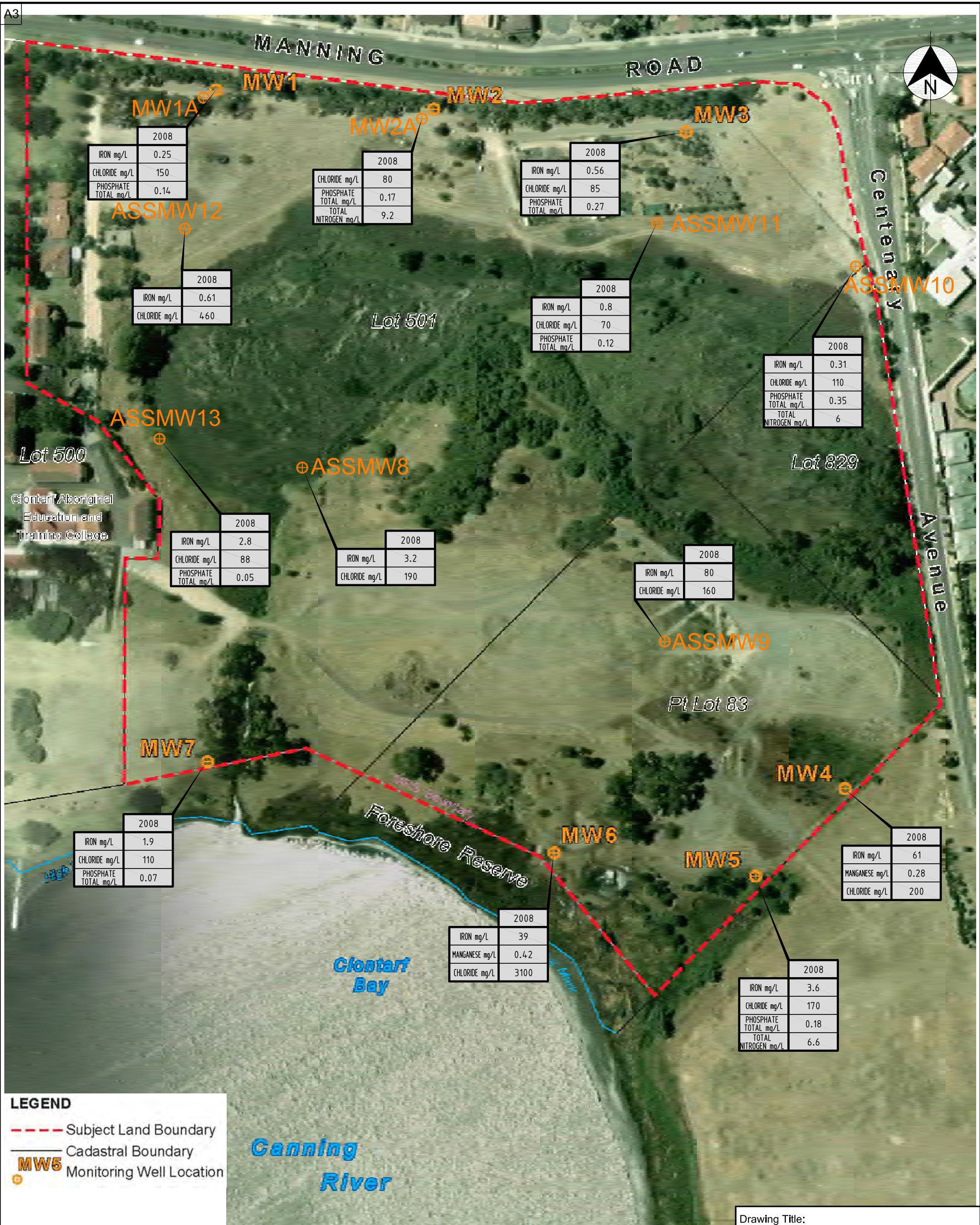
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WATER GUIDELINES WITH HARDNESS  
MODIFICATION FACTOR (2008)**

Rev	Date	Revision Details	Drm
A	17.12.08	ISSUE	LZ



Drawn LZ	Date 17.12.08
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 12
	Rev. A





**LEGEND**

- Subject Land Boundary
- Cadastral Boundary
- MW5 Monitoring Well Location

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Rev	Date	Revision Details	Drm
A	17.12.08	ISSUE	LZ

Client: TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INCORPORATED

Project: CYGNIA COVE

Location: CYGNIA COVE WATERFORD, WESTERN AUSTRALIA

Scale: 0 20 40 60 80 100 METRES  
SCALE 1:2000 (A3)

Drawing Title: **CONTAMINANT CONCENTRATIONS IN GROUNDWATER EXCEEDING LONG TERM IRRIGATION WATER GUIDELINES (2008)**

Drawn LZ	Date 17.12.08
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 13
	Rev. A





**LEGEND**

- Subject Land Boundary
- Cadastral Boundary
- MW5 Monitoring Well Location

Drawing Title:  
**CONTAMINANT CONCENTRATIONS IN  
GROUNDWATER EXCEEDING SHORT TERM  
IRRIGATION WATER GUIDELINES (2008)**

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Rev	Date	Revision Details
A	17.12.08	ISSUE

Client:  
**TRUSTEES OF THE CHRISTIAN  
BROTHERS IN WESTERN  
AUSTRALIA INCORPORATED**

Project:  
**CYGNIA COVE**

Location:  
**CYGNIA COVE  
WATERFORD, WESTERN AUSTRALIA**

Scale: 1:2000 (A3)

0 20 40 60 80 100  
SCALE METRES

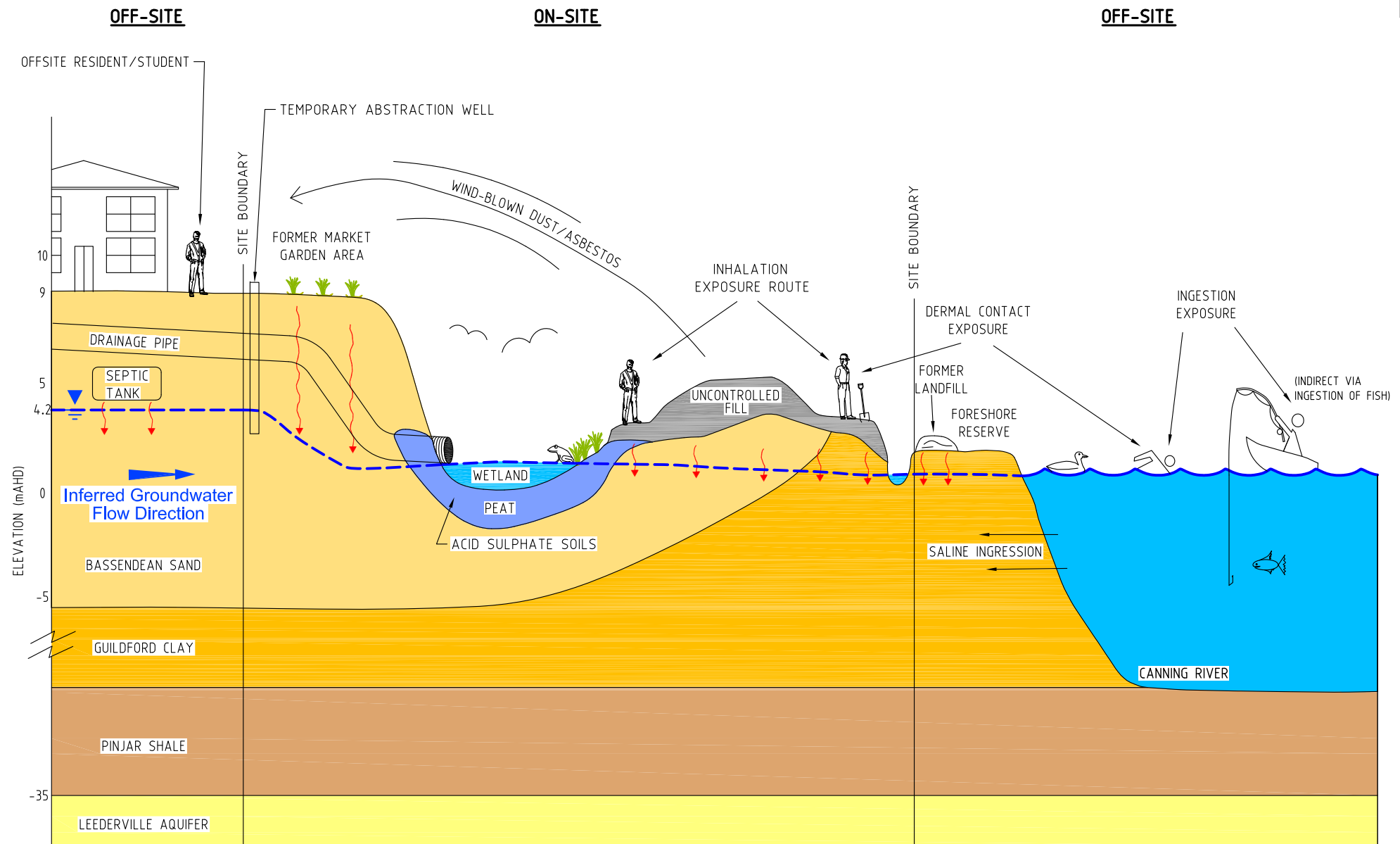
Drawn LZ	Date 17.12.08
APPENDIX D SITE CONTAMINATION, INVESTIGATION AND REMEDIATION AND VALIDATION MANAGEMENT PLAN	Figure No. 14
	Rev. A



# Appendix E


## Conceptual Site Models

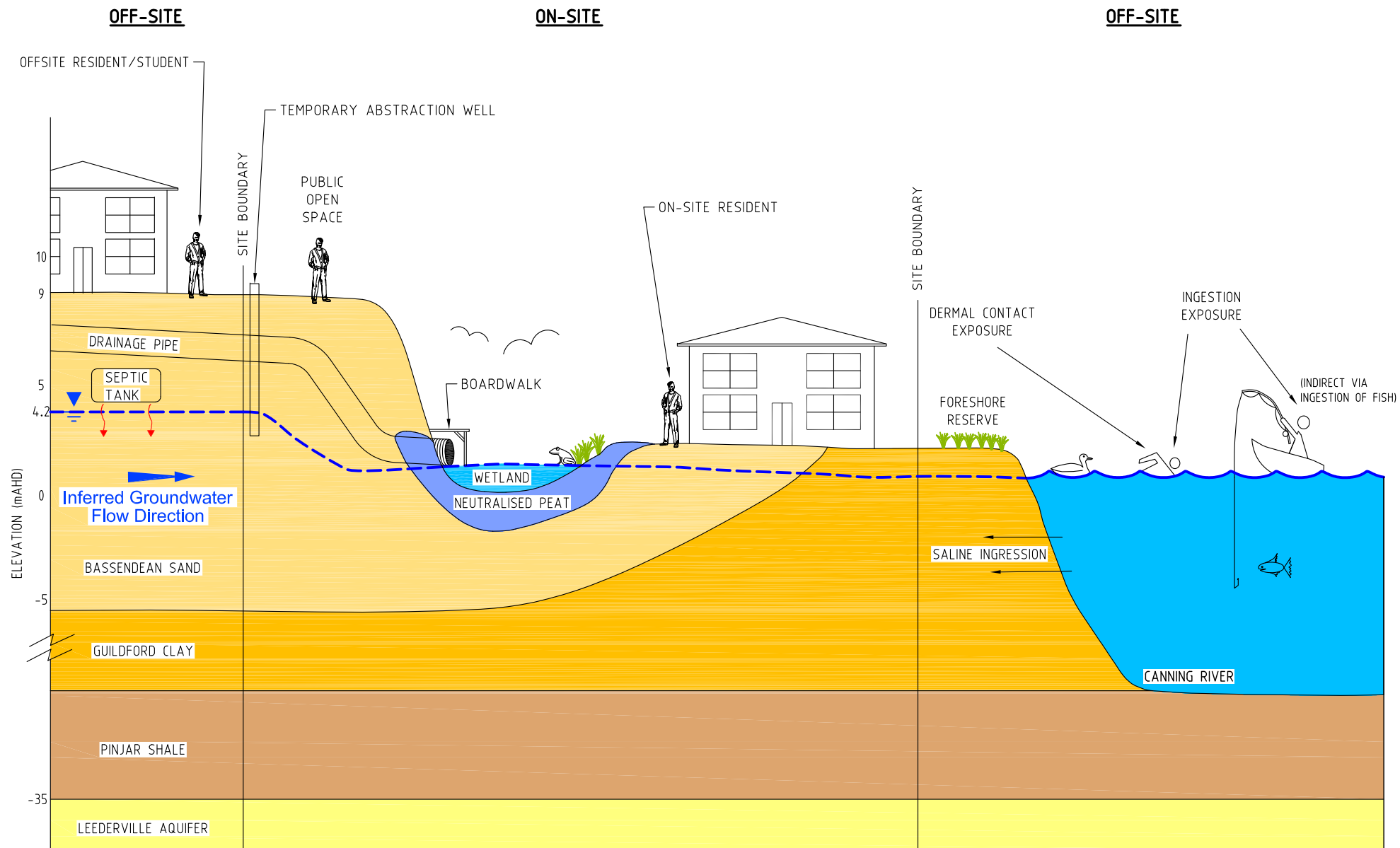
**Site Contamination Investigation, Remediation and Validation Management Plan  
Cygnia Cove, Waterford, WA**



THIS IS ONE INTERPRETATION ONLY  
OTHER INTERPRETATIONS ARE POSSIBLE.

NOTE:  
DIAGRAMMATIC-NOT TO SCALE

				 <b>coffey environments</b> SPECIALISTS IN LIVING AND WORKING PLACES	Ground Floor 89-91 Burswood Rd Burswood, WA 6100 Ph: (08) 9355 7100 Fax: (08) 9355 7197	Client:  <b>TRUSTEES OF THE CHRISTIAN BROTHERS IN WESTERN AUSTRALIA INCORPORATED</b>	Project: CYGNIA COVE DEVELOPMENT (FORMERLY EAST CLONTARF)	Drawing Title:  <b>SITE CONCEPTUAL MODEL (A) CYGNIA COVE, WATERFORD</b>	Coffey Environments Pty Ltd © <b>DRAFT</b>		
A		22.08.08	ISSUE						LZ	Drawn LZ	Date 22.08.08
Rev.	Date	Revision Details							Dwg	Project - Drawing No. ENVIPERT00209AA-D01	



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OTHER INTERPRETATIONS ARE POSSIBLE.

NOTE:  
DIAGRAMMATIC-NOT TO SCALE

Rev	Date	Revision Details	Drn
A	22.08.08	ISSUE	LZ

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Fax: (08) 9355 7197

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AUSTRALIA INCORPORATED**

Project:  
CYGNIA COVE DEVELOPMENT  
(FORMERLY EAST CLONTARF)  
Location:  
LOT 83 AND LOTS 501 & 829 MANNING ROAD  
WATERFORD, WESTERN AUSTRALIA

Drawing Title:  
**SITE CONCEPTUAL MODEL (B)  
CYGNIA COVE, WATERFORD**

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Drawn LZ	Date 22.08.08	
Project - Drawing No. ENVIPERT00209AA-D01	Figure No.	Rev. A