



# Fassaroe Historic Landfill

## Surface & Groundwater Monitoring Report

### September 2016

Client:	Cosgrave Development	
Project Title:	Fassaroe Historic Landfill Monitoring	
Document Title:	Surface & Groundwater Monitoring Report	
Document No:	DD00203B/D1/004b	
Text Pages:	14	Appendices: 2

Rev.	Status	Date	Author(s)	Reviewed By	Approved By
D01	Draft	21 <sup>st</sup> October 2016	JN	GB	GB
F01	Final	8 <sup>th</sup> December 2016	JN	GB	GB

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# 1 INTRODUCTION

## 1.1 PROJECT BACKGROUND

In 2015, RPS was appointed by Cosgrave Developments to carry out an Environmental Risk Assessment (ERA) at the historic landfills at Fassaroe, Co. Wicklow. A detailed site investigation was conducted between November 2015 and March 2016 as part of the ERA and included an initial round of baseline sampling of waste leachate, groundwater and springs and surface waters at the site (RPS Report (2016); ref. no. MDR1206Rp0004 F01).

The current surface water and groundwater monitoring round, provides additional quality data for the Fassaroe Site to allow comparison to appropriate Environmental Quality Standards (EQS).

## 1.2 OBJECTIVES

The objectives of the current round of water quality monitoring at the Fassaroe Site are as follows:

- To obtain water quality from surface and groundwater bodies during low flow (dry) period.
- To assess the variability of water quality results.

## 1.3 SITE BACKGROUND

A detailed description of the Site Conceptual Model (CSM) is given in ERA Report (2016), and is summarised below:

The Fassaroe site consists of five historic landfills (Site 1, Site 2, Site 3A, Site 3B and Site 3C), most of which are in relatively close proximity to the County Brook River. All five waste bodies (sources) are surrounded by a thick sequence of unsaturated sand and gravels which represent glaciofluvial and glaciolacustrine sediments that make up the Enniskerry gravel aquifer body, classed as locally important gravel aquifer.

Groundwater boreholes were installed into the gravel aquifer, both up and down gradient, where possible, at all five waste sites. Groundwater flow in the gravel aquifer was shown to be to the north and northeast towards the river, based on water levels taken on the 29<sup>th</sup> of March 2016. Groundwater discharges emerge as springs and seepages along the northern boundary of the gravel aquifer in the river valley and feed a small strip of alkaline fen and tufa deposits within the Ballyman Glen Special Area of Conservation (SAC) [Site code: 000713].

The majority of the waste is underlain by unsaturated subsoil at Site 2 and Site 3a, however the most northerly parts of the waste body, closest to the river, appear to intercept the water table. In Site 3C the base of the waste appears to intercept the top of the water table across the majority of the site.

The underlying bedrock consists of Ordovician Metasediments of the Maulin Bedrock Formation characteristic of dark blue-grey slate, phyllite & schist, classified as a locally important, moderately productive bedrock aquifer in local zones (LI). The depth to bedrock was not confirmed during the site investigation drilling programme of up to 35 metres.

## 1.4 SCOPE OF WORKS/METHODOLOGY

### 1.4.1 Surface Water & Spring Sampling

On the 24th of August (2016) surface water sampling was completed at 10 locations including five springs and five targeted locations along the County Brook River (Fassaroe Stream). The surface water monitoring locations are presented in Figure 1. The position of the springs relative to the waste bodies is identified in Table 1.1.

**Table 1.1 – Spring Monitoring Locations**

Sample ID	Location
SP1	60m down gradient of Site 2
SP2	85m down gradient of Site 1
SP3	140m down gradient of Site 3C
SP4	25m down gradient of Site 3A
SP5	60m down gradient of Site 3A

All surface water grab samples were obtained by placing the dedicated sampling bottles directly into the surface water body. Samples were obtained from areas where river level and flow was observed to ensure samples were representative. The sample inlet was placed below the surface flow while care was taken not to disturb the base/bed of the surface water body. Indicative field parameters of electrical conductivity, pH and temperature were taken for each sampling location.

### 1.4.2 Groundwater Sampling

Between the 30<sup>th</sup> of August and the 1<sup>st</sup> of September 2016, groundwater samples were taken from a total of seven groundwater monitoring boreholes (including one gas borehole G20), targeting both up-gradient and down-gradient locations of the landfills where possible. The position of groundwater monitoring boreholes relative to the waste bodies is identified in Table 1.2.

**Table 1.2 - Groundwater Monitoring Boreholes Sampled**

Site ID	BH ID	Relative Location	Other Groundwater boreholes (not sampled)
Site 1	BH05	Up gradient	none
Site 2	G20 (gas well)	Up gradient	<i>Up gradient:</i> BH03 (dry); BH04(dry); BH11(dry); BH13(dry);
	BH01	Down/Side gradient	
Site 3A	BH07, BH09, BH10 (d),	Up/Side Gradient	none
Site 3B	none		<i>Down gradient:</i> BH8 (dry)
Site 3C	BH06	Up-gradient	none

The boreholes which did not intercept groundwater include BH03, BH04, BH11 and BH13 (all of which are surrounding Site 2). BH8 at Site 3B did not intercept groundwater in the current round, albeit sufficient water for sampling was present in the previous monitoring round in March 2016.

Groundwater samples were obtained following purging a minimum of three well volumes prior to sample collection. To minimise cross contamination between sampling locations dedicated inertial tubing was used to collect each sample.

Indicative field parameters of electrical conductivity, pH and temperature were recorded at each sampling location.

### 1.4.3 Leachate Sampling

A total of 11 leachate samples were collected from the five sites between the 30<sup>th</sup> of August and the 1<sup>st</sup> of September 2016). The remaining leachate boreholes did not intercept any water or contained insufficient sample volumes. A summary of all leachate monitoring boreholes is presented in Table 1.3.

**Table 1.3 - Leachate Monitoring Boreholes Sampled**

Site ID	Sampled boreholes	Other boreholes (not sampled)
Site 1	LG11	LG12 (dry), LG13 (dry)
Site 2	LG03, LG07, LG09, LG10	LG01 (dry), LG02 (dry), LG04 (dry), LG05 (dry), LG06 (<40cm of leachate), LG08 (dry)
Site 3A	LG15, MW4, LG19	LG20 (dry), MW3
Site 3B	LG17	LG16 (<15cm of leachate), LG21 (<20cm of leachate)
Site 3C	LG14, MW2	LG18 (dry)

The leachate samples taken were collected by RPS staff in laboratory supplied sample containers and shipped to Chemtest Ltd. (UKAS Accredited), Depot Road, Newmarket, CB8 0AL, UK. To minimise cross contamination between sampling locations dedicated inertial tubing was used to collect each leachate sample.

Historic leachate monitoring wells are in existence at Sites 3A and Site 3C. For the current sampling round, leachate samples were collected from MW2 and MW4 for analysis. Other historic leachate monitoring boreholes are in existence across Sites 1 and 2, however borehole logs were not available therefore the integrity of existing monitoring infrastructure could not be established and were not utilised during the monitoring regime.

### 1.4.4 Laboratory Analysis

The surface water, spring water, leachate and groundwater samples were collected by RPS staff in laboratory supplied sample containers and shipped in cooler boxes including ice packs on the same day to Chemtest Ltd. (UKAS Accredited), Depot Road, Newmarket, CB8 0AL, UK. Confirmation of receipt was received the following day that all three batches of samples arrived in good condition.

All water and leachate samples were scheduled for testing of the following suite of parameters:

- Metals (including Al, As, Ba, B, Cd, Ca, Cr, Cu, Fe, Pb, Mn, Hg, Ni, K, Na, V, Zn)
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- pH
- Electrical Conductivity
- Alkalinity as CaCO<sub>3</sub>
- Ammoniacal Nitrogen as N
- Chloride as Cl
- Nitrite as N
- Nitrogen, Total Oxidised as N
- Phosphate, Ortho as P
- Sulphate as SO<sub>4</sub>
- Total Dissolved Solids
- Total Suspended Solids
- Total Organic Carbon
- Cyanide
- Fluoride
- Phenols
- Extractable Hydrocarbons
- Polycyclic aromatic Hydrocarbons
- Volatile Organic Compounds
- Semi-Volatile Organic Compound

The leachate and groundwater samples were also scheduled for dissolved gases including methane, oxygen and carbon dioxide.

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## 2 RESULTS

### 2.1 SURFACE WATER & SPRINGS

#### 2.1.1 Field Parameters

The field parameters for spring and surface waters are summarised in Table 2.1 below.

**Table 2.1 – Surface water and Spring Field Parameters**

Date	BH-ID	pH (-)	Temp (°C)	EC (µS/cm)	Visual
24/08/2016	SP1	7.67	14.8	1,379	Ochre, red discolouration & hydrocarbon sheen
24/08/2016	SP2	8.51	14.1	660	Calcite deposits present
24/08/2016	SP3	7.77	15.2	607	Calcite deposits present
24/08/2016	SP4	7.49	15.6	976	Ochre deposits present
24/08/2016	SP5	7.95	15.2	646	Calcite deposits present
24/08/2016	SW1	8.28	12.9	547	Clear
24/08/2016	SW2	8.52	12.5	539	Clear
24/08/2016	SW3	8.61	12.4	558	Clear
24/08/2016	SW4	8.47	12.1	550	Clear
24/08/2016	SW5	8.18	11.8	548	Clear

Spring locations SP2, SP3 and SP5 show accumulations of calcite (tufa) deposits. Spring locations SP1 and SP4, both show evidence of ochre staining, with lower pH readings than the calcite depositing springs. Spring location SP1 also showed evidence of hydrocarbon contamination and showed the highest electrical conductivity reading of all the spring locations.

Surface waters do not indicate any visual or olfactory evidence of contamination.

#### 2.1.2 Laboratory Analysis

Surface water samples results were compared to Environmental Quality Standards (EQS) for freshwater bodies from the Surface Water Regulations (SI 327 of 2012 and SI 386 of 2015). These standards include a list of EQS for specific pollutants and for general physio-chemical conditions for good and high water body status. As such, these standards are considered to be the most appropriate generic assessment criteria for assessing the risk to surface water courses. The laboratory results for springs and surface waters are presented in Appendix A, and a summary of exceedances above EQS are summarised in Table 2.2.



**Table 2.2 – Surface water & Spring EQS Exceedances**

Type	Monitoring Location	Exceedances above EQS (specific pollutants)	Exceedance above general conditions for good status	Hydrocarbon & VOC detections
River	SW1		Ammoniacal Nitrogen	-
River	SW2		Ammoniacal Nitrogen	-
River	SW3		-	Chloromethane
River	SW4		Ammoniacal Nitrogen	Chloromethane
River	SW5	Mercury	Ammoniacal Nitrogen	Chloromethane
Spring	SP1		Ammoniacal Nitrogen	-
Spring	SP2		Ammoniacal Nitrogen	Chloromethane
Spring	SP3		Ammoniacal Nitrogen	Chloromethane
Spring	SP4	Nickel	Ammoniacal Nitrogen	Chloromethane
Spring	SP5	Zinc	Ammoniacal Nitrogen	Chloromethane

The results highlight exceedances at almost all locations of ammoniacal nitrogen, with exception of SW3, and chloromethane with the exception of SW1, SW2 and SP1. Isolated exceedances of nickel in SP4 and zinc in SP5 are also observed.

## 2.2 GROUNDWATER

### 2.2.1 Field Parameters

Field parameters for groundwater monitoring locations are summarised in Table 2.3. The purged and sampled groundwater at all monitoring locations contained significant amounts of fine sediment (silt) and as a result all samples were filtered on-site.

**Table 2.3 – Groundwater Field Parameters**

Date	BH-ID	Water level (mbgl)	pH (-)	Temp (°C)	EC (µS/cm)	Visual
30/08/2016	BH9	7.78	7.06	13.8	740	Silty brown
30/08/2016	BH8	dry	-	-	-	-
30/08/2016	BH7	14.91	7.43	16.5	709	Brown, very silty
30/08/2016	BH10	9.33	7.35	13.6	727	Brown, very silty
31/08/2016	BH6	6.45	6.88	14.5	867	Silty brown
31/08/2016	BH5	20.23	7.12	13.3	972	Slight brown colour, very silty
31/08/2016	G20	15.20	7.76	14	523	Brown, very silty
01/09/2016	BH1	15.94	6.68	12.1	927	Brown, turbid, very silty

## 2.2.2 Laboratory Analysis

Groundwater concentrations have been compared to the Interim Guideline Values (IGV) for Groundwater as presented in EPA interim report “Towards Setting Guideline Values for the Protection of Groundwater in Ireland” (2003) and the Groundwater Regulations Threshold Values (GTV) (S.I. 9 of 2010). Groundwater quality results for all sites are presented in Appendix A, and exceedances above GTVs for all sites are summarised in Table 2.4.

**Table 2.4 – Groundwater GTV and IGV Exceedances**

Site	Monitoring location	Exceedances above GTV ( <i>and IGV*</i> )	Hydrocarbon and VOC Detections
Site 1	BH5	Ammoniacal Nitrogen, Chloride ( <i>Boron, Iron</i> )	-
Site 2	G20	Ammoniacal Nitrogen, ( <i>Boron, Iron, Chloride</i> )	-
Site 2	BH1	Ammoniacal Nitrogen, Boron ( <i>Iron</i> )	-
Site 3A	BH7	Ammoniacal Nitrogen	-
Site 3A	BH9	Ammoniacal Nitrogen ( <i>Iron</i> )	-
Site 3A	BH10	Ammoniacal Nitrogen ( <i>Iron</i> )	-
Site 3C	BH6	Ammoniacal Nitrogen ( <i>Iron</i> )	Chrysene

\*Parameters listed in *italics* exceed only the IGV.

The results highlight that ammoniacal nitrogen exceeds the GTV at all groundwater monitoring locations. Exceedances above relevant GTV are also noted for Chloride in BH5 (up gradient of Site 1) and Boron in BH1 (down gradient of Site 2).

Exceedances above IGV's are observed for Iron at almost all groundwater monitoring locations, with the exception of BH7, for boron in BH5 (up gradient of Site 1) and G20 (up gradient of Site 2) and also for chloride in G20.

As summarised in Table 2.5 dissolved methane gas remained below detection limit of <0.050mg/l at all groundwater locations. Dissolved carbon dioxide gas ranged from 2.0 to 44mg/l across the sites.

**Table 2.5 – Dissolved Gases in groundwater samples in mg/l**

	Site 1	Site 2		Site 3A			Site 3C
Dissolved Gas	BH5	G20	BH1	BH7	BH9	BH10	BH6
Oxygen	11	9.5	14	8.7	8.4	9.9	9.3
CO2	44	9	30	2	3.3	1.7	25
Ethane	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ethene	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Methane	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050

## 2.3 LEACHATE

### 2.3.1 Field Parameters

The field parameters for the leachate samples are summarised in Table 2.6.

The leachate ranged from dark grey/ black to brown in colour and measurements of electrical conductivity were above the maximum threshold (>3999 $\mu$ S/cm) of the field probe instrument for almost all sampling locations.

**Table 2.6 – Leachate Field Parameters**

Date	BH-ID	Water level (mbgl)	pH (-)	Temp (°C)	EC ( $\mu$ S/cm)	Visual
30/08/2016	LG17	3.67	7.23	16.2	>3,999	dark grey cloudy, strong foul odour
30/08/2016	LG15	6.94	6.82	19	3,467	black colour, strong foul odour
30/08/2016	LG19	~14.50	7.20	14	>3,999	slight black colour, strong foul odour
31/08/2016	LG14	~11.23	7.34	17	>3,999	dark grey, very turbid, strong foul odour
31/08/2016	LG11	12.12	7.01	15.7	2,473	dark grey/black, turbid, slight foul odour
01/09/2016	LG01	dry	-	-	-	-
01/09/2016	LG09	7.05	7.19	14.2	>3,999	dark brown, speckles of hydrocarbon sheen, strong foul odour
01/09/2016	LG10	~13	7.17	15	>3,999	dark brown, speckles of hydrocarbon sheen, strong foul odour
01/09/2016	LG07	11.63	7.18	15	>3,999	brown/grey, speckles of hydrocarbon sheen, strong foul odour
01/09/2016	LG04	dry	-	-	-	-
01/09/2016	LG05	dry	-	-	-	-
01/09/2016	LG03	17.57	6.99	15.3	>3,999	

### 2.3.2 Laboratory Analysis

Field measurements of electrical conductivity, temperature and pH for leachate samples taken at each of the sites are used as indicators of generic leachate properties.

Waste leachate concentrations obtained from chemical laboratory analysis have been compared to the Interim Guideline Values (IGV) for Groundwater as presented in EPA interim report “Towards Setting Guideline Values for the Protection of Groundwater in Ireland” 2002. The leachate results are also compared to the groundwater threshold values (GTV) in the Groundwater Regulations (SI 9 of 2010) and as such provide a conservative assessment of risk.

The tabulated results are presented in Appendix A and a summary of GTV exceedances for all sites is given in Table 2.7.

**Table 2.7 – Leachate GTV Exceedances and IGV Exceedances**

Site	Monitoring location	Exceedances above GTV ( <i>and IGV</i> )	Hydrocarbon & VOC detections
Site 1	LG11	Boron, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, Sulphate, ( <i>Barium, Boron, Calcium, Iron, Manganese, Potassium, Nitrite, Total Dissolved Solids, Total Phenols</i> )	-
Site 2	LG03	Arsenic, Boron, Mercury, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, ( <i>Barium, Boron, Iron, Manganese, Potassium, Total Dissolved Solids, Total Petroleum Hydrocarbons</i> )	-
Site 2	LG07	Arsenic, Boron, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, ( <i>Barium, Boron, Iron, Manganese, Potassium, Phosphate, Total Dissolved Solids</i> )	-
Site 2	LG09	Arsenic, Boron, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, ( <i>Barium, Boron, Iron, Manganese, Potassium, Phosphate, Total Dissolved Solids</i> )	-
Site 2	LG10	Arsenic, Boron, Mercury, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, ( <i>Barium, Boron, Iron, Manganese, Potassium, Phosphate, Total Dissolved Solids, Total Petroleum Hydrocarbons</i> )	-
Site 3A	LG15	Arsenic, Boron, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, Benzene, ( <i>Barium, Boron, Calcium, Iron, Manganese, Potassium, Total Dissolved Solids, Total Phenols, Total Petroleum Hydrocarbons, Naphthalene, PAH, Toluene, m &amp; p-Xylene, Methyl Tert-Butyl Ether</i> )	Vinyl Chloride, cis 1,2-Dichloroethene, Benzene, Toluene, Ethylbenzene, m & p-Xylene, o-Xylene, 1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, 4-Isopropyltoluene
Site 3A	MW4	Arsenic, Boron, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, ( <i>Barium, Boron, Iron, Manganese, Potassium, Phosphate, Total Dissolved Solids, Total Phenols, Total Petroleum Hydrocarbons, Naphthalene, PAH</i> )	Toluene, m & p-Xylene, o-Xylene
Site 3A	LG19	Arsenic, Boron, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, Benzene, ( <i>Barium, Boron, Iron, Manganese, Potassium, Phosphate, Total Dissolved Solids, Total Phenols, Total Petroleum Hydrocarbons, Chlorobenzene, m &amp; p-Xylene</i> )	Benzene, Toluene, Chlorobenzene, Ethylbenzene, m & p-Xylene, o-Xylene, Isopropylbenzene, 1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, 4-Isopropyltoluene
Site 3B	LG17	Arsenic, Boron, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, Benzene, ( <i>Barium, Boron, Iron, Manganese, Potassium, Phosphate, Total Dissolved Solids, Total Phenols, Total Petroleum Hydrocarbons, Toluene, m &amp; p-Xylene</i> )	Vinyl Chloride, Benzene, Toluene, Ethylbenzene, m & p-Xylene, o-Xylene, 1,3,5-Trimethylbenzene, 1,2,4-Trimethylbenzene, 4-Isopropyltoluene

Site	Monitoring location	Exceedances above GTV ( <i>and IGV</i> )	Hydrocarbon & VOC detections
Site 3C	LG14	Arsenic, Boron, Nickel, Sodium, Electrical Conductivity, Ammoniacal Nitrogen, Chloride, ( <i>Boron, Iron, Manganese, Potassium, Phosphate, Total Dissolved Solids, Total Phenols, Total Petroleum Hydrocarbons, Naphthalene</i> )	Nitrobenzene, 2-Nitrophenol, 2,4-Dimethylphenol, Naphthalene, 4-Chloro-3-Methylphenol, Diethyl Phthalate, Toluene, Ethylbenzene, m & p-Xylene, o-Xylene, 1,2,4-Trimethylbenzene, 4-Isopropyltoluene
Site 3C	MW2	Arsenic, Boron, Electrical Conductivity, ( <i>Barium, Boron, Iron, Manganese, Potassium, Chloride, Naphthalene</i> )	1,4-Dichlorobenzene, Toluene, Naphthalene, 2-Methylnaphthalene

**Table 2.8** summarises the dissolved gases in the leachate samples. Dissolved methane gas was detected in all leachate samples, ranging from 0.41 to 12mg/l, with the highest value observed in LG17 (Site 3B). Carbon dioxide gas ranges from 47 to 160mg/l across all sites, with the highest value observed in MW2 (Site 3C).

**Table 2.8 – Dissolved Gases in Leachate samples in mg/l**

	Site 1	Site 2				Site 3A			Site 3B	Site 3C	
Dissolved	LG11	LG03	LG07	LG09	LG10	LG15	MW4	LG19	LG17	LG14	MW2
Oxygen	3.1	9.9	7.8	8.5	9.9	4.1	1.6	3.0	2.7	0.8	4.6
CO2	100	85	88	110	78	73	80	76	47	71	160
Ethane	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methane	0.94	2.9	1.5	5.9	0.41	5.2	1.8	6.9	12.0	8.5	1.8

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## 4 DISCUSSION

### 4.1 SITE 1

The waste at Site 1 is largely comprised of construction and demolition waste, albeit the presence of domestic waste has also been documented from the site investigation. The waste leachate highlighted exceedances above groundwater threshold and guideline values of 15 water quality parameters, as summarised in Table 2.7.

Groundwater results for up-gradient BH05 show that there are a small number of exceedances above GTVs and/or IGVs for ammoniacal nitrogen, chloride, boron and iron concentrations. Due to slope instability towards the County Brook, there are no directly down gradient of the landfill at Site 1.

Dissolved methane gas concentrations were not detected in the groundwater sample at Site 1. Dissolved carbon dioxide concentrations were 100mg/l in the leachate sample and 44mg/l in the up-gradient groundwater monitoring borehole BH5.

Water quality results from spring SP2, which emerges approximately 85m downgradient of Site 1 in close proximity to the County Brook River, shows an exceedance above Surface Water EQS for ammoniacal nitrogen. There are no other exceedances above surface water EQS noted for tested water quality parameters at SP2.

### 4.2 SITE 2

Waste encountered at Site 2, the largest of the landfill sites, is comprised of mixed municipal waste. Leachate results from the four leachate monitoring boreholes (LG03, LG07, LG09 and LG10) highlighted exceedances above groundwater threshold and guideline values between 13 to 21 water quality parameters.

There are two groundwater monitoring boreholes at Site 2, an up-gradient borehole G20 and down-gradient borehole BH01. Up-gradient borehole G20 highlights one exceedance above GTV for ammoniacal nitrogen and above IGVs for boron, iron and chloride.

The downgradient borehole BH01 highlights an exceedance above GTV for ammoniacal nitrogen and above IGVs for iron, both parameters showing higher concentrations than in the up-gradient groundwater, indicating the waste body at Site 2 has impacted the groundwater quality downgradient.

Dissolved methane gas was not detected in up-gradient or downgradient groundwater, despite elevated concentrations in leachate samples ranging from 0.41 to 5.9mg/l at Site 2. Concentrations of dissolved carbon dioxide were higher in the downgradient borehole BH1 than in up-gradient monitoring borehole G20.

Spring location SP1 is located 60 metres down gradient of Site 2 in close proximity to the County Brook River. SP1 shows evidence of ochre staining and hydrocarbon sheen on the water surface and its quality results highlights an exceedance above surface water EQS for ammoniacal nitrogen

biochemical oxygen demand. The results indicate the waste body has impacted the spring water quality at Site 2.

### 4.3 SITE 3A

Waste encountered at Site 3A is comprised of mixed municipal waste and leachate results from three leachate monitoring boreholes (LG15, MW4 and LG19) highlight exceedances above groundwater threshold and guideline values for at least 13 water quality parameters including arsenic and hydrocarbons and total phenols.

There are three groundwater monitoring boreholes, including two locations up-gradient (BH7 and BH9) and one borehole located side/ downgradient (BH10) of the waste body. Water quality results from the up-gradient boreholes highlight exceedances above the GTV for ammoniacal nitrogen and BH9 also exceeds the IGV for iron. These exceedances may possibly relate to the waste body at Site 3B, which is located up-gradient of these groundwater monitoring boreholes.

The results for the side/ downgradient groundwater monitoring borehole BH10 shows the highest concentration of ammoniacal nitrogen at Site 3A, exceeding the GTV and also exceeds the IGVs for iron, manganese and potassium, signifying that the waste body has impacted the groundwater quality at Site 3A.

Dissolved methane gas was not detected in up-gradient or downgradient groundwater, despite elevated concentrations in leachate samples ranging from 1.8 to 6.9mg/l at Site 3A. Concentrations of dissolved carbon dioxide in groundwater range from 1.7 to 3.3mg/l were highest at BH9 and are likely related to the up-gradient waste body at Site 3B.

Results for the two sampled spring locations SP4 (25m downgradient of Site 3A) and SP5 (60m downgradient of Site 3A) show exceedances above surface water EQS for ammoniacal nitrogen. Additional exceedances above surface water EQS include nickel at SP4 and zinc at SP5. The ochre staining observed at SP4 also corresponds with the highest concentrations of iron (0.39mg/l) and manganese (7.4mg/l). There are currently no surface water EQS for iron and manganese. The results highlight that the downgradient spring water quality has been impacted by the waste body at Site 3A.

### 4.4 SITE 3B

Waste encountered at Site 3B is comprised of mixed municipal waste and leachate results from monitoring borehole LG17 indicates exceedances above groundwater threshold and guideline values for 17 water quality parameters including arsenic, chromium, iron and hydrocarbons and total phenols.

The groundwater monitoring borehole BH8 was dry on the day of sampling and therefore there are no groundwater quality results for Site 3B. Previous results have indicated the exceedance of a number of heavy metals in BH8, however the metal concentrations were based on total concentrations as opposed to dissolved concentrations.

There are no springs immediately down gradient of Site 3B.

## 4.5 SITE 3C

Waste encountered at Site 3C is comprised of mixed municipal waste and leachate results from LG14 and MW2 indicates exceedances above groundwater threshold and guideline values for nine water quality parameters including arsenic, and total phenols and total hydrocarbons in MW2.

Water quality results for groundwater monitoring borehole BH6 shows exceedances above groundwater threshold and guideline values for boron, iron, potassium and ammoniacal nitrogen. BH6 is located up-gradient but very close to the waste body. The elevated concentrations in the up-gradient groundwater may relate to a perched leachate head at the up-gradient perimeter of the waste body at the site, possibly causing localised mounding of the water table leading to the plume dispersing from the site. Alternatively, the groundwater quality may be influenced from up-gradient waste body at Site 3B.

Due to slope instability towards the County Brook River, there are no directly downgradient groundwater boreholes of the landfill at Site 3C.

Dissolved methane gas was not detected in up-gradient groundwater at BH6. Concentrations of carbon dioxide in groundwater at BH6 (25mg/l) were lower than concentrations in waste leachate (71 to 160mg/l) at Site 3C.

Quality results for spring SP3 located 140m downgradient of Site 3C, shows an exceedance above the surface water EQS for ammoniacal nitrogen, but is similar to up gradient groundwater concentrations. There are no other exceedances above surface water EQS noted for tested water quality parameters at SP3.

## 4.6 SURFACE WATERS

Surface water quality exceedances above relevant EQS correspond primarily to ammoniacal nitrogen for all sampling locations. The highest ammoniacal nitrogen concentration is observed at sampling location SW5, located upstream of all the sites.

Previous quality results from March (2016) also detected the presence of extractable hydrocarbons (EH C6-C40, C24-C40) at surface water monitoring locations SW3, SW4 and SW5. Hydrocarbons were not detected in the current round, however low concentrations of chloromethane were detected at these locations, which was not detected previously.

Concentrations of metals including zinc, manganese, boron and iron show generally increasing trend downstream, however there are currently no corresponding surface water EQS for these parameters.

The surface water quality results demonstrate the landfill sites are likely to be affecting water quality within the County Brook River, although the significance of this effect is mitigated by the dilution capacity within the main river itself.



## 5 CONCLUSIONS

Groundwater and surface water sampling was completed successfully at the Fassaroe Historical Landfill site and along the County Brook River in September 2016. Samples were collected from seven groundwater boreholes, 11 leachate boreholes, five springs and five surface water monitoring locations.

Leachate results from each site show exceedances above groundwater guidelines values for nine to 17 quality parameters, including heavy metals, ammonia and hydrocarbons.

Groundwater samples downgradient of the waste bodies confirm elevated levels of ammoniacal nitrogen and iron at all sites and manganese at Site 3C. In comparison to the up-gradient groundwater results, the downgradient groundwater results (at Sites 2 and Site 3A for which they are available) indicate that the waste body has impacted the groundwater quality.

Furthermore, quality results of SP1, SP4 and SP5 downgradient of Sites 2 and 3A also indicate that the waste bodies at these have impacted spring water quality at these sites.

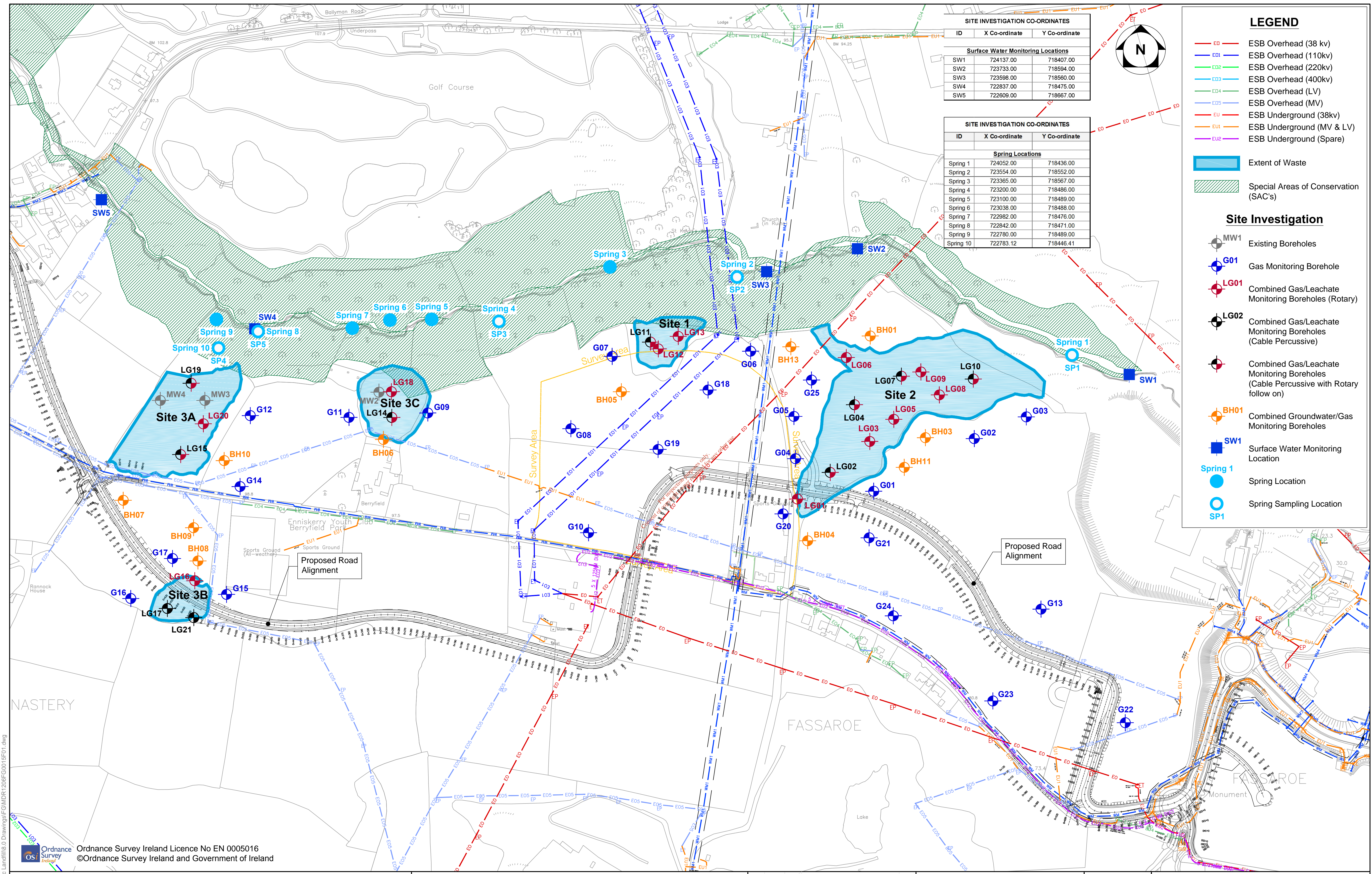
The surface water quality results demonstrate the landfill sites are likely to be affecting water quality within the County Brook River, although the significance of this effect is mitigated by the dilution capacity within the main river itself.

Further bi-annually quality monitoring of leachate, spring and surface waters and groundwater is recommended using the current suite of parameters.

## 6 RECOMMENDATIONS

Further bi-annually quality monitoring of leachate, spring and surface waters and groundwater is recommended using the current suite of parameters.





SITE INVESTIGATION CO-ORDINATES		
ID	X Co-ordinate	Y Co-ordinate
Surface Water Monitoring Locations		
SW1	724137.00	718407.00
SW2	723733.00	718594.00
SW3	723598.00	718560.00
SW4	722837.00	718475.00
SW5	722609.00	718667.00

SITE INVESTIGATION CO-ORDINATES		
ID	X Co-ordinate	Y Co-ordinate
Spring Locations		
Spring 1	724052.00	718436.00
Spring 2	723554.00	718552.00
Spring 3	723365.00	718567.00
Spring 4	723200.00	718486.00
Spring 5	723100.00	718489.00
Spring 6	723038.00	718488.00
Spring 7	722982.00	718476.00
Spring 8	722842.00	718471.00
Spring 9	722780.00	718489.00
Spring 10	722783.12	718446.41

### LEGEND

- ESB Overhead (38 kv)
- ESB Overhead (110kv)
- ESB Overhead (220kv)
- ESB Overhead (400kv)
- ESB Overhead (LV)
- ESB Overhead (MV)
- ESB Underground (38kv)
- ESB Underground (MV & LV)
- ESB Underground (Spare)
- Extent of Waste
- Special Areas of Conservation (SAC's)

### Site Investigation

- MW1 Existing Boreholes
- G01 Gas Monitoring Borehole
- LG01 Combined Gas/Leachate Monitoring Boreholes (Rotary)
- LG02 Combined Gas/Leachate Monitoring Boreholes (Cable Percussive)
- Combined Gas/Leachate Monitoring Boreholes (Cable Percussive with Rotary follow on)
- BH01 Combined Groundwater/Gas Monitoring Boreholes
- SW1 Surface Water Monitoring Location
- Spring 1 Spring Location
- SP1 Spring Sampling Location

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No.	Date	Dr/Chk	Amendment / Issue	App
F01	May16	RH/LD	FINAL ISSUE	

**RPS**  
 West Pier  
 Business Campus  
 Dun Laoghaire  
 Co Dublin

T +353 1 4882900  
 F +353 1 2835676  
 W www.rpsgroup.com/ireland  
 E ireland@rpsgroup.com

Drawn	RH	Project	<b>FASSAROE HISTORIC LANDFILL</b>
Checked	LD	Approved	CC
Date	May 2016	Title	<b>PLAN SHOWING MONITORING LOCATIONS</b>
Scale	1:2500 @ A1 1:5000 @ A3	Job No.	MDR1206
File Ref.	MDR1206FG0015F01.dwg	Drg. No.	Figure 1
Rev.	F01		

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## APPENDIX A

### Quality Results for Leachate, Groundwater and Surface Water

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Fassaroo Leachate Monitoring 2016				Site 1		Site 2				Site 3A			Site 3B	Site 3C	
Laboratory Number	Units	GW Regs (2010) TV	EPA IGW value (GW)	345695	346283	346280	346281	346282	345204	345205	345206	345202	345692	345693	
Customer Sample Ref.				LG11	LG03	LG07	LG09	LG10	LG15	MW4	LG19	LG17	LG14	MW2	
Sample Date/Time				31/08/2016	01/09/2016	01/09/2016	01/09/2016	01/09/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016	31/08/2016
Sample Matrix			Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	
Aluminium (Dissolved)	ug/l	150	200	< 10	14	< 10	< 10	< 10	< 10	11	20	76	14	< 10	
Arsenic (Dissolved)	ug/l	7.5	10	4.9	8.9	10	9.7	14	11	19	73	45	33	7.7	
Barium (Dissolved)	ug/l	-	100	240	500	300	330	350	250	130	270	300	65	240	
Boron (Dissolved)	ug/l	750	100	1300	3400	3200	2600	4600	980	3600	9500	2300	2700	1100	
Cadmium (Dissolved)	ug/l	3.75	5	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	
Calcium	mg/l		200	330	130	95	78	69	230	95	68	150	79	200	
Chromium (Dissolved)	ug/l	37.5	30	3.8	18	16	15	17	6.5	20	27	34	20	2.9	
Copper (Dissolved)	ug/l	1500	30	< 1.0	3.1	2.9	3.1	3.4	< 1.0	6.9	8.7	5.6	3.8	< 1.0	
Iron (Dissolved)	ug/l		200	660	610	700	530	440	16000	1000	960	14000	900	1200	
Lead (Dissolved)	ug/l	18.75	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	7	2.9	1	2.2	< 1.0	
Manganese (Dissolved)	ug/l		50	960	290	190	110	390	1100	310	250	630	250	1500	
Mercury (Dissolved)	ug/l	0.75	1	< 0.50	0.79	< 0.50	0.71	0.86	< 0.50	0.59	0.68	< 0.50	< 0.50	< 0.50	
Nickel (Dissolved)	ug/l	15	20	3.8	38	59	50	36	6.3	94	200	95	82	10	
Potassium	mg/l		5	32	270	340	310	350	140	550	500	750	550	43	
Sodium	mg/l	150	150	39	570	670	640	670	120	820	1100	760	760	59	
Vanadium (Dissolved)	ug/l			< 1.0	2.8	4.1	3.6	3.5	< 1.0	6	12	12	12	< 1.0	
Zinc (Dissolved)	ug/l		100	5.4	4.8	3.5	4.3	3.1	< 1.0	18	7.6	6.6	6.5	1.2	
BOD5	mg/l			< 4.0	11	26	21	20	120	4.0	63	420	23	19	
COD	mg/l			78	430	780	620	790	290	680	730	< 10	800	79	
pH	pH units			≥ 6.5 and ≤ 9.5	7.4	7.8	7.9	7.7	7.9	7.6	7.9	8.0	8.4	8.1	7.2
Conductivity Electrical	uS/cm	800-1875	1000	2000	6600	8500	7900	8700	2900	10000	11000	12000	9800	1700	
Alkalinity as CaCO3	mg/l		NAC	1200	2700	3200	3000	2900	1500	3500	4200	6500	4400	1200	
Ammoniacal Nitrogen as N	mg/l	0.175		29	270	310	280	330	200	590	540	780	0.93	69	
Chloride as Cl	mg/l	187.5	30	310	780	1100	1000	1300	190	1100	1700	1400	1100	58	
Nitrite as N	mg/l	0.375	0.1	0.11	0.02	0.025	0.02	0.012	0.061	0.052	0.067	0.011	< 0.010	< 0.010	
Nitrogen, Total Oxidised as N	mg/l		NAC	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.23	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	
Phosphate as P	mg/l		0.03	< 0.020	< 0.020	0.13	0.065	0.036	< 0.020	0.12	0.22	0.17	0.28	< 0.020	
Sulphate as SO4	mg/l	150	200	170	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.2	< 1.0	14	
Solids, Tot Dissolved	mg/l		1000	1200	4000	5100	4700	5200	1700	6100	6400	7300	5900	1000	
Total Suspended Solids	mg/l			870	390	460	450	260	1700	500	770	780	3500	880	
TOC as C	mg/l		NOC	24	71	86	90	120	110	130	220	240	180	90	
Cyanide, Total as CN	mg/l	0.0375	10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Fluoride as F	mg/l		1	0.12	0.3	0.38	0.3	0.33	0.16	0.47	0.6	2	0.78	0.23	
Dissolved Oxygen	mg O2/l		NAC	3.1	9.9	7.8	8.5	9.9	4.1	1.6	3	2.7	0.76	4.6	
Dissolved CO2	mg/l			100	85	88	110	78	73	80	76	47	71	160	
Dissolved Ethane	mg/l			< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Dissolved Ethene	mg/l			< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Dissolved Methane	mg/l			0.94	2.9	1.5	5.9	0.41	5.2	1.8	6.9	12	8.5	1.8	
Total Phenols	mg/l		0.0005	0.077	< 0.030	< 0.030	< 0.030	< 0.030	0.058	0.074	0.053	11	0.15	< 0.030	
Total TPH >C6-C40	ug/l		10	< 10	310	< 10	< 10	390	640	1600	750	2200	1100	< 10	
Acenaphthene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Anthracene	ug/l		10000	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (a) anthracene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (g,h,i) perylene	ug/l		0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (a) pyrene	ug/l	0.0075	0.01	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (b) fluoranthene	ug/l		0.5	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (k) fluoranthene	ug/l		0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Chrysene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenz (a,h) anthracene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	ug/l		1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno (1,2,3) cd pyrene	ug/l		0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Naphthalene	ug/l		1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.2	3.7	< 0.10	< 0.10	< 0.10	< 0.10	

Fassaroe Leachate Monitoring 2016				Site 1	Site 2					Site 3A			Site 3B	Site 3C	
Laboratory Number	Units	GW Regs (2010) TV	EPA IGV value (GW)	345695	346283	346280	346281	346282	345204	345205	345206	345202	345692	345693	
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Sample Date/Time				31/08/2016	01/09/2016	01/09/2016	01/09/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016	31/08/2016
Sample Matrix				Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
Phenanthrene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Pyrene	ug/l			< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
PAH, Total	ug/l	75	0.1	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	5.2	3.7	< 2.0	< 2.0	< 2.0	< 2.0	

<b>Legend</b>	
GW Regs TV - Groundwater Regulations (S.I. No. 9 of 2010) Groundwater Threshold Values	10 Exceedance above GW Regs TV
EPA IGV - EPA Interim Guidelines Values for Groundwater (2003)	10 Exceedance above EPA IGV
	NAC No Abnormal Change

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Fassaroe Leachate Monitoring 2016				Site 1	Site 2					Site 3A			Site 3B	Site 3C	
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Customer Sample Ref.				LG11	LG03	LG07	LG09	LG10	LG15	MW4	LG19	LG17	LG14	MW2	
Sample Date/Time				31/08/2016	01/09/2016	01/09/2016	01/09/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016	31/08/2016	
Sample Matrix				Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	
Phenol	ug/l		0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Chlorophenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis(2-Chloroethyl)Ether	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,3-Dichlorobenzene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,4-Dichlorobenzene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4.4	
1,2-Dichlorobenzene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Methylphenol (o-Cresol)	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis(2-Chloroisopropyl)Ether	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachloroethane	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
N-Nitrosodi-n-propylamine	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Methylphenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Nitrobenzene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.4	< 0.50	
Isophorone	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Nitrophenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	18	< 0.50	
2,4-Dimethylphenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.56	< 0.50	
Bis(2-Chloroethoxy)Methane	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dichlorophenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,2,4-Trichlorobenzene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Naphthalene	ug/l		1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.6	2.6	
4-Chloroaniline	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorobutadiene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chloro-3-Methylphenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4	< 0.50	
2-Methylnaphthalene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.68	
Hexachlorocyclopentadiene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4,6-Trichlorophenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4,5-Trichlorophenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Chloronaphthalene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Nitroaniline	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Acenaphthylene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dimethylphthalate	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,6-Dinitrotoluene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Acenaphthene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
3-Nitroaniline	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dibenzofuran	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chlorophenylphenylether	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dinitrotoluene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Fluorene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Diethyl Phthalate	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.82	< 0.50	
4-Nitroaniline	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Methyl-4,6-Dinitrophenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Azobenzene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Bromophenylphenyl Ether	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorobenzene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Pentachlorophenol	ug/l		2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Phenanthrene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Anthracene	ug/l		10000	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Carbazole	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Di-N-Butyl Phthalate	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Fluoranthene	ug/l		1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Pyrene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Butylbenzyl Phthalate	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[a]anthracene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Chrysene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

Fassaroe Leachate Monitoring 2016				Site 1	Site 2					Site 3A			Site 3B	Site 3C	
Laboratory Number	Units	GW Regs (2010) TV	EPA IGW value (GW)	345695	346283	346280	346281	346282	345204	345205	345206	345202	345692	345693	
Customer Sample Ref.				LG11	LG03	LG07	LG09	LG10	LG15	MW4	LG19	LG17	LG14	MW2	
Sample Date/Time				31/08/2016	01/09/2016	01/09/2016	01/09/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016	31/08/2016	
Sample Matrix				Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	
Bis(2-Ethylhexyl)Phthalate	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Di-N-Octyl Phthalate	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[b]fluoranthene	ug/l		0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[k]fluoranthene	ug/l		0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[a]pyrene	ug/l		0.01	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Indeno(1,2,3-c,d)Pyrene	ug/l		0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dibenz(a,h)Anthracene	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[g,h,i]perylene	ug/l		0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Nitrophenol	ug/l			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

<b>Legend</b>	
GW Regs TV - Groundwater Regulations (S.I. No. 9 of 2010) Groundwater Threshold Values	10 Exceedance above GW Regs TV
EPA IGW - EPA Interim Guidelines Values for Groundwater (2003)	10 Exceedance above EPA IGW
SW AA EQS - Surface Water Regulation (S.I. No 327 of 2012) Annual Average EQS	10 Exceedance above SW EQS
	10 Above Detection Limit

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Appendix A  
Leachate Results  
Part 3

Fassaroe Leachate Monitoring 2016				Site 1	Site 2					Site 3A			Site 3B	Site 3C	
Laboratory Number	Units	GW Regs (2010) TV	EPA IGW value (GW)	345695	346283	346280	346281	346282	345204	345205	345206	345202	345692	345693	
Customer Sample Ref.				LG11	LG03	LG07	LG09	LG10	LG15	MW4	LG19	LG17	LG14	MW2	
Sample Date/Time				31/08/2016	01/09/2016	01/09/2016	01/09/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016	31/08/2016	
Sample Matrix				Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	
Dichlorodifluoromethane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Chloromethane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6.6	< 1.0	< 1.0	3	< 1.0	< 1.0	
Bromomethane	ug/l			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Chloroethane	ug/l	0.375		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Trichlorofluoromethane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Trans 1,2-Dichloroethene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
cis 1,2-Dichloroethene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	ug/l			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Trichloromethane	ug/l		12	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	ug/l	0.75	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.9	< 1.0	1.8	1.1	< 1.0	< 1.0	
1,2-Dichloroethane	ug/l	2.25	3	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Trichloroethene	ug/l	7.5	40	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	ug/l			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
Bromodichloromethane	ug/l			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
cis-1,3-Dichloropropene	ug/l			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
Toluene	ug/l		10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	17	2.8	5.4	700	8.2	< 1.0	
Trans-1,3-Dichloropropene	ug/l			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
1,1,2-Trichloroethane	ug/l			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
Tetrachloroethene	ug/l	7.5	40	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	ug/l			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Dibromochloromethane	ug/l			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
1,2-Dibromoethane	ug/l		0.04	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Chlorobenzene	ug/l		1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.9	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	ug/l			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Ethylbenzene	ug/l		10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6.7	< 1.0	8.4	6.4	2.6	< 1.0	
m & p-Xylene	ug/l		10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	17	4.2	9.4	14	6.8	< 1.0	
o-Xylene	ug/l		10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	6.4	3.5	7.9	5.8	3.9	< 1.0	
Styrene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.2	< 1.0	< 1.0	< 1.0	
Bromobenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichloropropane	ug/l			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
N-Propylbenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.3	< 1.0	2.8	1.7	< 1.0	< 1.0	
4-Chlorotoluene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tert-Butylbenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	5	< 1.0	4.1	3.5	4.8	< 1.0	
Sec-Butylbenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	

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Appendix A  
Leachate Results  
Part 3

Fassaroe Leachate Monitoring 2016				Site 1	Site 2					Site 3A			Site 3B	Site 3C	
Laboratory Number	Units	GW Regs (2010) TV	EPA IGV value (GW)	345695	346283	346280	346281	346282	345204	345205	345206	345202	345692	345693	
Customer Sample Ref.				LG11	LG03	LG07	LG09	LG10	LG15	MW4	LG19	LG17	LG14	MW2	
Sample Date/Time				31/08/2016	01/09/2016	01/09/2016	01/09/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016	31/08/2016
Sample Matrix				Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate	Leachate
4-Isopropyltoluene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	11	< 1.0	6.5	70	19	< 1.0	
1,4-Dichlorobenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
N-Butylbenzene	ug/l			< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	ug/l		10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-Chloropropane	ug/l			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
1,2,4-Trichlorobenzene	ug/l		0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	ug/l		0.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	ug/l			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Methyl Tert-Butyl Ether	ug/l		0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	9.9	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
N-Nitrosodimethylamine	ug/l		30	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

<b>Legend</b>	
GW Regs TV - Groundwater Regulations (S.I. No. 9 of 2010) Groundwater Threshold Values	10 Exceedance above GW Regs TV
EPA IGV - EPA Interim Guidelines Values for Groundwater (2003)	10 Exceedance above EPA IGV
	10 Above Detection Limit

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Appendix A  
Groundwater Results  
Part 1

Fassaroe Groundwater Monitoring 2016					Site 1	Site 2	Site 3A			Site 3C	
Laboratory Number	Units	GW Regs (2010) TV	EPA IGV value (GW)	SW AA EQS	345694	345696	346279	345200	345201	345203	345691
Customer Sample Ref.					BH5	G20	BH1	BH7	BH9	BH10	BH6
Sample Date/Time					31/08/2016	31/08/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016
Sample Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Aluminium (Dissolved)	ug/l	150	200		< 10	< 10	< 10	< 10	< 10	< 10	< 10
Arsenic (Dissolved)	ug/l	7.5	10	25	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.5	< 1.0
Barium (Dissolved)	ug/l	-	100		72	28	83	39	31	59	57
Boron (Dissolved)	ug/l	750	100		450	530	< 20	< 20	< 20	20	1200
Cadmium (Dissolved)	ug/l	3.75	5	0.08	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Calcium	mg/l		200		160	95	150	110	130	120	140
Chromium (Dissolved)	ug/l	37.5	30	3.4	4.2	< 1.0	< 1.0	2.5	3.0	1.0	1.2
Copper (Dissolved)	ug/l	1500	30	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Iron (Dissolved)	ug/l		200		290	170	340	180	240	400	260
Lead (Dissolved)	ug/l	18.75	10	1.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Manganese (Dissolved)	ug/l		50		22	13	23	5.7	3.6	210	1.7
Mercury (Dissolved)	ug/l	0.75	1	0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nickel (Dissolved)	ug/l	15	20	4	< 1.0	< 1.0	1.4	< 1.0	< 1.0	4.3	< 1.0
Potassium	mg/l		5		2.9	1.7	1.7	1.1	0.67	30	31
Sodium	mg/l	150	150		13	8.9	16	9.3	8.3	36	13
Vanadium (Dissolved)	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (Dissolved)	ug/l		100	8	2.4	< 1.0	< 1.0	2.3	1.1	< 1.0	< 1.0
BODS	mg/l			1.5	4	< 4.0	< 4.0	5	6	< 4.0	5
COD	mg/l				16	< 10	72	12	< 10	880	12
pH	pH units		≥ 6.5 and ≤ 9.5	6.0 - 9.0	7.4	7.9	7.6	8.2	8.0	8.3	7.7
Conductivity Electrical	uS/cm	800-1875	1000		770	500	890	410	420	430	820
Alkalinity as CaCO3	mg/l		NAC		570	360	530	170	180	190	590
Ammoniacal Nitrogen as N	mg/l	0.175		0.065	0.34	0.93	2	0.86	3.5	14	0.59
Chloride as Cl	mg/l	187.5	30		170	46	21	28	23	31	22
Nitrite as N	mg/l	0.375	0.1		< 0.010	0.016	0.017	0.033	0.043	0.091	0.052
Nitrogen, Total Oxidised as N	mg/l		NAC		2.9	19	0.47	8.6	5.2	8.6	0.99
Phosphate as P	mg/l		0.03	0.035	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Sulphate as SO4	mg/l	150	200		69	31	25	27	18	24	22
Solids, Tot Dissolved	mg/l		1000		460	300	530	250	250	260	490
Total Suspended Solids	mg/l				840	240	390	4600	390	220	600
TOC as C	mg/l		NAC		18	17	9.3	6	4.7	98	8.8
Cyanide, Total as CN	mg/l	0.0375	10	0.01	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Fluoride as F	mg/l		1	0.5	0.097	0.092	0.14	0.12	0.097	0.11	0.11
Dissolved Oxygen	mg O2/l		NAC		11	9.5	14	8.7	8.4	9.9	9.3
Dissolved CO2	mg/l				44	9	30	2	3.3	1.7	25
Dissolved Ethane	mg/l				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Dissolved Ethene	mg/l				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Dissolved Methane	mg/l				< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Total Phenols	mg/l		0.0005	8	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030
Total TPH >C6-C40	ug/l		10		< 10	< 10	< 10	< 10	< 10	< 10	< 10
Acenaphthene	ug/l				< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	ug/l				< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

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Appendix A  
Groundwater Results  
Part 1

Fassaroe Groundwater Monitoring 2016					Site 1			Site 2			Site 3A			Site 3C
Laboratory Number	Units	GW Regs (2010) TV	EPA IGV value (GW)	SW AA EQS	345694	345696	346279	345200	345201	345203	345691			
Customer Sample Ref.					BH5	G20	BH1	BH7	BH9	BH10	BH6			
Sample Date/Time					31/08/2016	31/08/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016			
Sample Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater			
Anthracene	ug/l		10000	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo (a) anthracene	ug/l				< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo (g,h,i) perylene	ug/l		0.05	0.002	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo (a) pyrene	ug/l	0.0075	0.01	0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo (b) fluoranthene	ug/l		0.5	0.03	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo (k) fluoranthene	ug/l		0.05		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Chrysene	ug/l				< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Dibenz (a,h) anthracene	ug/l				< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluoranthene	ug/l		1	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluorene	ug/l				< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Indeno (1,2,3) cd pyrene	ug/l		0.05	0.002	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Naphthalene	ug/l		1	2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Phenanthrene	ug/l				< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Pyrene	ug/l				< 0.10	< 0.10	1.9	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
PAH, Total	ug/l	75	0.1	n/a	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0		

<b>Legend</b>	
GW Regs TV - Groundwater Regulations (S.I. No. 9 of 2010) Groundwater Threshold Values	10 Exceedance above GW Regs TV
EPA IGV - EPA Interim Guidelines Values for Groundwater (2003)	10 Exceedance above EPA IGV
SW AA EQS - Surface Water Regulation (S.I. No 327 of 2012) Annual Average EQS	10 Exceedance above SW EQS
	NAC No Abnormal Change

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Fassaroe Groundwater Monitoring 2016					Site 1	Site 2			Site 3A			Site 3C
Laboratory Number	Units	GW Regs (2010) TV	EPA IGW value (GW)	SW AA EQS	345694	345696	346279	345200	345201	345203	345691	
Customer Sample Ref.					BH5	G20	BH1	BH7	BH9	BH10	BH6	
Sample Date/Time					31/08/2016	31/08/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016	
Sample Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	
Phenol	ug/l		0.5	8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Chlorophenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis(2-Chloroethyl)Ether	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,3-Dichlorobenzene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,4-Dichlorobenzene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,2-Dichlorobenzene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Methylphenol (o-Cresol)	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis(2-Chloroisopropyl)Ether	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachloroethane	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
N-Nitrosodi-n-propylamine	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Methylphenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Nitrobenzene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Isophorone	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Nitrophenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dimethylphenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis(2-Chloroethoxy)Methane	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dichlorophenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,2,4-Trichlorobenzene	ug/l			0.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Naphthalene	ug/l		1	2.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chloroaniline	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorobutadiene	ug/l			0.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chloro-3-Methylphenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Methylnaphthalene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorocyclopentadiene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4,6-Trichlorophenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4,5-Trichlorophenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Chloronaphthalene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Nitroaniline	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Acenaphthylene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dimethylphthalate	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,6-Dinitrotoluene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Acenaphthene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
3-Nitroaniline	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dibenzofuran	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chlorophenylphenylether	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dinitrotoluene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Fluorene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Diethyl Phthalate	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Nitroaniline	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Methyl-4,6-Dinitrophenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Azobenzene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Bromophenylphenyl Ether	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorobenzene	ug/l			0.01	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Pentachlorophenol	ug/l		2	0.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Phenanthrene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Anthracene	ug/l		10000		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Carbazole	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Di-N-Butyl Phthalate	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Fluoranthene	ug/l		1	0.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Pyrene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Butylbenzyl Phthalate	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[a]anthracene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Chrysene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.65	
Bis(2-Ethylhexyl)Phthalate	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Di-N-Octyl Phthalate	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[b]fluoranthene	ug/l		0.5	0.03	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[k]fluoranthene	ug/l		0.05	0.03	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[a]pyrene	ug/l		0.01	0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Indeno(1,2,3-c,d)Pyrene	ug/l		0.05	0.002	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dibenz(a,h)Anthracene	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[g,h,i]perylene	ug/l		0.05		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

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Appendix A  
Groundwater Results  
Part 2

Fassaroe Groundwater Monitoring 2016					Site 1	Site 2		Site 3A			Site 3C
Laboratory Number					345694	345696	346279	345200	345201	345203	345691
Customer Sample Ref.					BH5	G20	BH1	BH7	BH9	BH10	BH6
Sample Date/Time	Units	GW Regs (2010) TV	EPA IGV value (GW)	SW AA EQS	31/08/2016	31/08/2016	01/09/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016
Sample Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
4-Nitrophenol	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

<b>Legend</b>	
GW Regs TV - Groundwater Regulations (S.I. No. 9 of 2010) Groundwater Threshold Values	10 Exceedance above GW Regs TV
EPA IGV - EPA Interim Guidelines Values for Groundwater (2003)	10 Exceedance above EPA IGV
SW AA EQS - Surface Water Regulation (S.I. No 327 of 2012) Annual Average EQS	10 Exceedance above SW EQS
	10 Above Detection Limit

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Appendix A  
Groundwater Results  
Part 3

Fassaroe Groundwater Monitoring 2016					Site 1	Site 2		Site 3A			Site 3C
Laboratory Number	Units	GW Regs (2010) TV	EPA IGW value (GW)	SW AA EQS	345694	346279	345696	345200	345201	345203	345691
Customer Sample Ref.					BH5	BH1	G20	BH7	BH9	BH10	BH6
Sample Date/Time					31/08/2016	01/09/2016	31/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016
Sample Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Dichlorodifluoromethane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	ug/l				< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	ug/l	0.375			< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	ug/l				< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	ug/l		12		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	0.75	1	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	ug/l	2.25	3	10	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	ug/l	7.5	40		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	ug/l				< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	ug/l				< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	ug/l				< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l		10	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	ug/l				< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	ug/l				< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	ug/l	7.5	40	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	ug/l				< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	ug/l				< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	ug/l		0.04		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	ug/l		1	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	ug/l				< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	ug/l		10		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	ug/l		10	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	ug/l		10	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Appendix A  
Groundwater Results  
Part 3

Fassaro Groundwater Monitoring 2016					Site 1	Site 2		Site 3A			Site 3C
Laboratory Number	Units	GW Regs (2010) TV	EPA IGV value (GW)	SW AA EQS	345694	346279	345696	345200	345201	345203	345691
Customer Sample Ref.					BH5	BH1	G20	BH7	BH9	BH10	BH6
Sample Date/Time					31/08/2016	01/09/2016	31/08/2016	30/08/2016	30/08/2016	30/08/2016	31/08/2016
Sample Matrix					Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Bromobenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	ug/l				< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	ug/l				< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	ug/l		10		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	ug/l				< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	ug/l		0.4	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	ug/l		0.1	0.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	ug/l		0.4	0.4	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	ug/l		30	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	ug/l				< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

**Legend**

GW Regs TV - Groundwater Regulations (S.I. No. 9 of 2010) Groundwater Threshold Values  
 EPA IGV - EPA Interim Guidelines Values for Groundwater (2003)  
 SW AA EQS - Surface Water Regulation (S.I. No 327 of 2012) Annual Average EQS

10 Exceedance above GW Regs TV  
 10 Exceedance above EPA IGV  
 10 Exceedance above SW EQS

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Appendix A  
Surface Water Results  
Part 1

Fassaroe Surface Water Monitoring 2016			River					Springs					
Laboratory Number	Units	SW AA EQS	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	
Customer Sample Ref.			SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4	SP5	
Sample Date/Time			24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016
Sample Matrix													
Aluminium (Dissolved)	ug/l		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
Arsenic (Dissolved)	ug/l	25	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Barium (Dissolved)	ug/l		27	33	25	22	21	150	25	23	320	81	
Boron (Dissolved)	ug/l		47	25	< 20	< 20	< 20	1100	110	< 20	130	52	
Cadmium (Dissolved)	ug/l	0.08	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	
Calcium	mg/l		110	110	110	120	120	160	110	120	190	120	
Chromium (Dissolved)	ug/l	3.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Copper, (Dissolved)	ug/l	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Iron (Dissolved)	ug/l		200	250	170	180	160	250	200	180	390	170	
Lead (Dissolved)	ug/l	1.2	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Manganese (Dissolved)	ug/l		24	2.3	< 1.0	7.5	2.9	560	8.8	690	7400	160	
Mercury (Dissolved)	ug/l	0.05	< 0.50	< 0.50	< 0.50	< 0.50	0.56	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Nickel (Dissolved)	ug/l	4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.6	1.5	< 1.0	4.9	1.9	
Potassium	mg/l		1.9	1.8	1.5	1.2	1.4	130	5.4	1.8	11	8	
Sodium	mg/l		17	17	16	16	16	120	37	14	41	33	
Vanadium (Dissolved)	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc (Dissolved)	ug/l	8	1.4	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	1.2	12	
BOD5	mg/l	1.5	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	7	< 4.0	< 4.0	< 4.0	< 4.0	
COD	mg/l		14	14	13	13	< 10	55	24	26	21	26	
pH	pH units	6.0 - 9.0	8.1	8.2	8.0	8.0	8.0	7.7	8.0	8.0	7.4	7.5	
Conductivity- Electrical 20C	uS/cm	1875	560	460	570	600	610	1400	730	550	1100	730	
Alkalinity as CaCO3	mg/l		250	240	240	260	270	660	290	290	490	310	
Ammoniacal Nitrogen as N	mg/l	0.065	0.1	0.07	0.063	0.074	0.86	18	0.17	0.25	4.1	0.075	
Chloride as Cl	mg/l		29	28	27	25	29	120	46	16	63	49	
Nitrite as N	mg/l		< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.011	< 0.010	< 0.010	0.033	0.016	
Nitrogen, Total Oxidised as N	mg/l		4.1	3.6	3.6	3.8	3.6	< 0.20	0.34	< 0.20	0.68	0.97	
Phosphate, Ortho as P	mg/l	0.035	0.021	0.021	< 0.020	0.02	0.022	< 0.020	< 0.020	0.021	< 0.020	< 0.020	
Sulphate as SO4	mg/l		24	23	22	23	25	< 1.0	45	< 1.0	15	7.8	
Solids, Tot Dissolved 180 DegC	mg/l		340	280	340	360	370	850	440	330	670	440	
Total Suspended Solids	mg/l		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	30000	1500	11000	5100	8300	
TOC as C	mg/l		11	6.3	5.8	5.7	5.5	10	11	30	13	8.8	
Cyanide, Total as CN	ug/l	0.01	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Fluoride as F	mg/l	0.5	0.13	0.12	0.12	0.12	0.13	0.14	0.12	0.13	0.15	0.12	
Total Phenols	mg/l	0.008	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	
Total TPH >C6-C40	ug/l		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
Acenaphthene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Anthracene	ug/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (a) anthracene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (g,h,i) perylene	ug/l	0.002	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	





Appendix A  
Surface Water Results  
Part 1

Fassaroe Surface Water Monitoring 2016			River					Springs				
Laboratory Number	Units	SW AA EQS	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	
Customer Sample Ref.			SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4	SP5
Sample Date/Time			24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016
Sample Matrix												
Benzo (a) pyrene	ug/l	0.05	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (b) fluoranthene	ug/l	0.03	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo (k) fluoranthene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Chrysene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenz (a,h) anthracene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	ug/l	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno (1,2,3) cd pyrene	ug/l	0.002	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Naphthalene	ug/l	2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Pyrene	ug/l		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
PAH, Total	ug/l	n/a	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	

**Legend**  
SW AA EQS - Surface Water Regulation (S.I. No 327 of 2012 & SI 386 of 2015) Annual Average Environmental Quality Standards

10	Exceedance above SW EQS
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Fassaroo Surface Water Monitoring 2016			River					Springs				
Customer Sample Ref.	Units	SW AA EQS	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	
Sample Date/Time			SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4	SP5
Sample Matrix			24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016
			Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	Surface water
Phenol	ug/l	8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl) Ether	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl) Ether	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	ug/l	0.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	ug/l	2.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	ug/l	0.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	ug/l	0.01	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	ug/l	0.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	ug/l	0.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	ug/l	0.03	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50



Appendix A  
Surface Water Results  
Part 2

Fassaroe Surface Water Monitoring 2016			River					Springs				
Laboratory Number	Units	SW AA EQS	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	
Customer Sample Ref.			SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4	SP5
Sample Date/Time			24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016
Sample Matrix			Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	Surface water	
Benzo[k]fluoranthene	ug/l	0.03	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[a]pyrene	ug/l	0.05	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Indeno(1,2,3-c,d)Pyrene	ug/l	0.002	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dibenz(a,h)Anthracene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Benzo[g,h,i]perylene	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Nitrophenol	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

<b>Legend</b>		
SW AA EQS - Surface Water Regulation (S.I. No 327 of 2012 & SI 386 of 2015) Annual Average Environmental Quality Standards	10	Exceedance above SW EQS
	10	Above Detection Limit

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Appendix A  
Surface Water Results  
Part 3

Fassaroo Surface Water Monitoring 2016			River					Springs				
Laboratory Number	Units	SW AA EQS	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	
Customer Sample Ref.			SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4	SP5
Sample Date/Time			24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016	24/08/2016
Sample Matrix			Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Dichlorodifluoromethane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	ug/l		<1.0	<1.0	27	29	36	< 1.0	34	9.9	23	29
Vinyl Chloride (chloroethene)	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	ug/l		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	ug/l		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	ug/l		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	ug/l	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	ug/l	10	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	ug/l		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	ug/l		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	ug/l		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	ug/l	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	ug/l		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	ug/l		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	ug/l	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	ug/l		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	ug/l		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	ug/l		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	ug/l	1.5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	ug/l		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	ug/l	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	ug/l	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	ug/l		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Appendix A  
Surface Water Results  
Part 3

4-Isopropyltoluene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	ug/l		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	ug/l		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	ug/l	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	ug/l	0.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	ug/l		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether (MBTE)	ug/l	0.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	ug/l		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

**Legend**

SW AA EQS - Surface Water Regulation (S.I. No 327 of 2012 & SI 386 of 2015) Annual Average Environmental Quality Sta 10 Exceedance above SW EQS 10 Above Detection Limit

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## APPENDIX B

### Chemtest Ltd. Laboratory Report

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## Final Report

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**Report No.:** 16-20343-1

**Initial Date of Issue:** 31-Aug-2016

**Client:** RPS

**Client Address:** West Pier Business Campus  
Dun Laoghaire  
Co. Dublin  
Ireland

**Contact(s):** Janka Nitsche

**Project:** MDR1206 - Fasseroe


**Quotation No.:** Q16-07130

**Order No.:**

**No. of Samples:** 10

**Turnaround (Wkdays):** 3

**Date Approved:** 30-Aug-2016

**Approved By:**  


**Date Received:** 25-Aug-2016

**Date Instructed:** 25-Aug-2016

**Results Due:** 30-Aug-2016

**Details:** Glynn Harvey, Laboratory Manager

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## Results - Water

Client: RPS	Chemtest Job No.:												
Quotation No.: Q16-07130	Chemtest Sample ID.:												
	Client Sample ID.:												
	Sample Type:												
	Date Sampled:												
Determinand	Accred.	SOP	Units	LOD	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343
pH	U	1010		N/A	8.1	8.2	8.0	8.0	8.0	7.7	8.0	8.0	7.4
Electrical Conductivity	U	1020	µS/cm	1.0	560	460	570	600	610	1400	730	550	1100
Suspended Solids At 105C	U	1030	mg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	30000	1500	11000	5100
Total Dissolved Solids	N	1040	mg/l	1.0	340	280	340	360	370	850	440	330	670
Chemical Oxygen Demand	U	1100	mg O2/l	10	14	14	13	13	< 10	55	24	26	21
Alkalinity (Total)	U	1220	mg CaCO3/l	10	250	240	240	260	270	660	290	290	490
Chloride	U	1220	mg/l	1.0	29	28	27	25	29	120	46	16	63
Fluoride	U	1220	mg/l	0.050	0.13	0.12	0.12	0.12	0.13	0.14	0.12	0.13	0.15
Ammoniacal Nitrogen	U	1220	mg/l	0.010	0.10	0.070	0.063	0.074	0.86	18	0.17	0.25	4.1
Nitrite as N	U	1220	mg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.011	< 0.010	< 0.010	0.033
Phosphate as P	U	1220	mg/l	0.020	0.021	0.021	< 0.020	0.020	0.022	< 0.020	< 0.020	0.021	< 0.020
Sulphate	U	1220	mg/l	1.0	24	23	22	23	25	< 1.0	45	< 1.0	15
Total Oxidised Nitrogen	U	1220	mg/l	0.20	4.1	3.6	3.6	3.8	3.6	< 0.20	0.34	< 0.20	0.68
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium	U	1415	mg/l	5.0	110	110	110	120	120	160	110	120	190
Potassium	U	1415	mg/l	0.50	1.9	1.8	1.5	1.2	1.4	130	5.4	1.8	11
Sodium	U	1415	mg/l	0.50	17	17	16	16	16	120	37	14	41
Aluminium (Dissolved)	N	1450	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	47	25	< 20	< 20	< 20	1100	110	< 20	130
Barium (Dissolved)	U	1450	µg/l	5.0	27	33	25	22	21	150	25	23	320
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Iron (Dissolved)	N	1480	µg/l	20	200	250	170	180	160	250	200	180	390
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.56	< 0.50	< 0.50	< 0.50	< 0.50
Manganese (Dissolved)	U	1450	µg/l	1.0	24	2.3	< 1.0	7.5	2.9	560	8.8	690	7400
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.6	1.5	< 1.0	4.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.4	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	1.2
Total Organic Carbon	U	1610	mg/l	2.0	11	6.3	5.8	5.7	5.5	10	11	30	13
Total TPH >C6-C40	U	1670	µg/l	10	[C] < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10



## Results - Water

Client: RPS	Chemtest Job No.:		16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	
Quotation No.: Q16-07130	Chemtest Sample ID.:		342238	342239	342240	342241	342242	342243	342244	342245	342246		
	Client Sample ID.:		SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4		
	Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER		
	Date Sampled:		24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016		
Determinand	Accred.	SOP	Units	LOD									
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Dichlorodifluoromethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Chloromethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	27	29	36	< 1.0	34	9.9	23
Vinyl Chloride	N	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	[C] < 5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	[C] < 2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	[C] < 5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	[C] < 2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	[C] < 10	[C] < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	[C] < 5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	[C] < 10	[C] < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	[C] < 10	[C] < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	[C] < 10	[C] < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	[C] < 2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	[C] < 10	[C] < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	[C] < 5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	[C] < 2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0

## Results - Water

Client: RPS	Chemtest Job No.:				16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343
Quotation No.: Q16-07130	Chemtest Sample ID.:				342238	342239	342240	342241	342242	342243	342244	342245	342246
	Client Sample ID.:				SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4
	Sample Type:				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Date Sampled:				24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016
Determinand	Accred.	SOP	Units	LOD									
Ethylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	[C] < 50	[C] < 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	[C] < 50	[C] < 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	[C] < 2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	[C] < 1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Water

Client: RPS	Chemtest Job No.:				16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343	16-20343
Quotation No.: Q16-07130	Chemtest Sample ID.:				342238	342239	342240	342241	342242	342243	342244	342245	342246
	Client Sample ID.:				SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4
	Sample Type:				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Date Sampled:				24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016
Determinand	Accred.	SOP	Units	LOD									
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Water

Client: RPS		Chemtest Job No.:											
Quotation No.: Q16-07130		Chemtest Sample ID.:											
		Client Sample ID.:											
		Sample Type:											
		Date Sampled:											
Determinand	Accred.	SOP	Units	LOD									
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030

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Client: RPS		Chemtest Job No.:			16-20343
Quotation No.: Q16-07130		Chemtest Sample ID.:			342247
		Client Sample ID.:			SP5
		Sample Type:			WATER
		Date Sampled:			24-Aug-2016
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	7.5
Electrical Conductivity	U	1020	µS/cm	1.0	730
Suspended Solids At 105C	U	1030	mg/l	5.0	8300
Total Dissolved Solids	N	1040	mg/l	1.0	440
Chemical Oxygen Demand	U	1100	mg O2/l	10	26
Alkalinity (Total)	U	1220	mg CaCO3/l	10	310
Chloride	U	1220	mg/l	1.0	49
Fluoride	U	1220	mg/l	0.050	0.12
Ammoniacal Nitrogen	U	1220	mg/l	0.010	0.075
Nitrite as N	U	1220	mg/l	0.010	0.016
Phosphate as P	U	1220	mg/l	0.020	< 0.020
Sulphate	U	1220	mg/l	1.0	7.8
Total Oxidised Nitrogen	U	1220	mg/l	0.20	0.97
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Calcium	U	1415	mg/l	5.0	120
Potassium	U	1415	mg/l	0.50	8.0
Sodium	U	1415	mg/l	0.50	33
Aluminium (Dissolved)	N	1450	µg/l	10	< 10
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	52
Barium (Dissolved)	U	1450	µg/l	5.0	81
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0
Iron (Dissolved)	N	1480	µg/l	20	170
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Manganese (Dissolved)	U	1450	µg/l	1.0	160
Nickel (Dissolved)	U	1450	µg/l	1.0	1.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	12
Total Organic Carbon	U	1610	mg/l	2.0	8.8
Total TPH >C6-C40	U	1670	µg/l	10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10

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Client: RPS		Chemtest Job No.:			16-20343
Quotation No.: Q16-07130		Chemtest Sample ID.:			342247
		Client Sample ID.:			SP5
		Sample Type:			WATER
		Date Sampled:			24-Aug-2016
Determinand	Accred.	SOP	Units	LOD	
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	29
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0

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Client: RPS		Chemtest Job No.:			16-20343
Quotation No.: Q16-07130		Chemtest Sample ID.:			342247
		Client Sample ID.:			SP5
		Sample Type:			WATER
		Date Sampled:			24-Aug-2016
Determinand	Accred.	SOP	Units	LOD	
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50

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Client: RPS		Chemtest Job No.:			16-20343
Quotation No.: Q16-07130		Chemtest Sample ID.:			342247
		Client Sample ID.:			SP5
		Sample Type:			WATER
		Date Sampled:			24-Aug-2016
Determinand	Accred.	SOP	Units	LOD	
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50

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## Results - Water

<b>Client: RPS</b>	<b>Chemtest Job No.:</b>				16-20343
Quotation No.: Q16-07130	<b>Chemtest Sample ID.:</b>				342247
	Client Sample ID.:				SP5
	Sample Type:				WATER
	Date Sampled:				24-Aug-2016
Determinand	Accred.	SOP	Units	LOD	
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030

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### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
342238		SW1	24-Aug-2016	C	Plastic Bottle 1000ml
342239		SW2	24-Aug-2016	C	Coloured Winchester 1000ml
342239		SW2	24-Aug-2016	C	Plastic Bottle 1000ml

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## Report Information

### **Key**

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- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

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- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

### **Sample Retention and Disposal**

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All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



2183

## Final Report

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**Report No.:** 16-20358-1

**Initial Date of Issue:** 31-Aug-2016

**Client:** RPS

**Client Address:** West Pier Business Campus  
Dun Laoghaire  
Co. Dublin  
Ireland

**Contact(s):** Janka Nitsche

**Project:** MDR1206 - Fasseroe

**Quotation No.:** Q16-07130

**Order No.:**

**No. of Samples:** 10

**Turnaround (Wkdays):** 6

**Date Approved:** 31-Aug-2016

**Approved By:**  


**Date Received:** 25-Aug-2016

**Date Instructed:** 25-Aug-2016

**Results Due:** 02-Sep-2016

**Details:** Glynn Harvey, Laboratory Manager

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## Results - Water

Client: RPS	Chemtest Job No.:				16-20358	16-20358	16-20358	16-20358	16-20358	16-20358	16-20358	16-20358	16-20358
Quotation No.: Q16-07130	Chemtest Sample ID.:				342327	342328	342329	342330	342331	342332	342333	342334	342335
	Client Sample ID.:				SW1	SW2	SW3	SW4	SW5	SP1	SP2	SP3	SP4
	Sample Type:				WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	Date Sampled:				24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016	24-Aug-2016
Determinand	Accred.	SOP	Units	LOD									
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	7.0	< 4.0	< 4.0	< 4.0
Phosphate	U	1220	mg/l	0.050	< 0.050	0.052	< 0.050	0.058	0.062				

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**Project: MDR1206 - Fasseroe**

## Results - Water

<b>Client: RPS</b>	<b>Chemtest Job No.:</b>				16-20358
Quotation No.: Q16-07130	<b>Chemtest Sample ID.:</b>				342336
	Client Sample ID.:				SP5
	Sample Type:				WATER
	Date Sampled:				24-Aug-2016
Determinand	Accred.	SOP	Units	LOD	
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0
Phosphate	U	1220	mg/l	0.050	

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## Report Information

### Key

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- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### Sample Deviation Codes

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- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

### Sample Retention and Disposal

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All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

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**Report No.:** 16-20856-1

**Initial Date of Issue:** 07-Sep-2016

**Client:** RPS

**Client Address:** West Pier Business Campus  
Dun Laoghaire  
Co. Dublin  
Ireland

**Contact(s):** Janka Nitsche

**Project:** MDR1206 Fassaroe

**Quotation No.:** Q16-07130

**Order No.:**

**No. of Samples:** 7

**Turnaround (Wkdays):** 6

**Date Approved:** 07-Sep-2016

**Approved By:**

*M. Dyer*

**Details:** Martin Dyer, Laboratory Manager

**Date Received:** 31-Aug-2016

**Date Instructed:** 31-Aug-2016

**Results Due:** 07-Sep-2016

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## Results - Water

Client: RPS	Chemtest Job No.:		16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	
Quotation No.: Q16-07130	Chemtest Sample ID.:		345200	345201	345202	345203	345204	345205	345206		
	Client Sample ID.:		BH7	BH9	LG17	BH10	LG15	MW4	LG19		
	Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER		
	Date Sampled:		30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016		
Determinand	Accred.	SOP	Units	LOD							
pH	U	1010		N/A	8.2	8.0	8.4	8.3	7.6	7.9	8.0
Electrical Conductivity	U	1020	µS/cm	1.0	410	420	12000	430	2900	10000	11000
Suspended Solids At 105C	U	1030	mg/l	5.0	4600	390	780	220	1700	500	770
Total Dissolved Solids	N	1040	mg/l	1.0	250	250	7300	260	1700	6100	6400
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	5.0	6.0	420	< 4.0	120	< 4.0	63
Chemical Oxygen Demand	U	1100	mg O2/l	10	12	< 10	< 10	880	290	680	730
Dissolved Oxygen	N	1150	mg O2/l	0.50	8.7	8.4	2.7	9.9	4.1	1.6	3.0
Dissolved CO2	N	1160	mg/l	0.60	2.0	3.3	47	1.7	73	80	76
Alkalinity (Total)	U	1220	mg CaCO3/l	10	170	180	6500	190	1500	3500	4200
Chloride	U	1220	mg/l	1.0	28	23	1400	31	190	1100	1700
Fluoride	U	1220	mg/l	0.050	0.12	0.097	2.0	0.1	0.16	0.47	0.60
Ammoniacal Nitrogen	U	1220	mg/l	0.010	0.86	3.5	780	14	100	590	540
Nitrite as N	U	1220	mg/l	0.010	0.033	0.043	0.011	0.091	0.061	0.052	0.067
Phosphate as P	U	1220	mg/l	0.020	< 0.020	< 0.020	0.17	< 0.020	< 0.020	0.12	0.22
Sulphate	U	1220	mg/l	1.0	27	18	32	24	< 1.0	< 1.0	< 1.0
Total Oxidised Nitrogen	U	1220	mg/l	0.20	8.6	5.2	0.20	8.6	0.23	< 0.20	< 0.20
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium	U	1415	mg/l	5.0	110	130	150	120	230	95	68
Potassium	U	1415	mg/l	0.50	1.1	0.67	750	30	140	550	500
Sodium	U	1415	mg/l	0.50	9.3	8.3	760	36	120	820	1100
Aluminium (Dissolved)	N	1450	µg/l	10	< 10	< 10	76	< 10	< 10	11	20
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	45	1.5	11	19	73
Boron (Dissolved)	U	1450	µg/l	20	< 20	< 20	2300	20	980	3600	9500
Barium (Dissolved)	U	1450	µg/l	5.0	39	31	300	59	250	130	270
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	2.5	3.0	34	1.0	6.5	20	27
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	5.6	< 1.0	< 1.0	6.9	8.7
Iron (Dissolved)	N	1480	µg/l	20	180	240	14000	400	16000	1000	960
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.59	0.68
Manganese (Dissolved)	U	1450	µg/l	1.0	5.7	3.6	630	210	1100	310	250
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	95	4.3	6.3	94	200
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	1.0	< 1.0	< 1.0	7.0	2.9
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	12	< 1.0	< 1.0	6.0	12
Zinc (Dissolved)	U	1450	µg/l	1.0	2.3	1.1	6.6	< 1.0	< 1.0	18	7.6
Total Organic Carbon	U	1610	mg/l	2.0	6.0	4.7	240	98	110	130	220
Dissolved Ethane	N	1630	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Dissolved Ethene	N	1630	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Dissolved Methane	N	1630	mg/l	0.050	< 0.050	< 0.050	12	< 0.050	5.2	1.8	6.9
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	2200	< 10	640	1600	750
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	5.2	3.7	< 0.10

## Results - Water

Client: RPS		Chemtest Job No.:		16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856
Quotation No.: Q16-07130		Chemtest Sample ID.:		345200	345201	345202	345203	345204	345205	345206
		Client Sample ID.:		BH7	BH9	LG17	BH10	LG15	MW4	LG19
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:		30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016
Determinand	Accred.	SOP	Units	LOD						
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	5.2	3.7
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	3.0	< 1.0	6.6	< 1.0
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	7.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	1.1	< 1.0	2.9	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	< 1.0	< 1.0	700	< 1.0	17	2.8
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10

## Results - Water

Client: RPS	Chemtest Job No.:		16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856
Quotation No.: Q16-07130	Chemtest Sample ID.:		345200	345201	345202	345203	345204	345205	345206	
	Client Sample ID.:		BH7	BH9	LG17	BH10	LG15	MW4	LG19	
	Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
	Date Sampled:		30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	
Determinand	Accred.	SOP	Units	LOD						
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.9
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	6.4	< 1.0	6.7	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	14	< 1.0	17	4.2
o-Xylene	U	1760	µg/l	1.0	< 1.0	< 1.0	5.8	< 1.0	6.4	3.5
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.2
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	2.3	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	3.5	< 1.0	5.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	70	< 1.0	11	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	9.9	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Consent for inspection purposes only.  
 Consent for report only required for any other use.

## Results - Water

Client: RPS		Chemtest Job No.:									
Quotation No.: Q16-07130		Chemtest Sample ID.:		16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856
		Client Sample ID.:		BH7	BH9	LG17	BH10	LG15	MW4	LG19	
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
		Date Sampled:		30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	
Determinand	Accred.	SOP	Units	LOD							
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

**Project: MDR1206 Fassaroe**

<b>Client: RPS</b>		<b>Chemtest Job No.:</b>									
Quotation No.: Q16-07130		<b>Chemtest Sample ID.:</b>		16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856	16-20856
		Client Sample ID.:		BH7	BH9	LG17	BH10	LG15	MW4	LG19	
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	WATER	
		Date Sampled:		30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	30-Aug-2016	
<b>Determinand</b>	<b>Accred.</b>	<b>SOP</b>	<b>Units</b>	<b>LOD</b>							
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	11	< 0.030	0.058	0.074	0.053

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## **Report Information**

### **Key**

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- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

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- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

### **Sample Retention and Disposal**

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All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



# Final Report

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**Report No.:** 16-21054-1

**Initial Date of Issue:** 09-Sep-2016

**Client:** RPS

**Client Address:** West Pier Business Campus  
Dun Laoghaire  
Co. Dublin  
Ireland

**Contact(s):** Janka Nitsche

**Project:** MDR1206 - Fasseroe

**Quotation No.:** Q16-07130

**Order No.:**

**No. of Samples:** 5

**Turnaround (Wkdays):** 5

**Date Approved:** 09-Sep-2016

**Approved By:**

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**Date Received:** 02-Sep-2016

**Date Instructed:** 02-Sep-2016

**Results Due:** 08-Sep-2016

**Details:** Robert Monk, Technical Development  
Chemist

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## Results - Water

Client: RPS	Chemtest Job No.:					16-21054	16-21054	16-21054	16-21054	16-21054
Quotation No.: Q16-07130	Chemtest Sample ID.:					346279	346280	346281	346282	346283
Order No.:	Client Sample Ref.:					G.Water	Leachate	Leachate	Leachate	Leachate
	Client Sample ID.:					BH1	LG07	LG09	LG10	LG03
	Sample Type:					WATER	WATER	WATER	WATER	WATER
	Date Sampled:					01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Determinand	Accred.	SOP	Units	LOD						
pH	U	1010		N/A	7.6	7.9	7.7	7.9	7.8	
Electrical Conductivity	U	1020	µS/cm	1.0	890	8500	7900	8700	6600	
Suspended Solids At 105C	U	1030	mg/l	5.0	390	460	450	260	390	
Total Dissolved Solids	N	1040	mg/l	1.0	530	5100	4700	5200	4000	
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	< 4.0	26	21	20	11	
Chemical Oxygen Demand	U	1100	mg O2/l	10	72	780	620	790	430	
Dissolved Oxygen	N	1150	mg O2/l	0.50	14	7.8	8.5	9.9	9.9	
Dissolved CO2	N	1160	mg/l	0.60	30	88	110	78	85	
Alkalinity (Total)	U	1220	mg CaCO3/l	10	530	3200	3000	2900	2700	
Chloride	U	1220	mg/l	1.0	21	1100	1000	1300	780	
Fluoride	U	1220	mg/l	0.050	0.14	0.38	0.38	0.33	0.30	
Ammoniacal Nitrogen	U	1220	mg/l	0.010	2.0	310	280	330	270	
Nitrite as N	U	1220	mg/l	0.010	0.017	0.025	0.020	0.012	0.020	
Phosphate as P	U	1220	mg/l	0.020	< 0.020	0.13	0.065	0.036	< 0.020	
Sulphate	U	1220	mg/l	1.0	25	< 1.0	< 1.0	< 1.0	< 1.0	
Total Oxidised Nitrogen	U	1220	mg/l	0.20	0.47	< 0.20	< 0.20	< 0.20	< 0.20	
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Calcium	U	1415	mg/l	5.0	150	95	78	69	130	
Potassium	U	1415	mg/l	0.50	1.7	340	310	350	270	
Sodium	U	1415	mg/l	0.50	16	670	640	670	570	
Aluminium (Dissolved)	N	1450	µg/l	10	< 10	< 10	< 10	< 10	14	
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	10	9.7	14	8.9	
Boron (Dissolved)	U	1450	µg/l	20	< 20	3200	2600	4600	3400	
Barium (Dissolved)	U	1450	µg/l	5.0	83	300	330	350	500	
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	
Chromium (Dissolved)	U	1450	µg/l	1.0	< 1.0	16	15	17	18	
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.9	3.1	3.4	3.1	
Iron (Dissolved)	N	1480	µg/l	20	340	700	530	440	610	
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	0.71	0.86	0.79	
Manganese (Dissolved)	U	1450	µg/l	1.0	23	190	110	390	290	
Nickel (Dissolved)	U	1450	µg/l	1.0	1.4	59	50	36	38	
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0	4.1	3.6	3.5	2.8	
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0	3.5	4.3	3.1	4.8	
Total Organic Carbon	U	1610	mg/l	2.0	9.3	86	90	120	71	
Dissolved Ethane	N	1630	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Dissolved Ethene	N	1630	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	
Dissolved Methane	N	1630	mg/l	0.050	< 0.050	1.5	5.9	0.41	2.9	
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	< 10	390	310	



Client: RPS		Chemtest Job No.:							
Quotation No.: Q16-07130		16-21054	16-21054	16-21054	16-21054	16-21054			
Order No.:		Chemtest Sample ID.:							
Client Sample Ref.:		346279	346280	346281	346282	346283			
Client Sample ID.:		G.Water	Leachate	Leachate	Leachate	Leachate			
Sample Type:		BH1	LG07	LG09	LG10	LG03			
Date Sampled:		WATER	WATER	WATER	WATER	WATER			
		01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016			
Determinand	Accred.	SOP	Units	LOD					
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	1.9	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	U	1760	µg/l	2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10	[C] < 10	< 10	< 10	< 10	< 10
Bromodichloromethane	U	1760	µg/l	5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10	[C] < 10	< 10	< 10	< 10	< 10
Toluene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Client: RPS	Chemtest Job No.:					16-21054	16-21054	16-21054	16-21054	16-21054
Quotation No.: Q16-07130	Chemtest Sample ID.:					346279	346280	346281	346282	346283
Order No.:	Client Sample Ref.:					G.Water	Leachate	Leachate	Leachate	Leachate
	Client Sample ID.:					BH1	LG07	LG09	LG10	LG03
	Sample Type:					WATER	WATER	WATER	WATER	WATER
	Date Sampled:					01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Determinand	Accred.	SOP	Units	LOD						
Trans-1,3-Dichloropropene	N	1760	µg/l	10	[C] < 10	< 10	< 10	< 10	< 10	
1,1,2-Trichloroethane	U	1760	µg/l	10	[C] < 10	< 10	< 10	< 10	< 10	
Tetrachloroethene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	U	1760	µg/l	2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Dibromochloromethane	U	1760	µg/l	10	[C] < 10	< 10	< 10	< 10	< 10	
1,2-Dibromoethane	U	1760	µg/l	5.0	[C] < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Chlorobenzene	N	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Ethylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
m & p-Xylene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromobenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichloropropane	N	1760	µg/l	50	[C] < 50	< 50	< 50	< 50	< 50	
N-Propylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tert-Butylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Sec-Butylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	N	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
4-Isopropyltoluene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
N-Butylbenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	[C] < 50	< 50	< 50	< 50	< 50	
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	U	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	[C] < 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	[C] < 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

Client: RPS	Chemtest Job No.:					16-21054	16-21054	16-21054	16-21054	16-21054
Quotation No.: Q16-07130	Chemtest Sample ID.:					346279	346280	346281	346282	346283
Order No.:	Client Sample Ref.:					G.Water	Leachate	Leachate	Leachate	Leachate
	Client Sample ID.:					BH1	LG07	LG09	LG10	LG03
	Sample Type:					WATER	WATER	WATER	WATER	WATER
	Date Sampled:					01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Determinand	Accred.	SOP	Units	LOD						
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Naphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

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## Results - Water

Client: RPS		Chemtest Job No.:		16-21054	16-21054	16-21054	16-21054	16-21054
Quotation No.: Q16-07130		Chemtest Sample ID.:		346279	346280	346281	346282	346283
Order No.:		Client Sample Ref.:		G.Water	Leachate	Leachate	Leachate	Leachate
		Client Sample ID.:		BH1	LG07	LG09	LG10	LG03
		Sample Type:		WATER	WATER	WATER	WATER	WATER
		Date Sampled:		01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016	01-Sep-2016
Determinand	Accred.	SOP	Units	LOD				
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030

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### Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
346279	G.Water	BH1	01-Sep-2016	C	Amber Glass 60ml
346279	G.Water	BH1	01-Sep-2016	C	Coloured Winchester 1000ml
346279	G.Water	BH1	01-Sep-2016	C	Plastic Bottle 1000ml

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## Report Information

### **Key**

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- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

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- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

### **Sample Retention and Disposal**

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All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage


If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)



## Amended Report

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<b>Report No.:</b>	16-20927-2		
<b>Initial Date of Issue:</b>	08-Sep-2016	<b>Date of Re-Issue:</b>	23-Sep-2016
<b>Client</b>	RPS		
<b>Client Address:</b>	Aquaterra Business Park Dun Laoghaire Co. Dublin Ireland		
<b>Contact(s):</b>	Janka Nitsche		
<b>Project</b>	MDR 1206 Fassaroe		
<b>Quotation No.:</b>	Q16-07130	<b>Date Received:</b>	01-Sep-2016
<b>Order No.:</b>		<b>Date Instructed:</b>	01-Sep-2016
<b>No. of Samples:</b>	6		
<b>Turnaround (Wkdays):</b>	5	<b>Results Due:</b>	07-Sep-2016
<b>Date Approved:</b>	23-Sep-2016		
<b>Approved By:</b>			
<b>Details:</b>	Glynn Harvey, Laboratory Manager		

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## Results - Water

Client: RPS	Chemtest Job No.:		16-20927	16-20927	16-20927	16-20927	16-20927	16-20927	16-20927	
Quotation No.: Q16-07130	Chemtest Sample ID.:		345691	345692	345693	345694	345695	345696		
	Client Sample ID.:		BH6	LG14	MW2	BH5	LG11	G20		
	Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER		
	Date Sampled:		31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016		
Determinand	Accred.	SOP	Units	LOD						
pH	U	1010		N/A	7.7	8.1	7.2	7.4	7.4	7.9
Electrical Conductivity	U	1020	µS/cm	1.0	820	9800	1700	770	2000	500
Suspended Solids At 105C	U	1030	mg/l	5.0	600	3500	880	840	870	240
Total Dissolved Solids	N	1040	mg/l	1.0	490	5900	1000	460	1200	300
Biochemical Oxygen Demand	N	1090	mg O2/l	4.0	5.0	23	19	4.0	< 4.0	< 4.0
Chemical Oxygen Demand	U	1100	mg O2/l	10	12	800	79	16	78	< 10
Dissolved Oxygen	N	1150	mg O2/l	0.50	9.3	0.76	4.6	11	3.1	9.5
Dissolved CO2	N	1160	mg/l	0.60	25	71	160	44	100	9.0
Alkalinity (Total)	U	1220	mg CaCO3/l	10	590	4400	1200	570	1200	360
Chloride	U	1220	mg/l	1.0	22	1100	58	170	310	46
Fluoride	U	1220	mg/l	0.050	0.11	0.78	0.23	0.097	0.12	0.092
Ammoniacal Nitrogen	U	1220	mg/l	0.010	0.59	0.93	69	0.34	29	0.93
Nitrite as N	U	1220	mg/l	0.010	0.052	< 0.010	< 0.010	< 0.010	0.11	0.016
Phosphate as P	U	1220	mg/l	0.020	< 0.020	0.28	< 0.020	< 0.020	< 0.020	< 0.020
Sulphate	U	1220	mg/l	1.0	22	< 1.0	14	69	170	31
Total Oxidised Nitrogen	U	1220	mg/l	0.20	0.99	< 0.20	< 0.20	2.9	< 0.20	19
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Calcium	U	1415	mg/l	5.0	140	79	200	160	330	95
Potassium	U	1415	mg/l	0.50	31	550	43	2.9	32	1.7
Sodium	U	1415	mg/l	0.50	13	760	59	13	39	8.9
Aluminium (Dissolved)	N	1450	µg/l	10	< 10	14	< 10	< 10	< 10	< 10
Arsenic (Dissolved)	U	1450	µg/l	1.0	< 1.0	33	7.7	< 1.0	4.9	< 1.0
Boron (Dissolved)	U	1450	µg/l	20	1200	2700	1100	450	1300	530
Barium (Dissolved)	U	1450	µg/l	5.0	57	65	240	72	240	28
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080	< 0.080
Chromium (Dissolved)	U	1450	µg/l	1.0	1.2	20	2.9	4.2	3.8	< 1.0
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0	3.8	< 1.0	< 1.0	< 1.0	< 1.0
Iron (Dissolved)	N	1480	µg/l	20	260	900	1200	290	660	170
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Manganese (Dissolved)	U	1450	µg/l	1.0	1.7	250	1500	22	960	13
Nickel (Dissolved)	U	1450	µg/l	1.0	< 1.0	82	10	< 1.0	3.8	< 1.0
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0	2.2	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0	12	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	< 1.0	6.5	1.2	2.4	5.4	< 1.0
Total Organic Carbon	U	1610	mg/l	2.0	8.8	180	90	18	24	17
Dissolved Ethane	N	1630	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Dissolved Ethene	N	1630	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Dissolved Methane	N	1630	mg/l	0.050	< 0.050	8.5	1.8	< 0.050	0.94	< 0.050
Total TPH >C6-C40	U	1670	µg/l	10	< 10	1100	< 10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10



## Results - Water

Client: RPS	Chemtest Job No.:					16-20927	16-20927	16-20927	16-20927	16-20927	16-20927
Quotation No.: Q16-07130	Chemtest Sample ID.:					345691	345692	345693	345694	345695	345696
	Client Sample ID.:					BH6	LG14	MW2	BH5	LG11	G20
	Sample Type:					WATER	WATER	WATER	WATER	WATER	WATER
	Date Sampled:					31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Determinand	Accred.	SOP	Units	LOD							
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Chrysene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Dichlorodifluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Chloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Chloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Trichlorofluoromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Trans 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
cis 1,2-Dichloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Bromochloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
Trichloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
Trichloroethene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromomethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	
Bromodichloromethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	
cis-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	
Toluene	U	1760	µg/l	1.0	< 1.0	8.2	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-Dichloropropene	N	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	
1,1,2-Trichloroethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10	< 10	

Client: RPS	Chemtest Job No.:		16-20927	16-20927	16-20927	16-20927	16-20927	16-20927	
Quotation No.: Q16-07130	Chemtest Sample ID.:		345691	345692	345693	345694	345695	345696	
	Client Sample ID.:		BH6	LG14	MW2	BH5	LG11	G20	
	Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER	
	Date Sampled:		31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	
Determinand	Accred.	SOP	Units	LOD					
Tetrachloroethene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0	2.6	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0	6.8	< 1.0	< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0	3.9	< 1.0	< 1.0	< 1.0
Styrene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50
N-Propylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1.0	< 1.0	4.8	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50	< 50	< 50	< 50	< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	4.4	< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

Client: RPS		Chemtest Job No.:		16-20927	16-20927	16-20927	16-20927	16-20927	16-20927
Quotation No.: Q16-07130		Chemtest Sample ID.:		345691	345692	345693	345694	345695	345696
		Client Sample ID.:		BH6	LG14	MW2	BH5	LG11	G20
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
		Date Sampled:		31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016	31-Aug-2016
Determinand	Accred.	SOP	Units	LOD					
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.50	< 0.50	2.4	< 0.50	< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.50	< 0.50	18	< 0.50	< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.50	< 0.50	0.56	< 0.50	< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Naphthalene	N	1790	µg/l	0.50	< 0.50	1.6	2.6	< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.50	< 0.50	4.0	< 0.50	< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	0.68	< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Acenaphthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluorene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pentachlorophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Phenanthrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50

## Results - Water

Client: RPS		Chemtest Job No.: 16-20927								
Quotation No.: Q16-07130		Chemtest Sample ID.:								
		Client Sample ID.:			Sample Type:			Date Sampled:		
		Date Sampled:			Date Sampled:			Date Sampled:		
Determinand	Accred.	SOP	Units	LOD						
Butylbenzyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chrysene	N	1790	µg/l	0.50	0.65	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Phenols	U	1920	mg/l	0.030	< 0.030	0.15	< 0.030	0.030	0.077	< 0.030

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## Report Information

### **Key**

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- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

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- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

### **Sample Retention and Disposal**

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All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

[customerservices@chemtest.co.uk](mailto:customerservices@chemtest.co.uk)