



## Environmental Services

Specialising in:

Acid Sulphate Soils  
Contaminated Site Assessment  
Air Quality Investigations

Remediation Advice and Design  
Groundwater Management  
Facility Maintenance

**ABN 36 835 856 256**

# GROUNDWATER MONITORING EVENT #5

**Lot 20 Adelaide Street, Hazelmere**

PREPARED FOR:

**Wasterock Pty Ltd**

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## Environmental Services

### DOCUMENT DETAILS

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<b>Synopsis:</b>	This document and investigation has been prepared in accordance with the Contaminated Sites Act, Western Australia (2006) and Department of Environment Regulation (DER) Contaminated Sites Guidelines (2014) which includes ASC NEPM as amended 2013. This report is based on the groundwater sampling event completed at Lot 20 Adelaide Street, Hazelmere

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- Appendix B – Field Sheets (Groundwater)
- Appendix C – Groundwater and QC (Duplicate) Laboratory Documentation and Results
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# **1 INTRODUCTION**

MDW Environmental Services (MDWES) were engaged by Wasterock Pty Ltd (the Client) to undertake a fifth groundwater monitoring event (GME#5) at Lot 20 Adelaide Street, Hazelmere, herein referred to as the Site (Figure 1).

The Site is located approximately 14km north west of the Perth CBD and covers an area of approximately 0.17 km<sup>2</sup>. A site location map is presented in Figure 1.

As part of the environmental approval for commencement of works onsite, this GME has been prepared to investigate and identify the presence or absence of contamination within the underlying groundwater and if Acid Sulfate Soils (ASS) have impacted the Site. The rationale for the groundwater assessment is part of the ongoing groundwater monitoring program to model current groundwater conditions prior to the remediation project starting.

This report has been prepared to detail the sampling methodology and results from the groundwater monitoring event. This investigation was conducted in accordance with the Department of Environment Regulation (DER) *Assessment and management of contaminated sites, Contaminated Sites Guidelines* (2014) and ASC NEPM as amended 2013.

# **2 OBJECTIVES**

The objectives of the groundwater investigation are to:

- Conduct a comprehensive investigation into the groundwater quality for the identification and risk posed to environmental receptors with regards to contamination (e.g. metals/hydrocarbons) and ASS.
- Determine if groundwater contamination (if identified) exceeds relevant groundwater assessment criteria.
- Determine the suitability of water abstraction from the superficial aquifer for the purposes of dust suppression and compaction during the remediation on Site.
- Identify and determine the extent of the risk that any identified groundwater contamination may pose to human health and the environment.
- Identify the annual directional flow and seasonal variations of groundwater beneath the Site.
- Establish background groundwater data from the Site prior to the proposed remediation works.
- Provide meaningful and accurate results for reporting under the DER *Contaminated Sites Guidelines* (2014).

Therefore, the technical objective of this report is to display to the satisfaction of the Client, DER, Environmental Auditor and stakeholders that the above issues have been attended to within the investigation.

This report was prepared for Wasterock Pty Ltd to detail the sampling procedures undertaken on Site by MDWES and the results of all analyses associated with groundwater contamination and ASS. Groundwater quality results will be compared to relevant assessment criteria.

### **3 SCOPE OF WORK**

The groundwater investigation and field work was carried out onsite on the 14<sup>th</sup> May 2015. Works were completed by a MDWES Environmental Scientist. MDWES conducted the following scope of works to achieve the environmental objectives:

- A single groundwater monitoring event of six (6) groundwater monitoring wells across the Site. (GME number 5).
- Submission of groundwater samples analysed for contamination assessment. All samples were submitted to a National Association of Testing Authorities (NATA) registered laboratory.
- Data analysis and reporting on the findings of the investigations (groundwater) (this report).
- Comparison of groundwater levels and groundwater results with results previous groundwater results (visits 1 to 4 inclusive).

### **4 SITE IDENTIFICATION**

Information regarding the Site identification is summarised in Table A below. The Certificate of Title (CoT) is presented in Appendix A.

**Table A: Site Summary**

<b>Site Name</b>	Wasterock	
<b>Site Location</b>	Lot 20 Adelaide Street, Hazelmere	
<b>Local Government</b>	City of Swan	
<b>Certificate of Title:</b> (Volume / Folio)	2054 / 299	
<b>Historical Use</b>	Sand mine and Uncontrolled Inert Landfill	
<b>Current Site Use</b>	Vacant	
<b>Proposed Site Use</b>	Remediated commercial lots	
<b>Boundary Coordinates:</b> (Datum: MGA GDA-94 Zone 50)	<b>Eastings</b>	<b>Northings</b>
	406595	6467321
	407034	6467190
	406939	6467172
	407015	6466812
	406476	6467046
	407078	6467020

## **5 BACKGROUND INFORMATION**

The Site is located within the City of Swan, approximately 14 km north-west of the Perth CBD (Figure 1). Situated between Talbot Road and Adelaide Street, access is gained from the south of the Site via Adelaide Street.

Historically, the Site was occupied by a sand mine, once the minerals had been exhausted the Lot was used as a licensed inert waste landfill. The landfill was reported as accepting material outside the license in which potentially contaminating wastes were dumped at the landfill. Following investigation by Parsons Brinckerhoff (2006) the Site was classified “Contaminated – Remediation Required” by the DER.

### **5.1 Site History**

Historically, the Site operated as a licensed uncontrolled inert landfill from c.1987 to c.1997, after first being mined for building and construction sand.

### **5.2 Land Owner**

The Site is currently vested with Wasterock Pty Ltd and has been so since 2006. A copy of the Certificate of Title is attached in Appendix A.

### **5.3 Land Use**

The Site has been used for collection and storage of inert demolition waste as landfill with some potentially contaminating waste. The proposed program of works is to remediate and redevelop the Site which will require excavation of the historical landfill. This in turn, will be repackaged and engineered to allow for an industrial / commercial end use.

### **5.4 Site Boundary**

The Site is surrounded by private properties to the north and south with industrial properties to the west. An operating landfill is noted on the eastern boundary. In addition the Roe Highway runs north to south in close proximity of the eastern boundary.

### **5.5 Groundwater Use**

The site does not currently make use of the groundwater. To achieve the project goals, groundwater abstraction will be required on site in the future to assist in the management and suppression of dust.

The groundwater modelling predictions (CDM Smith, 2015) indicate that the proposed abstraction of 230 ML/y for 5 years will induce up to 0.9m of drawdown outside of the site. Drawdown at the locations of nearby existing licensed groundwater users are predicted to be up to 0.6m. Based on the Water Register (2015) map, ten groundwater licenses are predicted to have potential drawdown impacts of 0.2m

The modelling results predict that after five years, the proposed abstraction will induce up to 0.9m maximum drawdown at the water table in the superficial aquifer outside of the site, and up to 0.6m drawdown at nearby existing licensed groundwater users or conservation areas.

These modelling results are dependent upon the assumed location of the pumping bore, and the predicted drawdown at the above locations could be altered by modifying the location of this modelled bore. Groundwater levels are predicted to recover relatively quickly after pumping ceases. Five years after the cessation of pumping, the modelled drawdown is less than 0.15m at all locations.

## 5.6 Previous Studies

Several reports and investigations have been undertaken on the subject Site from c.2005 to present. The information and results of these investigations are compiled in the following documents and should be read in conjunction with this report:

- FOI 1233/05 by Department of Environment & Conservation (DEC) – Freedom of Information – Lot 20, Adelaide Street, Hazelmere (October 2005).
- 2145245A:PR2\_16644.RevA by Parsons Brinckerhoff – Site Investigation (SI) – Hazelmere, WA (July 2006).
- 476300-0kjcv070709a by Burgess Rawson – Valuation Report – Lot 20 Adelaide Street, Hazelmere, WA (July 2007).
- V392/2007 grw4469 by Knight Frank – Valuation Report – Lot 20 Adelaide Street, Hazelmere, WA (July 2007).
- 60150301 by AECOM – District Storm water Management Strategy – Hazelmere Enterprise Area (June 2010).
- Drilling Logs by Banister Drilling & Irrigation for 20 Adelaide Street, WA. (May 2012).
- E2012-031 (GME) – MDWES – Groundwater Monitoring Event #1 – Adelaide Street Hazelmere (May 2012).
- E2012-031 (GME) – MDWES – Groundwater Monitoring Event #2 – Adelaide Street Hazelmere (August 2012).
- 15172-2-12131 by Herring Storer - Acoustic Assessment for Lot 20 Adelaide Street Hazelmere (September 2012).
- E2012-031 (GWAMP) – MDWES – Groundwater Abstraction for Dust Suppression & Surface Compaction v2 – Adelaide Street Hazelmere (October 2012).
- E2012-031 (GME) – MDWES – Groundwater Monitoring Event #3 – Adelaide Street Hazelmere (January 2013).
- E2013-031 – (SAMP) - MDWES – Soil Amendment Management Plan – Lot 20 Adelaide Street, Hazelmere (March 2013).
- E2012-031 (GME) – MDWES – Groundwater Monitoring Event #4 – Adelaide Street Hazelmere (June 2013).
- E2012-031 (GMES) – MDWES – Annual Groundwater Monitoring Event Summary Report (GMES) v2 – Adelaide Street Hazelmere, (October 2013).
- 6045.k.09\_09082\_SMP by Waste Rock Pty Ltd – Site Remediation Works Agreement and Site Management Plan (Final) – Lot 20 Adelaide Street. (March 2014).
- GRA 7729 by Greg Rowe & Assoc. – Community Management Strategy for Remediation of Former Landfill Site: Lot 20 Adelaide Street, Hazelmere. (March 2014).
- E2012-031 (AQMP) – MDWES – Air Quality Management Plan (AQMP) v5 – Adelaide Street Hazelmere, (October 2014).
- E2012-031 (HHRA) – MDWES – Human Health Risk Assessment (HHRA) v3 – Adelaide Street Hazelmere, (October 2014).
- CDM Smith (formally NTEC Environmental Technology) – Groundwater Modeling for the 20 Adelaide Street - Landfill Remediation Site Hazelmere. (1<sup>st</sup> issued 2012, revised April 2015).

## 5.7 Contaminated Sites Database

The site is currently classified as “*Contaminated – Remediation Required*” as per DER Contaminated Sites Database (accessed 27 May 2015).

One (1) site was identified on the DER Contaminated Sites Database within a 400m radius of the subject Site (Figure 2). A summary of the identified site is detailed in Table B. The identified site is most pertinent to the subject site and this report.

**Table B: DER Contaminated Site**

Description or Comment	
<b>Site Address:</b>	390 Sterling Street, Hazelmere
<b>Distance From Subject Site:</b>	400m north west of site
<b>Lot (Reference):</b>	Lot 155 on Plan 4553
<b>Classification:</b>	<i>Remediated for restricted use</i>
<b>Nature &amp; Extent of Contamination:</b>	Metals and hydrocarbons (such as degraded diesel or oil) are present in groundwater beneath the site at approximately 2.0 mbgl.
<b>Restrictions On Use:</b>	The land use of the site is restricted to commercial/industrial use; recreational open space and residential land use with minimum soil access which excludes sensitive uses with accessible soil.

## 5.8 Acid Sulfate Soils

The DER ASS Risk Map obtained from the WA Atlas (Landgate, 2012) indicates that Site is located within an area of ‘*Moderate to low risk of AASS & PASS occurring generally at a depth of > 3m,*’ (DER Class 2 classification). Furthermore, an area of ‘*High risk of actual acid sulfate AASS & PASS < 3m from surface*’, is located approximately 400m south west of the Site (DER Class 1) (Figure 3).

An area approximately 400m to the south west the Site has been identified as being of a high to moderate ASS risk. This ASS area has been attributed to a historical wetland, which is now part of recent residential development. As part of the proposed remediation project, groundwater is required to assist in dust suppression on Site. Groundwater abstraction may have an adverse effect on the groundwater table due to drawdown, in turn, potentially affecting the identified ASS areas (Figure 3).

The depth of the underlying landfill has been reported as being approximately 6.5mbgl with a possible variance of +/-2m (the depth will only be determined once the remediation begins). The remediation and rehabilitation of the current landfill will not enter the underlying natural soils. It is believed that remediating the Site is unlikely to impact or cause an acidifying affect of the soil and groundwater on Site. However, the abstraction of groundwater for dust suppression has the potential to draw the identified high to moderate ASS area to the west of the Site on to site (CDM Smith, 2015).

## **6 CONTAMINANTS OF POTENTIAL CONCERN (CoPC)**

The Site is proposed for remediation upon completion of the remediation the end use is proposed to be industrial lots. The following list of Contaminants of Potential Concern (CoPC) are based on the historical, current and proposed Site activities, regional soil and related issues, proximity to classified contaminated sites and offsite sources of impacts:

- Physical parameters.
- Dissolved Metals: Aluminium (Al), arsenic (As), cadmium (Cd), chromium (Cr), iron (Fe), manganese (Mn), nickel (Ni), selenium (Se), zinc (Zn).
- Total Metals: Aluminium (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), molybdenum (Mo), nickel (Ni), silver (Ag), selenium (Se), zinc (Zn), mercury (Hg), hexavalent chromium ( $\text{Cr}^{6+}$ ) and ferrous iron ( $\text{Fe}^{2+}$ ).
- Nutrients.
- Organochlorine and Organophosphorous Pesticides (OC/OP).
- Monocyclic Aromatic Hydrocarbons (MAH).
- Oxygenated Compounds.
- Sulfur Compounds.
- Fumigants.
- Halogenated Aliphatic/Aromatic Compounds.
- Trihalomethanes.
- Phenolic compounds.
- Polynuclear Aromatic Hydrocarbons (PAH).
- Benzene, Toluene, Ethyl Benzene, Xylene and Naphthalene (BTEXN).
- Total Petroleum Hydrocarbons (TPH) / Total Recoverable Hydrocarbons (TRH).

### **6.1 Preferential Contaminant Pathways**

Many of the CoPC's identified have the potential to impact soil and groundwater at the Site and surrounding areas. Listed above are the contaminants that have the potential to be found in the underling groundwater and most likely to present a risk to human health and the environment. The CoPC have been identified due to the wide range of potential fill inert/non-inert waste which may have been imported as fill onsite. In addition there is potential for the presence of ASS due to groundwater abstraction. The preferential contaminant pathways can be summarised as soil, air and groundwater; notwithstanding that the Scope of Works for this investigation only includes assessment of potential groundwater contamination.

## 7 SAMPLING ANALYSIS PLAN AND METHODOLOGY

As per DER guidelines (DER, 2014) six (6) groundwater monitoring well locations were selected to investigate across the Site. The sampling and analysis of the groundwater monitoring was completed to determine if the historical site use, and/or potential presence of ASS has impacted the underlying groundwater quality of the Site prior to remediation begins (background monitoring visits 1 to 5 inclusive).

The Monitoring Well (MW) locations (on Site) are shown in Figure 4. The groundwater monitoring field sheets are presented in Appendix B. The groundwater sampling conducted at the Site is summarised in Table C below.

**Table C: Groundwater Investigation Summary**

Activity	Details
Date of Field Activity	14 <sup>th</sup> May 2015
Investigation	A total of six (6) groundwater wells located onsite were sampled for groundwater quality (contamination & ASS).
Dimensions	The monitoring wells were previously installed across the site. The wells were installed to maximum depths ranging between 6.0m to 14.5m. The uPVC pipe used for each installation was 50mm in diameter.
Sampling Method	Monitoring wells were sampled via use of a 12V GeoTech Low Flow Bladder pump coupled to YSI Quattro low flow sampler.
Samples	A total of six (6) sets of water samples were collected during this GME (one from each monitoring well).
QA/QC	One QC set of samples were taken, consisting of one (1) duplicate, one (1) field blank and one (1) rinsate blank which were submitted to ALS Environmental (WA). In addition, One (1) triplicate sample was submitted to ARL (WA).
Calibration	YSI Quattro low flow is calibrated daily and was calibrated from this monitoring event.
Decontamination Procedure	See Section 8.1.2
Analysis	<ul style="list-style-type: none"><li>• Physical parameters</li><li>• Dissolved and Total Metals</li><li>• Nutrients</li><li>• OC/OP</li><li>• Fumigants</li><li>• Halogenated Compounds (Aliphatic / Aromatic)</li><li>• MAH</li><li>• Phenolic Compounds</li><li>• PAH</li><li>• BTEXN</li><li>• TRH/TPH</li></ul>
Laboratory	Primary and duplicate samples were submitted to the primary laboratory, ALS Environmental. The triplicate sample was submitted to the secondary laboratory, ARL (WA). Both laboratories are NATA accredited.
Sample Preservation	Samples were placed in laboratory supplied bottles. Samples were stored on ice (<4°C) in an esky while on site and in transit to the laboratory.

## **7.1                  Groundwater Sampling**

The groundwater sampling was conducted by MDWES on 14<sup>th</sup> May 2015. Field results were documented which including standing water levels recorded with an interface meter for detection of potential hydrocarbons.

Groundwater samples were taken via a 12V submersible Low Flow™ pump, coupled to an YSI Quattro low flow sampler was utilised, enabling continuous measurement of field parameters. Field readings were recorded at five minute consecutive intervals. Once stabilisation of the field parameters was reached, samples taken and were placed in laboratory supplied bottles with specific preservatives. To assess for dissolved metals samples were filtered and collected in laboratory supplied bottles.

All samples were tagged/labelled according to standard procedures, and placed in an esky filled with ice. Samples were then submitted along with chain of custody documentation to the appropriate NATA accredited laboratory for analysis.

Total Titratable Acidity (TTA) and Total Alkalinity (TALK) were determined using HANNA Instrument Alkalinity and Acidity test kits.

## **8      QUALITY ASSURANCE / QUALITY CONTROL**

The following Quality Assurance / Quality Control (QA/QC) program was implemented throughout the monitoring event to ensure the accuracy and precision of the data obtained. Quality Control (QC) measures the effectiveness of the procedures of the Quality Assurance (QA) program.

### **8.1            Quality Assurance**

All procedures including staff selection, sampling methodologies, equipment, analysis methods and data transfer were based on:

- Australian/New Zealand Standard AS/NZS 5667.1:1998 Water Quality -Sampling

In particular, the following actions applied:

- Samples were collected by a trained, experienced field technician; and
- Samples were collected by the same personnel, ensuring that techniques used were consistent across the sampling program.

#### **8.1.1        Groundwater Sampling Procedure**

All groundwater samples were subject to the following procedures:

- Dedicated tubing was used for each well.
- The pump, low flow cell, the low flow equipment was decontaminated between wells (See section 8.1.2).
- Samples were collected using clean, disposable nitrile gloves replaced between each sample.
- Samples were collected within an eight hour period into laboratory supplied sample bottles. Preservatives (if required) were provided by the laboratory in the appropriate sample bottle.
- Samples were filled to the top of the bottle to ensure no headspace remained.
- All samples were marked in the field using permanent marker with a label showing sample location, date and job number.
- Samples were immediately placed on ice within an esky for transport to the laboratory accompanied with standard chain of custody (CoC) documentation.

#### **8.1.2        Decontamination of Sampling Equipment**

All sample collection equipment was subjected to rigorous decontamination procedures to prevent cross-contamination of samples. Any plant and/or equipment used at multiple sampling locations was subject to the following decontamination procedures to prevent cross-contamination:

- a) Remove any residual detritus using scrapers, brushes and sponges.
- b) Wash thoroughly in an oxygen based phosphate free detergent solution (Decon90).
- c) Inspect equipment for any residues.
- d) Repeat (b) and (c) until no evidence of residues.
- e) Rinse thoroughly with tap water.
- f) Finally, rinse thoroughly with de-ionised water.

## **8.2              Laboratory**

ALS Environmental was selected as the NATA accredited laboratory for the primary and duplicate samples. ARL (WA) was selected as the NATA accredited laboratory for the triplicate sample.

The laboratory conducts internal quality control analysis as part of their QA/QC procedures. Following discussions with the primary laboratory and a review of their laboratory certificates of analysis, the following laboratory QC protocols occur:

- At least 10% of samples are split into internal laboratory duplicate samples. These samples are homogenised prior to splitting into sub samples.
- At least 5% of samples are run with Matrix Spikes of known additions.
- Laboratory Control Samples (LCS) were run at the required rate (minimum 1 LCS per batch of samples). The LCS results are reported in the laboratory certificates named 'Interpretive Quality Control Report' and the 'Quality Control Report'.

Laboratory results and documentation for the primary and duplicate samples, and the triplicate sample are presented in Appendix C and Appendix D, respectively.

## **8.3              Laboratory Quality Control Groundwater**

Internal laboratory QC was analysed and outliers are described below:

- **EG020:** It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of methods.

## **8.4              Quality Control**

To ensure the quality of the sampling method and laboratory analysis, QC samples collected for this GME consisted of one (1) field blank, one (1) rinsate blank and one (1) set of duplicate and triplicate samples of a groundwater sample.

- WRMW4 was the primary sample used for the duplicate (QC8) and triplicate (QC9).
- A field blank was collected from the day of sampling (QC10).
- A rinsate sample was collected from the day of sampling (QC11).

Laboratory documentation for the duplicate and triplicate groundwater samples are presented in Appendix C and Appendix D, respectively. Laboratory documentation for the field blank and rinsate blank are available in Appendix C. The results of the field blank and rinsate blank is presented in Table 3.

The reproducibility of the sampling and analytical methodology is measured as precision. Laboratory and field precision is measured using the Relative Percent Difference (RPD) between the sample and its duplicates. For those RPD values which exceed a generally acceptable 30% - 50% (Australian Standard AS 4482.1), data precision is considered poor, however, consideration needs to be given to sample homogeneity and the concentrations detected.

Therefore, the acceptable ranges adopted for the RPDs are based on the laboratories RPD acceptance criteria and are dependent on the magnitude of results in comparison to the limits of reporting (LOR) as follows:

Result < 10 times LOR = No Limit (NL)

Result 10 – 20 times LOR = 50%

Result > 20 times LOR = 20%

Where values are reported below the laboratory LOR, RPDs will not be calculated.

## **8.5 RPD Groundwater Results**

A comparison of the primary duplicate and triplicate groundwater QC samples was conducted (Table 2), with the following noted:

Exceeding RPD values were noted when comparing the primary (WRMW4) and duplicate (QC9) samples. Exceedances of the RPD values occurred for Total Dissolved Solids (TDS) and Sulfate.

## **8.6 Conclusions**

Laboratory internal QC for groundwater samples were analysed with total concentrations less than dissolved concentrations for some metal analytes. However, the differences were marginal and were within experimental variation of methods, therefore, no further action was required.

The groundwater QC program indicated two (2) RPD values marginally exceeded acceptable criteria for the duplicate sample when compared to the primary sample. These RPD exceedances are likely to be due to natural variations encountered when conducting the sampling of groundwater. In addition, a small variance within the results reported can exaggerate the RPD. All care was taken to homogenise samples by MDWES prior to splitting for QC sampling.

Based on the results of the QC program, the groundwater analytical results are deemed to be acceptable for use in this report.

## **8.7 Waste Disposal**

Sampling was completed in consultation with the MDWES Standard Operating Procedure and all waste water was disposed of appropriately (off site) as to not impose risk, or cause contamination onsite.

## **9 ASSESSMENT CRITERIA**

Laboratory analyses of the groundwater samples collected during the GME on 14<sup>th</sup> May 2015 are presented in Table 1. To assess the groundwater quality underlying the Site, the following assessment criteria were adopted for groundwater:

- Australia and New Zealand Environment and Conservation Council (ANZECC 2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* as reproduced in the DER's *Contaminated Site Management Series - Assessment Levels for Soil, Sediment and Water* (DEC 2014):
  - Freshwater Ecosystems
  - Marine Ecosystems
  - Dutch intervention values for petroleum hydrocarbons (2000)
  - Short Term Irrigation Water
  - Long Term Irrigation Water
- Department of Health *Contaminated Sites Ground and Surface Water Screening Guidelines*, (DoH 2014):
  - Non-Potable Groundwater Use.
- Department of Environment Regulation *Treatment and Management of Soils and Water in Acid Sulfate Soil Landscapes* (DEC, 2011)
  - ASS disturbance indicators.
  - Buffering Capacity indicators.

### **9.1 Classification**

The analytical results of the groundwater analysis concentrations and exceedances against the selected criteria will determine whether contamination is present or has the potential to be present on site. It should be noted that the purpose of this report is to summarise the groundwater over a continued monitoring period rather than note individual exceedances of assessment criteria. Therefore, the results have been assessed as a single event and also compared against previous recorded data observed from previous GMEs.

## 10 RESULTS – FIELD

Field results for the groundwater investigation conducted by MDWES are presented in Table G below. In addition the groundwater levels from this GME and previous GMEs are presented in Tables D, E and F. The groundwater field sheets are presented in Appendix B.

### 10.1 Groundwater Levels

Groundwater levels were taken using an interface meter which was used to verify the presence / absence of free phase hydrocarbon products in the groundwater. MDWES can confirm that no free phase products were detected at the groundwater horizons in any of the monitoring wells.

Groundwater levels recorded ranged between 3.65mbgl to 11.81 mbgl (RL 26.831 to 34.112 mAHD) (Table D). It should be noted that WRMW6 was noted to be dry as noted on GME visit 4.

Historical groundwater levels recorded from previous GME's are tabulated in Table E across each monitoring well.

Monthly depth to groundwater measurements have been undertaken by MDWES from May 2012 to May 2015 to assess season variations within the groundwater levels, these are presented in Table F. Generally the groundwater levels vary between 1m to 2m +/- seasonally.

The groundwater flux appears to be in a north-north west direction (Figure 5).

**Table D: Groundwater Levels (GME5)**

Date	Well ID	Water Level (mm TOC)	Standpipe (m)	Water Level (mbgl)	Ground Level (RL mAHD)	Water Level (RL mAHD)
14/05/15	WRMW1	-4095	0.45	-3.65	26.831	23.19
	WRMW2	-8102	0.62	-7.48	29.987	22.51
	WRMW3	-12320	0.51	-11.81	34.112	22.30
	WRMW4	-8916	0.63	-8.29	27.121	18.84
	WRMW5	-9360	0.56	-8.80	28.474	19.67
	WRMW6	-9685	0.64	Dry	30.971	n/a

**Table E: Groundwater Levels (Historical Data)**

Date	Well ID	Water Level (mm TOC)	Standpipe (m)	Water Level (mbgl)	Ground Level (RL mAHD)	Water Level (RL mAHD)	Change (mm)
18/05/12	WRMW1	-3700	0.45	-3.25	26.831	23.58	NA
30/08/12		-3455		-3.46		23.38	-205.00
11/10/12		-3130		-2.68		24.15	775.00
15/01/13		-3646		-3.20		23.64	-516.00
3/06/13		-3987		-3.54		23.29	-341.00
14/05/15		-4095		-3.65		23.19	-108.00
18/05/12	WRMW2	-7666	0.62	-7.05	29.987	22.94	NA
30/08/12		-7260		-7.26		22.73	-214.00
11/10/12		-7316		-6.70		23.29	564.00
15/01/13		-7682		-7.06		22.93	-366.00
3/06/13		-7924		-7.30		22.68	-242.00
14/05/15		-8102		-7.48		22.51	-178.00
18/05/12	WRMW3	-11846	0.51	-11.34	34.112	22.78	NA
30/08/12		-11725		-11.73		22.39	-389.00
11/10/12		-11794		-11.28		22.83	441.00
15/01/13		-11858		-11.35		22.76	-64.00
3/06/13		-12197		-11.69		22.43	-339.00
14/05/15		-12320		-11.81		22.30	-123.00
18/05/12	WRMW4	-8509	0.63	-7.88	27.121	19.24	NA
30/08/12		-7790		-7.79		19.33	-205.00
11/10/12		-7753		-7.12		20.00	775.00
15/01/13		-8289		-7.66		19.46	-516.00
3/06/13		-8872		-8.24		18.88	-341.00
14/05/15		-8916		-8.29		18.84	-108.00
18/05/12	WRMW5	-8836	0.56	-8.28	24.474	16.20	NA
30/08/12		-8280		-8.28		16.19	-4.00
11/10/12		-8170		-7.61		16.86	670.00
15/01/13		-8641		-8.08		16.39	-471.00
3/06/13		-9322		-8.76		15.71	-681.00
14/05/15		-9360		-8.80		15.67	-38.00
18/05/12	WRMW6	-8759	0.64	-8.12	30.971	22.85	NA
30/08/12		-9215		-9.22		21.76	-1096.00
11/10/12		-8998		-8.36		22.61	857.00
15/01/13		-9312		-8.67		22.30	-314.00
3/06/13		-9917		dry		n/a	n/a
14/05/15		-9685		dry		n/a	n/a

**Table F: Groundwater Levels (Monthly Recordings)**

SAMPLE LOCATION		MW1			MW2			MW3			MW4			MW5			MW6		
		Standpipe (m):	0.45	Ground (RL mAHD):	Standpipe (m):	0.68	Ground (RL mAHD):	Standpipe (m):	0.51	Ground (RL mAHD):	Standpipe (m):	0.45	Ground (RL mAHD):	Standpipe (m):	0.68	Ground (RL mAHD):	Standpipe (m):	0.51	Ground (RL mAHD):
Date	Day	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)	Water Level (mm TOC)	Water Level Change (mm)	Water Level (mbgl)
<b>Trigger Level</b>																			
18/5/12	Fri	-3700	-3700	-3.25	-7666	-7666	-6.99	-11846	-11846	-11.34	-8509	-8509	-8.06	-8836	-8836	-8.16	-8759	-8759	-8.25
30/8/12	Thu	-3455	245	-3.01	-7260	406	-6.58	-11725	121	-11.22	-7790	719	-7.34	-8280	556	-7.60	-9215	-456	-8.71
15/1/13	Tue	-3646	-191	-3.20	-7682	-422	-7.00	-11858	-133	-11.35	-8289	-499	-7.84	-8641	-361	-7.96	-9312	-97	-8.80
21/3/13	Thu	-3870	-224	-3.42	-7530	152	-6.85	-12110	-252	-11.60	-8830	-541	-8.38	-9130	-489	-8.45	-9710	-398	-9.20
23/4/13	Tue	-4000	-130	-3.55	-7600	-70	-6.92				-8960	-130	-8.51	-9310	-180	-8.63	-9865	-155	-9.36
3/6/13	Mon	-3987	13	-3.54	-7924	-324	-7.24	-12197	-87	-11.69	-8872	88	-8.42	-9322	-12	-8.64			
18/6/13	Tue	-4045	-58	-3.60	-7570	354	-6.89	-12230	-33	-11.72	-8865	7	-8.42	-9310	12	-8.63			
26/7/13	Fri	-4040	5	-3.59	-7855	-285	-7.18	-12515	-285	-12.01	-8820	45	-8.37	-9305	5	-8.63			
22/8/13	Thu	-3600	440	-3.15	-7460	395	-6.78	-12030	485	-11.52	-8212	608	-7.76	-8478	827	-7.80			
25/9/13	Wed	-3055	545	-2.61	-5960	1500	-5.28	-11756	274	-11.25	-6760	1452	-6.31	-6560	1918	-5.88			
14/10/13	Mon	-3065	-10	-2.62	-6090	-130	-5.41	-11600	156	-11.09	-6620	140	-6.17	-7050	-490	-6.37			
19/11/13	Tues	-3215	-150	-2.77	-6500	-410	-5.82	-11548	52	-11.04	-7130	-510	-6.68	-7492	-442	-6.81			
12/12/13	Thurs	-3310	-95	-2.86	-6700	-200	-6.02	-11570	-22	-11.06	-7480	-350	-7.03	-7820	-328	-7.14			
21/1/14	Tues	-3505	-195	-3.06	-7120	-420	-6.44	-11715	-145	-11.21	-8028	-548	-7.58	-8306	-486	-7.63			
25/2/14	Tues	-3690	-185	-3.24	-7360	-240	-6.68	-11914	-199	-11.404	-8454	-426	-8.004	-8716	-410	-8.036			
25/3/14	Tues	-3840	-150	-3.39	-7570	-210	-6.89	-12070	-156	-11.56	-8715	-261	-8.265	-8990	-274	-8.31			
19/5/14	Mon	-3980	-140	-3.53	-7450	120	-6.77	-12566	-496	-12.056	-8945	-230	-8.495	-9340	-350	-8.66			
23/6/14	Mon	-3815	-3.365	-7250	200	-6.57	-12180	386	-11.67	-8745	200	-8.295	-9210	130	-8.53				
22/7/14	Tues	-3605	210	-3.155	-6910	540	-6.23	-12033	147	-11.523	-8199	546	-7.749	-8691	519	-8.011			
26/8/14	Tues	-3350	255	-2.9	-6550	360	-5.87	-11868	165	-11.358	-7558	641	-7.108	-8048	643	-7.368			
24/9/14	Wed	-3240	110	-2.79	-6420	130	-5.74	-11725	143	-11.215	-7172	386	-6.722	-7643	405	-6.963			
26/11/14	Thurs	-3423	-3423	-2.973	-6720	-6720	-6.04	-11683	42	-11.173	-7567	-7567	-7.117	-7978	-7978	-7.298			
17/12/14	Wed	-3500	-77	-3.05	-6900	-180	-6.22	-11760	-77	-11.25	-7780	-213	-7.33	-8180	-202	-7.5			
20/1/15	Tue	-3515	-15	-3.065	-6875	25	-6.195	-11775	-15	-11.265	-7825	-45	-7.375	-8205	-25	-7.525			
25/2/15	Wed	-3823	-308	-3.373	-7370	-495	-6.69	-12080	-305	-11.57	-8532	-707	-8.082	-7850	355	-7.17			
27/3/15	Fri	-3961	-138	-3.511	-7500	-130	-6.82	-12195	-115	-11.685	-8755	-223	-8.305	-9088	-1238	-8.408			
29/5/15	Wed	-4050	-89	-3.6	-7510	-10	-6.83	-12295	-100	-11.785	-8900	-145	-8.45	-9280	-192	-8.6			

Groundwater levels from  
03/06/13 have been reported  
dry.

Field results indicated that pH levels in all monitoring wells were below the lower Freshwater and Marine Ecosystems criteria, the lower Long Term Irrigation criteria and the DER assessment criteria (Table G). Indicating acidic waters present on site.

Field electrical conductivity (EC) measurements indicate that the groundwater beneath the Site is fresh, with all results of an acceptable level fresh groundwater limits.

The oxidation reduction potential (redox) was positive in all monitoring wells, indicating an oxidising environment.

Total alkalinity (TALK) levels were below the DER assessment criteria in WRMW2 and WRMW5. The total acidity : total alkalinity (TTA : TALK) ratio in WRMW2 exceeded the DER assessment criteria. As the pH in this well was below 6, the ratio indicates acidic water.

**Table G: Groundwater Field Results**

Date	Well ID	pH (pH units)	EC ( $\mu\text{S}/\text{cm}$ )	DO (mg/L O <sub>2</sub> )	Redox (mV)	TTA (mg/L CaCO <sub>3</sub> )	TALK (mg/L CaCO <sub>3</sub> )	TTA : TALK (ratio)
Freshwater Ecosystems		6.5-8.5	1500 <sup>1</sup>					
Marine Ecosystems		8.0-8.4						
Long Term Irrigation		6.0-8.5						
DER Trigger Values		<5 <sup>3</sup> / 6 <sup>4</sup>					<30 <sup>4</sup>	1 <sup>5</sup>
24/5/15	WRMW1	5.63	784	0.3	135.3	20	55	0.36
	WRMW2	4.32	456	1.9	220.0	46	24	1.92
	WRMW3	5.70	963	1.0	119.1	41	77	0.53
	WRMW4	4.20	127	6.7	241.0	24	31	0.77
	WRMW5	5.00	120	5.1	192.6	9	29	0.31

- NOTE:
1. ANZECC default trigger value for lakes, reservoirs & wetlands in south-west Australia
  2. Average EC threshold for pastures in sandy soils
  3. ASS disturbance indicators
  4. Buffering capacity indicators
  5. Acidic water definition where pH <6.

# **11 RESULTS – LABORATORY**

A total of six (6) primary samples and one (1) duplicate and one (1) triplicate QC sample set were analysed for the CoPC based on historical, current and proposed use of the Site. The samples were labelled as WRMW1 to WRMW6 inclusive. In addition, rinsates and field blanks were also completed as part of the sampling QA/QC program.

The following notes are summaries of laboratory results and are compared to current assessment criteria. Table H is a summary of exceeding laboratory results for each of the wells analysed during this GME.

## **11.1 Laboratory Physical Parameters**

Laboratory results were generally similar to those observed in the field, with pH levels in WRMW1 and WRMW3 below the lower limit for Freshwater Ecosystems. pH levels observed within WRMW2, WRMW4 and WRMW5 were below the DER trigger value.

The acidity : alkalinity ratio exceeded the DER trigger value in WRMW2, WRMW4 and WRMW5. In addition, the pH is less than 6 in the three wells, this is an indication of acidity within groundwater. The sulfate : alkalinity ratio in all six monitoring wells exceeded the DER trigger values. The sulfate : chloride ratio exceeded DER guideline levels in WRMW3 and WRMW5.

## **11.2 Metals**

The following dissolved metal concentration exceedances (Table H below) were detected:

- Dissolved aluminium exceeded the Freshwater Ecosystems assessment criteria in WRMW2, WRMW4 and WRMW5. Aluminium concentrations exceeded Freshwater Ecosystems, Non-potable Groundwater Use and DER assessment criteria in WRMW1.
- Dissolved Zinc exceeded the Freshwater Ecosystems trigger value in WRMW1. Both the Freshwater and Marine Ecosystems trigger values were exceeded in WRMW1, WRMW2 and WRMW4.
- Dissolved Iron exceeded the Long Term Irrigation, Non-Potable Groundwater Use, Freshwater and Marine Ecosystems assessment criteria in WRMW1.

The following total metal concentration exceedances (Table H) were detected:

- Total Aluminium exceeded the Freshwater Ecosystems and Non-Potable Groundwater Use assessment criteria in WRMW2, WRMW3, WRMW4 and WRMW5. Aluminium concentrations in WRMW1 exceeded the Freshwater Ecosystems, Non-Potable Groundwater Use and Long Term Irrigation trigger values.
- Total Copper exceeded the Freshwater and Marine Ecosystems trigger levels at all monitoring locations.
- Total Lead exceeded the Freshwater and Marine Ecosystems trigger levels in WRMW1, WRMW2 and WRMW3.
- Total Zinc levels exceeded both the Freshwater and Marine Ecosystems criteria in WRMW1, WRMW2 and WRMW4.
- Total Iron levels exceeded the Long Term Irrigation, Non-Potable Groundwater Use, Freshwater Ecosystems and Marine Ecosystems assessment criteria in WRMW1, WRMW2 and WRMW3.

**Table H: Summary of Exceeding Dissolved and Total Metal Concentrations (GME5)**

Analyte grouping/Analyte	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-potable Groundwater Use	DER Trigger Values	14/05/2015 WRMW1-05	14/05/2015 WRMW2-05	14/05/2015 WRMW3-05	14/05/2015 WRMW4-05	14/05/2015 WRMW5-05
<b>Dissolved Metals</b>											
Aluminium	0.055		20	5	0.2	1.0 <sup>7</sup>	1.59	0.08	0.02	0.13	0.09
Zinc	0.008	0.015	5	2	3		0.036	0.03	0.014	0.021	0.006
Iron	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		2.41	0.1	0.14	<0.05	<0.05
<b>Total Metals</b>											
Aluminium	0.055		20	5	0.2		8.37	1.93	3.62	0.21	2.15
Copper	0.0014	0.0013	5	0.2	20		0.012	0.012	0.002	0.003	0.002
Lead	0.0034	0.0044	5	2	0.1		0.02	0.009	0.006	0.003	0.003
Zinc	0.008	0.015	5	2	3		0.054	0.028	0.007	0.021	0.008
Iron	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		5.11	1.46	1.45	<0.05	0.15
Mercury	0.00006	0.0001	0.002	0.002	0.01		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

### **11.3 Nutrients**

Total nitrogen concentrations in WRMW1, WRMW2, WRMW3 and WRMW5 exceeded the Freshwater Ecosystems criteria. Nitrogen concentrations in WRMW4 exceeded both the Freshwater Ecosystems and Long Term Irrigation assessment criteria. Total phosphorus concentrations exceeded both the Long Term Irrigation and Freshwater Ecosystems assessment criteria in WRMW1.

### **11.4 Organochlorine Pesticides (OC)**

Each of the speciated OC pesticides analysed were below the LOR.

### **11.5 Organophosphorus Pesticides (OP)**

Each of the speciated OP pesticides analysed were below the LOR.

### **11.6 Monocyclic Aromatic Hydrocarbons (MAH)**

Each of the speciated MAH compounds analysed were below the LOR.

### **11.7 Oxygenated & Sulfonated Compounds**

Each of the speciated Oxygenated and Sulfonated compounds analysed were below the LOR.

### **11.8 Fumigants**

Each of the speciated fumigants analysed were below the LOR.

### **11.9 Halogenated Aliphatic Compounds**

Each of the speciated Halogenated Aliphatic compounds analysed were below the LOR.

### **11.10 Halogenated Aromatic Compounds**

Each of the speciated Halogenated Aromatic compounds analysed were below the LOR.

### **11.11 Trihalomethanes**

Each of the speciated Trihalomethane compounds analysed were below the LOR.

### **11.12 Phenolic Compounds**

Each of the speciated Phenolic compounds analysed were below the LOR.

### **11.13 Polycyclic Aromatic Hydrocarbons (PAH)**

Each of the speciated PAH analysed were below the LOR.

### **11.14 Benzene, Toluene, Ethyl Benzene, Xylene, Naphthalene (BTEXN)**

Each of the speciated BTEXN fractions analysed were below the LOR.

### **11.15 Total Petroleum Hydrocarbons (TPH)**

Each of the TPH fractions analysed were below the LOR.

### **11.16 Total Recoverable Hydrocarbons (TRH)**

Each of the TRH fractions analysed were below the LOR

## **12 HISTORICAL RESULTS**

Laboratory analyses of samples completed for GME #5 are tabulated against historical monitoring events to identify changes and variation in groundwater quality (attached Table 4 to Table 9). The current results from GME #5 have been compared against historical data and the following points of comparisons are presented below.

### **12.1 Results from WRMW1**

Laboratory results of WRMW1 samples indicate a fluctuating in pH ranging from pH6.77 to pH6.17. In addition, alkalinity : acidity, Sulfate fractions over the three year period are also shown to be above the DER assessment criteria. Exceedances of dissolved metals were recorded for Aluminium, Zinc, Iron. Total metal exceedance reported as being Aluminium, Copper, Lead, Zinc, Iron and Mercury. However Mercury has not been observed as an exceedance in the last three GME's. Total nitrogen and phosphorus fluctuates across the five visits (exceeding and not exceeding criteria). Hydrocarbon fractions were also observed across the five visits. All other analytes remained relatively similar throughout monitoring events.

### **12.2 Results from WRMW2**

Laboratory results of WRMW2 samples indicate a fluctuating in pH ranging from pH4.91 (visit 5) to pH6.14 (visit 1). In addition, alkalinity : acidity, Sulfate alkalinity and total alkalinity over the three year period are also shown to be above the DER assessment criteria. Exceedances of dissolved metals were recorded for Aluminium, Nickel, Zinc, Iron. Total metal exceedance reported as being Aluminium, Copper, Lead, Zinc, Nickel, Iron and Mercury. However Mercury has not been observed as an exceedance since the first GME. Total nitrogen and phosphorus fluctuates across the five visits (exceeding and not exceeding criteria). All other analytes remained relatively similar throughout monitoring events.

### **12.3 Results from WRMW3**

Laboratory results of WRMW3 samples indicate a steady in pH ranging from pH7.13 to pH7.83 (visits 1 to 4). However, visits 5 did show a more acidic state with a pH of 6.31 recorded. In addition, Sulfate alkalinity has increase from visit 3 to 5 (inclusive) over the three year period with results now shown to be above the DER assessment criteria. Exceedances of dissolved metals were recorded for Aluminium, Zinc and Iron. Total metal exceedance reported as being Aluminium, Copper, Lead, Zinc, Nickel, Iron and Mercury. Mercury was only recorded on the 4<sup>th</sup> GME as marginally exceeding and was not recorded during any of the other GMEs. Total phosphorus fluctuates across the five visits (exceeding and not exceeding criteria). Hydrocarbon fractions were also observed during visit 5 only. All other analytes remained relatively similar throughout monitoring events.

### **12.4 Results from WRMW4**

Laboratory results of WRMW4 samples indicate a decrease in pH ranging from pH7.04 to pH4.29 (visits 1 to 5). In addition, total alkalinity, acidity : alkalinity, Sulfate alkalinity has increase fluctuated over the three year period with results shown to be above the DER assessment criteria. Exceedances of dissolved metals were recorded for Aluminium, Nickel, Zinc and Iron. Total metal exceedance reported as being Aluminium, Copper, Lead, Zinc, Nickel and Iron. Total phosphorus and nitrogen fluctuates across the five visits (exceeding and not exceeding criteria). All other analytes remained relatively similar throughout monitoring events.

## **12.5 Results from WRMW5**

Laboratory results of WRMW5 samples indicate a fluctuation in pH ranging from pH6.19 to pH4.35 (visit 5). In addition, total alkalinity, acidity : alkalinity, Sulfate alkalinity has increased and fluctuated over the three year period with results shown to be above the DER assessment criteria. Exceedances of dissolved metals were recorded for Aluminium, Zinc and Iron. Total metal exceedance reported as being Aluminium, Copper, Lead, Zinc and Iron. Total phosphorus and nitrogen fluctuates across the five visits (exceeding and not exceeding criteria). All other analytes remained relatively similar throughout monitoring events.

## **12.6 Results from WRMW6**

WRMW6 well has been dry on the last two previous visits (GME4 & GME5) and therefore no results have been recorded. However, sampling was conducted on visits 1 to 3 with results observed a falling pH ranging between 5.83 and 5.15. Exceedances of metals were recorded for Aluminium, Nickel, Zinc, Iron (Dissolved) with total metal exceedance reported as being Aluminium, Lead, Manganese, Nickel, Zinc and Iron. All other analytes remained relatively similar throughout previous monitoring events.

## **13 DISCUSSION**

Standing water level measurements recorded by MDWES during the GME sampling indicate that groundwater is encountered between RL 24.15 mAHD and 15.67mAHD (2.68mbgl and 8.8mbgl) beneath the Site. Based on current remediation plans, groundwater abstraction will be required for onsite use.

Field results indicate that the groundwater beneath the site to be slightly acidic with pH levels ranging from 5.63 to 4.20 (GME#5). EC levels show the groundwater within the tolerable limits of being fresh water (120-963 $\mu$ s/cm). DO levels appear to be low and in an anaerobic (0.3 to 6.7mg/L O<sub>2</sub>).

Laboratory results indicate that the groundwater beneath the site is fresh and mildly acidic with pH levels ranging from 4.29 to 6.45 (GME#5). In comparison to historical results pH levels in all monitoring wells have continued to decline (pH6.69 and 4.26), with some locations indicating underlying acidic groundwater conditions.

Contamination of the groundwater from material previously deposited on the Site appears to be negligent. With the exception of metals and nutrients, all other CoPCs were below laboratory detection limits.

Disturbance of ASS within the vicinity of the Site appears to have occurred. This is evident from a decline in pH levels when compared to historical data as well as increases in sulfate concentrations, both indicators of an increasing acidic environment.

Metal results could be considered higher than expected for background waters within this locality, however, elevated levels of suspended solids and dissolved solids within majority of the samples could have contributed to increasing the results. Dissolved metals analysed are significantly lower than the total metals results and are more indicative of the quality of water that would be abstracted and used for dust suppression and compaction.

Although nutrient levels in all wells were slightly elevated above ANZECC criteria for nitrogen, surface waters are not located in the immediate vicinity of the site and downstream receptors are likely to be more significantly impacted upon by land uses to the north of the site.

Comparison of historical data indicates that concentrations of TPH and TRH fractions have declined to negligible amounts in all monitoring wells. Referring to the historical data, it is apparent that TPH has an intermittent presence in the groundwater at WRMW1 and WRMW3. WRMW6 also has shown ongoing presence of TPH fractions; however, due to lack of groundwater this well has not been sampled since 15 January 2013. It is noted that the wells on the proximity of the site and outside the known landfill area, it is possible that seasonal infiltration of rainfall from surface through landfill material is the contributing influential factor to these levels recorded. All other concentrations of all CoPCs were below laboratory detection limits and have not been assessed any further.

Although concentrations of metals and some nutrients were elevated above relevant assessment criteria, the exceedances were relatively minor. In light of the lack of exposure pathways and beneficial uses of Site groundwater, the risk to potential receptors is considered low. Downstream receptors are also unlikely to be impacted due to distance and natural dispersion.

Results from May 2015 monitoring, when compared to results from previous monitoring events, suggest that the concentration of analytes have declined and impact has been negligible. However, the physical properties of the groundwater appear to have changed with slightly acidic waters detected.

## **14 CONCLUSIONS**

MDWES are of the opinion that the contamination of the groundwater from material previously deposited on the Site is minimal and the Site does not appear to be a source for contamination external to the site boundaries.

It is of MDWES opinion that ASS disturbance has occurred within the vicinity and/or surrounding area of the Site. Groundwater properties have changed during each of the visits, in particular the pH decrease (acidic) and the presence of Sulfate at trigger levels within the assessment criteria. The background levels on the site show that acidic waters are being introduced into the underlying groundwater table this should be considered when the project starts and groundwater abstraction is utilised for dust suppression and compaction.

MDWES further recommendations that continued groundwater monitoring and laboratory analysis be completed on a quarterly basis until the remediation works commence. This data will contribute to the established groundwater data to develop background conditions prior to works commencing on site.

## **15 REFERENCES**

ANZECC (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

DER (2011) *Treatment and Management of Soils and Water in Acid Sulfate Soil Landscapes*, Department of Environment Regulation

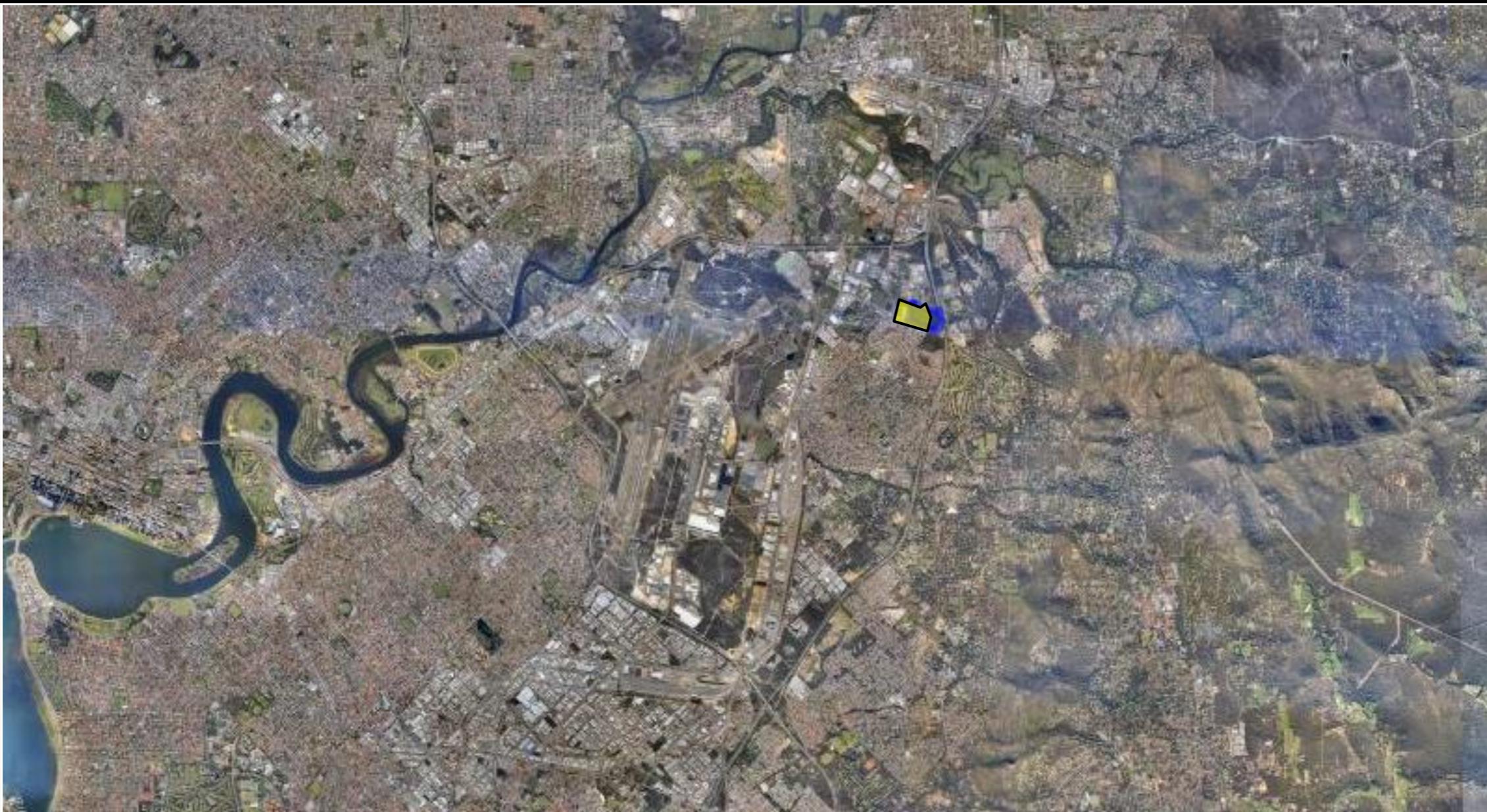
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Standards Australia/Standards New Zealand. 1998. AS/NZS 5667.1:1998. Water Quality – Sampling. Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of sample. Standards Australia and Standards New Zealand, Homebush NSW and Wellington NZ.

## **FIGURES**



MDW Environmental Services

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ENVIRONMENTAL SERVICES

Client:

**WASTEROCK PTY LTD**

Project:

**Wasterock**

Location:

**Lot 20 Adelaide Street, Hazelmere**

Drawing Title:

**SITE AND REGIONAL VIEW**

Notes:



Site Location

Drawn by:  
RB

Scale:

Scale Not Used



Date:  
2/06/2015

Project No:

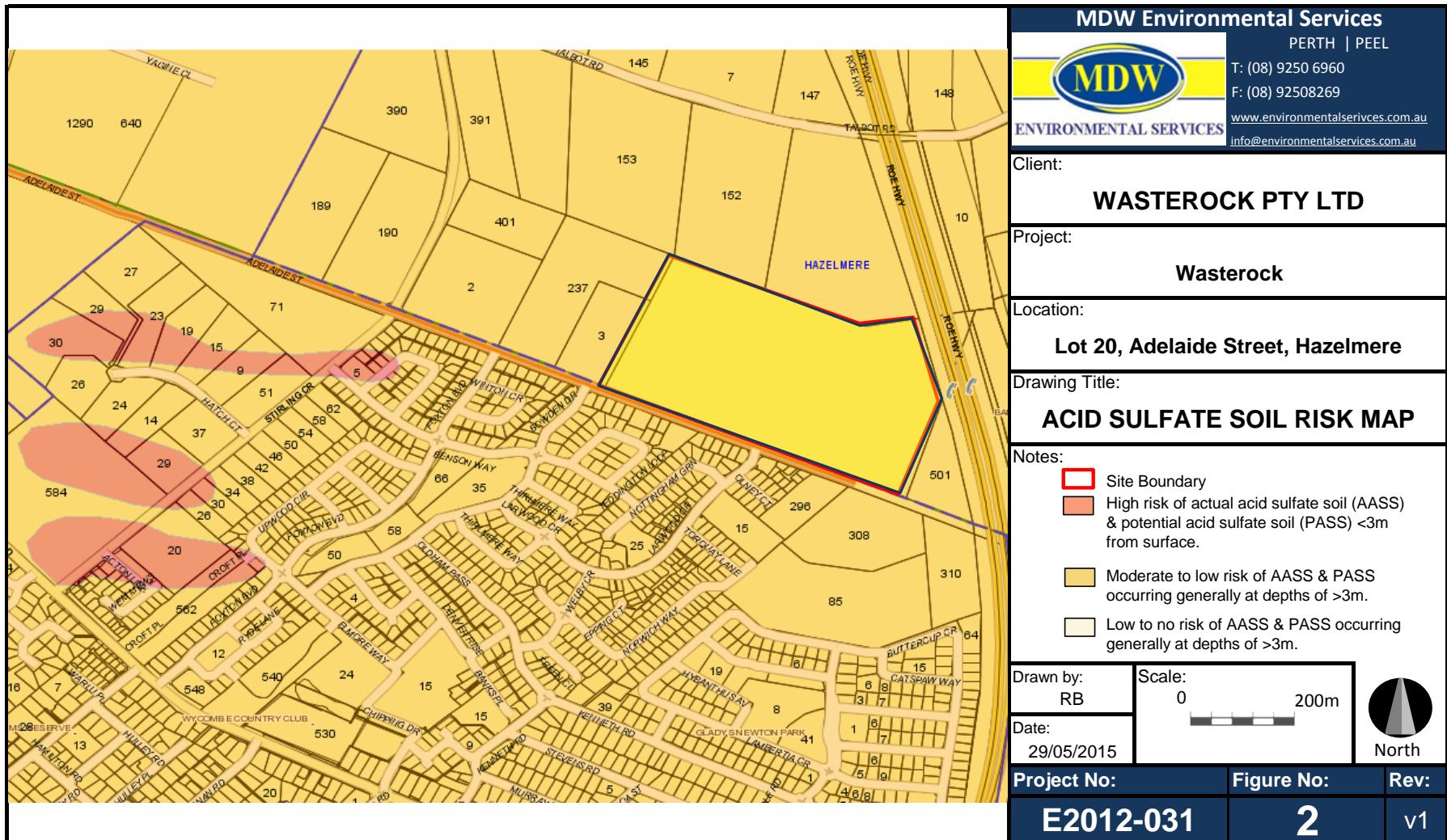
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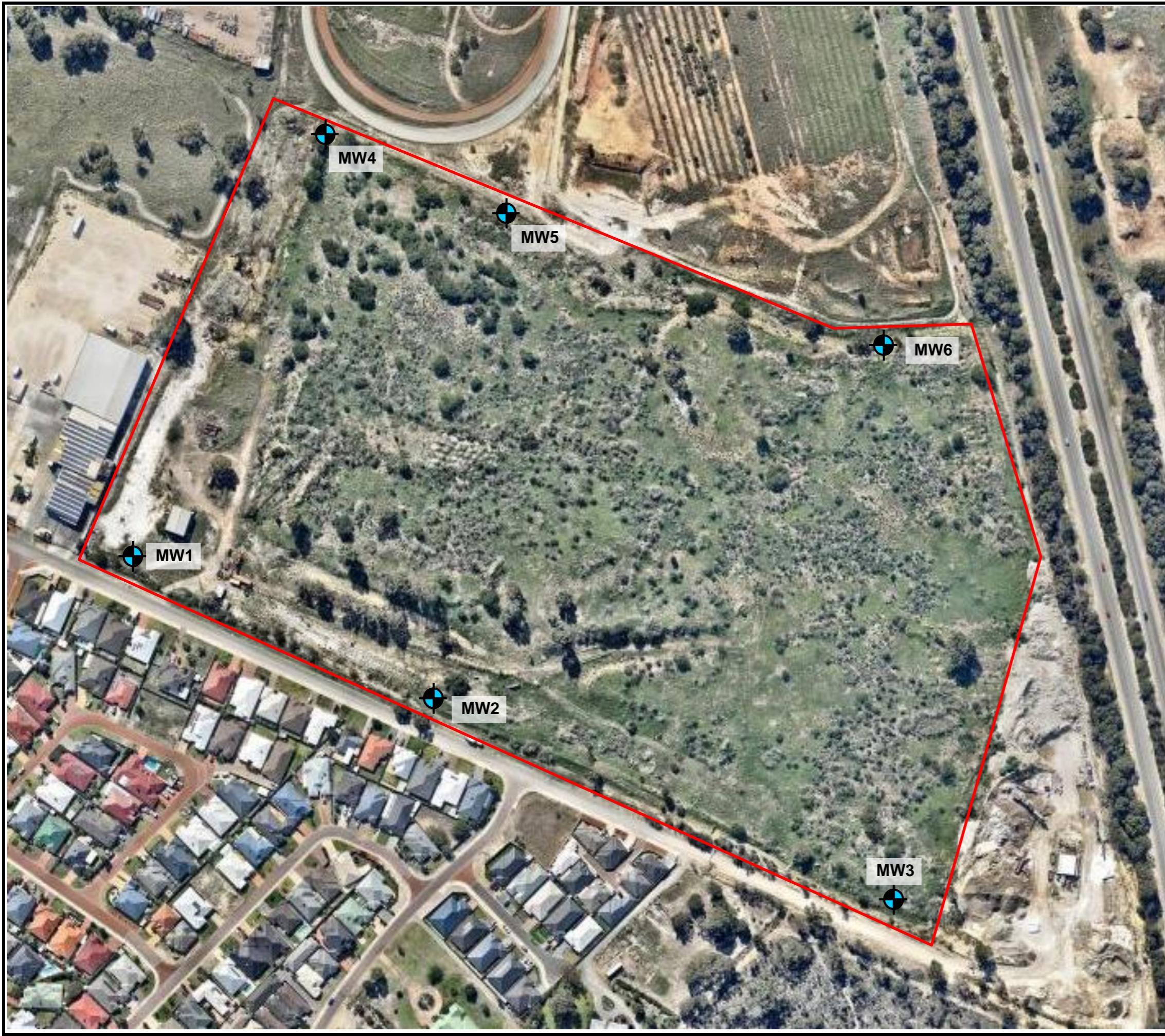
Rev:

**E2012 - 031**

**1**

**v1**





MDW Environmental Services

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ENVIRONMENTAL SERVICES

Client:

**WASTEROCK PTY LTD**

Project:

**Groundwater Monitoring Event**

Location:

**Lot 20 Adelaide Street, Hazelmere**

Drawing Title:

**MONITORING WELL LOCATIONS**

Notes:

Site Boundary

Monitoring Well

Drawn by:  
MB

Scale:  
0

90m



Date:  
25/06/2015

Project No:

Figure No:

Rev:

**E2012 - 031**

**3**

**v1**



Client:

**WASTEROCK PTY LTD**

Project:

Groundwater Monitoring Event

Location:

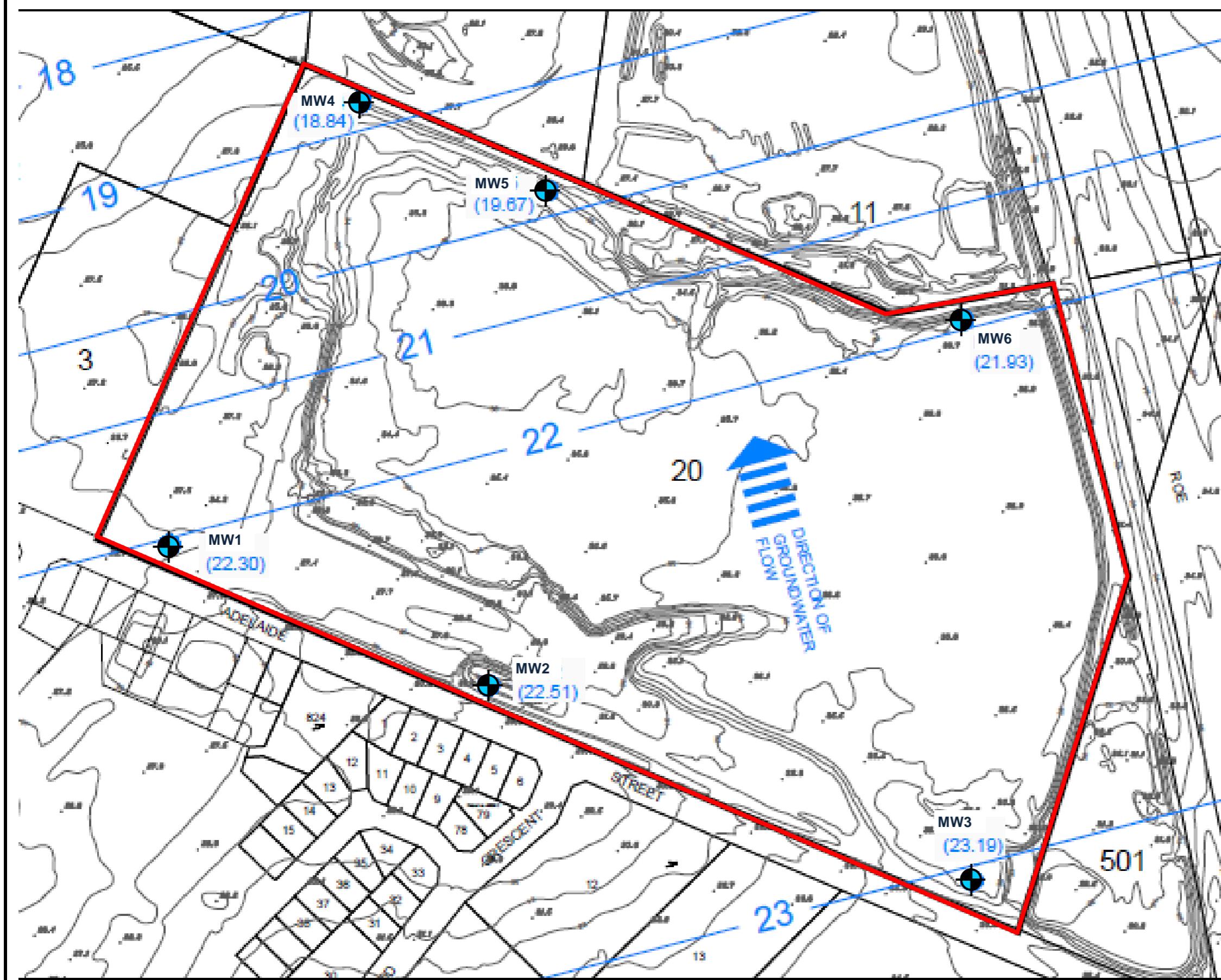
Lot 20 Adelaide Street, Hazelmere

Drawing Title:

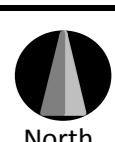
## GROUNDWATER FLOW DIRECTION

Notes:

- Site Boundary
- Monitoring Well

Drawn by:  
RBScale:  
0

90m

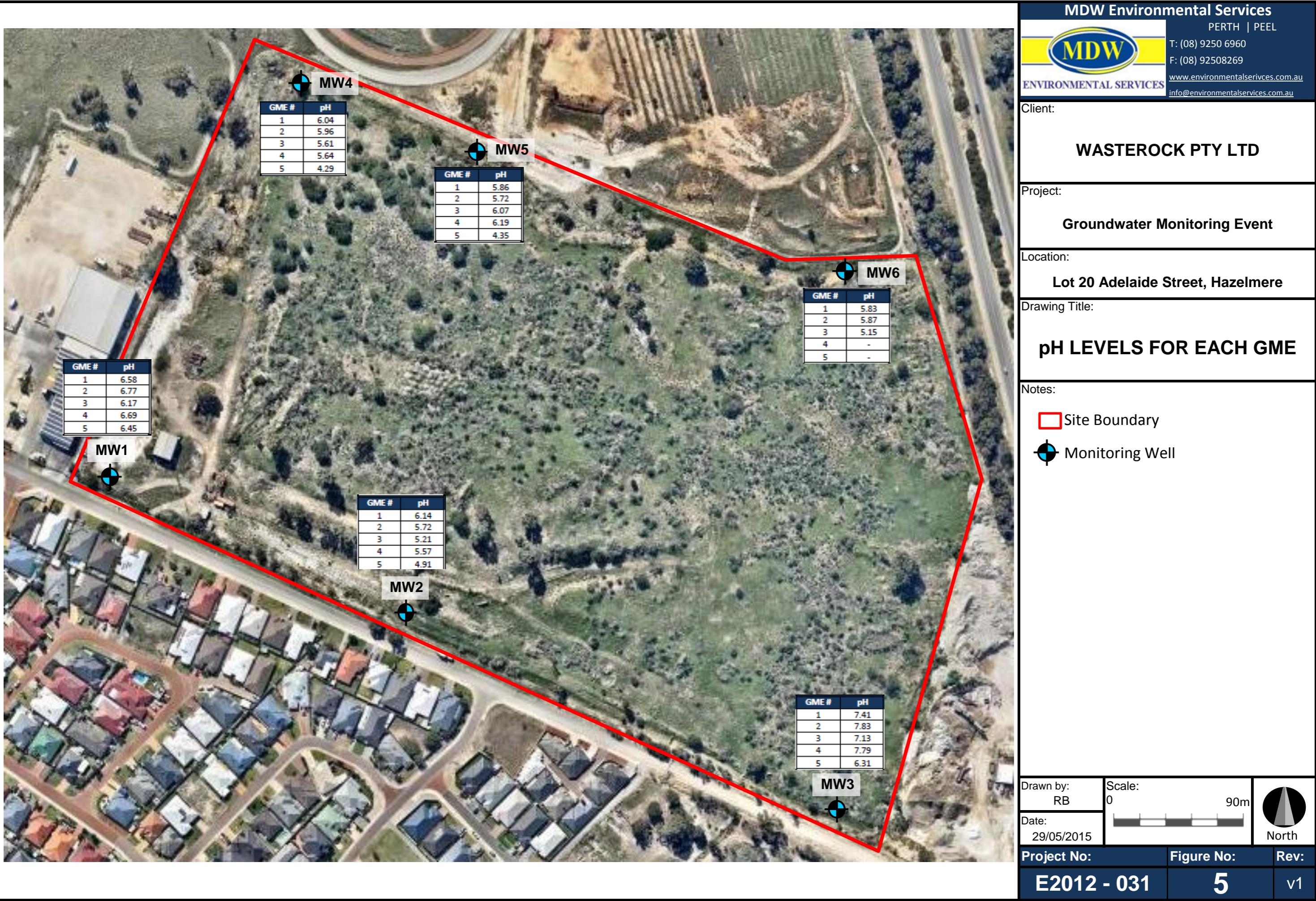
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28/05/2015

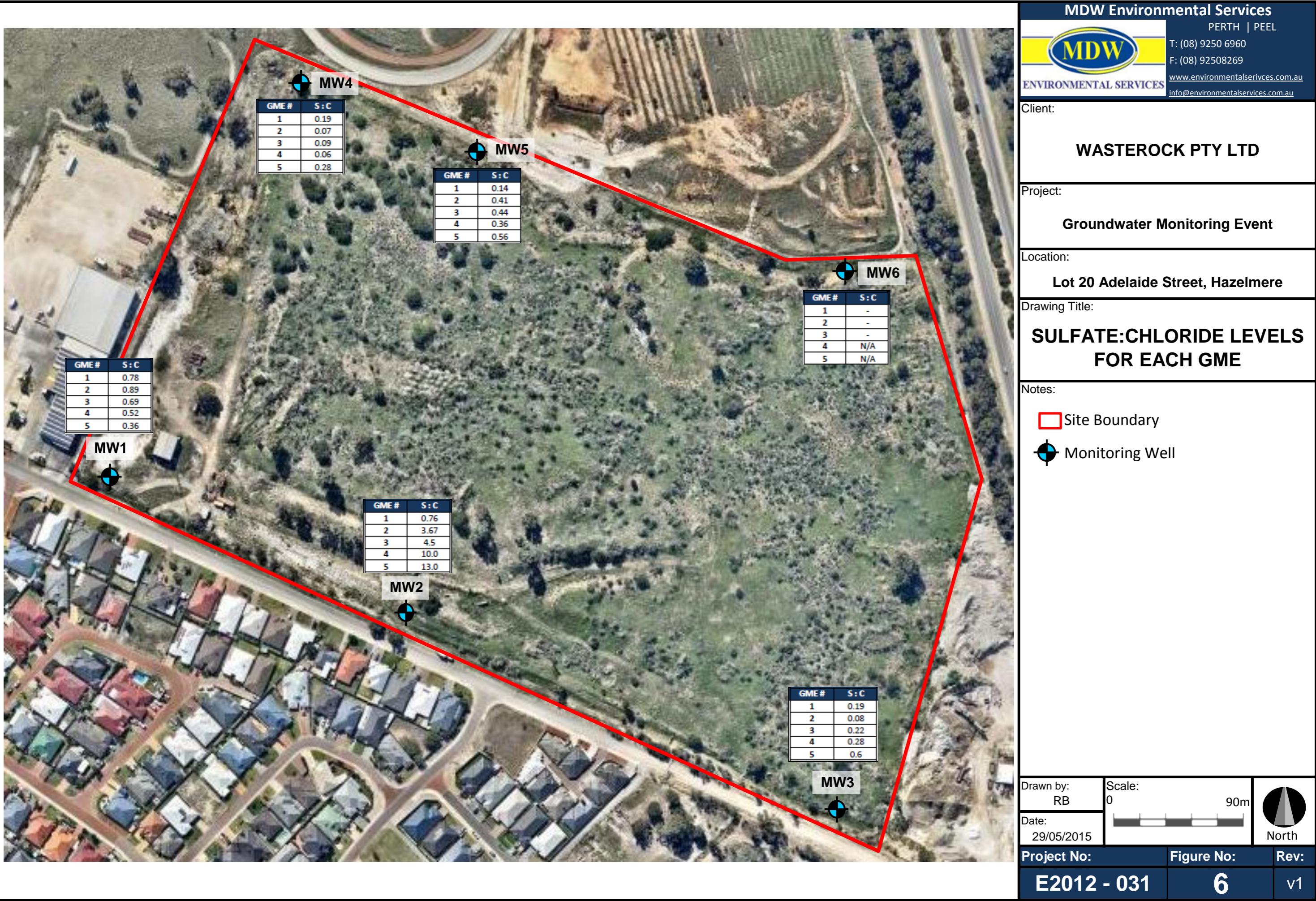
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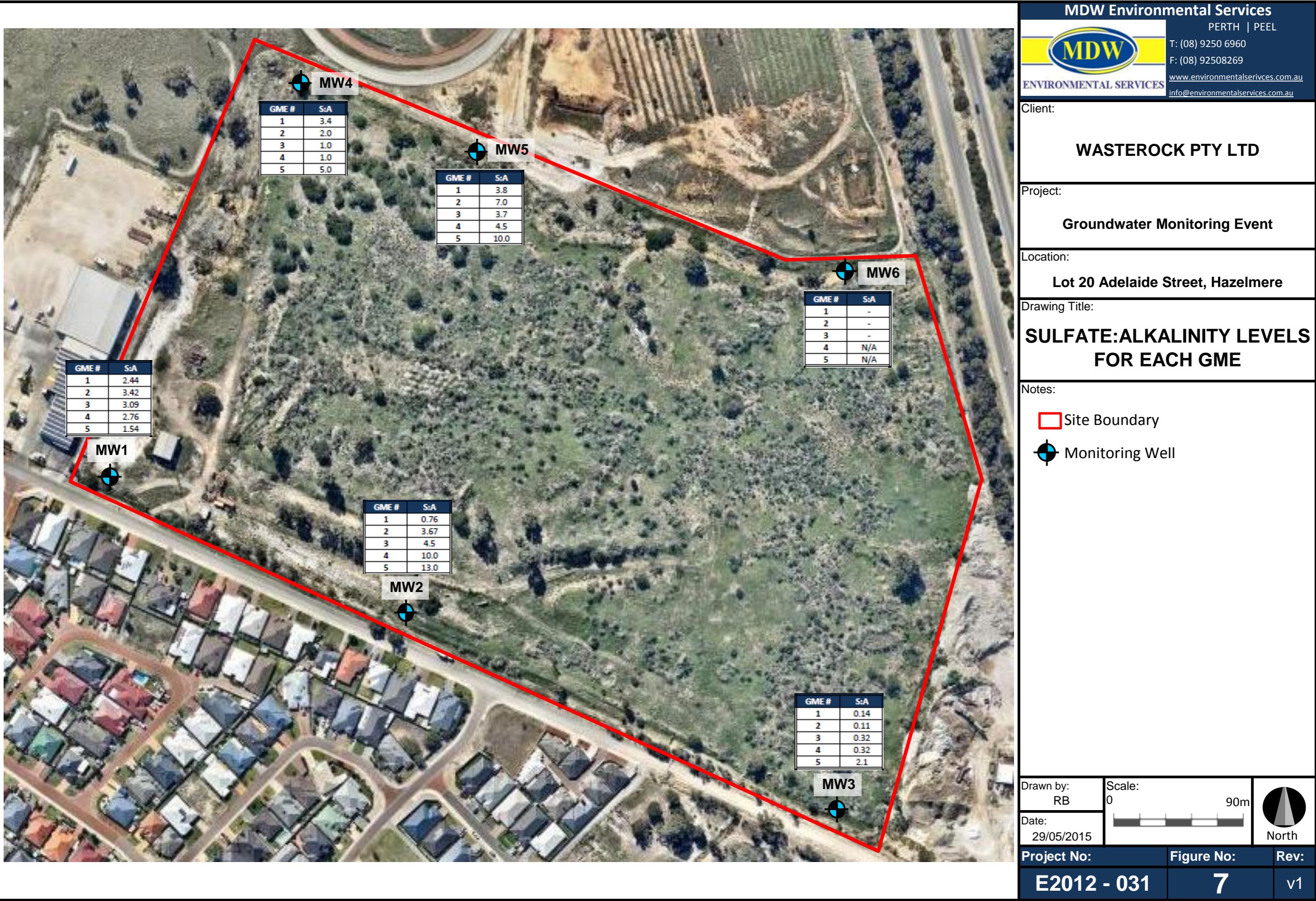
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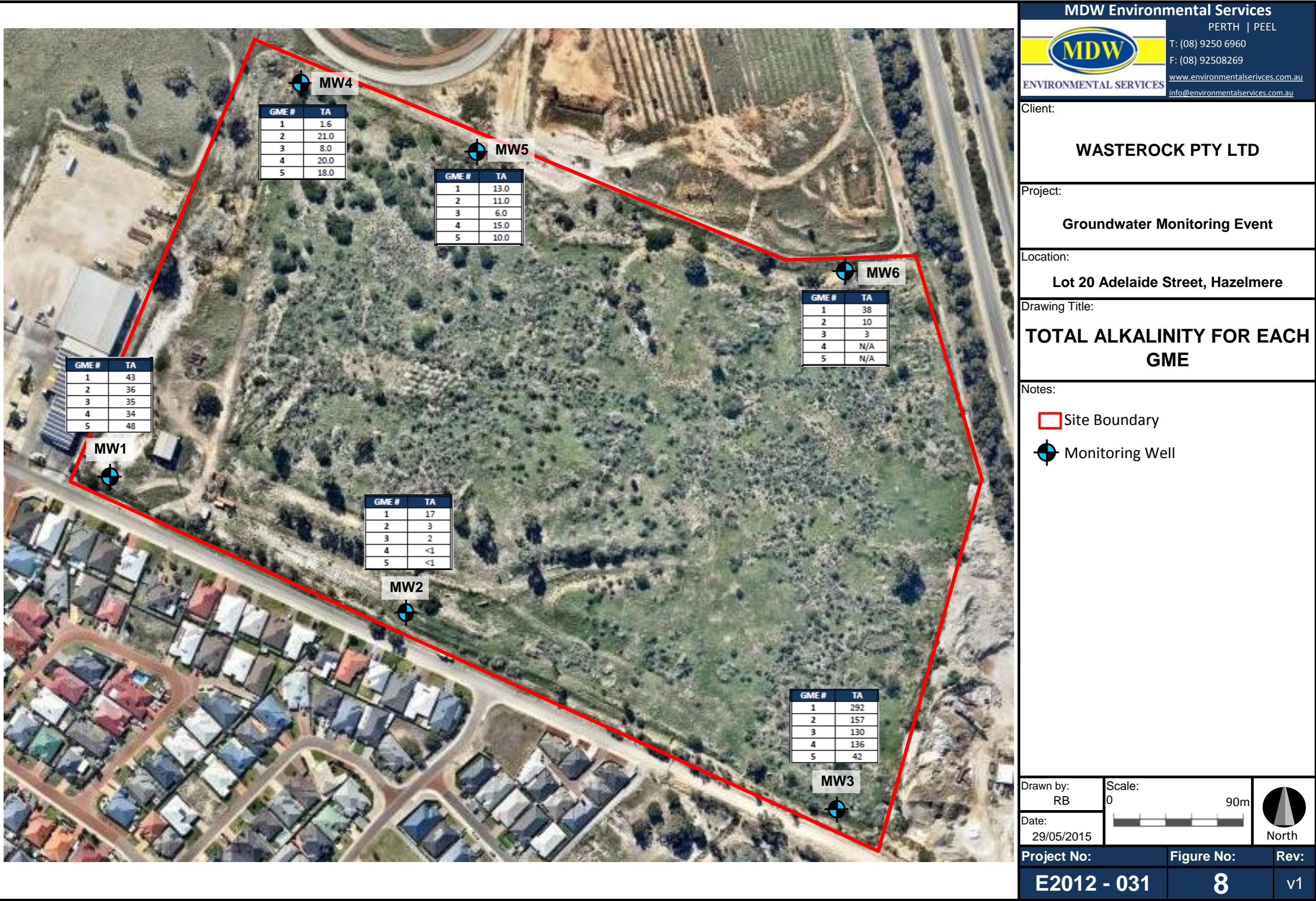
Rev:

**E2012 - 031****4****v1**











## TABLES

**Table 1**  
**Ecological and Health Investigation Levels**  
**Groundwater Monitoring Event #5 (May 2014)**  
**Lot 20, Adelaide Street, Hazelmere**  
**E2012-031**

Analyte grouping/Analyte	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-potable Groundwater Use	DER Trigger Values	14/05/2015 WRMW1-05	14/05/2015 WRMW2-05	14/05/2015 WRMW3-05	14/05/2015 WRMW4-05	14/05/2015 WRMW5-05
pH Value	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5		<5 <sup>7</sup> / <6 <sup>8</sup>	6.45	4.91	6.31	4.29	4.35
Electrical Conductivity	1500 <sup>1</sup>		6400 <sup>4</sup>				828	416	678	139	112
Total Dissolved Solids							581	232	400	84	72
Suspended Solids							205	69	246	<5	38
Turbidity							359	72.3	149	1.6	59
Total Alkalinity CaCO <sub>3</sub>						<30 <sup>8</sup>	48	<1	42	<1	<1
Acidity : Alkalinity						1 <sup>9</sup>	0.42	39.00	0.31	18.00	10.00
Acidity as CaCO <sub>3</sub>						40	20	39	13	18	10
Sulfate : Alkalinity						0.2 <sup>7</sup>	1.54	13.00	2.10	5.00	10.00
Sulfate : Chloride						0.5 <sup>7</sup>	0.36	0.11	0.60	0.28	0.56
Sulfate as SO <sub>4</sub> <sup>2-</sup>					1000		74	13	88	5	10
Sulfide	0.001				0.05		<0.1	<0.1	<0.1	<0.1	<0.1
Chloride					250		207	115	147	18	18
BOD							<2	<2	<2	<2	<2
<b>Dissolved Major Cations</b>											
Calcium							30	<1	16	<1	1
Magnesium							20	7	25	5	2
Sodium							110	67	84	12	16
Potassium							4	<1	4	2	1
<b>Dissolved Metals</b>											
Aluminum	0.055		20	5	0.2	1.0 <sup>7</sup>	1.59	0.08	0.02	0.13	0.09
Arsenic	0.013		2	0.1	0.1		0.002	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium			1	0.1			0.002	<0.001	<0.001	<0.001	<0.001
Manganese	1.9		10	0.2	5		0.042	0.002	0.004	<0.001	<0.001
Nickel	0.011	0.007	2	0.2	0.2		0.003	0.002	0.003	0.001	<0.001
Selenium	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	0.008	0.015	5	2	3		0.036	0.03	0.014	0.021	0.006
Iron	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		2.41	0.1	0.14	<0.05	<0.05
Ferrous Iron							2.09	0.06	<0.05	<0.05	<0.05
Chromium VI	0.001	0.0044			0.5		<0.01	<0.01	<0.01	<0.01	<0.01
<b>Total Metals</b>											
Aluminum	0.055		20	5	0.2		8.37	1.93	3.62	0.21	2.15
Arsenic	0.013		2	0.1	0.1		0.002	<0.001	<0.001	<0.001	<0.001
Cadmium	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium			1	0.1			0.014	0.003	0.004	<0.001	0.003
Copper	0.0014	0.0013	5	0.2	20		0.012	0.012	0.002	0.003	0.002
Lead	0.0034	0.0044	5	2	0.1		0.02	0.009	0.006	0.003	0.003
Manganese	1.9		10	0.2	5		0.042	0.002	0.004	<0.001	0.001
Molybdenum			0.05	0.01	0.5		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	0.011	0.007	2	0.2	0.2		0.005	0.002	0.003	0.001	<0.001
Selenium	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	0.00005	0.0014			1		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	0.008	0.015	5	2	3		0.054	0.028	0.007	0.021	0.008
Iron	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		5.11	1.46	1.45	<0.05	0.15
Mercury	0.00006	0.0001	0.002	0.002	0.01		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<b>Nutrients</b>											
Ammonia as N	0.9	0.91					0.13	0.03	0.03	<0.01	0.01
Nitrite as N					30		<0.01	<0.01	0.05	<0.01	<0.01
Nitrate as N					500		0.32	2.39	0.92	4.47	1.79
Kjeldhal Nitrogen							0.8	0.5	0.4	0.8	0.4
Total Nitrogen	1.0 <sup>2</sup>		25 <sup>3</sup>	5			1.1	2.9	1.4	5.3	2.2
Total Phosphorus	0.1 <sup>2</sup>		0.8 <sup>4</sup>	0.05			0.14	0.02	0.04	0.04	0.01
Reactive Phosphorus							<0.01	<0.01	<0.01	<0.01	<0.01
<b>Organochlorine Pesticides (OC)</b>											
alpha-BHC							<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)							<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC							<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC							<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC							<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	0.01						<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin							<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide					0.000003		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	0.03 <sup>10</sup>						<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	0.03 <sup>11</sup>	0.005 <sup>11</sup>					<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	0.03 <sup>10</sup>						<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin							<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE							<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	0.01	0.004					<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	0.03 <sup>11</sup>	0.005 <sup>11</sup>					<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD							<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde							<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate							<0.5	<0.5</td			

**Table 1**  
**Ecological and Health Investigation Levels**  
**Groundwater Monitoring Event #5 (May 2014)**  
**Lot 20, Adelaide Street, Hazelmere**  
**E2012-031**

Analyte grouping/Analyte	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-potable Groundwater Use	DER Trigger Values	14/05/2015 WRMW1-05	14/05/2015 WRMW2-05	14/05/2015 WRMW3-05	14/05/2015 WRMW4-05	14/05/2015 WRMW5-05
<b>Fumigants</b>											
2,2-Dichloropropane						<5	<5	<5	<5	<5	<5
1,2-Dichloropropane						<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene						<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene						<5	<5	<5	<5	<5	<5
<b>Halogenated Aliphatic Compounds</b>											
Dichlorodifluoromethane						<50	<50	<50	<50	<50	<50
Chloromethane						<50	<50	<50	<50	<50	<50
Vinyl chloride						<50	<50	<50	<50	<50	<50
Bromomethane						<50	<50	<50	<50	<50	<50
Chloroethane						<50	<50	<50	<50	<50	<50
Trichlorofluoromethane						<50	<50	<50	<50	<50	<50
1,1-Dichloroethene						<5	<5	<5	<5	<5	<5
Iodomethane						<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene						<5	<5	<5	<5	<5	<5
1,1-Dichloroethane						<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene						<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane						<5	<5	<5	<5	<5	<5
1,1-Dichloropropylene						<5	<5	<5	<5	<5	<5
Carbon Tetrachloride						<5	<5	<5	<5	<5	<5
1,2-Dichloroethane					0.00003	<5	<5	<5	<5	<5	<5
Trichloroethene						<5	<5	<5	<5	<5	<5
Dibromomethane						<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	6500	1900				<5	<5	<5	<5	<5	<5
1,3-Dichloropropane						<5	<5	<5	<5	<5	<5
Tetrachloroethene					0.0005	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane						<5	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene						<5	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene						<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane						<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane						<5	<5	<5	<5	<5	<5
Pentachloroethane						<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane						<5	<5	<5	<5	<5	<5
Hexachlorobutadiene						<5	<5	<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>											
Chlorobenzene					0.00001	<5	<5	<5	<5	<5	<5
Bromobenzene						<5	<5	<5	<5	<5	<5
2-Chlorotoluene						<5	<5	<5	<5	<5	<5
4-Chlorotoluene						<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	260				0.00002	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	60				0.000003	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	160				0.000001	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	170	80				<5	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	10					<5	<5	<5	<5	<5	<5
<b>Trihalomethanes</b>											
Chloroform					0.0025	<5	<5	<5	<5	<5	<5
Bromodichloromethane						<5	<5	<5	<5	<5	<5
Dibromochloromethane						<5	<5	<5	<5	<5	<5
Bromoform						<5	<5	<5	<5	<5	<5
<b>Phenolic Compounds</b>											
Phenol	320	400				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	340				0.003	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol						<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120				0.002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	3				0.0002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	3.6	11				<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
<b>Polycyclic Aromatic Hydrocarbons</b>											
Naphthalene	16	50				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)fluoranthene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene					0.000001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3,cd)pyrene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
<b>BTEX</b>											
Benzene	950	500			0.00001	<1	<1	<1	<1	<1	<1
Toluene					0.000025	<2	<2	<2	<2	<2	<2
Ethylbenzene					0.000003	<2	<2	<2	<2	<2	<2
meta- & para-Xylene	200				0.00002	<2	<2	<2	<2	<2	<2
ortho-Xylene	350				0.00002	<2	<2	<2	<2	<2	<2
Total Xylenes					0.00002	<2	<2	<2	<2	<2	<2
Sum of BTEX						<1	<1	<1	<1	<1	<1
Naphthalene						<5	<5	<5	<5	<5	<5
<b>Total Petroleum Hydrocarbons</b>											
C6 - C9 Fraction						<20	<20	<20	<20	<20	<20
C10 - C14 Fraction						<50	<50	<50	<50	<50	<50
C15 - C28 Fraction						<100	<100	<100	<100	<100	<100
C29 - C36 Fraction						<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)	600 <sup>12</sup>					<50	<50				

110773 110778 110783 110788 110793 110798 110803 110808 110813 110818 110823 110828

1. ANZECC default trigger value for lakes, reservoirs & wetlands in  
2. GPT Health Risk Action Plan – Targets (GPT-2022)

2. SRT Healthy Rivers Action Plan

3. pH > 6 / pH < 6 (DER, 2014)  
4. Aqueous EC<sub>50</sub> (incl. LC<sub>50</sub>) to aquatic organisms (ANZECC)

#### 4. Average EC threshold for pastures in sandy soils (A)

5. Lower guideline limit (upper = 125) (ANZECC, 2000)

6. Lower guideline limit (upper = 12) (ANZECC, 2000)

## 7. ASS disturbance indicators (DEC, 2011)

### 8. Biotic Integrity Indicators (DEC 2011)

#### 8. Buffering Capacity Indicators (DEC,2011)

19. Acidic water definition where pH <6 (DEC, 2011)  
20. ANZECC 20% protection level for Chloroform

10. ANZECC 99% protection level for Chlordane  
11. ANZECC 99% protection level for Endosulfan

11. ANZECC 99% protection level for Endosulfan  
12. Dutch intervention values (2000)

#### 12. Dutch intervention values (2000).

**Table 2**  
**Quality Control / Quality Assurance**  
**Groundwater Monitoring Event #5 (May 2014)**  
**Lot 20, Adelaide Street, Hazelmere**  
**E2012-031**

Analyte grouping/Analyte	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-potable Groundwater Use	DER Trigger Values	14/05/2015	14/05/2015
							QC10	QC11
pH Value	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5		<5 <sup>7</sup> / <6 <sup>8</sup>	5.45	3.89
Electrical Conductivity	1500 <sup>1</sup>		6400 <sup>4</sup>				<1	48
Total Dissolved Solids							<10	15
Suspended Solids							<5	<5
Turbidity							<0.1	<0.1
Total Alkalinity CaCO <sub>3</sub>						<30 <sup>6</sup>	<1	<1
Acidity : Alkalinity						1 <sup>9</sup>	1.00	6.00
Acidity as CaCO <sub>3</sub>							1	6
Sulfate : Alkalinity						0.2 <sup>7</sup>	2.00	6.00
Sulfate : Chloride						0.5 <sup>7</sup>	2.00	6.00
Sulfate as SO <sub>4</sub> <sup>2-</sup>					1000		2	6
Sulfide	0.001				0.05		<0.1	<0.1
Chloride					250		<1	<1
BOD							<2	<2
<b>Dissolved Major Cations</b>								
Calcium							<1	<1
Magnesium							<1	<1
Sodium							<1	<1
Potassium							<1	<1
<b>Dissolved Metals</b>								
Aluminium	0.055		20	5	0.2	1.0 <sup>7</sup>	<0.01	<0.01
Arsenic	0.013		2	0.1	0.1		<0.001	<0.001
Cadmium	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001
Chromium			1	0.1			<0.001	<0.001
Manganese	1.9		10	0.2	5		<0.001	<0.001
Nickel	0.011	0.007	2	0.2	0.2		<0.001	<0.001
Selenium	0.005		0.05	0.02	0.1		<0.01	<0.01
Zinc	0.008	0.015	5	2	3		<0.005	<0.005
Iron	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		<0.05	<0.05
Ferrous Iron							<0.05	<0.05
Chromium VI	0.001	0.0044			0.5		<0.01	<0.01
<b>Total Metals</b>								
Aluminium	0.055		20	5	0.2		<0.01	<0.01
Arsenic	0.013		2	0.1	0.1		<0.001	<0.001
Cadmium	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001
Chromium			1	0.1			<0.001	<0.001
Copper	0.0014	0.0013	5	0.2	20		<0.001	<0.001
Lead	0.0034	0.0044	5	2	0.1		<0.001	<0.001
Manganese	1.9		10	0.2	5		<0.001	<0.001
Molybdenum			0.05	0.01	0.5		<0.001	<0.001
Nickel	0.011	0.007	2	0.2	0.2		<0.001	<0.001
Selenium	0.005		0.05	0.02	0.1		<0.01	<0.01
Silver	0.00005	0.0014			1		<0.001	<0.001
Zinc	0.008	0.015	5	2	3		<0.005	<0.005
Iron	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		<0.05	<0.05
Mercury	0.00006	0.0001	0.002	0.002	0.01		<0.0001	<0.0001
<b>Nutrients</b>								
Ammonia as N	0.9	0.91					<0.01	<0.01
Nitrite as N					30		<0.01	<0.01
Nitrate as N					500		<0.01	<0.01
Kjeldhal Nitrogen							<0.1	<0.1
Total Nitrogen	1.0 <sup>2</sup>		25 <sup>3</sup>	5			<0.1	<0.1
Total Phosphorus	0.1 <sup>2</sup>		0.8 <sup>4</sup>	0.05			<0.01	<0.01
Reactive Phosphorus							<0.01	<0.01
<b>Organochlorine Pesticides (OC)</b>								
alpha-BHC							<0.5	<0.5
Hexachlorobenzene (HCB)							<0.5	<0.5
beta-BHC							<0.5	<0.5
gamma-BHC							<0.5	<0.5
delta-BHC							<0.5	<0.5
Heptachlor	0.01						<0.5	<0.5
Aldrin							<0.5	<0.5
Heptachlor epoxide					0.000003		<0.5	<0.5
trans-Chlordane	0.03 <sup>10</sup>						<0.5	<0.5
alpha-Endosulfan	0.03 <sup>11</sup>	0.005 <sup>11</sup>					<0.5	<0.5
cis-Chlordane	0.03 <sup>10</sup>						<0.5	<0.5
Dieldrin							<0.5	<0.5
4,4'-DDE							<0.5	<0.5
Endrin	0.01	0.004					<0.5	<0.5
beta-Endosulfan	0.03 <sup>11</sup>	0.005 <sup>11</sup>					<0.5	<0.5
4,4'-DDD							<0.5	<0.5
Endrin aldehyde							<0.5	<0.5
Endosulfan sulfate							<0.5	<0.5
4,4'-DDT	0.006						<2.0	<2.0
Endrin ketone							<0.5	<0.5
Methoxychlor							<2.0	<2.0
<b>Organophosphorus Pesticides (OP)</b>								
Dichlorvos							<0.5	<0.5
Demeton-S-methyl							<0.5	<0.5
Monocrotophos							<2.0	<2.0
Dimethoate	0.15				0.00007		<0.5	<0.5
Diazinon	0.01				0.00004		<0.5	<0.5
Chlorpyrifos-methyl							<0.5	<0.5
Parathion-methyl							<2.0	<2.0
Malathion	0.05				0.0007		<0.5	<0.5
Fenthion					0.00007		<0.5	<0.5
Chlorpyrifos	0.01	0.009			0.0001		<0.5	<0.5
Parathion	0.004				0.0002		<2.0	<2.0
Pirimiphos-ethyl							<0.5	<0.5
Chlorfenvinphos					0.00002		<0.5	<0.5
Bromophos-ethyl							<0.5	<0.5
Fenamiphos					0.000005		<0.5	<0.5
Prothifos							<0.5	<0.5
Ethion							<0.5	<0.5
Carbophenothion							<0.5	<0.5
Azinphos Methyl	0.02				0.0003		<0.5	<0.5
<b>Monocyclic Aromatic Hydrocarbons</b>								
Styrene					0.000004		<5	<5
Isopropylbenzene							<5	<5
n-Propylbenzene							<5	<5
1,3,5-Trimethylbenzene							<5	<5
sec-Butylbenzene							<5	<5
1,2,4-Trimethylbenzene							<5	<5
tert-Butylbenzene							<5	<5
p-Isopropyltoluene								

**Table 2**  
**Quality Control / Quality Assurance**  
**Groundwater Monitoring Event #5 (May 2014)**  
**Lot 20, Adelaide Street, Hazelmere**  
**E2012-031**

Analyte grouping/Analyte	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-potable Groundwater Use	DER Trigger Values	14/05/2015 QC10	14/05/2015 QC11
<b>Fumigants</b>								
2,2-Dichloropropane							<5	<5
1,2-Dichloropropane							<5	<5
cis-1,3-Dichloropropylene							<5	<5
trans-1,3-Dichloropropylene							<5	<5
<b>Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane							<50	<50
Chloromethane							<50	<50
Vinyl chloride							<50	<50
Bromomethane							<50	<50
Chloroethane							<50	<50
Trichlorofluoromethane							<50	<50
1,1-Dichlorethane							<5	<5
Iodomethane							<5	<5
trans-1,2-Dichloroethene							<5	<5
1,1-Dichloroethane							<5	<5
cis-1,2-Dichloroethene							<5	<5
1,1,1-Trichloroethane							<5	<5
1,1-Dichloropropylene							<5	<5
Carbon Tetrachloride							<5	<5
1,2-Dichloroethane					0.00003		<5	<5
Trichloroethene							<5	<5
Dibromomethane							<5	<5
1,1,2-Trichloroethane	6500	1900					<5	<5
1,3-Dichloropropane							<5	<5
Tetrachloroethene					0.0005		<5	<5
1,1,1,2-Tetrachloroethane							<5	<5
trans-1,4-Dichloro-2-butene							<5	<5
cis-1,4-Dichloro-2-butene							<5	<5
1,1,2,2-Tetrachloroethane							<5	<5
1,2,3-Trichloropropane							<5	<5
Pentachloroethane							<5	<5
1,2-Dibromo-3-chloropropane							<5	<5
Hexachlorobutadiene							<5	<5
<b>Halogenated Aromatic Compounds</b>								
Chlorobenzene					0.00001		<5	<5
Bromobenzene							<5	<5
2-Chlorotoluene							<5	<5
4-Chlorotoluene							<5	<5
1,3-Dichlorobenzene	260				0.00002		<5	<5
1,4-Dichlorobenzene	60				0.0000003		<5	<5
1,2-Dichlorobenzene	160				0.000001		<5	<5
1,2,4-Trichlorobenzene	170	80					<5	<5
1,2,3-Trichlorobenzene	10						<5	<5
<b>Trihalomethanes</b>								
Chloroform					0.0025		<5	<5
Bromodichloromethane							<5	<5
Dibromochloromethane							<5	<5
Bromoform							<5	<5
<b>Phenolic Compounds</b>								
Phenol	320	400					<1.0	<1.0
2-Chlorophenol	340				0.003		<1.0	<1.0
2-Methylphenol							<1.0	<1.0
3- & 4-Methylphenol							<2.0	<2.0
2-Nitrophenol							<1.0	<1.0
2,4-Dimethylphenol							<1.0	<1.0
2,4-Dichlorophenol	120				0.002		<1.0	<1.0
2,6-Dichlorophenol							<1.0	<1.0
4-Chloro-3-Methylphenol							<1.0	<1.0
2,4,6-Trichlorophenol	3				0.0002		<1.0	<1.0
2,4,5-Trichlorophenol							<1.0	<1.0
Pentachlorophenol	3.6	11					<2.0	<2.0
<b>Polycyclic Aromatic Hydrocarbons</b>								
Naphthalene	16	50					<1.0	<1.0
Acenaphthylene							<1.0	<1.0
Acenaphthene							<1.0	<1.0
Fluorene							<1.0	<1.0
Phenanthrene							<1.0	<1.0
Anthracene							<1.0	<1.0
Fluoranthene							<1.0	<1.0
Pyrene							<1.0	<1.0
Benz(a)anthracene							<1.0	<1.0
Chrysene							<1.0	<1.0
Benzo(b)fluoranthene							<1.0	<1.0
Benzo(k)fluoranthene							<1.0	<1.0
Benzo(a)pyrene					0.0000001		<0.5	<0.5
Indeno(1,2,3,cd)pyrene							<1.0	<1.0
Dibenz(a,h)anthracene							<1.0	<1.0
Benzo(g,h,i)perylene							<1.0	<1.0
<b>BTEXN</b>								
Benzene	950	500			0.00001		<1	<1
Toluene					0.000025		<2	<2
Ethylbenzene					0.000003		<2	<2
meta- & para-Xylene	200				0.00002		<2	<2
ortho-Xylene	350				0.00002		<2	<2
Total Xylenes					0.00002		<2	<2
Sum of BTEX							<1	<1
Naphthalene							<5	<5
<b>Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction							<20	<20
C10 - C14 Fraction							<50	<50
C15 - C28 Fraction							<100	<100
C29 - C36 Fraction							<50	<50
C10 - C36 Fraction (sum)	600 <sup>12</sup>						<50	<50
<b>Total Recoverable Hydrocarbons</b>								
C6 - C10 Fraction							<20	<20
C6 - C10 Fraction minus BTEX							<20	<20
>C10 - C16 Fraction							<100	<100
>C16 - C34 Fraction							<100	<100
>C34 - C40 Fraction							<100	<100
>C10 - C40 Fraction (sum)							<100	<100
>C10 - C16 Fraction minus N							<100	<100

NOTES: 1. ANZECC default trigger value for lakes, reservoirs & wetlands in south-west Australia (ANZECC, 2000)

2. SRT Healthy Rivers Action Plan Long Term Targets (SRT, 2008)

3. pH > 6 / pH < 6 (DER, 2014)

4. Average EC threshold for pastures in sandy soils (ANZECC, 2000)

5. Lower guideline limit (upper = 125) (ANZECC, 2000)

6. Lower guideline limit (upper = 12) (ANZECC, 2000)

7. ASS disturbance indicators (DEC, 2011)

8. Buffering Capacity Indicators (DEC, 2011)

9. Acidic water definition where pH <6 (DEC, 2011)

10. ANZECC 99% protection level for Chlordane

11. ANZECC 99% protection level for Endosulfan

12. Dutch intervention values (2000).

**Table 3**  
**Quality Control Results**  
**Groundwater Monitoring Event (May 2015)**  
**Wasterock Pty Ltd**  
**0153**

Analyte Grouping / Analyte	Units	WRMW4	QC8	Limit (%)	RPD (%)	QC9	Limit (%)	RPD (%)
		14/05/2015	14/05/2015			14/05/2015		
		Primary	Duplicate			Triplicate		
<b>Groundwater Parameters</b>								
pH Value	pH Unit	4.29	4.31	20	0.46	4.5	20	4.67
Electrical Conductivity	µS/cm	139	112	NL	19.42	120	20	13.67
Total Dissolved Solids	mg/L	84	65	20	22.62	71	50	15.48
Suspended Solids	mg/L	<5	<5	NL	NA	<5	NL	NA
Turbidity	NTU	1.6	2	NL	20.00	0.3	NL	81.25
Total Alkalinity as CaCO3	mg/L	<1	<1	NL	NA	<5	NL	NA
Acidity as CaCO3	mg/L	18	18	20	0.00	22	NL	18.18
BOD	mg/L	<2	<2	NL	NA	<5	NL	NA
Sulfate as SO4	mg/L	5	2	20	60.00	-	NL	0.00
Sulfide	mg/L	<0.1	<0.1	NL	NA	<0.05	NL	NA
Chloride	mg/L	18	18	20	0.00	18	NL	0.00
<b>Metals (Dissolved)</b>								
Aluminium	mg/L	0.13	0.13	20	0.00	0.13	20	0.00
Arsenic	mg/L	<0.001	<0.001	NL	NA	<0.001	NL	NA
Cadmium	mg/L	<0.0001	<0.0001	NL	NA	<0.0001	NL	NA
Chromium	mg/L	<0.001	<0.001	NL	NA	<0.001	NL	NA
Manganese	mg/L	<0.001	<0.001	NL	NA	<0.01	NL	NA
Nickel	mg/L	0.001	<0.001	NL	0.00	0.001	NL	0.00
Selenium	mg/L	<0.01	<0.01	NL	NA	<0.001	NL	NA
Zinc	mg/L	0.021	0.02	20	4.76	<0.005	NL	NA
Iron	mg/L	<0.05	<0.05	NL	NA	0.1	NL	0.00
Ferrous Iron	mg/L	<0.05	<0.05	NL	NA	<0.05	NL	NA
Hexavalent Chromium	mg/L	<0.01	<0.01	NL	NA	-	NL	NA
<b>Metals (Total)</b>								
Aluminium	mg/L	0.21	0.2	20	4.76	0.26	20	19.23
Arsenic	mg/L	<0.001	<0.001	NL	NA	<0.001	NL	NA
Cadmium	mg/L	<0.0001	<0.0001	NL	NA	<0.0001	NL	NA
Chromium	mg/L	<0.001	<0.001	NL	NA	0.004	NL	0.00
Copper	mg/L	0.003	0.004	NL	25.00	-	NL	NA
Lead	mg/L	0.003	0.003	NL	0.00	-	NL	NA
Manganese	mg/L	<0.001	<0.001	NL	NA	<0.01	NL	NA
Molybdenum	mg/L	<0.001	<0.001	NL	NA	-	NL	NA
Nickel	mg/L	0.001	0.001	NL	0.00	0.001	NL	0.00
Selenium	mg/L	<0.01	<0.01	NL	NA	<0.001	NL	NA
Silver	mg/L	<0.001	<0.001	NL	NA	-	NL	NA
Zinc	mg/L	0.021	0.022	NL	4.55	<0.005	NL	NA
Iron	mg/L	<0.05	<0.05	NL	NA	0.24	20	0.00
Mercury	mg/L	<0.0001	<0.0001	NL	NA	-	NL	NA
<b>Nutrients</b>								
Ammonia as N	mg/L	<0.01	<0.01	NL	NA	<0.02	NL	NA
Nitrite as N	mg/L	<0.01	<0.01	NL	NA	<0.01	NL	NA
Nitrate as N	mg/L	4.47	4.55	20	1.76	4.7	20	4.89
Total Kjeldahl Nitrogen as N	mg/L	0.8	0.8	NL	0.00	<0.2	NL	NA
Total Nitrogen as N	mg/L	5.3	5.4	20	1.85	4.7	20	11.32
Total Phosphorus as P	mg/L	0.04	0.07	NL	42.86	0.01	NL	75.00
Reactive Phosphorus as P	mg/L	<0.01	<0.01	NL	NA	<0.01	NL	NA
<b>Organochlorine Pesticides (OC)</b>								
alpha-BHC	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Hexachlorobenzene (HCB)	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
beta-BHC	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
gamma-BHC	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
delta-BHC	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Heptachlor	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Aldrin	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Heptachlor epoxide	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
trans-Chlordane	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
alpha-Endosulfan	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
cis-Chlordane	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Dieldrin	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
4,4'-DDE	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Endrin	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
beta-Endosulfan	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
4,4'-DDD	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Endrin aldehyde	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Endosulfan sulfate	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
4,4'-DDT	µg/L	<2.0	<2.0	NL	NA	-	NL	NA
Endrin ketone	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Methoxychlor	µg/L	<2.0	<2.0	NL	NA	-	NL	NA

**Table 3**  
**Quality Control Results**  
**Groundwater Monitoring Event (May 2015)**  
**Wasterock Pty Ltd**  
**0153**

Analyte Grouping / Analyte	Units	WRMW4	QC8	Limit (%)	RPD (%)	QC9	Limit (%)	RPD (%)
		14/05/2015	14/05/2015			14/05/2015		
		Primary	Duplicate			Triplicate		
<b>Organophosphorus Pesticides (OP)</b>								
Dichlorvos	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Demeton-S-methyl	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Monocrotophos	µg/L	<2.0	<2.0	NL	NA	-	NL	NA
Dimethoate	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Diazinon	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Chlorpyrifos-methyl	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Parathion-methyl	µg/L	<2.0	<2.0	NL	NA	-	NL	NA
Malathion	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Fenthion	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Chlorpyrifos	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Parathion	µg/L	<2.0	<2.0	NL	NA	-	NL	NA
Pirimphos-ethyl	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Chlorfenvinphos	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Bromophos-ethyl	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Fenamiphos	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Prothiofos	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Ethion	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Carbophenothion	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Azinphos Methyl	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
<b>Monocyclic Aromatic Hydrocarbons</b>								
Styrene	µg/L	<5	<5	NL	NA	-	NL	NA
Isopropylbenzene	µg/L	<5	<5	NL	NA	-	NL	NA
n-Propylbenzene	µg/L	<5	<5	NL	NA	-	NL	NA
1,3,5-Trimethylbenzene	µg/L	<5	<5	NL	NA	-	NL	NA
sec-Butylbenzene	µg/L	<5	<5	NL	NA	-	NL	NA
1,2,4-Trimethylbenzene	µg/L	<5	<5	NL	NA	-	NL	NA
tert-Butylbenzene	µg/L	<5	<5	NL	NA	-	NL	NA
p-Isopropyltoluene	µg/L	<5	<5	NL	NA	-	NL	NA
n-Butylbenzene	µg/L	<5	<5	NL	NA	-	NL	NA
<b>Oxygenated Compounds</b>								
Vinyl Acetate	µg/L	<50	<50	NL	NA	-	NL	NA
2-Butanone (MEK)	µg/L	<50	<50	NL	NA	-	NL	NA
4-Methyl-2-pentanone (MIBK)	µg/L	<50	<50	NL	NA	-	NL	NA
2-Hexanone (MBK)	µg/L	<50	<50	NL	NA	-	NL	NA
<b>Sulfonated Compounds</b>								
Carbon disulfide	µg/L	<5	<5	NL	NA	-	NL	NA
<b>Fumigants</b>								
2,2-Dichloropropane	µg/L	<5	<5	NL	NA	-	NL	NA
1,2-Dichloropropane	µg/L	<5	<5	NL	NA	-	NL	NA
cis-1,3-Dichloropropylene	µg/L	<5	<5	NL	NA	-	NL	NA
trans-1,3-Dichloropropylene	µg/L	<5	<5	NL	NA	-	NL	NA
1,2-Dibromoethane (EDB)	µg/L	<5	<5	NL	NA	-	NL	NA
<b>Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	µg/L	<50	<50	NL	NA	-	NL	NA
Chloromethane	µg/L	<50	<50	NL	NA	-	NL	NA
Vinyl chloride	µg/L	<50	<50	NL	NA	-	NL	NA
Bromomethane	µg/L	<50	<50	NL	NA	-	NL	NA
Chloroethane	µg/L	<50	<50	NL	NA	-	NL	NA
Trichlorofluoromethane	µg/L	<50	<50	NL	NA	-	NL	NA
1,1-Dichloroethene	µg/L	<5	<5	NL	NA	-	NL	NA
Iodomethane	µg/L	<5	<5	NL	NA	-	NL	NA
trans-1,2-Dichloroethene	µg/L	<5	<5	NL	NA	-	NL	NA
1,1-Dichloroethane	µg/L	<5	<5	NL	NA	-	NL	NA
cis-1,2-Dichloroethene	µg/L	<5	<5	NL	NA	-	NL	NA
1,1,1-Trichloroethane	µg/L	<5	<5	NL	NA	-	NL	NA
1,1-Dichloropropylene	µg/L	<5	<5	NL	NA	-	NL	NA
Carbon Tetrachloride	µg/L	<5	<5	NL	NA	-	NL	NA
1,2-Dichloroethane	µg/L	<5	<5	NL	NA	-	NL	NA
Trichloroethene	µg/L	<5	<5	NL	NA	-	NL	NA
Dibromomethane	µg/L	<5	<5	NL	NA	-	NL	NA
1,1,2-Trichloroethane	µg/L	<5	<5	NL	NA	-	NL	NA
1,3-Dichloropropane	µg/L	<5	<5	NL	NA	-	NL	NA
Tetrachloroethene	µg/L	<5	<5	NL	NA	-	NL	NA
1,1,1,2-Tetrachloroethane	µg/L	<5	<5	NL	NA	-	NL	NA
trans-1,4-Dichloro-2-butene	µg/L	<5	<5	NL	NA	-	NL	NA
cis-1,4-Dichloro-2-butene	µg/L	<5	<5	NL	NA	-	NL	NA
1,1,2,2-Tetrachloroethane	µg/L	<5	<5	NL	NA	-	NL	NA
1,2,3-Trichloropropane	µg/L	<5	<5	NL	NA	-	NL	NA
Pentachloroethane	µg/L	<5	<5	NL	NA	-	NL	NA
1,2-Dibromo-3-chloropropane	µg/L	<5	<5	NL	NA	-	NL	NA
Hexachlorobutadiene	µg/L	<5	<5	NL	NA	-	NL	NA

**Table 3**  
**Quality Control Results**  
**Groundwater Monitoring Event (May 2015)**  
**Wasterock Pty Ltd**  
**0153**

Analyte Grouping / Analyte	Units	WRMW4	QC8	Limit (%)	RPD (%)	QC9	Limit (%)	RPD (%)
		14/05/2015	14/05/2015			14/05/2015		
		Primary	Duplicate			Triplicate		
<b>Halogenated Aromatic Compounds</b>								
Chlorobenzene	µg/L	<5	<5	NL	NA	-	NL	NA
Bromobenzene	µg/L	<5	<5	NL	NA	-	NL	NA
2-Chlorotoluene	µg/L	<5	<5	NL	NA	-	NL	NA
4-Chlorotoluene	µg/L	<5	<5	NL	NA	-	NL	NA
1,3-Dichlorobenzene	µg/L	<5	<5	NL	NA	-	NL	NA
1,4-Dichlorobenzene	µg/L	<5	<5	NL	NA	-	NL	NA
1,2-Dichlorobenzene	µg/L	<5	<5	NL	NA	-	NL	NA
1,2,4-Trichlorobenzene	µg/L	<5	<5	NL	NA	-	NL	NA
1,2,3-Trichlorobenzene	µg/L	<5	<5	NL	NA	-	NL	NA
<b>Trihalomethanes</b>								
Chloroform	µg/L	<5	<5	NL	NA	-	NL	NA
Bromodichloromethane	µg/L	<5	<5	NL	NA	-	NL	NA
Dibromochloromethane	µg/L	<5	<5	NL	NA	-	NL	NA
Bromoform	µg/L	<5	<5	NL	NA	-	NL	NA
<b>Phenolic Compounds</b>								
Phenol	µg/L	<1.0	<1.0	NL	NA	<50	NL	NA
2-Chlorophenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
2-Methylphenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
3- & 4-Methylphenol	µg/L	<2.0	<2.0	NL	NA	-	NL	NA
2-Nitrophenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
2,4-Dimethylphenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
2,4-Dichlorophenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
2,6-Dichlorophenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
4-Chloro-3-Methylphenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
2,4,6-Trichlorophenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
2,4,5-Trichlorophenol	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Pentachlorophenol	µg/L	<2.0	<2.0	NL	NA	-	NL	NA
<b>Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Acenaphthylene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Acenaphthene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Fluorene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Phenanthrone	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Anthracene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Fluoranthene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Pyrene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Benz(a)anthracene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Chrysene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Benzo(b)fluoranthene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Benzo(k)fluoranthene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Benzo(a)pyrene	µg/L	<0.5	<0.5	NL	NA	-	NL	NA
Indeno(1,2,3,cd)pyrene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Dibenz(a,h)anthracene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
Benzo(g,h,i)perylene	µg/L	<1.0	<1.0	NL	NA	-	NL	NA
<b>BTEX</b>								
Benzene	µg/L	<1	<1	NL	NA	<1	NL	NA
Toluene	µg/L	<2	<2	NL	NA	<1	NL	NA
Ethylbenzene	µg/L	<2	<2	NL	NA	<1	NL	NA
meta- & para-Xylene	µg/L	<2	<2	NL	NA	-	NL	NA
ortho-Xylene	µg/L	<2	<2	NL	NA	-	NL	NA
Total Xylenes	µg/L	<2	<2	NL	NA	<3	NL	NA
Sum of BTEX	µg/L	<1	<1	NL	NA	-	NL	NA
Naphthalene	µg/L	<5	<5	NL	NA	-	NL	NA
<b>Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	µg/L	<20	<20	NL	NA	<20	NL	NA
C10 - C14 Fraction	µg/L	<50	<50	NL	NA	<20	NL	NA
C15 - C28 Fraction	µg/L	<100	<100	NL	NA	<40	NL	NA
C29 - C36 Fraction	µg/L	<50	<50	NL	NA	<40	NL	NA
C10 - C36 Fraction (sum)	µg/L	<50	<50	NL	NA	<40	NL	NA
<b>Total Recoverable Hydrocarbons</b>								
C6 - C10 Fraction	µg/L	<20	<20	NL	NA	<20	NL	NA
C6 - C10 Fraction minus BTEX	µg/L	<20	<20	NL	NA	<20	NL	NA
>C10 - C16 Fraction	µg/L	<100	<100	NL	NA	<40	NL	NA
>C16 - C34 Fraction	µg/L	<100	<100	NL	NA	<40	NL	NA
>C34 - C40 Fraction	µg/L	<100	<100	NL	NA	<40	NL	NA
>C10 - C40 Fraction (sum)	µg/L	<100	<100	NL	NA	-	NL	NA

NOTES:

-
NL
NA

1. Analysis was not requested for relevant sample
2. No Limit (result is less than LOR or result is less than 10 times LOR)
3. Not Applicable (no limit applied)
- 57.7 4. RPD exceeds 50% when results are 10 - 20 times more than LOR, or RPD exceeds 20% when results are more than 20 times the LOR

**Table 4**  
 Results from all GMEs for MW1  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW1-01	30/08/2012 WRMW1-02	15/01/2013 WRMW1-03	4/06/2013 WRMW1-04	14/05/2015 WRMW1-05
pH Value	pH Unit	0.01	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5		<5 <sup>7</sup> / <6 <sup>8</sup>	6.58	6.77	6.17	6.69	6.45
Electrical Conductivity	µS/cm	1	1500 <sup>1</sup>		6400 <sup>4</sup>				635	716	788	882	828
Total Dissolved Solids	mg/L	10							434	474	562	500	581
Suspended Solids	mg/L	5							582	950	138	604	205
Turbidity	NTU	0.1							166	202	62.8	203	359
Total Alkalinity CaCO <sub>3</sub>	mg/L	1						<30 <sup>8</sup>	43	36	35	34	48
Acidity : Alkalinity	ratio							1 <sup>9</sup>	0.35	0.97	1.14	1.24	0.42
Acidity as CaCO <sub>3</sub>	mg/L	1						40	15	35	40	42	20
Sulfate : Alkalinity	ratio							0.2 <sup>7</sup>	2.44	3.42	3.09	2.76	1.54
Sulfate : Chloride	ratio							0.5 <sup>7</sup>	0.78	0.89	0.69	0.52	0.36
Sulfate as SO <sub>4</sub> <sup>2-</sup>	mg/L	1						1000	105	123	108	94	74
Sulfide	mg/L	0.1	0.001					0.05		0.100	<0.1	<0.1	<0.1
Chloride	mg/L	1						250		134	138	157	182
BOD	ratio	2							<2	<2	<2	<2	<2
<b>Dissolved Major Cations</b>													
Calcium	mg/L	1											30
Magnesium	mg/L	1											20
Sodium	mg/L	1											110
Potassium	mg/L	1											4
<b>Dissolved Metals</b>													
Aluminum	mg/L	0.01	0.055			20	5	0.2	1.0 <sup>7</sup>	0.04	0.09	0.11	0.04
Arsenic	mg/L	0.001	0.013			2	0.1	0.1		<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	0.0002		0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001				1	0.1			<0.001	<0.001	<0.001	<0.002
Manganese	mg/L	0.001	1.9			10	0.2	5		0.005	0.004	0.002	0.004
Nickel	mg/L	0.001	0.011		0.007	2	0.2	0.2		<0.001	0.002	0.007	0.003
Selenium	mg/L	0.01	0.005			0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	0.008		0.015	5	2	3		0.005	0.013	0.045	0.047
Iron	mg/L	0.05	0.3		1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		<0.05	0.52	0.07	0.27
Ferrous Iron	mg/L	0.05								<0.05	0.34	0.11	0.25
Chromium VI	mg/L	0.01	0.001		0.0044			0.5		<0.010	<0.010	<0.01	<0.01
<b>Total Metals</b>													
Aluminium	mg/L	0.01	0.055			20	5	0.2		11.1	7.69	4.69	7.43
Arsenic	mg/L	0.001	0.013			2	0.1	0.1		<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	0.0002		0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001				1	0.1			0.007	0.005	0.003	0.006
Copper	mg/L	0.001	0.014		0.0013	5	0.2	20		0.004	0.002	0.005	0.012
Lead	mg/L	0.001	0.0034		0.0044	5	2	0.1		0.013	0.015	0.004	0.012
Manganese	mg/L	0.001	1.9			10	0.2	5		0.006	0.004	0.003	0.042
Molybdenum	mg/L	0.001				0.05	0.01	0.5		<0.001	<0.001	<0.001	<0.001
Nickel	mg/L	0.001	0.011		0.007	2	0.2	0.2		0.002	0.003	0.007	0.005
Selenium	mg/L	0.01	0.005			0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	0.00005		0.0014			1		<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.005	0.008		0.015	5	2	3		0.008	0.007	0.044	0.024
Iron	mg/L	0.05	0.3		1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		0.29	0.21	0.23	0.54
Mercury	mg/L	0.0001	0.00006		0.0001	0.002	0.002	0.01		0.0001	0.00010	<0.0001	<0.0001
<b>Nutrients</b>													
Ammonia as N	mg/L	0.01	0.9		0.91					0.06	0.03	0.02	0.06
Nitrite as N	mg/L	0.01								0.03	0.02	0.01	<0.01
Nitrate as N	mg/L	0.01								5.15	4.91	1.86	0.32
Kjeldhal Nitrogen	mg/L	0.1								0.5	1.4	0.5	0.8
Total Nitrogen	mg/L	0.1	1.0 <sup>2</sup>			25 <sup>3</sup>	5			5.7	6.3	2.4	0.8
Total Phosphorus	mg/L	0.01	0.1 <sup>2</sup>			0.8 <sup>4</sup>	0.05			0.01	0.19	<0.01	0.04
Reactive Phosphorus	mg/L	0.01								<0.01	<0.01	<0.01	<0.01
<b>Organochlorine Pesticides (OC)</b>													
alpha-BHC	µg/L	0.5								<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	µg/L	0.5								<0.5	<0.5	<0.5	<0.5
beta-BHC	µg/L	0.5								<0.5	<0.5	<0.5	<0.5
gamma-BHC	µg/L	0.5								<0.5	<0.5	<0.5	<0.5
delta-BHC	µg/L	0.5								<0.5	<0.5	<0.5	<0.5
Heptachlor	µg/L	0.5	0.01							<0.5	<0.5	<0.5	<0.5
Aldrin	µg/L	0.5								<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	µg/L	0.5								<0.5	<0.5	<0.5	<0.5
trans-Chlordane	µg/L	0.5	0.03 <sup>10</sup>							<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	µg/L	0.5	0.03 <sup>11</sup>		0.005 <sup>11</sup>					<0.5	<0.5	<0.5	<0.5
cis-Chlordane	µg/L	0.5	0.03 <sup>10</sup>							<			

**Table 4**  
 Results from all GMEs for MW1  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW1-01	30/08/2012 WRMW1-02	15/01/2013 WRMW1-03	4/06/2013 WRMW1-04	14/05/2015 WRMW1-05	
<b>Fumigants</b>														
2,2-Dichloropropane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,2-Dichloropropane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
cis-1,3-Dichloropropylene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
trans-1,3-Dichloropropylene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
<b>Halogenated Aliphatic Compounds</b>														
Dichlorodifluoromethane	µg/L	50	orange	blue	light green	brown	pink	<50	<50	<50	<50	<50	<50	
Chloromethane	µg/L	50	orange	blue	light green	brown	pink	<50	<50	<50	<50	<50	<50	
Vinyl chloride	µg/L	50	orange	blue	light green	brown	pink	<50	<50	<50	<50	<50	<50	
Bromomethane	µg/L	50	orange	blue	light green	brown	pink	<50	<50	<50	<50	<50	<50	
Chloroethane	µg/L	50	orange	blue	light green	brown	pink	<50	<50	<50	<50	<50	<50	
Trichlorofluoromethane	µg/L	50	orange	blue	light green	brown	pink	<50	<50	<50	<50	<50	<50	
1,1-Dichloroethene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Iodomethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
trans-1,2-Dichloroethene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,1-Dichlorethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
cis-1,2-Dichloroethene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,1,1-Trichloroethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,1-Dichloropropylene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Carbon Tetrachloride	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,2-Dichloroethane	µg/L	5	orange	blue	light green	brown	pink	0.00003	<5	<5	<5	<5	<5	
Trichloroethene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Dibromomethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,1,2-Trichloroethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,3-Dichloropropane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Tetrachloroethene	µg/L	5	orange	blue	light green	brown	pink	0.0005	<5	<5	<5	<5	<5	
1,1,1,2-Tetrachloroethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
trans-1,4-Dichloro-2-butene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
cis-1,4-Dichloro-2-butene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,1,2,2-Tetrachloroethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,2,3-Trichloropropane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Pentachloroethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,2-Dibromo-3-chloropropane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Hexachlorobutadiene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
<b>Halogenated Aromatic Compounds</b>														
Chlorobenzene	µg/L	5	orange	blue	light green	brown	pink	0.00001	<5	<5	<5	<5	<5	
Bromobenzene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
2-Chlorotoluene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
4-Chlorotoluene	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,3-Dichlorobenzene	µg/L	5	260	blue	light green	brown	pink	0.00002	<5	<5	<5	<5	<5	
1,4-Dichlorobenzene	µg/L	5	60	blue	light green	brown	pink	0.0000003	<5	<5	<5	<5	<5	
1,2-Dichlorobenzene	µg/L	5	160	blue	light green	brown	pink	0.000001	<5	<5	<5	<5	<5	
1,2,4-Trichlorobenzene	µg/L	5	170	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
1,2,3-Trichlorobenzene	µg/L	5	10	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
<b>Trihalomethanes</b>														
Chloroform	µg/L	5	orange	blue	light green	brown	pink	0.0025	<5	<5	<5	<5	<5	
Bromodichloromethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Dibromochloromethane	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
Bromoform	µg/L	5	orange	blue	light green	brown	pink	<5	<5	<5	<5	<5	<5	
<b>Phenolic Compounds</b>														
Phenol	µg/L	1	320	400	light green	brown	pink	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
2-Chlorophenol	µg/L	1	340	blue	light green	brown	pink	0.003	<1.0	<1.0	<1.0	<1.0	<1.0	
2-Methylphenol	µg/L	1	orange	blue	light green	brown	pink	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
3- & 4-Methylphenol	µg/L	2	orange	blue	light green	brown	pink	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
2-Nitrophenol	µg/L	1	orange	blue	light green	brown	pink	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
2,4-Dimethylphenol	µg/L	1	orange	blue	light green	brown	pink	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
2,4-Dichlorophenol	µg/L	1	120	blue	light green	brown	pink	0.002	<1.0	<1.0	<1.0	<1.0	<1.0	
2,6-Dichlorophenol	µg/L	1	orange	blue	light green	brown	pink	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
4-Chloro-3-Methylphenol	µg/L	1	orange	blue	light green	brown	pink	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
2,4,6-Trichlorophenol	µg/L	1	3	blue	light green	brown	pink	0.0002	<1.0	<1.0	<1.0	<1.0	<1.0	
2,4,5-Trichlorophenol	µg/L	1	orange	blue	light green	brown	pink	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

**Table 5**  
 Results from all GMEs for MW2  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-023

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW2-01	30/08/2012 WRMW2-02	15/01/2013 WRMW2-03	4/06/2013 WRMW2-04	14/05/2015 WRMW2-05
pH Value	pH Unit	0.01	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5		<5 <sup>7</sup> / <6 <sup>8</sup>	6.14	5.72	5.21	5.57	4.91
Electrical Conductivity	µS/cm	1	1500 <sup>1</sup>		6400 <sup>4</sup>				307	292	347	371	416
Total Dissolved Solids	mg/L	10							244	169	290	221	232
Suspended Solids	mg/L	5							292	106	75	154	69
Turbidity	NTU	0.1							236	32	54.7	96.6	72.3
Total Alkalinity CaCO <sub>3</sub>	mg/L	1						<30 <sup>9</sup>	17	3	2	<1	<1
Acidity : Alkalinity ratio								1 <sup>9</sup>	1.53	14.00	19.50	32.00	39.00
Acidity as CaCO <sub>3</sub>	mg/L	1						40	26	42	39	32	39
Sulfate : Alkalinity ratio								0.2 <sup>7</sup>	0.76	3.67	4.50	10.00	13.00
Sulfate : Chloride ratio								0.5 <sup>7</sup>	0.16	0.13	0.10	0.11	0.11
Sulfate as SO <sub>4</sub> <sup>2-</sup>	mg/L	1						1000	13	11	9	10	13
Sulfide	mg/L	0.1	0.001					0.05	<0.1	<0.1	<0.1	<0.1	<0.1
Chloride	mg/L	1						250	80	82	88	89	115
BOD	ratio	2							3	<2	<2	<2	<2
<b>Dissolved Major Cations</b>													
Calcium	mg/L	1											<1
Magnesium	mg/L	1											7
Sodium	mg/L	1											67
Potassium	mg/L	1											<1
<b>Dissolved Metals</b>													
Aluminum	mg/L	0.01	0.055		20	5	0.2	1.0 <sup>7</sup>	0.02	0.03	0.1	0.03	0.08
Arsenic	mg/L	0.001	0.013		2	0.1	0.1		0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001			1	0.1			<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	mg/L	0.001	1.9		10	0.2	5		0.022	0.003	0.001	0.002	0.002
Nickel	mg/L	0.001	0.011	0.007	2	0.2	0.2		0.002	0.006	0.008	0.003	0.002
Selenium	mg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	mg/L	0.005	0.008	0.015	5	2	3		0.048	0.025	0.066	0.047	0.03
Iron	mg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		0.68	0.75	0.12	0.44	0.1
Ferrous Iron	mg/L	0.05							0.43	0.76	0.12	0.44	0.06
Chromium VI	mg/L	0.01	0.001	0.0044			0.5		<0.010	<0.010	<0.01	<0.01	<0.01
<b>Total Metals</b>													
Aluminium	mg/L	0.01	0.055		20	5	0.2		16.2	3.15	3.3	4.27	1.93
Arsenic	mg/L	0.001	0.013		2	0.1	0.1		<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001			1	0.1			0.016	0.003	0.003	0.005	0.003
Copper	mg/L	0.001	0.0014	0.0013	5	0.2	20		0.07	0.005	0.011	0.007	0.012
Lead	mg/L	0.001	0.0034	0.0044	5	2	0.1		0.017	0.003	0.005	0.005	0.009
Manganese	mg/L	0.001	1.9		10	0.2	5		0.026	0.004	0.002	0.001	0.002
Molybdenum	mg/L	0.001			0.05	0.01	0.5		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	mg/L	0.001	0.011	0.007	2	0.2	0.2		0.005	0.006	0.009	0.003	0.002
Selenium	mg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	0.001	0.00005	0.0014			1		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	mg/L	0.005	0.008	0.015	5	2	3		0.08	0.079	0.07	0.046	0.028
Iron	mg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		4.82	2.12	1.37	1.97	1.46
Mercury	mg/L	0.0001	0.00006	0.0001	0.002	0.002	0.01		0.00010	<0.0001	<0.0001	<0.0001	<0.0001
<b>Nutrients</b>													
Ammonia as N	mg/L	0.01	0.9	0.91					0.36	0.03	0.01	0.02	0.03
Nitrite as N	mg/L	0.01							0.02	0.01	<0.01	<0.01	<0.01
Nitrate as N	mg/L	0.01							500	0.62	1.09	1.24	0.84
Kjeldhal Nitrogen	mg/L	0.1								0.5	0.3	0.2	0.5
Total Nitrogen	mg/L	0.1	1.0 <sup>2</sup>		25 <sup>3</sup>	5				1.1	1.4	1.4	1
Total Phosphorus	mg/L	0.01	0.1 <sup>2</sup>		0.8 <sup>4</sup>	0.05				0.15	0.03	0.04	0.07
Reactive Phosphorus	mg/L	0.01								<0.01	<0.01	<0.01	<0.01
<b>Organochlorine Pesticides (OC)</b>													
alpha-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	µg/L	0.5	0.01						<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	µg/L	0.5						0.00003	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	µg/L	0.5	0.03 <sup>10</sup>						<0.5	&			

**Table 5**  
 Results from all GMEs for MW2  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-023

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW2-01	30/08/2012 WRMW2-02	15/01/2013 WRMW2-03	4/06/2013 WRMW2-04	14/05/2015 WRMW2-05	
<b>Fumigants</b>														
2,2-Dichloropropane	µg/L	5							<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	µg/L	5							<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	µg/L	5							<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	µg/L	5							<5	<5	<5	<5	<5	<5
<b>Halogenated Aliphatic Compounds</b>														
Dichlorodifluoromethane	µg/L	50							<50	<50	<50	<50	<50	<50
Chloromethane	µg/L	50							<50	<50	<50	<50	<50	<50
Vinyl chloride	µg/L	50							<50	<50	<50	<50	<50	<50
Bromomethane	µg/L	50							<50	<50	<50	<50	<50	<50
Chloroethane	µg/L	50							<50	<50	<50	<50	<50	<50
Trichlorofluoromethane	µg/L	50							<50	<50	<50	<50	<50	<50
1,1-Dichloroethene	µg/L	5							<5	<5	<5	<5	<5	<5
Iodomethane	µg/L	5							<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L	5							<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	µg/L	5							<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L	5							<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L	5							<5	<5	<5	<5	<5	<5
1,1-Dichloropropylene	µg/L	5							<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	µg/L	5							<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	µg/L	5						0.00003	<5	<5	<5	<5	<5	<5
Trichloroethene	µg/L	5							<5	<5	<5	<5	<5	<5
Dibromomethane	µg/L	5							<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	5	6500	1900					<5	<5	<5	<5	<5	<5
1,3-Dichloropropene	µg/L	5							<5	<5	<5	<5	<5	<5
Tetrachloroethene	µg/L	5						0.0005	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L	5							<5	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L	5							<5	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L	5							<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	µg/L	5							<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropene	µg/L	5							<5	<5	<5	<5	<5	<5
Pentachloroethane	µg/L	5							<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L	5							<5	<5	<5	<5	<5	<5
Hexachlorobutadiene	µg/L	5							<5	<5	<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>														
Chlorobenzene	µg/L	5						0.00001	<5	<5	<5	<5	<5	<5
Bromobenzene	µg/L	5							<5	<5	<5	<5	<5	<5
2-Chlorotoluene	µg/L	5							<5	<5	<5	<5	<5	<5
4-Chlorotoluene	µg/L	5							<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	5	260					0.00002	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	5	60					0.000003	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	5	160					0.000001	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	5	170	80					<5	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	5	10						<5	<5	<5	<5	<5	<5
<b>Trihalomethanes</b>														
Chloroform	µg/L	5						0.0025	<5	<5	<5	<5	<5	<5
Bromodichloromethane	µg/L	5							<5	<5	<5	<5	<5	<5
Dibromochloromethane	µg/L	5							<5	<5	<5	<5	<5	<5
Bromoform	µg/L	5							<5	<5	<5	<5	<5	<5
<b>Phenolic Compounds</b>														
Phenol	µg/L	1	320	400					<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	1	340					0.003	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L	1							<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L	2							2.6	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	µg/L	1							<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L	1							<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	1	120					0.002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L	1							<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L	1							<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	1	3					0.0002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L	1							<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	2	3.6	11					<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
<b>Polycyclic Aromatic Hydrocarbons</b>														
Naphthalene	µg/L	1	16	50										

**Table 6**  
 Results from all GMEs for MW3  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW3-01	30/08/2012 WRMW3-02	15/01/2013 WRMW3-03	4/06/2013 WRMW3-04	14/05/2015 WRMW3-05	
pH Value	pH Unit	0.01	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5		<5 <sup>7</sup> / <6 <sup>8</sup>	7.41	7.83	7.13	7.79	6.31	
Electrical Conductivity	µS/cm	1	1500 <sup>1</sup>		6400 <sup>4</sup>				1070	901	906	886	678	
Total Dissolved Solids	mg/L	10							704	567	598	640	400	
Suspended Solids	mg/L	5							425	1610	287	5340	246	
Turbidity	NTU	0.1							383	1120	900	9210	149	
Total Alkalinity CaCO <sub>3</sub>	mg/L	1						<30 <sup>8</sup>	292	157	130	136	42	
Acidity : Alkalinity	ratio							1 <sup>9</sup>	0.05	0.11	0.06	0.12	0.31	
Acidity as CaCO <sub>3</sub>	mg/L	1						40	16	18	8	16	13	
Sulfate : Alkalinity	ratio							0.2 <sup>7</sup>	0.14	0.11	0.32	0.32	2.10	
Sulfate : Chloride	ratio							0.5 <sup>7</sup>	0.19	0.08	0.22	0.28	0.60	
Sulfate as SO <sub>4</sub> <sup>2-</sup>	mg/L	1						1000	40	18	41	44	88	
Sulfide	mg/L	0.1	0.001					0.05		<0.1	<0.1	<0.1	<0.1	
Chloride	mg/L	1						250		216	219	184	155	
BOD	ratio	2							69	5	2	6	<2	
<b>Dissolved Major Cations</b>														
Calcium	mg/L	1												16
Magnesium	mg/L	1												25
Sodium	mg/L	1												84
Potassium	mg/L	1												4
<b>Dissolved Metals</b>														
Aluminium	mg/L	0.01	0.055		20	5	0.2	1.0 <sup>7</sup>	<0.01	0.02	0.61	0.03	0.02	
Arsenic	µg/L	0.001	0.013		2	0.1	0.1		0.004	0.002	0.002	0.001	<0.001	
Cadmium	µg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	µg/L	0.001			1	0.1			<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	µg/L	0.001	1.9		10	0.2	5		0.182	0.108	0.082	0.056	0.004	
Nickel	µg/L	0.001	0.011	0.007	2	0.2	0.2		0.001	0.003	0.003	0.002	0.003	
Selenium	µg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	µg/L	0.005	0.008	0.015	5	2	3		0.005	0.006	0.011	0.017	0.014	
Iron	µg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		2.16	<0.05	1.17	<0.05	0.14	
Ferrous Iron	µg/L	0.05							2.28	<0.05	0.61	<0.05	<0.05	
Chromium VI	µg/L	0.01	0.001	0.0044			0.5		<0.010	<0.010	<0.01	<0.01	<0.01	
<b>Total Metals</b>														
Aluminium	mg/L	0.01	0.055		20	5	0.2		34.4	24.9	21.5	44.2	3.62	
Arsenic	µg/L	0.001	0.013		2	0.1	0.1		0.01	0.007	0.006	0.007	<0.001	
Cadmium	µg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		0.0001	0.0002	<0.0001	0.0002	<0.0001	
Chromium	µg/L	0.001			1	0.1			0.047	0.044	0.03	0.071	0.004	
Copper	µg/L	0.001	0.0014	0.0013	5	0.2	20		0.032	0.036	0.022	0.072	0.002	
Lead	µg/L	0.001	0.0034	0.0044	5	2	0.1		0.087	0.079	0.052	0.156	0.006	
Manganese	µg/L	0.001	1.9		10	0.2	5		0.191	0.129	0.094	0.11	0.004	
Molybdenum	µg/L	0.001			0.05	0.01	0.5		<0.001	0.001	<0.001	<0.001	<0.001	
Nickel	µg/L	0.001	0.011	0.007	2	0.2	0.2		0.014	0.019	0.011	0.024	0.003	
Selenium	µg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	
Silver	µg/L	0.001	0.00005	0.0014			1		<0.001	<0.001	<0.001	<0.001	<0.001	
Zinc	µg/L	0.005	0.008	0.015	5	2	3		0.068	0.079	0.061	0.188	0.007	
Iron	µg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		11.9	12.4	9.35	18	1.45	
Mercury	µg/L	0.0001	0.00006	0.0001	0.002	0.002	0.01		<0.0001	<0.0001	<0.0001	0.00010	<0.0001	
<b>Nutrients</b>														
Ammonia as N	mg/L	0.01	0.9	0.91					0.03	0.45	0.1	0.11	0.03	
Nitrite as N	mg/L	0.01							<0.01	0.02	<0.01	<0.01	0.05	
Nitrate as N	mg/L	0.01							500	0.17	0.31	0.24	0.18	0.92
Kjeldhal Nitrogen	mg/L	0.1								0.3	1.4	0.9	0.6	0.4
Total Nitrogen	mg/L	0.1	1.0 <sup>2</sup>		25 <sup>3</sup>	5				0.5	1.7	1.1	0.8	1.4
Total Phosphorus	mg/L	0.01	0.1 <sup>2</sup>		0.8 <sup>4</sup>	0.05				0.24	0.51	<0.01	0.38	0.04
Reactive Phosphorus	mg/L	0.01								<0.01	<0.01	<0.01	<0.01	<0.01
<b>Organochlorine Pesticides (OC)</b>														
alpha-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Hexachlorobenzene (HCB)	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
beta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
gamma-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
delta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Heptachlor	µg/L	0.5	0.01						<0.5	<0.5	<0.5	<0.5	<0.5	
Aldrin	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Heptachlor epoxide	µg/L	0.5							<0.5	&lt				

**Table 6**  
 Results from all GMEs for MW3  
 Lot 20, Adelaide Street, Hazelwood  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW3-01	30/08/2012 WRMW3-02	15/01/2013 WRMW3-03	4/06/2013 WRMW3-04	14/05/2015 WRMW3-05	
<b>Fumigants</b>														
2,2-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Halogenated Aliphatic Compounds</b>														
Dichlorodifluoromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Chloromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Vinyl chloride	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Bromomethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Chloroethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Trichlorofluoromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
1,1-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Iodomethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	µg/L	5					0.00003	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Dibromomethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	5	6500	1900				<5	<5	<5	<5	<5	<5	<5
1,3-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	µg/L	5					0.0005	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Pentachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Hexachlorobutadiene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>														
Chlorobenzene	µg/L	5					0.00001	<5	<5	<5	<5	<5	<5	<5
Bromobenzene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
2-Chlorotoluene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
4-Chlorotoluene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	5	260				0.00002	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	5	60				0.0000003	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	5	160				0.000001	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	5	170	80				<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	5	10					<5	<5	<5	<5	<5	<5	<5
<b>Trihalomethanes</b>														
Chloroform	µg/L	5					0.0025	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Bromoform	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Phenolic Compounds</b>														
Phenol	µg/L	1	320	400				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	1	340				0.003		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L	2						<2.0	3.3	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	1	120				0.002		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	1	3				0.0002		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	2	3.6	11				<2.0	<2.0	<2.0</				

**Table 7**  
 Results from all GMEs for MW4  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW4-01	30/08/2012 WRMW4-02	15/01/2013 WRMW4-03	4/06/2013 WRMW4-04	14/05/2015 WRMW4-05	
pH Value	pH Unit	0.01	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5		<5 <sup>7</sup> / <6 <sup>8</sup>	6.04	5.96	5.61	5.64	4.29	
Electrical Conductivity	µS/cm	1	1500 <sup>1</sup>		6400 <sup>4</sup>				354	144	118	117	139	
Total Dissolved Solids	mg/L	10							226	83	74	96	84	
Suspended Solids	mg/L	5							144	9	313	6	<5	
Turbidity	NTU	0.1							86.9	10.8	81.8	6.5	1.6	
Total Alkalinity CaCO <sub>3</sub>	mg/L	1						<30 <sup>8</sup>	5	1	2	<1	<1	
Acidity : Alkalinity	ratio							1 <sup>9</sup>	1.60	21.00	8.00	20.00	18.00	
Acidity as CaCO <sub>3</sub>	mg/L	1						40	8	21	16	20	18	
Sulfate : Alkalinity	ratio							0.2 <sup>7</sup>	3.40	2.00	1.00	1.00	5.00	
Sulfate : Chloride	ratio							0.5 <sup>7</sup>	0.19	0.07	0.09	0.06	0.28	
Sulfate as SO <sub>4</sub> <sup>2-</sup>	mg/L	1						1000	17	2	2	1	5	
Sulfide	mg/L	0.1	0.001					0.05		<0.1	<0.1	<0.1	<0.1	
Chloride	mg/L	1						250		89	30	23	17	
BOD	ratio	2							4	<2	4	<2	<2	
<b>Dissolved Major Cations</b>														
Calcium	mg/L	1												<1
Magnesium	mg/L	1												5
Sodium	mg/L	1												12
Potassium	mg/L	1												2
<b>Dissolved Metals</b>														
Aluminum	mg/L	0.01	0.055		20	5	0.2	1.0 <sup>7</sup>	0.02	0.06	0.34	0.11	0.13	
Arsenic	mg/L	0.001	0.013		2	0.1	0.1		<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	mg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		<0.0001	0.0001	<0.0001	<0.0001	<0.0001	
Chromium	mg/L	0.001			1	0.1			<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	mg/L	0.001	1.9		10	0.2	5		0.013	0.005	0.005	0.003	<0.001	
Nickel	mg/L	0.001	0.011	0.007	2	0.2	0.2		<0.001	0.003	0.012	0.003	0.001	
Selenium	mg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	mg/L	0.005	0.008	0.015	5	2	3		0.01	0.01	0.072	0.027	0.021	
Iron	mg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		0.11	<0.05	0.31	<0.05	<0.05	
Ferrous Iron	mg/L	0.05							<0.05	<0.05	0.09	<0.05	<0.05	
Chromium VI	mg/L	0.01	0.001	0.0044			0.5		<0.010	<0.01	<0.01	<0.01	<0.01	
<b>Total Metals</b>														
Aluminium	mg/L	0.01	0.055		20	5	0.2		4.3	1.61	13.9	0.48	0.21	
Arsenic	mg/L	0.001	0.013		2	0.1	0.1		0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	mg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	mg/L	0.001			1	0.1			0.004	0.001	0.008	<0.001	<0.001	
Copper	mg/L	0.001	0.0014	0.0013	5	0.2	20		0.005	0.003	0.025	0.003	0.003	
Lead	mg/L	0.001	0.0034	0.0044	5	2	0.1		0.011	0.005	0.012	<0.001	0.003	
Manganese	mg/L	0.001	1.9		10	0.2	5		0.016	0.006	0.007	0.001	<0.001	
Molybdenum	mg/L	0.001			0.05	0.01	0.5		<0.001	<0.001	<0.001	<0.001	<0.001	
Nickel	mg/L	0.001	0.011	0.007	2	0.2	0.2		0.001	0.003	0.016	0.002	0.001	
Selenium	mg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	
Silver	mg/L	0.001	0.00005	0.0014			1		<0.001	<0.001	<0.001	<0.001	<0.001	
Zinc	mg/L	0.005	0.008	0.015	5	2	3		0.017	0.011	0.11	0.021	0.021	
Iron	mg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		0.88	0.4	1.5	0.07	<0.05	
Mercury	mg/L	0.0001	0.00006	0.0001	0.002	0.002	0.01		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
<b>Nutrients</b>														
Ammonia as N	mg/L	0.01	0.9	0.91					0.11	0.05	0.03	0.02	<0.01	
Nitrite as N	mg/L	0.01							0.01	<0.01	<0.01	<0.01	<0.01	
Nitrate as N	mg/L	0.01							30		4.92	4.38	4.91	
Kjeldhal Nitrogen	mg/L	0.1							500		3.75	6	5.1	
Total Nitrogen	mg/L	0.1	1.0 <sup>2</sup>		25 <sup>3</sup>	5					4.3	6	5.1	
Total Phosphorus	mg/L	0.01	0.1 <sup>2</sup>		0.8 <sup>4</sup>	0.05					0.04	0.12	<0.01	
Reactive Phosphorus	mg/L	0.01									<0.01	<0.01	<0.01	
<b>Organochlorine Pesticides (OC)</b>														
alpha-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Hexachlorobenzene (HCB)	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
beta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
gamma-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
delta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Heptachlor	µg/L	0.5	0.01						<0.5	<0.5	<0.5	<0.5	<0.5	
Aldrin	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Heptachlor epoxide	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
trans-Chlordane	µg/L	0.5	0.03 <sup>10</sup> </td											

Table 7  
Results from all GMEs for MW4  
Lot 20, Adelaide Street, Hazelmere  
E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW4-01	30/08/2012 WRMW4-02	15/01/2013 WRMW4-03	4/06/2013 WRMW4-04	14/05/2015 WRMW4-05	
<b>Fumigants</b>														
2,2-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Halogenated Aliphatic Compounds</b>														
Dichlorodifluoromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Chloromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Vinyl chloride	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Bromomethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Chloroethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Trichlorofluoromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
1,1-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Iodomethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	µg/L	5					0.00003	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Dibromomethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	5	6500	1900				<5	<5	<5	<5	<5	<5	<5
1,3-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	µg/L	5					0.0005	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Pentachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Hexachlorobutadiene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>														
Chlorobenzene	µg/L	5					0.00001	<5	<5	<5	<5	<5	<5	<5
Bromobenzene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
2-Chlorotoluene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
4-Chlorotoluene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	5	260				0.00002	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	5	60				0.0000003	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	5	160				0.000001	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	5	170	80				<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	5	10					<5	<5	<5	<5	<5	<5	<5
<b>Trihalomethanes</b>														
Chloroform	µg/L	5					0.0025	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Bromoform	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Phenolic Compounds</b>														
Phenol	µg/L	1	320	400				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	1	340				0.003	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L	2						<2.0	3.3	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	1	120				0.002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	1	3				0.0002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	2	3.6	11				<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
<b>Polycyclic Aromatic Hydrocarbons</b>														
Naphthalene	µg/L	1	16	50				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	µg/L	1						<						

NOTES: 1. ANZECC default trigger value for lakes, reservoirs & wetlands in south-west Australia (ANZECC, 2000)  
2. SRT Healthy Rivers Action Plan Long Term Targets (SRT, 2008)  
3. pH > 6 / pH < 6 (DER, 2014)  
4. Average EC threshold for pastures in sandy soils (ANZECC, 2000)  
5. Lower guideline limit (upper = 125) (ANZECC, 2000)  
6. Lower guideline limit (upper = 12) (ANZECC, 2000)  
7. ASS disturbance indicators (DEC, 2011)  
8. Buffering Capacity Indicators (DEC, 2011)  
9. Acidic water definition where pH < 6 (DEC, 2011)  
10. ANZECC 99% protection level for Chlordane  
11. ANZECC 99% protection level for Endosulfan  
12. Dutch intervention values (2000).

Table 8  
Results from all GMEs for MW5  
Lot 20, Adelaide Street, Hazelmere  
E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012	30/08/2012	15/01/2013	4/06/2013	14/05/2015	
								<5 <sup>7</sup> / <6 <sup>8</sup>	WRMW5-01	WRMW5-02	WRMW5-03	WRMW5-04	WRMW5-05	
pH Value	pH Unit	0.01	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5			5.86	5.72	6.07	6.19	4.35	
Electrical Conductivity	µS/cm	1	1500 <sup>1</sup>		6400 <sup>4</sup>				449	97	124	134	112	
Total Dissolved Solids	mg/L	10							341	56	133	118	72	
Suspended Solids	mg/L	5							59	660	42	36	38	
Turbidity	NTU	0.1							137	854	57.6	45.3	59	
Total Alkalinity CaCO <sub>3</sub>	mg/L	1						<30 <sup>8</sup>	5	<1	3	2	<1	
Acidity : Alkalinity	ratio							1 <sup>9</sup>	2.60	11.00	2.00	7.50	10.00	
Acidity as CaCO <sub>3</sub>	mg/L	1						40	13	11	6	15	10	
Sulfate : Alkalinity	ratio							0.2 <sup>7</sup>	3.80	7.00	3.67	4.50	10.00	
Sulfate : Chloride	ratio							0.5 <sup>7</sup>	0.14	0.41	0.44	0.36	0.56	
Sulfate as SO <sub>4</sub> <sup>2-</sup>	mg/L	1						1000		19	7	11	9	
Sulfide	mg/L	0.1	0.001					0.05		<0.1	<0.1	<0.1	<0.1	
Chloride	mg/L	1						250		132	17	25	18	
BOD	ratio	2							3	3	<2	<2	<2	
<b>Dissolved Major Cations</b>														
Calcium	mg/L	1												1
Magnesium	mg/L	1												2
Sodium	mg/L	1												16
Potassium	mg/L	1												1
<b>Dissolved Metals</b>														
Aluminium	mg/L	0.01	0.055		20	5	0.2	1.0 <sup>7</sup>	0.19	1.48	0.41	0.06	0.09	
Arsenic	mg/L	0.001	0.013		2	0.1	0.1		<0.001	0.001	<0.001	<0.001	<0.001	
Cadmium	mg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	mg/L	0.001			1	0.1			<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	mg/L	0.001	1.9		10	0.2	5		0.01	0.005	0.001	0.002	<0.001	
Nickel	mg/L	0.001	0.011	0.007	2	0.2	0.2		0.001	0.004	0.004	0.002	<0.001	
Selenium	mg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	mg/L	0.005	0.008	0.015	5	2	3		0.008	0.021	0.028	0.016	0.006	
Iron	mg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		0.08	0.54	<0.05	<0.05	<0.05	
Ferrous Iron	mg/L	0.05							<0.05	0.12	<0.05	<0.05	<0.05	
Chromium VI	mg/L	0.01	0.001	0.0044			0.5		<0.010	<0.010	<0.01	<0.01	<0.01	
<b>Total Metals</b>														
Aluminium	mg/L	0.01	0.055		20	5	0.2		10	2.57	5.03	2.28	2.15	
Arsenic	mg/L	0.001	0.013		2	0.1	0.1		0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	mg/L	0.0001	0.0002	0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	mg/L	0.001			1	0.1			0.005	0.001	0.003	0.002	0.003	
Copper	mg/L	0.001	0.0014	0.0013	5	0.2	20		0.005	0.015	0.006	0.003	0.002	
Lead	mg/L	0.001	0.0034	0.0044	5	2	0.1		0.015	0.002	0.005	0.003	0.003	
Manganese	mg/L	0.001	1.9		10	0.2	5		0.01	0.002	0.002	<0.001	0.001	
Molybdenum	mg/L	0.001			0.05	0.01	0.5		<0.001	<0.001	<0.001	<0.001	<0.001	
Nickel	mg/L	0.001	0.011	0.007	2	0.2	0.2		0.003	0.002	0.004	0.001	<0.001	
Selenium	mg/L	0.01	0.005		0.05	0.02	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	
Silver	mg/L	0.001	0.00005	0.0014			1		<0.001	<0.001	<0.001	<0.001	<0.001	
Zinc	mg/L	0.005	0.008	0.015	5	2	3		0.011	0.007	0.025	0.012	0.008	
Iron	mg/L	0.05	0.3	1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		0.49	0.13	0.37	0.14	0.15	
Mercury	mg/L	0.0001	0.00006	0.0001	0.002	0.002	0.01		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
<b>Nutrients</b>														
Ammonia as N	mg/L	0.01	0.9	0.91					0.01	0.06	<0.01	0.02	0.01	
Nitrite as N	mg/L	0.01							0.04	<0.01	<0.01	<0.01	<0.01	
Nitrate as N	mg/L	0.01							0.45	2.03	1.63	1.9	1.79	
Kjeldhal Nitrogen	mg/L	0.1							0.1	1.5	0.2	0.6	0.4	
Total Nitrogen	mg/L	0.1	1.0 <sup>2</sup>		25 <sup>3</sup>	5			0.6	3.5	1.8	2.5	2.2	
Total Phosphorus	mg/L	0.01	0.1 <sup>2</sup>		0.8 <sup>4</sup>	0.05			0.02	0.23	<0.01	0.02	0.01	
Reactive Phosphorus	mg/L	0.01							<0.01	<0.01	<0.01	<0.01	<0.01	
<b>Organochlorine Pesticides (OC)</b>														
alpha-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Hexachlorobenzene (HCB)	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
beta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
gamma-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
delta-BHC	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Heptachlor	µg/L	0.5	0.01						<0.5	<0.5	<0.5	<0.5	<0.5	
Aldrin	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Heptachlor epoxide	µg/L	0.5						0.000003		<0.5	<0.5	<0.5	<0.5	
trans-Chlordane	µg/L	0.5	0.03 <sup>10</sup>						<0.5	<0.5	<0.5	<0.5	<0.5	
alpha-Endosulfan	µg/L	0.5	0.03 <sup>11</sup>	0.005 <sup>11</sup>					<0.5	<0.5	<0.5	<0.5	<0.5	
cis-Chlordane	µg/L	0.5	0.03 <sup>10</sup>						<0.5	<0.5	<0.5	<0.5	<0.5	
Dieldrin	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
4,4'-DDE	µg/L	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	
Endrin	µg/L	0.5	0.01	0.004					<0.5	<0.5	<0.5	<0.5	<0.5	
beta-Endosulfan	µg/L	0.5	0.03 <sup>11</sup>	0.005 <sup>11</sup>					<0.5	<0.5	<0.5	<0.5		

**Table 8**  
 Results from all GMEs for MW5  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW5-01	30/08/2012 WRMW5-02	15/01/2013 WRMW5-03	4/06/2013 WRMW5-04	14/05/2015 WRMW5-05	
<b>Fumigants</b>														
2,2-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Halogenated Aliphatic Compounds</b>														
Dichlorodifluoromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Chloromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Vinyl chloride	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Bromomethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Chloroethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
Trichlorofluoromethane	µg/L	50						<50	<50	<50	<50	<50	<50	<50
1,1-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Iodomethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1-Dichloropropylene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Carbon Tetrachloride	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	µg/L	5					0.00003	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Dibromomethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	µg/L	5	6500	1900				<5	<5	<5	<5	<5	<5	<5
1,3-Dichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene	µg/L	5					0.0005	<5	<5	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Pentachloroethane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	µg/L	5						<5	<5	<5	<5	<5	<5	<5
Hexachlorobutadiene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
<b>Halogenated Aromatic Compounds</b>														
Chlorobenzene	µg/L	5					0.00001	<5	<5	<5	<5	<5	<5	<5
Bromobenzene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
2-Chlorotoluene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
4-Chlorotoluene	µg/L	5						<5	<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	µg/L	5	260				0.00002	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	µg/L	5	60				0.0000003	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	µg/L	5	160				0.000001	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	µg/L	5	170	80				<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	µg/L	5	10					<5	<5	<5	<5	<5	<5	<5
<b>Trihalomethanes</b>														
Chloroform	µg/L	5					0.0025	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	µg/L	5						5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	µg/L	5						20	<5	<5	<5	<5	<5	<5
Bromoform	µg/L	5						22	<5	<5	<5	<5	<5	<5
<b>Phenolic Compounds</b>														
Phenol	µg/L	1	320	400				<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	µg/L	1	340				0.003	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	µg/L	2						<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	µg/L	1	120				0.002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-Methylphenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	µg/L	1	3				0.0002	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	µg/L	1						<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	µg/L	2	3.6	11				<2.0	&					

**Table 9**  
 Results from all GMEs for MW6  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012	30/08/2012	15/01/2013	4/06/2013	14/05/2015	
									WRMW6-01	WRMW6-02	WRMW6-03	WRMW6-04	WRMW6-05	
pH Value	pH Unit	0.01	6.5-8.5	8.0-8.4	4.0-9.0	6.0-8.5		<5 <sup>7</sup> / <6 <sup>8</sup>	5.83	5.87	5.15			
Electrical Conductivity	µS/cm	1	1500 <sup>1</sup>		6400 <sup>4</sup>				808	914	912			
Total Dissolved Solids	mg/L	10							492	578	588			
Suspended Solids	mg/L	5							50	6	32			
Turbidity	NTU	0.1							76.6	4	19.9			
Total Alkalinity CaCO <sub>3</sub>	mg/L	1						<30 <sup>8</sup>	38	10	3			
Acidity : Alkalinity	ratio							1 <sup>9</sup>						
Acidity as CaCO <sub>3</sub>	mg/L	1						40	22	39	28			
Sulfate : Alkalinity	ratio							0.2 <sup>7</sup>						
Sulfate : Chloride	ratio							0.5 <sup>7</sup>						
Sulfate as SO <sub>4</sub> <sup>2-</sup>	mg/L	1						1000		173	203	169		
Sulfide	mg/L	0.1	0.001					0.05		<0.1	<0.1	<0.1		
Chloride	mg/L	1						250		124	153	168		
BOD	ratio	2							26	2	<2			
<b>Dissolved Major Cations</b>														
Calcium	mg/L	1												
Magnesium	mg/L	1												
Sodium	mg/L	1												
Potassium	mg/L	1												
<b>Dissolved Metals</b>														
Aluminum	mg/L	0.01	0.055			20	5	0.2	1.0 <sup>7</sup>	0.01	0.15	0.3		
Arsenic	mg/L	0.001	0.013			2	0.1	0.1		<0.001	<0.001	0.001		
Cadmium	mg/L	0.0001	0.0002		0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001		
Chromium	mg/L	0.001				1	0.1			<0.001	<0.001	<0.001		
Manganese	mg/L	0.001	1.9			10	0.2	5		0.035	0.032	0.032		
Nickel	mg/L	0.001	0.011		0.007	2	0.2	0.2		0.001	0.004	0.014		
Selenium	mg/L	0.01	0.005			0.05	0.02	0.1		<0.01	<0.01	<0.01		
Zinc	mg/L	0.005	0.008		0.015	5	2	3		0.01	0.016	0.132		
Iron	mg/L	0.05	0.3		1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		1.42	0.11	0.91		
Ferrous Iron	mg/L	0.05								0.35	<0.05	0.73		
Chromium VI	mg/L	0.01	0.001		0.0044			0.5		<0.010	<0.010	<0.01		
<b>Total Metals</b>														
Aluminium	mg/L	0.01	0.055			20	5	0.2		0.74	0.41	1.15		
Arsenic	mg/L	0.001	0.013			2	0.1	0.1		<0.001	<0.001	<0.001		
Cadmium	mg/L	0.0001	0.0002		0.0007	0.05	0.01	0.02		<0.0001	<0.0001	<0.0001		
Chromium	mg/L	0.001				1	0.1			<0.001	<0.001	0.005		
Copper	mg/L	0.001	0.0014		0.0013	5	0.2	20		0.002	0.003	0.013		
Lead	mg/L	0.001	0.0034		0.0044	5	2	0.1		0.007	0.009	0.008		
Manganese	mg/L	0.001	1.9			10	0.2	5		0.034	0.034	0.035		
Molybdenum	mg/L	0.001				0.05	0.01	0.5		<0.001	<0.001	<0.001		
Nickel	mg/L	0.001	0.011		0.007	2	0.2	0.2		0.002	0.003	0.013		
Selenium	mg/L	0.01	0.005			0.05	0.02	0.1		<0.01	<0.01	<0.01		
Silver	mg/L	0.001	0.00005		0.0014			1		<0.001	<0.001	<0.001		
Zinc	mg/L	0.005	0.008		0.015	5	2	3		0.012	0.011	0.107		
Iron	mg/L	0.05	0.3		1.0 / 0.3 <sup>3</sup>	10	0.2	0.3		10.4	3.21	1.74		
Mercury	mg/L	0.0001	0.00006		0.0001	0.002	0.002	0.01		<0.0001	<0.0001	<0.0001		
<b>Nutrients</b>														
Ammonia as N	mg/L	0.01	0.9		0.91					1.64	0.73	0.33		
Nitrite as N	mg/L	0.01						30		0.05	0.02	<0.01		
Nitrate as N	mg/L	0.01						500		0.17	1.43	1.16		
Kjeldhal Nitrogen	mg/L	0.1								1.6	1.1	0.8		
Total Nitrogen	mg/L	0.1	1.0 <sup>2</sup>			25 <sup>3</sup>	5			1.8	2.6	2		
Total Phosphorus	mg/L	0.01	0.1 <sup>2</sup>			0.8 <sup>4</sup>	0.05			0.03	0.02	<0.01		
Reactive Phosphorus	mg/L	0.01								<0.01	<0.01	<0.01		
<b>Organochlorine Pesticides (OC)</b>														
alpha-BHC	µg/L	0.5								<0.5	<0.5	<0.5		
Hexachlorobenzene (HCB)	µg/L	0.5								<0.5	<0.5	<0.5		
beta-BHC	µg/L	0.5								<0.5	<0.5	<0.5		
gamma-BHC	µg/L	0.5								<0.5	<0.5	<0.5		
delta-BHC	µg/L	0.5								<0.5	<0.5	<0.5		
Heptachlor	µg/L	0.5	0.01							<0.5	<0.5	<0.5		
Aldrin	µg/L	0.5								<0.5	<0.5	<0.5		
Heptachlor epoxide	µg/L	0.5						0.000003		<0.5	<0.5	<0.5		
trans-Chlordane	µg/L	0.5	0.03 <sup>10</sup>							<0.5	<0.5	<0.5		
alpha-Endosulfan	µg/L	0.5	0.03 <sup>11</sup>		0.005 <sup>11</sup>					<0.5	<0.5	<0.5		
cis-Chlordane	µg/L	0.5	0.03 <sup>10</sup>							<0.5	<0.5	<0.5		
Dieldrin	µg/L	0.5				</td								

**Table 9**  
 Results from all GMEs for MW6  
 Lot 20, Adelaide Street, Hazelmere  
 E2012-031

Analyte grouping/Analyte	Units	LOR	Freshwater Ecosystems	Marine Ecosystems	Short Term Irrigation	Long Term Irrigation	Non-Potable Groundwater Use	DER Trigger Values	18/05/2012 WRMW6-01	30/08/2012 WRMW6-02	15/01/2013 WRMW6-03	4/06/2013 WRMW6-04	14/05/2015 WRMW6-05
<b>Fumigants</b>													
2,2-Dichloropropane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
1,2-Dichloropropane	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
cis-1,3-Dichloropropene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
trans-1,3-Dichloropropene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
<b>Halogenated Aliphatic Compounds</b>													
Dichlorodifluoromethane	µg/L	50	orange	blue	light green	olive	pink	<50	<50	<50			
Chloromethane	µg/L	50	orange	blue	light green	olive	pink	<50	<50	<50			
Vinyl chloride	µg/L	50		blue	light green	olive	pink	<50	<50	<50			
Bromomethane	µg/L	50		blue	light green	olive	pink	<50	<50	<50			
Chloroethane	µg/L	50	orange	blue	light green	olive	pink	<50	<50	<50			
Trichlorofluoromethane	µg/L	50		blue	light green	olive	pink	<50	<50	<50			
1,1-Dichloroethene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
Iodomethane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
trans-1,2-Dichloroethene	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
1,1-Dichloroethane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
cis-1,2-Dichloroethene	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
1,1,1-Trichloroethane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
1,1-Dichloropropylene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
Carbon Tetrachloride	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
1,2-Dichloroethane	µg/L	5		blue	light green	olive	pink	0.00003	<5	<5	<5		
Trichloroethene	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
Dibromomethane	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
1,1,2-Trichloroethane	µg/L	5	6500	1900			pink	<5	<5	<5			
Tetrachloroethene	µg/L	5		blue	light green	olive	pink	0.0005	<5	<5	<5		
1,1,1,2-Tetrachloroethane	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
trans-1,4-Dichloro-2-butene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
cis-1,4-Dichloro-2-butene	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
1,1,2,2-Tetrachloroethane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
1,2,3-Trichloropropene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
Pentachloroethane	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
1,2-Dibromo-3-chloropropane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
Hexachlorobutadiene	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
<b>Halogenated Aromatic Compounds</b>													
Chlorobenzene	µg/L	5	orange	blue	light green	olive	pink	0.00001	<5	<5	<5		
Bromobenzene	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
2-Chlorotoluene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
4-Chlorotoluene	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
1,3-Dichlorobenzene	µg/L	5	260	blue	light green	olive	pink	0.00002	<5	<5	<5		
1,4-Dichlorobenzene	µg/L	5	60	blue	light green	olive	pink	0.0000003	<5	<5	<5		
1,2-Dichlorobenzene	µg/L	5	160	blue	light green	olive	pink	0.0000001	<5	<5	<5		
1,2,4-Trichlorobenzene	µg/L	5	170	80	light green	olive	pink	<5	<5	<5			
1,2,3-Trichlorobenzene	µg/L	5	10		light green	olive	pink	<5	<5	<5			
<b>Trihalomethanes</b>													
Chloroform	µg/L	5	orange	blue	light green	olive	pink	0.0025	<5	<5	<5		
Bromodichloromethane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
Dibromochloromethane	µg/L	5	orange	blue	light green	olive	pink	<5	<5	<5			
Bromoform	µg/L	5		blue	light green	olive	pink	<5	<5	<5			
<b>Phenolic Compounds</b>													
Phenol	µg/L	1	320	400			pink	<1.0	<1.0	<1.0			
2-Chlorophenol	µg/L	1	340	blue	light green	olive	pink	0.003	<1.0	<1.0	<1.0		
2-Methylphenol	µg/L	1	orange	blue	light green	olive	pink	<1.0	<1.0	<1.0			
3- & 4-Methylphenol	µg/L	2		blue	light green	olive	pink	<2.0	<2.0	<2.0			
2-Nitrophenol	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			
2,4-Dimethylphenol	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			
2,4-Dichlorophenol	µg/L	1	120	blue	light green	olive	pink	0.002	<1.0	<1.0	<1.0		
2,6-Dichlorophenol	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			
4-Chloro-3-Methylphenol	µg/L	1	orange	blue	light green	olive	pink	<1.0	<1.0	<1.0			
2,4,6-Trichlorophenol	µg/L	1	3	blue	light green	olive	pink	0.0002	<1.0	<1.0	<1.0		
2,4,5-Trichlorophenol	µg/L	1	orange	blue	light green	olive	pink	<1.0	<1.0	<1.0			
Pentachlorophenol	µg/L	2	3.6	11	light green	olive	pink	<2.0	<2.0	<2.0			
<b>Polycyclic Aromatic Hydrocarbons</b>													
Naphthalene	µg/L	1	16	50	light green	olive	pink	<1.0	<1.0	<1.0			
Acenaphthylene	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			
Acenaphthene	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			
Fluorene	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			
Phenanthrene	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			
Anthracene	µg/L	1		blue	light green	olive	pink	<1.0	<1.0	<1.0			



## **Appendix A – Certificate of Title**

WESTERN



AUSTRALIA

REGISTER NUMBER  
**20/D76128**

DUPPLICATE  
EDITION  
**3**

DATE DUPLICATE ISSUED  
**13/6/2008**

VOLUME  
**2054**

FOLIO  
**299**

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

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.

  
REGISTRAR OF TITLES



### LAND DESCRIPTION:

LOT 20 ON DIAGRAM 76128

### REGISTERED PROPRIETOR: (FIRST SCHEDULE)

HAZELLAND PTY LTD OF SUITE 5, 17 FOLEY STREET, BALCATTA  
(TP K606822 ) REGISTERED 26 MAY 2008

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

1. \*K606823 NOTIFICATION CONTAINS FACTORS AFFECTING THE WITHIN LAND. LODGED 26.5.2008.
2. \*L520703 MEMORIAL. CONTAMINATED SITES ACT 2003 (CONTAMINATED SITE - REMEDIATION REQUIRED) REGISTERED 30.12.2010.

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: 2054-299 (20/D76128).  
PREVIOUS TITLE: 1697-970, 1103-577.  
PROPERTY STREET ADDRESS: LOT 20 ADELAIDE ST, HAZELMERE.  
LOCAL GOVERNMENT AREA: CITY OF SWAN.

ORIGINAL—NOT TO BE REMOVED FROM OFFICE OF TITLES

Application G704

Volume Folio  
1103 577  
1697 970

WESTERN



AUSTRALIA

REGISTER BOOK  
VOL. FOL.

CT 2054

299



## 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.

Dated 9th October, 1995

*G. Sach*

REGISTRAR OF TITLES



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

## ESTATE AND LAND REFERRED TO

Estate in fee simple in portion of Helena Location 20a and being Lot 20 the subject of Diagram 76128, delineated on the map in the Third Schedule hereto.

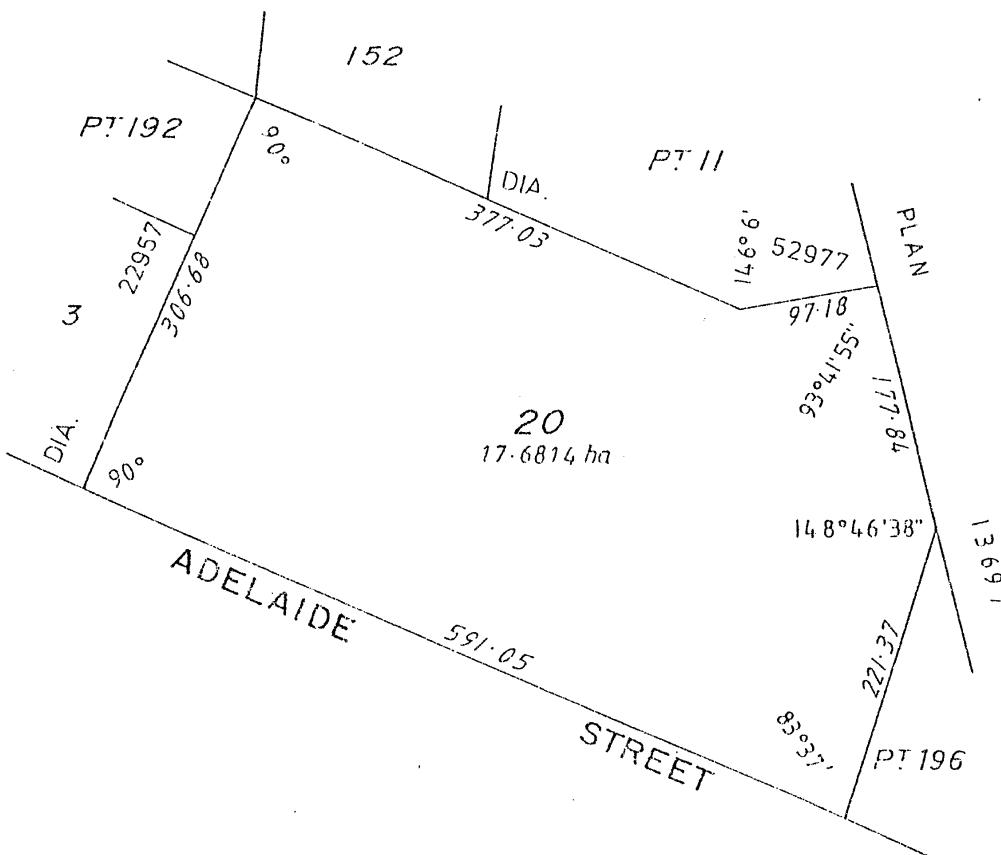
## FIRST SCHEDULE (continued overleaf)

~~Enviroclean Waste Services Pty Ltd of Post Office Box 347 Victoria Park.~~

## SECOND SCHEDULE (continued overleaf)

1. ~~MORTGAGE E223538 to Commonwealth Bank of Australia. Registered 31.10.89 at 10.02 hrs.~~  
Discharged G108671 23.2.96
2. ~~CAVEAT E674833 Lodged 9.8.91 at 11.27 hrs.~~  
Withdrawn G108674 23.2.96
3. ~~MEMORIAL E730989 of Section 46 Land Tax Assessment Act 1976. Registered 25.10.91 at 9.15 hrs.~~  
Withdrawn G108673 23.2.96
4. ~~CAVEAT E544516 Lodged 10.5.94 at 12.10 hrs.~~  
Withdrawn G108672 23.2.96

## THIRD SCHEDULE



NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS.

Page 2 (19 pages)

SEARCHED		INDEXED		FILED	
NO: ENTRIES MAY BE MADE BY SUBSCRIBERS		INSTRUMENT		REGISTRATION	
REGISTERED PROPRIETOR		NATURE	NUMBER	TIME	CERT. OFFICER
Westarain Pty Ltd		Transf.	C100675	22 2 06	10 10 S. G. S.
Wattle Grove					

Westgroup Pty Ltd of 665 Welshpool Road, Wattle Grove.

**SECOND SCHEDULE (continued)** NOTE: ENTRIES MAY BE AFFECTED BY SUBSEQUENT ENDORSEMENTS

LANDGATE COPY OF ORIGINAL NOT TO SCALE Tue Sep 11 14:41:32 2012 JOB 40018009



## **Appendix B – Groundwater Field Sheets**



ENVIRONMENTAL SERVICES

## Monitoring Well Field Record

Job # E2012-031Client: Waste RockLocation: Adelaide StreetWell ID: MW3Date: 14.5.2015 Sampler: RB

### Monitoring Well Information

Depth to Water: -4095 (mm TOC) Depth to Bottom: \_\_\_\_\_ (m)Standpipe: \_\_\_\_\_ (m) Monument Cover Lock:  None  Padlock (YL)  Enviro Cap  Gatic

### Equipment IDs

Water Quality Meter: YSI TTA Kit: /Pump: low flow TALK Kit: /Dipper: on site

### Sampling

Sample ID: WRMW3-05 COC No: E2012-031-008

Time	pH	EC	DO	Temp	Redox	TTA	TALK
1211	5.53	768	0.41	23.4	152.6		
1216	5.61	771	0.30	23.3	142.5		
1221	5.63	784	0.32	23.4	135.3	0.20	0.23

### Bottles

### ASSESSMENT SUITE 2

1 x 1000mL plastic GREEN	<input type="checkbox"/>	2 x 40mL vials MAROON	<input type="checkbox"/>	1 x 500mL plastic GREEN**	<input type="checkbox"/>
1 x 125mL plastic YELLOW	<input type="checkbox"/>	1 x 500mL glass ORANGE	<input type="checkbox"/>	**BRING BACK & FILTER INTO:	
1 x 125mL plastic PURPLE	<input type="checkbox"/>	2 x 500mL glass ORANGE	<input type="checkbox"/>	1 x 60mL plastic MAROON	<input type="checkbox"/>
1 x 60mL plastic BLUE	<input type="checkbox"/>	per sample set (Lab Dups)	<input type="checkbox"/>	1 x 60mL plastic RED/GREEN	<input type="checkbox"/>
1 x 60mL plastic RED/GREEN	<input type="checkbox"/>	1 x 500mL plastic GREEN	<input type="checkbox"/>		

### Comments



## Monitoring Well Field Record

Job # E2012-031

Client: Waste Rock

Location: Adelaide Street

Well ID: MW62

Date: 14.5.2015 Sampler: DA | RB

### Monitoring Well Information

Depth to Water: - 8102 (mm TOC) Depth to Bottom: \_\_\_\_\_ (m)

Standpipe: \_\_\_\_\_ (m) Monument Cover

Lock:  None  Padlock (YL)  Enviro Cap  Gatic

### Equipment IDs

Water Quality Meter: Y51 TTA Kit: /

Pump: low flow TALK Kit: /

Dipper: con sites

### Sampling

Sample ID: WRMW6-05 COC No: E2012-031-008

Time	pH	EC	DO	Temp	Redox	TTA	TALK
1039	5.32	467.5	1.77	22.0	195.7		
1044	4.38	462.6	1.82	22.0	219.1		
1049	4.32	465.0	1.88	22.0	220.0	0.46	0.10
1054							

### Bottles

### ASSESSMENT SUITE 2

1 x 1000mL plastic GREEN	<input type="checkbox"/>	2 x 40mL vials MAROON	<input type="checkbox"/>	1 x 500mL plastic GREEN**	<input type="checkbox"/>
1 x 125mL plastic YELLOW	<input type="checkbox"/>	1 x 500mL glass ORANGE	<input type="checkbox"/>	**BRING BACK & FILTER INTO:	
1 x 125mL plastic PURPLE	<input type="checkbox"/>	2 x 500mL glass ORANGE	<input type="checkbox"/>	1 x 60mL plastic MAROON	<input type="checkbox"/>
1 x 60mL plastic BLUE	<input type="checkbox"/>	per sample set (Lab Dups)	<input type="checkbox"/>	1 x 60mL plastic RED/GREEN	<input type="checkbox"/>
1 x 60mL plastic RED/GREEN	<input type="checkbox"/>	1 x 500mL plastic GREEN	<input type="checkbox"/>		

### Comments

fill -10 discharge -8



ENVIRONMENTAL SERVICES

## Monitoring Well Field Record

Job # E2012-031Client: Waste RockLocation: Adelaide StreetWell ID: MW3 3Date: 14.5.2015Sampler: DA | DB

### Monitoring Well Information

Depth to Water: 12320 (mm TOC) Depth to Bottom: \_\_\_\_\_ (m)

Standpipe: \_\_\_\_\_ (m)

Monument Cover Lock:  None Padlock (YL) Enviro Cap Gatic

### Equipment IDs

Water Quality Meter: 451 TTA Kit: ✓Pump: low flow TALK Kit: ✓Dipper: con sites

### Sampling

Sample ID: WRMW3-05 COC No: E2012-031-008

Time	pH	EC	DO	Temp	Redox	TTA	TALK
954	5.32	790	2.90	22.2	168.7		
959	5.64	954	1.31	22.6	134.8		
1004	5.68	966	1.13	22.8	123.9		
1009	5.70	963	1.03	22.8	119.1	0.41	0.32
1014							

### Bottles

### ASSESSMENT SUITE 2

1 x 1000mL plastic GREEN	<input type="checkbox"/>	2 x 40mL vials MAROON	<input type="checkbox"/>	1 x 500mL plastic GREEN**	<input type="checkbox"/>
1 x 125mL plastic YELLOW	<input type="checkbox"/>	1 x 500mL glass ORANGE	<input type="checkbox"/>	**BRING BACK & FILTER INTO:	
1 x 125mL plastic PURPLE	<input type="checkbox"/>	2 x 500mL glass ORANGE	<input type="checkbox"/>	1 x 60mL plastic MAROON	<input type="checkbox"/>
1 x 60mL plastic BLUE	<input type="checkbox"/>	per sample set (Lab Dups)	<input type="checkbox"/>	1 x 60mL plastic RED/GREEN	<input type="checkbox"/>
1 x 60mL plastic RED/GREEN	<input type="checkbox"/>	1 x 500mL plastic GREEN	<input type="checkbox"/>		

### Comments



ENVIRONMENTAL SERVICES

## Monitoring Well Field Record

Job # E2012-031Client: Waste RockLocation: Adelaide StreetWell ID: MW4Date: 14.5.2015 Sampler: DA / RB

### Monitoring Well Information

Depth to Water: -8916 (mm TOC) Depth to Bottom: \_\_\_\_\_ (m)Standpipe: \_\_\_\_\_ (m) Monument Cover Lock:  None  Padlock (YL)  Enviro Cap  Gatic

### Equipment IDs

Water Quality Meter: 451 TTA Kit: ✓Pump: low flow TALK Kit: ✓Dipper: con sites (QC TR)

### Sampling

Sample ID: WRMW4-05 COC No: E2012-031-008

Time	pH	EC	DO	Temp	Redox	TTA	TALK
0830	5.11	153.4	8.07	26.1	181.2		
0835	4.61	124.0	7.11	21.2	255.6		
0840	4.35	125.2	6.75	21.5	235.1		
0845	4.26	126.1	6.86	21.5	238.6		
0850	4.20	126.8	6.68	21.5	241.0	0.24	136.1

### Bottles

### ASSESSMENT SUITE 2

1 x 1000mL plastic GREEN	<input type="checkbox"/>	2 x 40mL vials MAROON	<input type="checkbox"/>	1 x 500mL plastic GREEN**	<input type="checkbox"/>
1 x 125mL plastic YELLOW	<input type="checkbox"/>	1 x 500mL glass ORANGE	<input type="checkbox"/>	**BRING BACK & FILTER INTO:	
1 x 125mL plastic PURPLE	<input type="checkbox"/>	2 x 500mL glass ORANGE	<input type="checkbox"/>	1 x 60mL plastic MAROON	<input type="checkbox"/>
1 x 60mL plastic BLUE	<input type="checkbox"/>	per sample set (Lab Dups)	<input type="checkbox"/>	1 x 60mL plastic RED/GREEN	<input type="checkbox"/>
1 x 60mL plastic RED/GREEN	<input type="checkbox"/>	1 x 500mL plastic GREEN	<input type="checkbox"/>		

### Comments

QC8 dup

QC9 trip



ENVIRONMENTAL SERVICES

## Monitoring Well Field Record

Job # E2012-031Client: Waste RockLocation: Adelaide StreetWell ID: MW5Date: 14.5.2015 Sampler: DA | QB

### Monitoring Well Information

Depth to Water: 9360 (mm TOC) Depth to Bottom: \_\_\_\_\_ (m)Standpipe: 12300 (m) Monument Cover Lock:  None  Padlock (YL)  Enviro Cap  Gatic

### Equipment IDs

Water Quality Meter: 951 TTA Kit: ✓Pump: low flow TALK Kit: ✓Dipper: on sites

### Sampling

Sample ID: WRMW5-05 COC No: E2012-031-08

Time	pH	EC	DO	Temp	Redox	TTA	TALK
803	6.98	118.4	6.25	20.8	105.5		
808	5.42	119.9	5.52	22.0	154.8		
813	5.11	119.8	5.27	22.2	184.3		
818	5.00	120.0	5.11	22.3	192.8	0.09	0.12

### Bottles

### ASSESSMENT SUITE 2

1 x 1000mL plastic GREEN	<input type="checkbox"/>	2 x 40mL vials MAROON	<input type="checkbox"/>	1 x 500mL plastic GREEN**	<input type="checkbox"/>
1 x 125mL plastic YELLOW	<input type="checkbox"/>	1 x 500mL glass ORANGE	<input type="checkbox"/>	**BRING BACK & FILTER INTO:	
1 x 125mL plastic PURPLE	<input type="checkbox"/>	2 x 500mL glass ORANGE	<input type="checkbox"/>	1 x 60mL plastic MAROON	<input type="checkbox"/>
1 x 60mL plastic BLUE	<input type="checkbox"/>	per sample set (Lab Dups)	<input type="checkbox"/>	1 x 60mL plastic RED/GREEN	<input type="checkbox"/>
1 x 60mL plastic RED/GREEN	<input type="checkbox"/>	1 x 500mL plastic GREEN	<input type="checkbox"/>		

### Comments



## **Appendix C – Groundwater and QC (Duplicate) Laboratory Results & Documentation**

3181

Site: Waste rock  
Job #: E2012\_031  
Sampler: DA | RB  
CoC #: E2012-031-009  
Quote #: EP / 1016 / 14 v2  
Laboratory: ALS  
Date and time delivered: 14/5  
Received by: A Lucy



## **ENVIRONMENTAL SERVICES**

**Mobile Dewatering Environmental Services**  
Unit 1, 22 Elmsfield Road  
Midvale WA 6056  
P: 08 9250 6960  
F: 08 9250 8269  
E: info@environmentalservices.com.au

**Comments:**

## Analysis Detection Limits

Sample ID	Lab ID	Type	Sampling		ASSESSMENT
			Date	Time	
1 WRMW1-05		WATER	14/5	0830	/
2 WRMW2-05				0930	//
3 WRMW3-05				1030	//
4 WRMW4-05				1130	//
5 WRMW5-05				1230	/
6 QC8				1230	/
7 QC10				1230	//
8 QC11				1230	//

*Environmental Division*

Perth

### **Work Order Reference**

EP1510146



Telephone : +61-8-9209 7655

Condition of Sample: Cool / Ambient / Warm

Relinquished by: \_\_\_\_\_



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: EP1510146		
Client	: MOBILE DEWATERING	Laboratory	: Environmental Division Perth
Contact	: INFO UNKNOWN	Contact	: Cicelia Bartels
Address	: PO BOX 239 MIDLAND WA, AUSTRALIA 6939	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: info@environmentalservices.com.au	E-mail	: cicelia.bartels@alsglobal.com
Telephone	: +61 08 9250 4995	Telephone	: (08) 9209 7601
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: E2012-031	Page	: 1 of 3
Order number	: ----	Quote number	: EP2014MOBDEW0151 (EP/1016/14 V2)
C-O-C number	: E2012-031-009	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: Waste rock		
Sampler	: DALE ANDREWS		

**Dates**

Date Samples Received	: 14-May-2015	Issue Date	: 15-May-2015
Client Requested Due Date	: 21-May-2015	Scheduled Reporting Date	: <b>21-May-2015</b>

**Delivery Details**

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 15 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 8 / 8

**General Comments**

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Please see scanned COC for sample discrepancies: extra samples , samples not received etc.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (SamplesPerth@alsenviro.com)
- Analytical work for this work order will be conducted at ALS Environmental Perth.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of Work Order.
- **pH analysis should be conducted within 6 hours of sampling.**

## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exist.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

Matrix: WATER

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA010P Conductivity (PC)	WATER - ED038 Acidity (all parameters)	WATER - EG020F Dissolved Metals by ICPMS	WATER - EP026SP Chemical Oxygen Demand (COD)	WATER - EP030 BOD	WATER - NT-01 & 02 Major Cations & Anions (Ca, Mg, Na, K, Cl, SO4, Total Nitrogen + NO2 + NO3 + NH3 + Total P +
EP1510146-001	14-May-2015 08:30	WRMW1-05	✓	✓	✓	✓	✓	✓
EP1510146-002	14-May-2015 09:30	WRMW2-05	✓	✓	✓	✓	✓	✓
EP1510146-003	14-May-2015 10:30	WRMW3-05	✓	✓	✓	✓	✓	✓
EP1510146-004	14-May-2015 11:30	WRMW4-05	✓	✓	✓	✓	✓	✓
EP1510146-005	14-May-2015 00:30	WRMW5-05	✓	✓	✓	✓	✓	✓
EP1510146-006	14-May-2015 00:30	QC8	✓	✓	✓	✓	✓	✓
EP1510146-007	14-May-2015 00:30	QC10	✓	✓	✓	✓	✓	✓
EP1510146-008	14-May-2015 00:30	QC11	✓	✓	✓	✓	✓	✓

Matrix: WATER

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PC)	WATER - EA025H Suspended Solids (High Level)	WATER - EG030G-F Dissolved Hexavalent Chromium by Discrete	WATER - EG051G Ferrous Iron by Discrete Analyser	WATER - EK085M Sulfide as S 2-	WATER - W-12 OC/OP Pesticides	WATER - W-14A PAH/Phenols (SIM)
EP1510146-001	14-May-2015 08:30	WRMW1-05	✓	✓	✓	✓	✓	✓	✓
EP1510146-002	14-May-2015 09:30	WRMW2-05	✓	✓	✓	✓	✓	✓	✓
EP1510146-003	14-May-2015 10:30	WRMW3-05	✓	✓	✓	✓	✓	✓	✓
EP1510146-004	14-May-2015 11:30	WRMW4-05	✓	✓	✓	✓	✓	✓	✓
EP1510146-005	14-May-2015 00:30	WRMW5-05	✓	✓	✓	✓	✓	✓	✓
EP1510146-006	14-May-2015 00:30	QC8	✓	✓	✓	✓	✓	✓	✓
EP1510146-007	14-May-2015 00:30	QC10	✓	✓	✓	✓	✓	✓	✓
EP1510146-008	14-May-2015 00:30	QC11	✓	✓	✓	✓	✓	✓	✓

**Matrix: WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA015H	Total Dissolved Solids - High Level	WATER - EA045	Turbidity	WATER - EG020T	Total Recoverable Metals by ICPMS (including	WATER - EG035T	Total Mercury by FIMS	WATER - W-09	TRH/VOC
EP1510146-001	14-May-2015 08:30	WRMW1-05	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EP1510146-002	14-May-2015 09:30	WRMW2-05	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EP1510146-003	14-May-2015 10:30	WRMW3-05	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EP1510146-004	14-May-2015 11:30	WRMW4-05	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EP1510146-005	14-May-2015 00:30	WRMW5-05	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EP1510146-006	14-May-2015 00:30	QC8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EP1510146-007	14-May-2015 00:30	QC10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EP1510146-008	14-May-2015 00:30	QC11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

### Requested Deliverables

#### ACCOUNTS PAYABLE (WA)

- A4 - AU Tax Invoice (INV) Email greer@environmentalservices.com.au

#### INFO UNKNOWN

- \*AU Certificate of Analysis - NATA (COA) Email info@environmentalservices.com.au
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email info@environmentalservices.com.au
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email info@environmentalservices.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email info@environmentalservices.com.au
- Chain of Custody (CoC) (COC) Email info@environmentalservices.com.au
- EDI Format - ENMRG (ENMRG) Email info@environmentalservices.com.au
- EDI Format - XTab (XTAB) Email info@environmentalservices.com.au

## CERTIFICATE OF ANALYSIS

Work Order	: EP1510146	Page	: 1 of 19
Client	: MOBILE DEWATERING	Laboratory	: Environmental Division Perth
Contact	: INFO UNKNOWN	Contact	: Cicelia Bartels
Address	: PO BOX 239 MIDLAND WA, AUSTRALIA 6939	Address	: 10 Hod Way Malaga WA Australia 6090
E-mail	: info@environmentalservices.com.au	E-mail	: cicelia.bartels@alsglobal.com
Telephone	: +61 08 9250 4995	Telephone	: (08) 9209 7601
Facsimile	: ----	Facsimile	: +61-8-9209 7600
Project	: E2012-031	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----	Date Samples Received	: 14-May-2015 15:25
C-O-C number	: E2012-031-009	Date Analysis Commenced	: 15-May-2015
Sampler	: DALE ANDREWS	Issue Date	: 22-May-2015 09:48
Site	: Waste rock	No. of samples received	: 8
Quote number	: ----	No. of samples analysed	: 8

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.



WORLD RECOGNISED  
ACCREDITATION

### Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics
Efua Wilson	Metals Chemist	Perth Inorganics
Jeremy Truong	Senior Inorganic Chemist	Perth Inorganics
Rassem Ayoubi	Senior Organic Chemist	Perth Organics
Scott James	Laboratory Manager	Perth Inorganics

## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

Ø = ALS is not NATA accredited for these tests.

- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the DEC Waste Classification and Waste Definitions 1996 (as amended 2009) guideline are analysed by ALS using P19/2 package.
- This guideline comparison report only provides evaluation of total concentration data against upper limit thresholds for Class I, II, III, IV.
- This Automated Guideline Comparison report assesses potential chemical 'contaminants' versus guideline criteria. Other parameters may impact classification and 95% upper control limits may also be applied - refer to EPA Regulations.
- Red shading is applied where the result is equal to or greater than the guideline upper limit. Red shading is not applied to the Summary of Thresholds Reached or Exceeded.
- For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required sample IDs are listed and analysed.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1,2,3,cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.

## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		WRMW1-05	WRMW2-05	WRMW3-05	WRMW4-05	WRMW5-05
Compound	CAS Number	LOR	Unit	14-May-2015 08:30	14-May-2015 09:30	14-May-2015 10:30	14-May-2015 11:30	14-May-2015 00:30
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	---	0.01	pH Unit	6.45	4.91	6.31	4.29	4.35
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	---	1	µS/cm	828	416	678	139	112
<b>EA015: Total Dissolved Solids</b>								
^ Total Dissolved Solids @180°C	---	10	mg/L	581	232	400	84	72
<b>EA025: Suspended Solids</b>								
^ Suspended Solids (SS)	---	5	mg/L	205	69	246	<5	38
<b>EA045: Turbidity</b>								
Turbidity	---	0.1	NTU	359	72.3	149	1.6	59.0
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO <sub>3</sub>	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO <sub>3</sub>	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO <sub>3</sub>	71-52-3	1	mg/L	48	<1	42	<1	<1
Total Alkalinity as CaCO <sub>3</sub>	---	1	mg/L	48	<1	42	<1	<1
<b>ED038A: Acidity</b>								
Acidity as CaCO <sub>3</sub>	---	1	mg/L	20	39	13	18	10
<b>ED041G: Sulfate (Turbidimetric) as SO<sub>4</sub> 2- by DA</b>								
Sulfate as SO <sub>4</sub> - Turbidimetric	14808-79-8	1	mg/L	74	13	88	5	10
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	207	115	147	18	18
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	30	<1	16	<1	1
Magnesium	7439-95-4	1	mg/L	20	7	25	5	2
Sodium	7440-23-5	1	mg/L	110	67	84	12	16
Potassium	7440-09-7	1	mg/L	4	<1	4	2	1
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	1.59	0.08	0.02	0.13	0.09
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.042	0.002	0.004	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.003	0.002	0.003	0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.036	0.030	0.014	0.021	0.006

## *Analytical Results*

## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		WRMW1-05	WRMW2-05	WRMW3-05	WRMW4-05	WRMW5-05
Compound	CAS Number	LOR	Unit	14-May-2015 08:30	14-May-2015 09:30	14-May-2015 10:30	14-May-2015 11:30	14-May-2015 00:30
				Result	Result	Result	Result	Result
<b>EK067G: Total Phosphorus as P by Discrete Analyser - Continued</b>								
Total Phosphorus as P	---	0.01	mg/L	0.14	0.02	0.04	0.04	0.01
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EK085M: Sulfide as S2-</b>								
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EN055: Ionic Balance</b>								
^ Total Anions	---	0.01	meq/L	8.34	3.51	6.82	0.61	0.72
^ Total Cations	---	0.01	meq/L	8.03	3.49	6.61	0.98	0.94
^ Ionic Balance	---	0.01	%	1.89	0.37	1.55	----	----
<b>EP026SP: Chemical Oxygen Demand (Spectrophotometric)</b>								
Chemical Oxygen Demand	---	10	mg/L	<10	<10	<10	<10	<10
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	---	2	mg/L	<2	<2	<2	<2	<2
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



## *Analytical Results*

## Analytical Results

Client sample ID				WRMW1-05	WRMW2-05	WRMW3-05	WRMW4-05	WRMW5-05
Compound	CAS Number	LOR	Unit	14-May-2015 08:30	14-May-2015 09:30	14-May-2015 10:30	14-May-2015 11:30	14-May-2015 00:30
				Result	Result	Result	Result	Result
<b>EP074B: Oxygenated Compounds - Continued</b>								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5

## Analytical Results

Client sample ID				WRMW1-05	WRMW2-05	WRMW3-05	WRMW4-05	WRMW5-05
Compound	CAS Number	LOR	Unit	14-May-2015 08:30	14-May-2015 09:30	14-May-2015 10:30	14-May-2015 11:30	14-May-2015 00:30
				Result	Result	Result	Result	Result
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0

## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		WRMW1-05	WRMW2-05	WRMW3-05	WRMW4-05	WRMW5-05
Compound	CAS Number	LOR	Unit	14-May-2015 08:30	14-May-2015 09:30	14-May-2015 10:30	14-May-2015 11:30	14-May-2015 00:30
				Result	Result	Result	Result	Result
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX	C6_C10-BTEX (F1)	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1

## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		WRMW1-05	WRMW2-05	WRMW3-05	WRMW4-05	WRMW5-05
Compound	CAS Number	LOR	Unit	14-May-2015 08:30	14-May-2015 09:30	14-May-2015 10:30	14-May-2015 11:30	14-May-2015 00:30
				Result	Result	Result	Result	Result
<b>EP080: BTEXN - Continued</b>								
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3	106-42-3	2	µg/L	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.5	%	64.3	82.4	80.6	81.1	87.2
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.5	%	60.5	77.5	76.7	77.7	83.2
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	5	%	92.7	91.0	91.3	89.8	89.1
Toluene-D8	2037-26-5	5	%	99.8	101	99.8	101	102
4-Bromofluorobenzene	460-00-4	5	%	92.7	90.2	91.7	90.8	87.7
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	1	%	18.0	21.1	19.2	20.3	22.9
2-Chlorophenol-D4	93951-73-6	1	%	49.7	59.6	53.5	54.5	61.4
2,4,6-Tribromophenol	118-79-6	1	%	53.4	68.6	64.4	66.2	72.1
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	1	%	61.2	71.2	64.0	61.2	71.8
Anthracene-d10	1719-06-8	1	%	68.0	82.2	79.0	74.4	84.5
4-Terphenyl-d14	1718-51-0	1	%	77.8	95.1	93.4	90.6	102
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	2	%	94.6	92.4	92.5	90.8	90.6
Toluene-D8	2037-26-5	2	%	98.3	98.9	98.3	98.9	100
4-Bromofluorobenzene	460-00-4	2	%	99.3	99.2	101	98.8	96.6

## Analytical Results

Client sample ID				QC8	QC10	QC11	---	---
Compound	CAS Number	LOR	Unit	14-May-2015 00:30	14-May-2015 00:30	14-May-2015 00:30	---	---
				Result	Result	Result	Result	Result
<b>EA005P: pH by PC Titrator</b>								
pH Value	---	0.01	pH Unit	4.31	5.45	3.89	---	---
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	---	1	µS/cm	112	<1	48	---	---
<b>EA015: Total Dissolved Solids</b>								
^ Total Dissolved Solids @180°C	---	10	mg/L	65	<10	15	---	---
<b>EA025: Suspended Solids</b>								
^ Suspended Solids (SS)	---	5	mg/L	<5	<5	<5	---	---
<b>EA045: Turbidity</b>								
Turbidity	---	0.1	NTU	2.0	<0.1	<0.1	---	---
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO <sub>3</sub>	DMO-210-001	1	mg/L	<1	<1	<1	---	---
Carbonate Alkalinity as CaCO <sub>3</sub>	3812-32-6	1	mg/L	<1	<1	<1	---	---
Bicarbonate Alkalinity as CaCO <sub>3</sub>	71-52-3	1	mg/L	<1	<1	<1	---	---
Total Alkalinity as CaCO <sub>3</sub>	---	1	mg/L	<1	<1	<1	---	---
<b>ED038A: Acidity</b>								
Acidity as CaCO <sub>3</sub>	---	1	mg/L	18	1	6	---	---
<b>ED041G: Sulfate (Turbidimetric) as SO<sub>4</sub> 2- by DA</b>								
Sulfate as SO <sub>4</sub> - Turbidimetric	14808-79-8	1	mg/L	2	2	6	---	---
<b>ED045G: Chloride by Discrete Analyser</b>								
Chloride	16887-00-6	1	mg/L	18	<1	<1	---	---
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	<1	<1	<1	---	---
Magnesium	7439-95-4	1	mg/L	4	<1	<1	---	---
Sodium	7440-23-5	1	mg/L	11	<1	<1	---	---
Potassium	7440-09-7	1	mg/L	2	<1	<1	---	---
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	0.13	<0.01	<0.01	---	---
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	---	---
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	---	---
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	---	---
Zinc	7440-66-6	0.005	mg/L	0.020	<0.005	<0.005	---	---

## **Analytical Results**

## Analytical Results

Client sample ID				QC8	QC10	QC11	---	---
Compound	CAS Number	LOR	Unit	14-May-2015 00:30	14-May-2015 00:30	14-May-2015 00:30	---	---
				Result	Result	Result	Result	Result
<b>EK067G: Total Phosphorus as P by Discrete Analyser - Continued</b>								
Total Phosphorus as P	---	0.01	mg/L	0.07	<0.01	<0.01	---	---
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	---	---
<b>EK085M: Sulfide as S2-</b>								
Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	<0.1	---	---
<b>EN055: Ionic Balance</b>								
^ Total Anions	---	0.01	meq/L	0.55	0.04	0.12	---	---
^ Total Cations	---	0.01	meq/L	0.86	<0.01	<0.01	---	---
^ Ionic Balance	---	0.01	%	---	100	100	---	---
<b>EP026SP: Chemical Oxygen Demand (Spectrophotometric)</b>								
Chemical Oxygen Demand	---	10	mg/L	<10	<10	<10	---	---
<b>EP030: Biochemical Oxygen Demand (BOD)</b>								
Biochemical Oxygen Demand	---	2	mg/L	<2	<2	<2	---	---
<b>EP068A: Organochlorine Pesticides (OC)</b>								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	---	---
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	---	---
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	---	---
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
4,4'-DDT	50-29-3	2	µg/L	<2.0	<2.0	<2.0	---	---
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	---	---

## *Analytical Results*

## Analytical Results

Client sample ID				QC8	QC10	QC11	---	---
Compound	CAS Number	LOR	Unit	14-May-2015 00:30	14-May-2015 00:30	14-May-2015 00:30	---	---
				Result	Result	Result	Result	Result
<b>EP074B: Oxygenated Compounds - Continued</b>								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	---	---
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	---	---
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	---	---
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	---	---
<b>EP074C: Sulfonated Compounds</b>								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	---	---
<b>EP074D: Fumigants</b>								
2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	---	---
1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	---	---
cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	---	---
trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	---	---
<b>EP074E: Halogenated Aliphatic Compounds</b>								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	---	---
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	---	---
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	---	---
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	---	---
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	---	---
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	---	---
1,1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	---	---
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	---	---
trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	---	---
1,1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	---	---
cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	---	---
1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	---	---
1,1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	---	---
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	---	---
1,2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	---	---
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	---	---
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	---	---
1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	---	---
1,3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	---	---
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	---	---
1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	---	---
trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	---	---
cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	---	---

## Analytical Results

Client sample ID				QC8	QC10	QC11	---	---
Compound	CAS Number	LOR	Unit	14-May-2015 00:30	14-May-2015 00:30	14-May-2015 00:30	---	---
				Result	Result	Result	Result	Result
<b>EP074E: Halogenated Aliphatic Compounds - Continued</b>								
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	---	---
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	---	---
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	---	---
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	---	---
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	---	---
<b>EP074F: Halogenated Aromatic Compounds</b>								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	---	---
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	---	---
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	---	---
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	---	---
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	---	---
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	---	---
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	---	---
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	---	---
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	---	---
<b>EP074G: Trihalomethanes</b>								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	---	---
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	---	---
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	---	---
Bromoform	75-25-2	5	µg/L	<5	<5	<5	---	---
<b>EP075(SIM)A: Phenolic Compounds</b>								
Phenol	108-95-2	1	µg/L	<1.0	<1.0	<1.0	---	---
2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	<1.0	---	---
2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	<1.0	---	---
3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	<2.0	---	---
2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	<1.0	---	---
2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	<1.0	---	---
2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	<1.0	---	---
2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	<1.0	---	---
4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	<1.0	---	---
2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	<1.0	---	---
2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	<1.0	---	---
Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	<2.0	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	<1.0	---	---

## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Client sample ID		QC8	QC10	QC11	---	---
Compound	CAS Number	LOR	Unit	14-May-2015 00:30	14-May-2015 00:30	14-May-2015 00:30	---	---
				Result	Result	Result	Result	Result
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued</b>								
Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	<1.0	---	---
Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	<1.0	---	---
Fluorene	86-73-7	1	µg/L	<1.0	<1.0	<1.0	---	---
Phenanthren	85-01-8	1	µg/L	<1.0	<1.0	<1.0	---	---
Anthracene	120-12-7	1	µg/L	<1.0	<1.0	<1.0	---	---
Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	<1.0	---	---
Pyrene	129-00-0	1	µg/L	<1.0	<1.0	<1.0	---	---
Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	<1.0	---	---
Chrysene	218-01-9	1	µg/L	<1.0	<1.0	<1.0	---	---
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	<1.0	---	---
Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	<1.0	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	---	---
Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	<1.0	---	---
Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	<1.0	---	---
Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	<1.0	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	---	---
<b>EP080/071: Total Petroleum Hydrocarbons</b>								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	---	---
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	---	---
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	---	---
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	---	---
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	---	---
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions</b>								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	---	---
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	---	---
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	<100	---	---
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	---	---
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	---	---
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	---	---
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	---	---
<b>EP080: BTEXN</b>								
Benzene	71-43-2	1	µg/L	<1	<1	<1	---	---

## Analytical Results

Client sample ID				QC8	QC10	QC11	---	---
Client sampling date / time				14-May-2015 00:30	14-May-2015 00:30	14-May-2015 00:30	---	---
Compound	CAS Number	LOR	Unit	EP1510146-006	EP1510146-007	EP1510146-008	-----	-----
				Result	Result	Result	Result	Result
<b>EP080: BTEXN - Continued</b>								
Toluene	108-88-3	2	µg/L	<2	<2	<2	---	---
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	---	---
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	---	---
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	---	---
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	---	---
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	---	---
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	---	---
<b>EP068S: Organochlorine Pesticide Surrogate</b>								
Dibromo-DDE	21655-73-2	0.5	%	88.6	89.7	81.1	---	---
<b>EP068T: Organophosphorus Pesticide Surrogate</b>								
DEF	78-48-8	0.5	%	85.3	88.1	75.6	---	---
<b>EP074S: VOC Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	5	%	93.1	87.1	87.2	---	---
Toluene-D8	2037-26-5	5	%	100	103	102	---	---
4-Bromofluorobenzene	460-00-4	5	%	92.3	89.6	88.7	---	---
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	1	%	23.2	25.6	16.6	---	---
2-Chlorophenol-D4	93951-73-6	1	%	60.1	74.0	46.4	---	---
2,4,6-Tribromophenol	118-79-6	1	%	75.3	83.7	59.6	---	---
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	1	%	70.3	80.3	66.2	---	---
Anthracene-d10	1719-06-8	1	%	82.8	88.0	77.0	---	---
4-Terphenyl-d14	1718-51-0	1	%	97.2	102	88.8	---	---
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	2	%	94.9	88.7	88.6	---	---
Toluene-D8	2037-26-5	2	%	98.7	101	101	---	---
4-Bromofluorobenzene	460-00-4	2	%	99.6	96.9	96.9	---	---

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: EP1510146</b>	<b>Page</b>	<b>: 1 of 22</b>
Client	<b>: MOBILE DEWATERING</b>	Laboratory	<b>: Environmental Division Perth</b>
Contact	<b>: INFO UNKNOWN</b>	Contact	<b>: Cicelia Bartels</b>
Address	<b>: PO BOX 239 MIDLAND WA, AUSTRALIA 6939</b>	Address	<b>: 10 Hod Way Malaga WA Australia 6090</b>
E-mail	<b>: info@environmentalservices.com.au</b>	E-mail	<b>: cicelia.bartels@alsglobal.com</b>
Telephone	<b>: +61 08 9250 4995</b>	Telephone	<b>: (08) 9209 7601</b>
Facsimile	<b>: ----</b>	Facsimile	<b>: +61-8-9209 7600</b>
Project	<b>: E2012-031</b>	QC Level	<b>: NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>
Order number	<b>: ----</b>	Date Samples Received	<b>: 14-May-2015</b>
C-O-C number	<b>: E2012-031-009</b>	Date Analysis Commenced	<b>: 15-May-2015</b>
Sampler	<b>: DALE ANDREWS</b>	Issue Date	<b>: 22-May-2015</b>
Site	<b>: Waste rock</b>	No. of samples received	<b>: 8</b>
Quote number	<b>: ----</b>	No. of samples analysed	<b>: 8</b>

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key :      Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

# = Indicates failed QC

### Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Canhuang Ke	Metals Instrument Chemist	Perth Inorganics
Efua Wilson	Metals Chemist	Perth Inorganics
Jeremy Truong	Senior Inorganic Chemist	Perth Inorganics
Rassem Ayoubi	Senior Organic Chemist	Perth Organics
Scott James	Laboratory Manager	Perth Inorganics

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA005P: pH by PC Titrator (QC Lot: 102946)</b>									
EP1510163-001	Anonymous	EA005-P: pH Value	---	0.01	pH Unit	7.63	7.64	0.131	0% - 20%
EP1510144-001	Anonymous	EA005-P: pH Value	---	0.01	pH Unit	5.95	5.96	0.168	0% - 20%
<b>EA010P: Conductivity by PC Titrator (QC Lot: 102947)</b>									
EP1510163-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	---	1	µS/cm	1120	1140	1.88	0% - 20%
EP1510144-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	---	1	µS/cm	428	424	0.945	0% - 20%
<b>EA015: Total Dissolved Solids (QC Lot: 101760)</b>									
EP1510138-004	Anonymous	EA015H: Total Dissolved Solids @180°C	---	10	mg/L	468	459	2.05	0% - 20%
EP1510138-002	Anonymous	EA015H: Total Dissolved Solids @180°C	---	10	mg/L	527	525	0.380	0% - 20%
<b>EA025: Suspended Solids (QC Lot: 101761)</b>									
EP1510138-004	Anonymous	EA025H: Suspended Solids (SS)	---	5	mg/L	23	22	5.59	No Limit
EP1510138-002	Anonymous	EA025H: Suspended Solids (SS)	---	5	mg/L	40	34	16.0	No Limit
<b>EA045: Turbidity (QC Lot: 100771)</b>									
EP1510100-001	Anonymous	EA045: Turbidity	---	0.1	NTU	92.9	92.7	0.215	0% - 20%
EP1510146-004	WRMW4-05	EA045: Turbidity	---	0.1	NTU	1.6	1.6	0.00	0% - 50%
<b>ED037P: Alkalinity by PC Titrator (QC Lot: 102948)</b>									
EP1510144-001	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO <sub>3</sub>	71-52-3	1	mg/L	12	11	12.5	0% - 50%
		ED037-P: Carbonate Alkalinity as CaCO <sub>3</sub>	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO <sub>3</sub>	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO <sub>3</sub>	---	1	mg/L	12	11	12.5	0% - 50%
EP1510180-005	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO <sub>3</sub>	71-52-3	1	mg/L	6	2	79.3	No Limit
		ED037-P: Carbonate Alkalinity as CaCO <sub>3</sub>	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Hydroxide Alkalinity as CaCO <sub>3</sub>	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO <sub>3</sub>	---	1	mg/L	6	2	79.3	No Limit
<b>ED038A: Acidity (QC Lot: 104043)</b>									
EP1510146-001	WRMW1-05	ED038: Acidity as CaCO <sub>3</sub>	---	1	mg/L	20	19	5.13	0% - 20%
EP1510146-008	QC11	ED038: Acidity as CaCO <sub>3</sub>	---	1	mg/L	6	7	15.4	No Limit
<b>ED041G: Sulfate (Turbidimetric) as SO<sub>4</sub> 2- by DA (QC Lot: 101042)</b>									
EP1510146-001	WRMW1-05	ED041G: Sulfate as SO <sub>4</sub> - Turbidimetric	14808-79-8	1	mg/L	74	76	2.87	0% - 20%
EP1510150-003	Anonymous	ED041G: Sulfate as SO <sub>4</sub> - Turbidimetric	14808-79-8	1	mg/L	66	67	0.00	0% - 20%
<b>ED045G: Chloride by Discrete Analyser (QC Lot: 101043)</b>									
EP1510146-001	WRMW1-05	ED045G: Chloride	16887-00-6	1	mg/L	207	209	0.723	0% - 20%
EP1510150-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	144	145	0.00	0% - 20%
<b>ED093F: Dissolved Major Cations (QC Lot: 102632)</b>									
EP1510115-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	40	40	0.00	0% - 20%



**Sub-Matrix: WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>ED093F: Dissolved Major Cations (QC Lot: 102632) - continued</b>									
EP1510115-001									
Anonymous		ED093F: Magnesium	7439-95-4	1	mg/L	6	5	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	7	7	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	49	50	0.00	0% - 20%
EP1510146-006									
QC8		ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	4	4	0.00	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	11	11	0.00	0% - 50%
<b>EG020F: Dissolved Metals by ICP-MS (QC Lot: 102630)</b>									
EP1510115-002									
Anonymous		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.017	0.017	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.02	0.02	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EP1510135-003									
Anonymous		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0277	0.0311	11.6	0% - 50%
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.080	0.090	11.5	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.020	<0.020	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	1.11	1.16	4.97	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	1.43	1.53	6.87	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.100	<0.100	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.20	<0.20	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.20	<0.20	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	5.07	5.47	7.53	No Limit
<b>EG020F: Dissolved Metals by ICP-MS (QC Lot: 102633)</b>									
EP1510146-007									
QC10		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
<b>EG020T: Total Metals by ICP-MS (QC Lot: 102614)</b>									
EP1510065-001									
Anonymous		EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0009	0.0010	0.00	0% - 50%
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.064	0.063	0.00	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.017	0.017	0.00	0% - 50%

**Sub-Matrix: WATER**

		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG020T: Total Metals by ICP-MS (QC Lot: 102614) - continued</b>									
EP1510065-001	Anonymous	EG020A-T: Copper	7440-50-8	0.001	mg/L	13.9	13.5	2.59	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.026	0.025	0.00	0% - 20%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.100	0.102	2.84	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.011	0.011	0.00	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	4.90	4.85	0.842	0% - 20%
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	1.11	1.02	8.98	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	2.56	2.51	2.05	0% - 20%
EP1510136-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.022	0.023	0.00	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.011	0.011	0.00	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.796	0.777	2.48	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.019	0.020	0.00	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.023	0.023	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.18	0.18	0.00	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	54.1	53.5	1.06	0% - 20%
<b>EG020T: Total Metals by ICP-MS (QC Lot: 102615)</b>									
EP1510070-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
<b>EG020T: Total Metals by ICP-MS (QC Lot: 104906)</b>									
EP1510070-002	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
<b>EG020T: Total Metals by ICP-MS (QC Lot: 104907)</b>									
EP1510070-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.005	0.006	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.016	0.015	7.19	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.04	0.04	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 102685)</b>									
EP1510070-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit

Sub-Matrix: WATER			Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 102685) - continued</b>									
EP1510146-005	WRMW5-05	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
<b>EG050F: Dissolved Hexavalent Chromium (QC Lot: 103426)</b>									
EP1510065-001	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1510115-002	Anonymous	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.00	No Limit
<b>EG051G: Ferrous Iron by Discrete Analyser (QC Lot: 103081)</b>									
EP1510143-032	Anonymous	EG051G: Ferrous Iron	---	0.05	mg/L	16.1	16.2	0.236	0% - 20%
EP1510146-008	QC11	EG051G: Ferrous Iron	---	0.05	mg/L	<0.05	<0.05	0.00	No Limit
<b>EK055G: Ammonia as N by Discrete Analyser (QC Lot: 100997)</b>									
EP1510139-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.43	0.45	4.58	0% - 20%
EP1510150-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.65	0.64	2.22	0% - 20%
<b>EK057G: Nitrite as N by Discrete Analyser (QC Lot: 101040)</b>									
EP1510146-001	WRMW1-05	EK057G: Nitrite as N	---	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1510150-003	Anonymous	EK057G: Nitrite as N	---	0.01	mg/L	<0.01	<0.01	0.00	No Limit
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 100998)</b>									
EP1510139-001	Anonymous	EK059G: Nitrite + Nitrate as N	---	0.01	mg/L	0.04	0.04	0.00	No Limit
EP1510150-001	Anonymous	EK059G: Nitrite + Nitrate as N	---	0.01	mg/L	0.33	0.33	0.00	0% - 20%
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 102203)</b>									
EP1510138-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.6	0.7	19.8	No Limit
EP1510146-003	WRMW3-05	EK061G: Total Kjeldahl Nitrogen as N	---	0.1	mg/L	0.4	0.4	0.00	No Limit
<b>EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 102202)</b>									
EP1510138-002	Anonymous	EK067G: Total Phosphorus as P	---	0.01	mg/L	0.09	0.12	23.4	0% - 50%
EP1510146-003	WRMW3-05	EK067G: Total Phosphorus as P	---	0.01	mg/L	0.04	0.06	34.3	No Limit
<b>EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 101041)</b>									
EP1510146-001	WRMW1-05	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP1510150-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
<b>EK085M: Sulfide as S2- (QC Lot: 104021)</b>									
EP1510107-001	Anonymous	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
EP1510140-001	Anonymous	EK085: Sulfide as S2-	18496-25-8	0.1	mg/L	<0.1	<0.1	0.00	No Limit
<b>EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QC Lot: 104336)</b>									
EP1510146-001	WRMW1-05	EP026SP: Chemical Oxygen Demand	---	10	mg/L	<10	<10	0.00	No Limit
EP1510183-002	Anonymous	EP026SP: Chemical Oxygen Demand	---	10	mg/L	30	28	5.27	No Limit
<b>EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 100794)</b>									
EP1510100-001	Anonymous	EP030: Biochemical Oxygen Demand	---	2	mg/L	84	74	12.2	0% - 20%
EP1510146-006	QC8	EP030: Biochemical Oxygen Demand	---	2	mg/L	<2	<2	0.00	No Limit
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 100898)</b>									
EP1510146-004	WRMW4-05	EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit

**Sub-Matrix: WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP068A: Organochlorine Pesticides (OC) (QC Lot: 100898) - continued</b>									
EP1510146-004	WRMW4-05	EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	<2.0	0.00	No Limit
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 100898)</b>									
EP1510146-004	WRMW4-05	EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Chlорenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Pirimiphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP068: Parathion	56-38-2	2	µg/L	<2.0	<2.0	0.00	No Limit
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 104510)</b>									
EP1510146-002	WRMW2-05	EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit

**Sub-Matrix: WATER**

		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 104510) - continued</b>									
EP1510146-002	WRMW2-05	EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
EP1510213-003	Anonymous	EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
<b>EP074B: Oxygenated Compounds (QC Lot: 104510)</b>									
EP1510146-002	WRMW2-05	EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
EP1510213-003	Anonymous	EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
<b>EP074C: Sulfonated Compounds (QC Lot: 104510)</b>									
EP1510146-002	WRMW2-05	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP1510213-003	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
<b>EP074D: Fumigants (QC Lot: 104510)</b>									
EP1510146-002	WRMW2-05	EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
EP1510213-003	Anonymous	EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 104510)</b>									
EP1510146-002	WRMW2-05	EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit

**Sub-Matrix: WATER**

		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 104510) - continued</b>									
EP1510146-002	WRMW2-05	EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
EP1510213-003	Anonymous	EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit

**Sub-Matrix: WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 104510) - continued</b>									
EP074E: Halogenated Aliphatic Compounds (QC Lot: 104510) - continued									
EP1510213-003	Anonymous	EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 104510)</b>									
EP1510146-002	WRMW2-05	EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
EP1510213-003	Anonymous	EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
<b>EP074G: Trihalomethanes (QC Lot: 104510)</b>									
EP1510146-002	WRMW2-05	EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
EP1510213-003	Anonymous	EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit

**Sub-Matrix: WATER**

		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP074G: Trihalomethanes (QC Lot: 104510) - continued</b>									
EP1510213-003	Anonymous	EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 100897)</b>									
EP1510146-004	WRMW4-05	EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.00	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 100897)</b>									
EP1510146-004	WRMW4-05	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(b+i)fluoranthene	205-99-2	1	µg/L	<1.0	<1.0	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1,2,3,cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 100896)</b>									
EP1510146-004	WRMW4-05	EP071: C15 - C28 Fraction	---	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	---	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	---	50	µg/L	<50	<50	0.00	No Limit
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 104509)</b>									
EP1510146-002	WRMW2-05	EP080: C6 - C9 Fraction	---	20	µg/L	<20	<20	0.00	No Limit

Sub-Matrix: WATER			Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 104509) - continued</b>									
EP1510213-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 100896)</b>									
EP1510146-004	WRMW4-05	EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 104509)</b>									
EP1510146-002	WRMW2-05	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP1510213-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
<b>EP080: BTEXN (QC Lot: 104509)</b>									
EP1510146-002	WRMW2-05	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
EP1510213-003	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit



## **Method Blank (MB) and Laboratory Control Spike (LCS) Report**

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Result	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 102630) - continued</b>								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	106	84	116
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.9	84	108
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	104	86	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	101	85	109
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	97.1	84	112
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	100	85	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	104	84	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	106	88	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	101	89	115
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 102633)</b>								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	84	116
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	97.3	84	108
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	104	86	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	101	85	109
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	84	112
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	102	85	109
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	96.6	84	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	88	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.5	89	115
<b>EG020T: Total Metals by ICP-MS (QCLot: 102614)</b>								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	101	86	116
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.6	83	107
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.6	83	107
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	101	84	110
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	100	85	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.6	82	112
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.2	85	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.8	83	109
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	98.9	84	120
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	100	82	110
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	95.3	80	110
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.7	81	103
<b>EG020T: Total Metals by ICP-MS (QCLot: 102615)</b>								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.01 mg/L	91.9	57	125
<b>EG020T: Total Metals by ICP-MS (QCLot: 104906)</b>								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.01 mg/L	84.0	57	125
<b>EG020T: Total Metals by ICP-MS (QCLot: 104907)</b>								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	86	116



**Sub-Matrix: WATER**

<b>Method: Compound</b>	<b>CAS Number</b>	<b>LOR</b>	<b>Unit</b>	<b>Result</b>	<b>Method Blank (MB) Report</b>	<b>Laboratory Control Spike (LCS) Report</b>			
					<b>Spike Concentration</b>	<b>Spike Recovery (%)</b>	<b>Recovery Limits (%)</b>		
						<b>LCS</b>	<b>Low</b>	<b>High</b>	
<b>EP068A: Organochlorine Pesticides (OC) (QCLot: 100898) - continued</b>									
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	62.4	41	115	
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	61.7	42	112	
EP068: 4,4'-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	59.7	28	98	
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	73.6	41	105	
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	63.1	43	99	
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	59.9	39	121	
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	62.0	43	101	
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	64.6	39	121	
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	61.8	41	107	
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	63.1	46	102	
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	61.7	42	114	
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	63.3	40	104	
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	64.0	37	115	
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	61.3	41	101	
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	62.3	41	101	
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	64.8	43	107	
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	59.3	41	97	
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	64.8	40	106	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	48.9	38	98	
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	60.7	25	101	
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	63.9	42	104	
<b>EP068B: Organophosphorus Pesticides (OP) (QCLot: 100898)</b>									
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	46.8	27	139	
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	63.4	36	114	
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	60.1	42	106	
EP068: Chlорfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	61.9	41	113	
EP068: Chloryrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	62.9	47	109	
EP068: Chloryrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	63.1	45	107	
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	57.8	37	111	
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	63.8	46	108	
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	54.4	38	108	
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	53.5	31	99	
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	59.0	41	113	
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	52.3	33	103	
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	63.3	43	107	
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	61.6	37	111	
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	5.51	1	21	
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	65.2	36	106	
EP068: Parathion-methyl	298-00-0	----	µg/L	----	5 µg/L	55.1	32	100	

**Sub-Matrix: WATER**

Method: Compound	CAS Number	LOR	Unit	Result	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
<b>EP068B: Organophosphorus Pesticides (OP) (QC Lot: 100898) - continued</b>								
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	63.9	39	113
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	60.4	41	113
<b>EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 104510)</b>								
EP074: 1,2,4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	100	74	122
EP074: 1,3,5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	100	73	121
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	101	75	121
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	98.6	70	126
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	94.6	72	122
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	100	73	123
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	101	72	122
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	101	74	124
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	102	73	121
<b>EP074B: Oxygenated Compounds (QC Lot: 104510)</b>								
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	96.5	66	130
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	98.1	70	126
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	100	72	126
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	106	61	135
<b>EP074C: Sulfonated Compounds (QC Lot: 104510)</b>								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	103	71	127
<b>EP074D: Fumigants (QC Lot: 104510)</b>								
EP074: 1,2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	102	74	124
EP074: 2,2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	102	71	129
EP074: cis-1,3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	103	73	127
EP074: trans-1,3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	92.9	70	130
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 104510)</b>								
EP074: 1,1,1,2-Tetrachloroethane	630-20-6	5	µg/L	<5	----	---	---	---
EP074: 1,1,1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	103	76	124
EP074: 1,1,2,2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	110	66	132
EP074: 1,1,2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	105	74	122
EP074: 1,1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	104	73	125
EP074: 1,1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	103	73	129
EP074: 1,1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	98.6	74	124
EP074: 1,2,3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	105	66	130
EP074: 1,2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	102	56	140
EP074: 1,2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	103	76	126
EP074: 1,3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	98.0	72	128
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	95.9	73	127
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	103	73	129

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Result	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
<b>EP074E: Halogenated Aliphatic Compounds (QCLot: 104510) - continued</b>								
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	108	74	124
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	99.6	73	125
EP074: cis-1,2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	100	76	122
EP074: cis-1,4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	103	61	135
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	104	75	127
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	103	70	130
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	102	66	134
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	101	42	142
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	116	66	134
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	94.8	74	124
EP074: trans-1,2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	100	72	126
EP074: trans-1,4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	101	54	142
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	99.3	75	125
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	100	72	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	102	72	128
<b>EP074F: Halogenated Aromatic Compounds (QCLot: 104510)</b>								
EP074: 1,2,3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	97.9	72	128
EP074: 1,2,4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	95.0	68	132
EP074: 1,2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	100	76	122
EP074: 1,3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	98.5	75	121
EP074: 1,4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	99.7	75	121
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	97.4	75	121
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	97.6	74	122
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	102	76	122
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	100	78	120
<b>EP074G: Trihalomethanes (QCLot: 104510)</b>								
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	104	73	129
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	104	67	133
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	102	75	125
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	102	68	132
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 100897)</b>								
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	1	µg/L	<1.0	10 µg/L	86.1	36	120
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	1	µg/L	<1.0	10 µg/L	85.7	29	117
EP075(SIM): 2,4-Dichlorophenol	120-83-2	1	µg/L	<1.0	10 µg/L	80.8	38	116
EP075(SIM): 2,4-Dimethylphenol	105-67-9	1	µg/L	<1.0	10 µg/L	81.2	37	117
EP075(SIM): 2,6-Dichlorophenol	87-65-0	1	µg/L	<1.0	10 µg/L	80.0	36	110
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	10 µg/L	73.1	42	104
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	10 µg/L	70.7	36	104
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	10 µg/L	79.5	37	115

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Result	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
					LCS	Low	High	
<b>EP075(SIM)A: Phenolic Compounds (QCLot: 100897) - continued</b>								
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	20 µg/L	63.6	37	95
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	10 µg/L	86.3	37	117
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	73.4	5	155
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	10 µg/L	31.3	18	56
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 100897)</b>								
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	10 µg/L	85.6	43	121
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	10 µg/L	88.8	41	113
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	10 µg/L	86.8	47	123
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	10 µg/L	95.9	48	142
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	10 µg/L	93.2	33	151
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	10 µg/L	86.0	35	145
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	10 µg/L	88.4	25	135
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	10 µg/L	91.7	43	139
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	10 µg/L	87.6	33	143
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	10 µg/L	84.5	27	133
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	10 µg/L	101	55	125
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	10 µg/L	89.4	46	122
EP075(SIM): Indeno(1,2,3,cd)pyrene	193-39-5	1	µg/L	<1.0	10 µg/L	86.7	31	137
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	10 µg/L	74.7	43	97
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	10 µg/L	90.1	50	122
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	10 µg/L	95.7	55	131
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 100896)</b>								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	35.0	31	123
EP071: C15 - C28 Fraction	----	100	µg/L	<100	400 µg/L	56.2	34	142
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	67.4	32	124
<b>EP080/071: Total Petroleum Hydrocarbons (QCLot: 104509)</b>								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	320 µg/L	102	74	142
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 100896)</b>								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	400 µg/L	38.2	32	126
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	600 µg/L	63.2	32	136
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	200 µg/L	69.2	28	142
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 104509)</b>								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	370 µg/L	104	74	142
<b>EP080: BTEXN (QCLot: 104509)</b>								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	102	73	122
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	103	72	121

**Sub-Matrix: WATER**

<b>Method: Compound</b>	<b>CAS Number</b>	<b>LOR</b>	<b>Unit</b>	<b>Result</b>	<b>Method Blank (MB) Report</b>	<b>Laboratory Control Spike (LCS) Report</b>		
					<b>Spike Concentration</b>	<b>Spike Recovery (%) LCS</b>	<b>Recovery Limits (%) Low High</b>	
<b>EP080: BTEXN (QCLot: 104509) - continued</b>								
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	105	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	20 µg/L	98.2	79	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	103	72	121
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	103	71	123

**Matrix Spike (MS) Report**

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

**Sub-Matrix: WATER**

<b>Laboratory sample ID</b>	<b>Client sample ID</b>	<b>Method: Compound</b>	<b>CAS Number</b>	<b>Matrix Spike (MS) Report</b>			
				<b>Spike</b>	<b>Spike Recovery(%)</b>	<b>Recovery Limits (%)</b>	
						<b>MS</b>	<b>Low</b>
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 101042)</b>							
EP1510146-001	WRMW1-05	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	107	70	130
<b>ED045G: Chloride by Discrete Analyser (QCLot: 101043)</b>							
EP1510146-001	WRMW1-05	ED045G: Chloride	16887-00-6	1000 mg/L	102	70	130
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 102630)</b>							
EP1510113-001	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	107	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	95.9	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	91.9	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	80.0	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	97.3	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	108	70	130
<b>EG020F: Dissolved Metals by ICP-MS (QCLot: 102633)</b>							
EP1510146-008	QC11	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	104	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	106	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	101	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	103	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	95.1	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	108	70	130
<b>EG020T: Total Metals by ICP-MS (QCLot: 102614)</b>							
EP1510067-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	108	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	94.9	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	86.1	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	# Not Determined	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	89.4	70	130



**Sub-Matrix: WATER**

				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
<b>EP074E: Halogenated Aliphatic Compounds (QC Lot: 104510) - continued</b>							
EP1510213-001	Anonymous	EP074: 1,1-Dichloroethene	75-35-4	20 µg/L	84.5	74	126
		EP074: Trichloroethene	79-01-6	20 µg/L	87.4	79	120
<b>EP074F: Halogenated Aromatic Compounds (QC Lot: 104510)</b>							
EP1510213-001	Anonymous	EP074: Chlorobenzene	108-90-7	20 µg/L	94.9	81	115
<b>EP075(SIM)A: Phenolic Compounds (QC Lot: 100897)</b>							
EP1510088-058	Anonymous	EP075(SIM): 2-Chlorophenol	95-57-8	10 µg/L	47.4	34	122
		EP075(SIM): 2-Nitrophenol	88-75-5	10 µg/L	52.5	32	134
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 µg/L	73.0	39	118
		EP075(SIM): Pentachlorophenol	87-86-5	10 µg/L	26.9	18	118
		EP075(SIM): Phenol	108-95-2	10 µg/L	22.0	19	59
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 100897)</b>							
EP1510088-058	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 µg/L	53.1	44	124
		EP075(SIM): Pyrene	129-00-0	10 µg/L	68.0	62	121
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 100896)</b>							
EP1510146-004	WRMW4-05	EP071: C10 - C14 Fraction	----	400 µg/L	63.4	45	122
		EP071: C15 - C28 Fraction	----	400 µg/L	69.2	55	143
		EP071: C29 - C36 Fraction	---	400 µg/L	74.0	54	128
<b>EP080/071: Total Petroleum Hydrocarbons (QC Lot: 104509)</b>							
EP1510213-001	Anonymous	EP080: C6 - C9 Fraction	----	240 µg/L	87.8	77	137
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 100896)</b>							
EP1510146-004	WRMW4-05	EP071: >C10 - C16 Fraction	>C10_C16	400 µg/L	65.0	45	122
		EP071: >C16 - C34 Fraction	----	600 µg/L	71.6	55	143
		EP071: >C34 - C40 Fraction	----	200 µg/L	74.1	54	128
<b>EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 104509)</b>							
EP1510213-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	290 µg/L	88.6	77	137
<b>EP080: BTEXN (QC Lot: 104509)</b>							
EP1510213-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	94.8	77	122
		EP080: Toluene	108-88-3	20 µg/L	98.4	74	126

## QA/QC Compliance Assessment for DQO Reporting

Work Order	<b>: EP1510146</b>	Page	<b>: 1 of 14</b>
Client	<b>: MOBILE DEWATERING</b>	Laboratory	<b>: Environmental Division Perth</b>
Contact	<b>: INFO UNKNOWN</b>	Telephone	<b>: (08) 9209 7601</b>
Project	<b>: E2012-031</b>	Date Samples Received	<b>: 14-May-2015</b>
Site	<b>: Waste rock</b>	Issue Date	<b>: 22-May-2015</b>
Sampler	<b>: DALE ANDREWS</b>	No. of samples received	<b>: 8</b>
Order number	<b>: ----</b>	No. of samples analysed	<b>: 8</b>

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### ***Outliers : Analysis Holding Time Compliance***

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### ***Outliers : Frequency of Quality Control Samples***

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

## Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EG020T: Total Metals by ICP-MS	EP1510067--001	Anonymous	Copper	7440-50-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG020T: Total Metals by ICP-MS	EP1510067--001	Anonymous	Zinc	7440-66-6	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EG051G: Ferrous Iron by Discrete Analyser	EP1510143--032	Anonymous	Ferrous Iron	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

## Outliers : Analysis Holding Time Compliance

Matrix: WATER

Method	Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA005P: pH by PC Titrator</b>							
Clear Plastic Bottle - Natural	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	----	----	----	19-May-2015	14-May-2015

## Outliers : Frequency of Quality Control Samples

Matrix: WATER

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	Method	QC	Regular	Actual	Expected
<b>Laboratory Duplicates (DUP)</b>					
PAH/Phenols (GC/MS - SIM)	1	13	7.69	10.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction	1	14	7.14	10.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>					
Pesticides by GCMS	0	9	0.00	5.00	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: ✘ = Holding time breach ; ✓ = Within holding time.

Matrix: WATER									Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.					
Method	Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis								
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation						
<b>EA005P: pH by PC Titrator</b>														
Clear Plastic Bottle - Natural (EA005-P)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	19-May-2015	14-May-2015	✗					
<b>EA010P: Conductivity by PC Titrator</b>														
Clear Plastic Bottle - Natural (EA010-P)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	19-May-2015	11-Jun-2015	✓					
<b>EA015: Total Dissolved Solids</b>														
Clear Plastic Bottle - Natural (EA015H)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	18-May-2015	21-May-2015	✓					
<b>EA025: Suspended Solids</b>														
Clear Plastic Bottle - Natural (EA025H)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	18-May-2015	21-May-2015	✓					
<b>EA045: Turbidity</b>														
Clear Plastic Bottle - Natural (EA045)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	15-May-2015	16-May-2015	✓					
<b>ED037P: Alkalinity by PC Titrator</b>														
Clear Plastic Bottle - Natural (ED037-P)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	19-May-2015	28-May-2015	✓					
<b>ED038A: Acidity</b>														
Clear Plastic Bottle - Natural (ED038)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	20-May-2015	28-May-2015	✓					

Matrix: WATER									Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.		
Method	Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			Date analysed	Due for analysis	Evaluation
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation			
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>											
Clear Plastic Bottle - Natural (ED041G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	15-May-2015	11-Jun-2015	✓		
<b>ED045G: Chloride by Discrete Analyser</b>											
Clear Plastic Bottle - Natural (ED045G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	15-May-2015	11-Jun-2015	✓		
<b>ED093F: Dissolved Major Cations</b>											
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	20-May-2015	11-Jun-2015	✓		
<b>EG020F: Dissolved Metals by ICP-MS</b>											
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	20-May-2015	10-Nov-2015	✓		
<b>EG020T: Total Metals by ICP-MS</b>											
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)	WRMW2-05, WRMW4-05, QC8, QC11	WRMW3-05, WRMW5-05, QC10,	14-May-2015	----	----	---	21-May-2015	10-Nov-2015	✓		
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T)	WRMW1-05		14-May-2015	19-May-2015	10-Nov-2015	✓	19-May-2015	10-Nov-2015	✓		
<b>EG020T: Total Metals by ICP-MS</b>											
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T)	WRMW2-05, WRMW4-05, QC8, QC11	WRMW3-05, WRMW5-05, QC10,	14-May-2015	----	----	---	21-May-2015	10-Nov-2015	✓		
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T)	WRMW1-05		14-May-2015	19-May-2015	10-Nov-2015	✓	19-May-2015	10-Nov-2015	✓		

Matrix: WATER									Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.					
Method	Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis								
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation						
<b>EG035T: Total Recoverable Mercury by FIMS</b>														
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	19-May-2015	11-Jun-2015	✓					
<b>EG050F: Dissolved Hexavalent Chromium</b>														
Clear Plastic Bottle - NaOH (EG050G-F)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	19-May-2015	11-Jun-2015	✓					
<b>EG051G: Ferrous Iron by Discrete Analyser</b>														
Clear Plastic Bottle - HCl - Filtered (EG051G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	19-May-2015	21-May-2015	✓					
<b>EK055G: Ammonia as N by Discrete Analyser</b>														
Clear Plastic Bottle - Sulfuric Acid (EK055G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	15-May-2015	11-Jun-2015	✓					
<b>EK057G: Nitrite as N by Discrete Analyser</b>														
Clear Plastic Bottle - Natural (EK057G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	15-May-2015	16-May-2015	✓					
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>														
Clear Plastic Bottle - Sulfuric Acid (EK059G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	---	---	---	15-May-2015	11-Jun-2015	✓					
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>														
Clear Plastic Bottle - Sulfuric Acid (EK061G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	18-May-2015	11-Jun-2015	✓	20-May-2015	11-Jun-2015	✓					

Matrix: WATER									Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.					
Method	Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis								
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation						
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>														
Clear Plastic Bottle - Sulfuric Acid (EK067G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	18-May-2015	11-Jun-2015	✓	20-May-2015	11-Jun-2015	✓					
<b>EK071G: Reactive Phosphorus as P by discrete analyser</b>														
Clear Plastic Bottle - Natural (EK071G)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	15-May-2015	16-May-2015	✓					
<b>EK085M: Sulfide as S2-</b>														
Clear Plastic Bottle - Zinc Acetate/NaOH (EK085)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	20-May-2015	21-May-2015	✓					
<b>EP026SP: Chemical Oxygen Demand (Spectrophotometric)</b>														
Clear Plastic Bottle - Sulfuric Acid (EP026SP)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	20-May-2015	11-Jun-2015	✓					
<b>EP030: Biochemical Oxygen Demand (BOD)</b>														
Clear Plastic Bottle - Natural (EP030)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	----	----	---	15-May-2015	16-May-2015	✓					
<b>EP068A: Organochlorine Pesticides (OC)</b>														
Amber Glass Bottle - Unpreserved (EP068)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	18-May-2015	21-May-2015	✓	19-May-2015	27-Jun-2015	✓					
<b>EP080/071: Total Petroleum Hydrocarbons</b>														
Amber Glass Bottle - Unpreserved (EP071)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	18-May-2015	21-May-2015	✓	19-May-2015	27-Jun-2015	✓					

Matrix: WATER									Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.					
Method	Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis								
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation						
<b>EP074A: Monocyclic Aromatic Hydrocarbons</b>														
Amber VOC Vial - Sulfuric Acid (EP074)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	20-May-2015	28-May-2015	✓	20-May-2015	28-May-2015	✓					
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>														
Amber Glass Bottle - Unpreserved (EP075(SIM))	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	18-May-2015	21-May-2015	✓	19-May-2015	27-Jun-2015	✓					
<b>EP080/071: Total Petroleum Hydrocarbons</b>														
Amber VOC Vial - Sulfuric Acid (EP080)	WRMW1-05, WRMW3-05, WRMW5-05, QC10,	WRMW2-05, WRMW4-05, QC8, QC11	14-May-2015	20-May-2015	28-May-2015	✓	20-May-2015	28-May-2015	✓					

## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: WATER

Evaluation: ✘ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	Count		Rate (%)		Quality Control Specification
			QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>							
Acidity as Calcium Carbonate		ED038	2	14	14.29	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Alkalinity by PC Titrator		ED037-P	2	19	10.53	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser		EK055G	2	13	15.38	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)		EP030	2	12	16.67	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (COD) (Spectrophotometric)		EP026SP	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser		ED045G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator		EA010-P	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A		EG020A-F	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser		EG051G	2	14	14.29	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium by Discrete Analyser - Dissolved		EG050G-F	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved		ED093F	2	16	12.50	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser		EK059G	2	13	15.38	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser		EK057G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)		EP075(SIM)	1	13	7.69	10.00	✗ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS		EP068	1	9	11.11	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH by PC Titrator		EA005-P	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser		EK071G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser		ED041G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-		EK085	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)		EA025H	2	19	10.53	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)		EA015H	2	19	10.53	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser		EK061G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS		EG035T	2	14	14.29	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A		EG020A-T	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B		EG020B-T	1	2	50.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser		EK067G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction		EP071	1	14	7.14	10.00	✗ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX		EP080	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Turbidity		EA045	2	18	11.11	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds		EP074	2	13	15.38	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Acidity as Calcium Carbonate		ED038	1	14	7.14	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Alkalinity by PC Titrator		ED037-P	2	19	10.53	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser		EK055G	1	13	7.69	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)		EP030	1	12	8.33	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (COD) (Spectrophotometric)		EP026SP	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: WATER Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	Count		Rate (%)		Quality Control Specification
			QC	Regular	Actual	Expected	
<b>Laboratory Control Samples (LCS) - Continued</b>							
Chloride by Discrete Analyser		ED045G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator		EA010-P	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A		EG020A-F	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser		EG051G	1	14	7.14	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium by Discrete Analyser - Dissolved		EG050G-F	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved		ED093F	1	16	6.25	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser		EK059G	1	13	7.69	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser		EK057G	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)		EP075(SIM)	1	13	7.69	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS		EP068	1	9	11.11	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH by PC Titrator		EA005-P	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser		EK071G	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser		ED041G	2	20	10.00	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfide as S2-		EK085	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Suspended Solids (High Level)		EA025H	2	19	10.53	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)		EA015H	2	19	10.53	10.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser		EK061G	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS		EG035T	1	14	7.14	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A		EG020A-T	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite B		EG020B-T	1	2	50.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser		EK067G	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH - Semivolatile Fraction		EP071	1	14	7.14	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX		EP080	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Turbidity		EA045	1	18	5.56	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Volatile Organic Compounds		EP074	1	13	7.69	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Alkalinity by PC Titrator		ED037-P	1	19	5.26	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser		EK055G	1	13	7.69	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)		EP030	1	12	8.33	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (COD) (Spectrophotometric)		EP026SP	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser		ED045G	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator		EA010-P	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A		EG020A-F	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser		EG051G	1	14	7.14	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Hexavalent Chromium by Discrete Analyser - Dissolved		EG050G-F	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved		ED093F	1	16	6.25	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser		EK059G	1	13	7.69	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser		EK057G	1	20	5.00	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)		EP075(SIM)	1	13	7.69	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS		EP068	1	9	11.11	5.00	✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: WATER

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Analytical Methods	Method	Count		Rate (%)		Quality Control Specification
			QC	Regular	Actual	Expected	
<b>Method Blanks (MB) - Continued</b>							
Reactive Phosphorus as P-By Discrete Analyser		EK071G	1	20	5.00	5.00	✓
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser		ED041G	1	20	5.00	5.00	✓
Sulfide as S2-		EK085	1	20	5.00	5.00	✓
Suspended Solids (High Level)		EA025H	1	19	5.26	5.00	✓
Total Dissolved Solids (High Level)		EA015H	1	19	5.26	5.00	✓
Total Kjeldahl Nitrogen as N By Discrete Analyser		EK061G	1	20	5.00	5.00	✓
Total Mercury by FIMS		EG035T	1	14	7.14	5.00	✓
Total Metals by ICP-MS - Suite A		EG020A-T	1	20	5.00	5.00	✓
Total Metals by ICP-MS - Suite B		EG020B-T	1	2	50.00	5.00	✓
Total Phosphorus as P By Discrete Analyser		EK067G	1	20	5.00	5.00	✓
TRH - Semivolatile Fraction		EP071	1	14	7.14	5.00	✓
TRH Volatiles/BTEX		EP080	1	20	5.00	5.00	✓
Turbidity		EA045	1	18	5.56	5.00	✓
Volatile Organic Compounds		EP074	1	13	7.69	5.00	✓
<b>Matrix Spikes (MS)</b>							
Ammonia as N by Discrete analyser		EK055G	1	13	7.69	5.00	✓
Chemical Oxygen Demand (COD) (Spectrophotometric)		EP026SP	1	20	5.00	5.00	✓
Chloride by Discrete Analyser		ED045G	1	20	5.00	5.00	✓
Dissolved Metals by ICP-MS - Suite A		EG020A-F	1	20	5.00	5.00	✓
Ferrous Iron by Discrete Analyser		EG051G	1	14	7.14	5.00	✓
Hexavalent Chromium by Discrete Analyser - Dissolved		EG050G-F	1	20	5.00	5.00	✓
Nitrite and Nitrate as N (NOx) by Discrete Analyser		EK059G	1	13	7.69	5.00	✓
Nitrite as N by Discrete Analyser		EK057G	1	20	5.00	5.00	✓
PAH/Phenols (GC/MS - SIM)		EP075(SIM)	1	13	7.69	5.00	✓
Pesticides by GCMS		EP068	0	9	0.00	5.00	✗
Reactive Phosphorus as P-By Discrete Analyser		EK071G	1	20	5.00	5.00	✓
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser		ED041G	1	20	5.00	5.00	✓
Total Kjeldahl Nitrogen as N By Discrete Analyser		EK061G	1	20	5.00	5.00	✓
Total Mercury by FIMS		EG035T	1	14	7.14	5.00	✓
Total Metals by ICP-MS - Suite A		EG020A-T	1	20	5.00	5.00	✓
Total Phosphorus as P By Discrete Analyser		EK067G	1	20	5.00	5.00	✓
TRH - Semivolatile Fraction		EP071	1	14	7.14	5.00	✓
TRH Volatiles/BTEX		EP080	1	20	5.00	5.00	✓
Volatile Organic Compounds		EP074	1	13	7.69	5.00	✓

## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+-5C. This method is compliant with NEPM (2013) Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+-2C . This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Acidity as Calcium Carbonate	ED038	WATER	In house: Referenced to APHA 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO <sub>4</sub> 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO <sub>4</sub> . Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO <sub>4</sub> suspension is measured by a photometer and the SO <sub>4</sub> -2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. in the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	<p>In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3)</p> <p>Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3)</p> <p>Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)</p>

<b>Analytical Methods</b>	<b>Method</b>	<b>Matrix</b>	<b>Method Descriptions</b>
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45 um filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	WATER	In house: Referenced to APHA 3500 Cr-A & B. Samples are 0.45 um filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ferrous Iron by Discrete Analyser	EG051G	WATER	In house: Referenced to APHA 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH <sub>3</sub> G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO <sub>2</sub> - B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO <sub>3</sub> - F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite and Nitrate as N (NO <sub>x</sub> ) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO <sub>3</sub> - F. Combined oxidised Nitrogen (NO <sub>2</sub> +NO <sub>3</sub> ) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO <sub>3</sub> - . This method is compliant with NEPM (2013) Schedule B(3)

<b>Analytical Methods</b>	<b>Method</b>	<b>Matrix</b>	<b>Method Descriptions</b>
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Sulfide as S2-	EK085	WATER	In house: Referenced to APHA 4500-S2- D. Sulfide species present in water samples are immediately precipitated when collected in pretreated caustic/zinc acetate preserved sample containers. After the supernatant is discarded, the resultant precipitate is then coloured using methylene blue indicator and measured using UV-VIS detection at 664nm. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	WATER	In house: Referenced to APHA 5220 D. Samples are digested with a known excess of an acidic potassium dichromate solution using silver sulfate as a catalyst. The chromium is reduced from the Cr (VI) oxidation state to the Cr (III) state by the oxygen present in the organic material. Both of these chromium species are coloured and absorb in the visible region of (400nm & 600nm) the spectrum. The oxidisable organic matter can be calculated in terms of oxygen equivalents.
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Volatile Organic Compounds	EP074	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
TKN/TP Digestion	EK061/EK067	WATER	APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)



## **Appendix D – QC (Triplicate) Laboratory Results & Documentation**

3182

Site: Wasterock  
Job #: E2012-031  
Sampler: DA / RB  
CoC #: E2012-031-010  
Quote #:  
Laboratory: ARL  
Date and time delivered:  
Received by:



## **ENVIRONMENTAL SERVICES**

**Mobile Dewatering Environmental Services**  
Unit 1, 22 Elmsfield Road  
Midvale WA 6056  
P: 08 9250 6960  
F: 08 9250 8269  
E: [info@environmentalservices.com.au](mailto:info@environmentalservices.com.au)

**Comments:**

## Analysis Detection Limits

15-3553

Any issues please call Rhian  
9750 6960.

DATE: 14/5/15  
CHECKED BY: Chris  
No OF SAMPLES: 1  
No OF GLASS: 4  
No OF PLASTIC: 6

Condition of Sample: Cool / Ambient / Warm

Relinquished by: John

# **SAMPLE RECEIPT NOTICE**



Analytical Reference Laboratory

**Job Number:** 15-3553

**Expected Due Date:** 21/05/15

## **Customer Information**

**Attention:** Fiona Trevenen  
**Customer:** Mobile Dewatering Environmental Services  
**Address:** Unit 1, 22 Elmsfield Road  
MIDVALE WA 6056  
**Phone Number:** 9250 6960  
**Fax Number:** 9250 4781  
**Report to:** Fiona Trevenen  
**Report email:** [info@environmentalservices.com.au](mailto:info@environmentalservices.com.au)

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## **Job Information**

**Project Reference:** E2012-031-010  
**Purchase Order:** 3182  
**ARL Quote Number:**

## **Receival Information**

**Date Received:** 14/05/2015      **Delivery Mode:** Customer  
**Condition of Samples:** Chilled      **Relinquished by:** Fiona Trevenen  
**Security Seal:** Not Present

## **Contact Details**

**Registered by:** Chris Harvey  
Any queries relating to sample condition (ie breakages/missing samples), registered analyses or sample labeling please email: [samples@arlwa.com.au](mailto:samples@arlwa.com.au)

**ARL Contact:** Douglas Todd  
Any queries relating to analytical capability, status or explanation of results, please email: [douglastodd@arlwa.com.au](mailto:douglastodd@arlwa.com.au)

## **Registration Comments**

**Disposal of samples will occur after the following time from date of issue of Final Report:**  
Aqueous Sample - 3 Months      Solid Samples - 6 Months

**Please refer to the signed Chain of Custody attached to this document  
for details of analyses registered.**

LABORATORY REPORT

**Job Number:** 15-3553  
**Revision:** 00  
**Date:** 22 May 2015

**ADDRESS:** **Mobile Dewatering Environmental Services**  
Unit 1, 22 Elmsfield Road  
MIDVALE WA 6056

**ATTENTION:** Greg Watts

**DATE RECEIVED:** 14/05/2015

**YOUR REFERENCE:** E2012-031-010

**PURCHASE ORDER:** 3182

**APPROVALS:**



Kim Rodgers  
General Manager



Paul Nottle  
Organic Supervisor



Sam Becker  
Inorganic Supervisor

**REPORT COMMENTS:**

Samples are analysed on an as received basis unless otherwise noted.

**METHOD REFERENCES:**

ARL No. 007	Benzene, Toluene, Ethylbenzene and Xylenes in Water
ARL No. 009	Total Petroleum Hydrocarbons (TPH) in Water
ARL No. 044	Total Phenols in Water
ARL No. 29/402/403	Metals in Water by AAS/ICPOES/ICPMS
ARL No. 040	Arsenic by Hydride Atomic Absorption
ARL No. 330	Persulphate Method for Simultaneous Determination of TN & TP
ARL No. 308	Total Phosphorus in Water by Discrete Analyser
ARL No. 305	Chloride in Water by Discrete Analyser
ARL No. 309	Filterable Reactive Phosphorus in Water by Discrete Analyser
ARL No. 303	Ammonia in Water by Discrete Analyser
ARL No. 313/319	NOx in Water by Discrete Analyser
ARL No. 311	Nitrite in Water by Discrete Analyser
ARL No. 322	Ferrous in Water by Discrete Analyser
ARL No. 021	Acidity in Water
ARL No. 037	Alkalinity in Water
ARL No. 014	pH in Water
ARL No. 019	Conductivity and Salinity in Water
ARL No. 017	Total Dissolved Solids (At 105°C)
ARL No. 016	Total Suspended Solids
ARL No. 045	Turbidity
ARL No. 011	Biochemical Oxygen Demand
ARL No. 020	Chemical Oxygen Demand



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ACCREDITATION  
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ISO/IEC 17025  
NATA Accreditation No. 2377



Analytical Reference Laboratory

**LABORATORY REPORT**

*Mobile Dewatering Environmental Services*

ARL Job No: 15-3553      Revision: 00

Date: 22 May 2015

ARL No. 324

Sulphide and Hydrogen Sulphide by Micro distillation

**LABORATORY REPORT**

Mobile Dewatering Environmental Services

ARL Job No: 15-3553

Revision: 00

Date: 22 May 2015

BTEX in Water Sample No: Sample Description:	LOR	UNITS	15-3553-1 QC9
Benzene	0.001	mg/L	<0.001
Toluene	0.001	mg/L	<0.001
Ethylbenzene	0.001	mg/L	<0.001
Xylenes (Total)	0.003	mg/L	<0.003
a, a, a-Trifluorotoluene(SS)		%	91

TPH in Water Sample No: Sample Description:	LOR	UNITS	15-3553-1 QC9
C <sub>6-9</sub>	0.02	mg/L	<0.02
C <sub>10-14</sub>	0.02	mg/L	<0.02
C <sub>15-28</sub>	0.04	mg/L	<0.04
C <sub>29-36</sub>	0.04	mg/L	<0.04
C <sub>&gt;36</sub>	0.04	mg/L	<0.04

TRH in Water Sample No: Sample Description:	LOR	UNITS	15-3553-1 QC9
C <sub>6-9</sub>	0.02	mg/L	<0.02
C <sub>10-14</sub>	0.02	mg/L	<0.02
C <sub>15-28</sub>	0.04	mg/L	<0.04
C <sub>29-36</sub>	0.04	mg/L	<0.04
C <sub>&gt;36</sub>	0.04	mg/L	<0.04

Misc. Organics in Water Sample No: Sample Description:	LOR	UNITS	15-3553-1 QC9
Total Phenols	0.05	mg/L	<0.05

Metals in Water Sample No: Sample Description:	LOR	UNITS	15-3553-1 QC9
Aluminium - Dissolved	0.01	mg/L	0.13
Aluminium - Total	0.01	mg/L	0.26
Arsenic - Dissolved	0.001	mg/L	<0.001
Arsenic - Total	0.001	mg/L	<0.001
Cadmium - Dissolved	0.0001	mg/L	<0.0001
Cadmium - Total	0.0001	mg/L	<0.0001
Chromium - Dissolved	0.001	mg/L	<0.001
Chromium - Total	0.001	mg/L	0.004
Iron - Dissolved	0.01	mg/L	0.10
Iron - Total	0.01	mg/L	0.24
Manganese - Dissolved	0.01	mg/L	<0.01
Manganese - Total	0.01	mg/L	<0.01
Nickel - Dissolved	0.001	mg/L	0.001
Nickel - Total	0.001	mg/L	0.001
Selenium - Dissolved	0.001	mg/L	<0.001

**LABORATORY REPORT**

Mobile Dewatering Environmental Services

ARL Job No: 15-3553

Revision: 00

Date: 22 May 2015

Analytical Reference Laboratory

<b>Metals in Water</b>			
<b>Sample No:</b>	<b>LOR</b>	<b>UNITS</b>	<b>15-3553-1 QC9</b>
Selenium - Total	0.001	mg/L	<0.001
Zinc - Dissolved	0.005	mg/L	<0.005
Zinc - Total	0.005	mg/L	<0.005

<b>Total Nitrogen in Water</b>			
<b>Sample No:</b>	<b>LOR</b>	<b>UNITS</b>	<b>15-3553-1 QC9</b>
Total Nitrogen	0.2	mg/L	4.7
TKN	0.2	mg/L	<0.2

<b>Total Phosphorus in Water</b>			
<b>Sample No:</b>	<b>LOR</b>	<b>UNITS</b>	<b>15-3553-1 QC9</b>
Total Phosphorus	0.01	mg/L	0.01

<b>Ions by Discrete Analyser</b>			
<b>Sample No:</b>	<b>LOR</b>	<b>UNITS</b>	<b>15-3553-1 QC9</b>
Chloride	5	mg/L	18
Filterable Reactive Phosphorus	0.01	mg/L	<0.01
Ammonia-N	0.02	mg/L	<0.02
Nitrate-N	0.01	mg/L	4.7
NOx-N	0.01	mg/L	4.7
Nitrite-N	0.01	mg/L	<0.01
Ferrous Iron	0.05	mg/L	<0.05

<b>Physical Parameters</b>			
<b>Sample No:</b>	<b>LOR</b>	<b>UNITS</b>	<b>15-3553-1 QC9</b>
Acidity	5	mgCaCO <sub>3</sub> /L	22
Alkalinity	5	mgCaCO <sub>3</sub> /L	<5
pH	0.1	pH units	4.5
Conductivity	0.01	mS/cm	0.12
Total Dissolved Solids	5	mg/L	71
Total Suspended Solids	5	mg/L	<5
Turbidity	0.1	NTU	0.3



Analytical Reference Laboratory

## LABORATORY REPORT

Mobile Dewatering Environmental Services

ARL Job No: 15-3553

Revision: 00

Date: 22 May 2015

Biochemical Oxygen Demand Sample No: Sample Description:	LOR	UNITS	15-3553-1 QC9
Biochemical Oxygen Demand	5	mg/L	<5

Misc. Inorganics in Water Sample No: Sample Description:	LOR	UNITS	15-3553-1 QC9
Chemical Oxygen Demand	10	mg/L	<10
Sulphide	0.05	mg/L	<0.05

### Result Definitions

LOR Limit of Reporting

[NT] Not Tested

[ND] Not Detected at indicated Limit of Reporting

[NR] Analysis Not Requested

(SS) Surrogate Standard Compound - Used for QC purposes. Acceptance Criteria is 60-120%.

# Quality Control Report

Job Number: 15-3553

Date: 22/05/2015



*This report must not be reproduced except in full without prior written consent.*

This Quality Control Report is issued in accordance with Section 18 of the ARL Quality Management Manual. All QC parameters are contained within the relevant ARL Method as indicated by the method reference, either on this report or the Laboratory Report.

Acceptance of Holding Times, Duplicate RPD, Spike, LCS and CRM Recoveries are determined at the time of analysis by the Signatory indicated on the Laboratory Report.

## **DEFINITIONS**

### ***Duplicate Analysis***

A sample, chosen randomly by the analyst at the time of sample preparation, analysed in duplicate.

### ***RPD***

Relative Percent Difference is the absolute difference between the sample and a duplicate analysis compared to the average of the two analytical results. Acceptance Limits can be exceeded by matrix interference or when the result is less than 5 times the LOR.

### ***Matrix Spike***

An additional portion of sample to which known amounts of the target analytes are added before sample preparation. Acceptance Limits can be exceeded by matrix interference or when the target analytes are present in the sample.

### ***Certified Reference Material (CRM)***

A commercially available certified solution/mixture of the target analyte of known concentration.

### ***Laboratory Control Sample (LCS)***

An in-house certified solution/mixture of the target analyte of known concentration.

# Quality Control Report

Job Number: 15-3553

Date: 22/05/2015



## BTEX in Water

Holding Time Criteria	Date	
Extracted	19/05/2015	
Analysed	20/05/2015	
Duplicate Analysis (15-3553-1)	RPD (%)	Limits (%)
Benzene	0	25
Toluene	0	25
Ethylbenzene	0	25
Xylenes (Total)	0	25
Matrix Spike (15-3553-1)	Recovery (%)	Limits (%)
Benzene	107	60 - 120
Toluene	102	60 - 120
Ethylbenzene	97	60 - 120
Xylenes (Total)	97	60 - 120

## TPH in Water

Holding Time Criteria	Date	
Extracted	20/05/2015	
Analysed	21/05/2015	
Blank Analysis	Result (mg/L)	Limit (mg/L)
C6-9	<0.02	0.02
C10-14	<0.02	0.02
C15-28	<0.04	0.04
C29-36	<0.04	0.04
C>36	<0.04	0.04
Matrix Spike (15-3553-1)	Recovery (%)	Limits (%)
C15-28	109	60 - 120

## TPH in Water

Holding Time Criteria	Date	
Extracted	20/05/2015	
Analysed	21/05/2015	
Blank Analysis	Result (mg/L)	Limit (mg/L)
C6-9	<0.02	0.02
C10-14	<0.02	0.02
C15-28	<0.04	0.04
C29-36	<0.04	0.04
C>36	<0.04	0.04
Matrix Spike (15-3553-1)	Recovery (%)	Limits (%)
C15-28	109	60 - 120

# Quality Control Report

Job Number: 15-3553

Date: 22/05/2015



## Total Phenols in Water

Holding Time Criteria	Date	
Extracted	21/05/2015	
Analysed	21/05/2015	
Duplicate Analysis (15-3553-1)	RPD (%)	Limits (%)
Total Phenols	0	25
Blank Analysis	Result (mg/L)	Limit (mg/L)
Total Phenols	<0.05	0.05
Matrix Spike (15-3553-1)	Recovery (%)	Limits (%)
Total Phenols	89	60 - 120
Certified Reference Material	Recovery (%)	Limits (%)
Total Phenols	133	74 - 143

# Quality Control Report

Job Number: 15-3553

Date: 22/05/2015



## Metals in Water

Duplicate Analysis (15-3519-1)	RPD (%)	Limits (%)
Aluminium - Dissolved	0	25
Arsenic - Dissolved	0	25
Cadmium - Dissolved	0	25
Chromium - Dissolved	0	25
Iron - Dissolved	13	25
Manganese - Dissolved	0	25
Nickel - Dissolved	0	25
Selenium - Dissolved	0	25
Zinc - Dissolved	0	25
Blank Analysis	Result (mg/L)	Limit (mg/L)
Aluminium - Dissolved	<0.01	0.01
Aluminium - Total	<0.01	0.01
Arsenic - Dissolved	<0.001	0.001
Arsenic - Total	<0.001	0.001
Cadmium - Dissolved	<0.0001	0.0001
Cadmium - Total	<0.0001	0.0001
Chromium - Dissolved	<0.001	0.001
Chromium - Total	<0.001	0.001
Iron - Dissolved	<0.01	0.01
Iron - Total	<0.01	0.01
Manganese - Dissolved	<0.01	0.01
Manganese - Total	<0.01	0.01
Nickel - Dissolved	<0.001	0.001
Nickel - Total	<0.001	0.001
Selenium - Dissolved	<0.001	0.001
Selenium - Total	<0.001	0.001
Zinc - Dissolved	<0.005	0.005
Zinc - Total	<0.005	0.005
Matrix Spike (15-3519-1)	Recovery (%)	Limits (%)
Aluminium - Dissolved	106	80 - 120
Cadmium - Dissolved	98	80 - 120
Chromium - Dissolved	102	80 - 120
Manganese - Dissolved	102	80 - 120
Nickel - Dissolved	81	80 - 120
Zinc - Dissolved	108	80 - 120
Certified Reference Material	Recovery (%)	Limits (%)
Aluminium - Dissolved	112	80 - 120
Aluminium - Total	112	80 - 120
Arsenic - Dissolved	95	80 - 120
Arsenic - Total	95	80 - 120

# Quality Control Report

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Certified Reference Material	Recovery (%)	Limits (%)
Cadmium - Dissolved	99	80 - 120
Cadmium - Total	99	80 - 120
Chromium - Dissolved	103	80 - 120
Chromium - Total	103	80 - 120
Iron - Dissolved	93	80 - 120
Iron - Total	93	80 - 120
Manganese - Dissolved	102	80 - 120
Manganese - Total	100	80 - 120
Nickel - Dissolved	95	80 - 120
Nickel - Total	95	80 - 120
Selenium - Dissolved	81	80 - 120
Selenium - Total	81	80 - 120
Zinc - Dissolved	83	80 - 120
Zinc - Total	83	80 - 120

## Total Nitrogen in Water

Holding Time Criteria	Date	
Extracted	19/05/2015	
Analysed	21/05/2015	
Duplicate Analysis (15-3583-1)	RPD (%)	Limits (%)
Total Nitrogen	0	25
Blank Analysis	Result (mg/L)	Limit (mg/L)
Total Nitrogen	<0.2	0.2
TKN	<0.2	0.2
Matrix Spike (15-3583-1)	Recovery (%)	Limits (%)
Total Nitrogen	105	80 - 120
Certified Reference Material	Recovery (%)	Limits (%)
Total Nitrogen	98	80 - 120
TKN	98	80 - 120

## Total Phosphorus in Water

Holding Time Criteria	Date	
Extracted	19/05/2015	
Analysed	21/05/2015	
Duplicate Analysis (15-3583-1)	RPD (%)	Limits (%)
Total Phosphorus	0	25
Blank Analysis	Result (mg/L)	Limit (mg/L)
Total Phosphorus	<0.01	0.01
Certified Reference Material	Recovery (%)	Limits (%)
Total Phosphorus	116	80 - 120

# Quality Control Report

Job Number: 15-3553

Date: 22/05/2015



## Ions in Water

Holding Time Criteria	Date	
Analysed	20/05/2015	
Blank Analysis	Result (mg/L)	Limit (mg/L)
Chloride	<5	5
Filterable Reactive Phosphorus	<0.01	0.01
Ammonia-N	<0.02	0.02
Nitrate-N	<0.01	0.01
NOx-N	<0.01	0.01
Nitrite-N	<0.01	0.01
Ferrous Iron	<0.05	0.05
Certified Reference Material	Recovery (%)	Limits (%)
Filterable Reactive Phosphorus	97	80 - 120
Ammonia-N	96	80 - 120
Nitrate-N	104	80 - 120
NOx-N	96	80 - 120
Chloride	90	80 - 120
Nitrite-N	81	80 - 120
Ferrous Iron	120	80 - 120

# Quality Control Report

Job Number: 15-3553

Date: 22/05/2015



## Alkalinity and Acidity

Holding Time Criteria	Date	
Analysed	15/05/2015	
Duplicate Analysis (15-3519-1)	RPD (%)	Limits (%)
Acidity	0	25
Alkalinity	5	25
Blank Analysis	Result (mgCaCO <sub>3</sub> /L)	Limit (mgCaCO <sub>3</sub> /L)
Acidity	<5	5
Alkalinity	<5	5
Certified Reference Material	Recovery (%)	Limits (%)
Alkalinity	108	80 - 120
Acidity	115	80 - 120
Duplicate Analysis (15-3553-1)	RPD (%)	Limits (%)
pH	0	25
Conductivity	50	25
Turbidity	29	25
Blank Analysis	Result (pH units)	Limit (pH units)
pH	5.5	0.1
Conductivity	<0.01	0.01
Turbidity	<0.1	0.1
Certified Reference Material	Recovery (%)	Limits (%)
Turbidity	84	80 - 120
pH	100	95 - 105
Conductivity	102	95 - 105
Duplicate Analysis (15-3519-1)	RPD (%)	Limits (%)
Total Dissolved Solids	4	25
Blank Analysis	Result (mg/L)	Limit (mg/L)
Total Dissolved Solids	<5	5
Total Suspended Solids	<5	5
Certified Reference Material	Recovery (%)	Limits (%)
Total Dissolved Solids	97	80 - 120
Total Suspended Solids	93	80 - 120

## Biochemical Oxygen Demand

Holding Time Criteria	Date	
Extracted	15/05/2015	
Analysed	20/05/2015	
Blank Analysis	Result (mg/L)	Limit (mg/L)
Biochemical Oxygen Demand	<5	5
Certified Reference Material	Recovery (%)	Limits (%)
Biochemical Oxygen Demand	120	80 - 120

# Quality Control Report

Job Number: 15-3553

Date: 22/05/2015



## Miscellaneous Inorganics in Water

Holding Time Criteria	Date	
Analysed	21/05/2015	
Blank Analysis	Result (mg/L)	Limit (mg/L)
Sulphide	<0.05	0.05
Certified Reference Material	Recovery (%)	Limits (%)
Sulphide	60	60 - 120
Duplicate Analysis (15-3553-1)	RPD (%)	Limits (%)
Chemical Oxygen Demand	0	25
Blank Analysis	Result (mg/L)	Limit (mg/L)
Chemical Oxygen Demand	<10	10
Blank Analysis	Result (mg/L)	Limit (mg/L)
Chemical Oxygen Demand	<10	10
Laboratory Control Sample	Recovery (%)	Limits (%)
Chemical Oxygen Demand	111	80 - 120
Certified Reference Material	Recovery (%)	Limits (%)
Chemical Oxygen Demand	117	80 - 120