**Sure Partners Limited** 

# ARKLOW BANK WIND PARK PHASE 2 ONSHORE GRID INFRASTRUCTURE

VOLUME III Chapter 9 APPENDICES

**Appendix 9.1j** GI Reports - GII Avoca River Park Phase 3 Environmental Assessment





Appendix 9.1j Phase 3 Environmental Assessment



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# **Ground Investigations Ireland**

# Avoca River Park

FT Squared

Phase 3 Environmental Assessment Factual Report

# September 2020



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# DOCUMENT CONTROL SHEET

Project Title	Avoca River Park
Engineer	Atkins Consulting Engineers
Client	FT Squared
Project No	9230-11-19
Document Title	Phase 3 Environmental Assessment Factual Report

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
А	Final	N Morgan	B Sexton	B Sexton	Dublin	04 September 2020

Ground Investigations Ireland Ltd. present the results of the fieldworks and laboratory testing in accordance with the specification and related documents provided by or on behalf of the client The possibility of variation in the ground and/or groundwater conditions between or below exploratory locations or due to the investigation techniques employed must be taken into account when this report and the appendices inform designs or decisions where such variation may be considered relevant. Ground and/or groundwater conditions may vary due to seasonal, man-made or other activities not apparent during the fieldworks and no responsibility can be taken for such variation. The data presented and the recommendations included in this report and associated appendices are intended for the use of the client and the client's geotechnical representative only and any duty of care to others is excluded unless approved in writing.





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# **GROUND INVESTIGATIONS IRELAND**

Geotechnical & Environmental

# CONTENTS

1.0	Preamble1
2.0	Overview1
2.1.	Background1
2.2.	Purpose and Scope1
3.0	Limitations1
4.0	Subsurface Exploration
4.1.	General2
4.2.	Trial Pits2
4.3.	Surveying
4.4.	Groundwater/Gas Monitoring Installations3
5.0	Ground Conditions
5.1.	General
5.2.	Groundwater/Gas4
6.0	Sampling and Monitoring4
6.1.	Made Ground Laboratory Analysis4
6.2.	Ground Gas Monitoring4
6.3.	Surface Water Sampling5
6.4.	Surface Water Laboratory Analysis5

# APPENDICES

Appendix 1	Figures
Appendix 2	Trial Pit Records
Appendix 3	Gas Monitoring Well Records
Appendix 2	Laboratory Reports
Appendix 3	Gas Monitoring Data



# 1.0 Preamble

On the instructions of FT Squared, a site investigation was carried out by Ground Investigations Ireland Ltd., between July and September 2020 at the site of the proposed data centre at Avoca River Park Industrial Estate, Arklow, Co. Wicklow (Figure 1 – Appendix 1). The investigation was to supplement information gathered in previous investigation and reported in the GII reports:

- 1. Ground Investigations Ireland, Avoca River Park, Phase 1 Environmental Assessment, January 2020.
- 2. Ground Investigations Ireland, Avoca River Park, Phase 2 Environmental Assessment, June 2020.

# 2.0 Overview

# 2.1. Background

The previous reports identified the presence of red material which is believed to be a by-product of the fertilizer production process. The sites historical use was as a fertilizer production facility. The site history and environmental setting are not discussed here but are outlined in full in the above referenced reports.

# 2.2. Purpose and Scope

The purpose of the site investigation was to investigate the presence of the red material identified in the Phase 2 investigation and to aid in the delineation of its extent. Surface water and ground gas monitoring was also required to allow an environmental risk assessment to be completed by a third party. The chemistry of the red material which been established in the Phase 2 investigation was also to be verified by additional sampling and analysis of the red material. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions;
- Carry out 23 No. trial pits;
- Slit trenching;
- Installation of 8 No. gas monitoring wells;
- Surface water sampling;
- Ground gas monitoring;
- Additional subsoil/made ground sampling; and
- Factual report.

# 3.0 Limitations

GII has prepared this report for the sole use of FT Squared. No other warranty, express or implied, is made as to the professional advice included in this report or other services provided by GII.

The conclusions and recommendations contained in this report are based upon information provided by others and the assumption that all relevant information has been provided by those bodies from whom it

has been requested. Information obtained from third parties has not been independently verified by GII, unless otherwise stated in this report.

This report has been prepared in line with best industry standards and within the project's budgetary and time constraints. The methodology adopted and the sources of information used by GII in providing its services are outlined in this report.

The work described was undertaken between July and September 2020, this report is based on the conditions encountered and the information available during that period. The scope of this Report and the services are accordingly factually limited by these circumstances.

Site investigations locations were selected though consultation with GII, FT Squared and a third party environmental consultant.

GII disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to GII's attention after the date of the Report.

The conclusions presented in this report represent GII's best professional judgement based on review of site conditions observed during any site visit and the relevant information available at the time of writing. The opinions and conclusions presented are valid only to the extent that the information provided was accurate and complete.

The assessment is reflective of and applicable to the site's ground conditions at the time of the site investigation and sampling. Alterations to the ground conditions or any further excavations carried out on site following the investigation are not reflected in this report.

# 4.0 Subsurface Exploration

#### 4.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.

The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

#### 4.2. Trial Pits

The trial pits were excavated using a 6T tracked excavator at the locations shown in Figure 2. The locations were checked using a CAT scan to minimise the potential for encountering services during the excavation. The trial pits were sampled, logged and photographed by a Geotechnical Engineer/Engineering Geologist prior to backfilling with arisings. Notes were made of any services, inclusions, pit stability, groundwater encountered and the characteristics of the strata encountered and are presented on the trial pit logs which are provided in Appendix 2 of this Report.

# 4.3. Surveying

The exploratory hole locations have been recorded using a Trimble R10 GNSS System which records the coordinates and elevation of the locations to ITM or Irish National Grid as required by the project specification. The coordinates and elevations are provided on the exploratory hole logs in the appendices of this Report.

# 4.4. Groundwater/Gas Monitoring Installations

Under the instructions of FT Squared GII installed ground gas monitoring wells in eight (8 No.) of the trial pits excavated. The location of the gas wells are indicated on Figure 3. The typical groundwater monitoring installation consists of a 50mm HDPE slotted pipe with a pea gravel response zone within the made ground deposits. A bentonite seal was fitted in the upper 0.5m of the annulus. The standpipe in each case was fitted with a gas tap and finished with a durable steel cover fixed in place with a concrete surround. The installation details are provided on the exploratory hole logs in Appendix 3.

# 5.0 Ground Conditions

# 5.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were consistent across the site and are generally comprised of;

- Surfacing/Tarmacadam
- Made Ground
- Cohesive Deposits

**TARMACADAM**: Tarmacadam was present to a maximum depth of 0.1m at all locations.

**MADE GROUND**: Made Ground deposits were encountered beneath the surfacing and were present to a depth of between 0.45m and 1.5m BGL. These deposits were described generally as *grey*, *slightly silty*, *sandy*, *GRAVEL and contained occasional fragments of concrete*, *red brick*, *glass and plastic*. A layer of Red Clay - fertilizer by product was also encountered in the majority of the trial pits. The thickness of the red material encountered ranged from 0.08m to 0.9m.

**COHESIVE DEPOSITS**: Cohesive deposits were encountered beneath the made ground and they can broadly be divided into an upper clay/silt layer and a lower layer containing peat. The deposits were described typically as a grey *brown CLAY/SILT* overlying a *lower layer containing PEAT/CLAYEY PEAT*. The peat encountered can generally be described as a brown to dark brown soft fibrous peat. There was occasional sand and gravel lenses present with in the upper cohesive deposits.

**RED MATERIAL EXTENT**: GII has estimated the extent of the red material based on the trial pits and slit trench excavation works completed in July 2020. The extent is presented in Figure 2.

# 5.2. Groundwater/Gas

Groundwater strikes are noted on the exploratory hole logs.

# 6.0 Sampling and Monitoring

# 6.1. Made Ground Laboratory Analysis

In order to aid in the assessment of materials, which may be excavated and removed from site, in terms of waste classification, a selection of samples collected were analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as *hazardous* or *non-hazardous* (RILTA Suite). The suite also allows for the assessment of the soils in terms of suitability for placement at various categories of landfill. The parameter list for the RILTA suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The RILTA suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are pH, total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

In line with the requirement of Council Decision 2003/33/EC a leachate was generated from the solid samples which was in turn analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).

Samples of the red material were collected for analysis from the trial pits TP-37, 38, 45 and 50. A sample was collected for analysis from TP-52 after strong hydrocarbon odours were noted during the excavation of the trial pit.

The laboratory testing was competed by Element Materials Technology (EMT) in the UK; EMT is a UKAS accredited laboratory. The full laboratory report is included in Appendix 4.

### 6.2. Ground Gas Monitoring

Gas monitoring was completed on the 14<sup>th</sup>, 18<sup>th</sup>, 21<sup>st</sup>, 26<sup>th</sup> and 31<sup>st</sup> August and 3<sup>rd</sup> September 2020. Monitoring was completed using a geotechnical instruments GA 2000+ Gas Analyser with flow pod. The results of the monitoring rounds completed are summarised in Appendix 5.

# 6.3. Surface Water Sampling

GII collected surface water samples from the Avoca River on 26<sup>th</sup> August 2020. Samples were collected upstream and downstream of the site. No evidence of contamination was noted during the sampling of the Avoca River. Surface water field parameters were measured in situ using calibrated hand probes. Measurement included pH, electrical conductivity, temperature and redox potential (ORP). The recorded field data are summarised in Table 1.

# 6.4. Surface Water Laboratory Analysis

The laboratory analysis undertaken on the samples collected from the river included dissolved arsenic, boron, cadmium, copper, chromium (III & VI), cyanide, lead, mercury, nickel, manganese and zinc, aliphatic and aromatic petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAH), methyl tert butyl ether (MTBE), benzene toluene ethylbenzene and toluene (BTEX), total phenols, pH, electrical conductivity, pesticides, volatile organic compounds (VOCs), nitrate, nitrite, chloride, sulphate, ammonia, calcium, sulphur, phosphorus and potassium. The parameter range was based on the site history and the need to establish a comprehensive environmental baseline for the groundwater quality for the site.

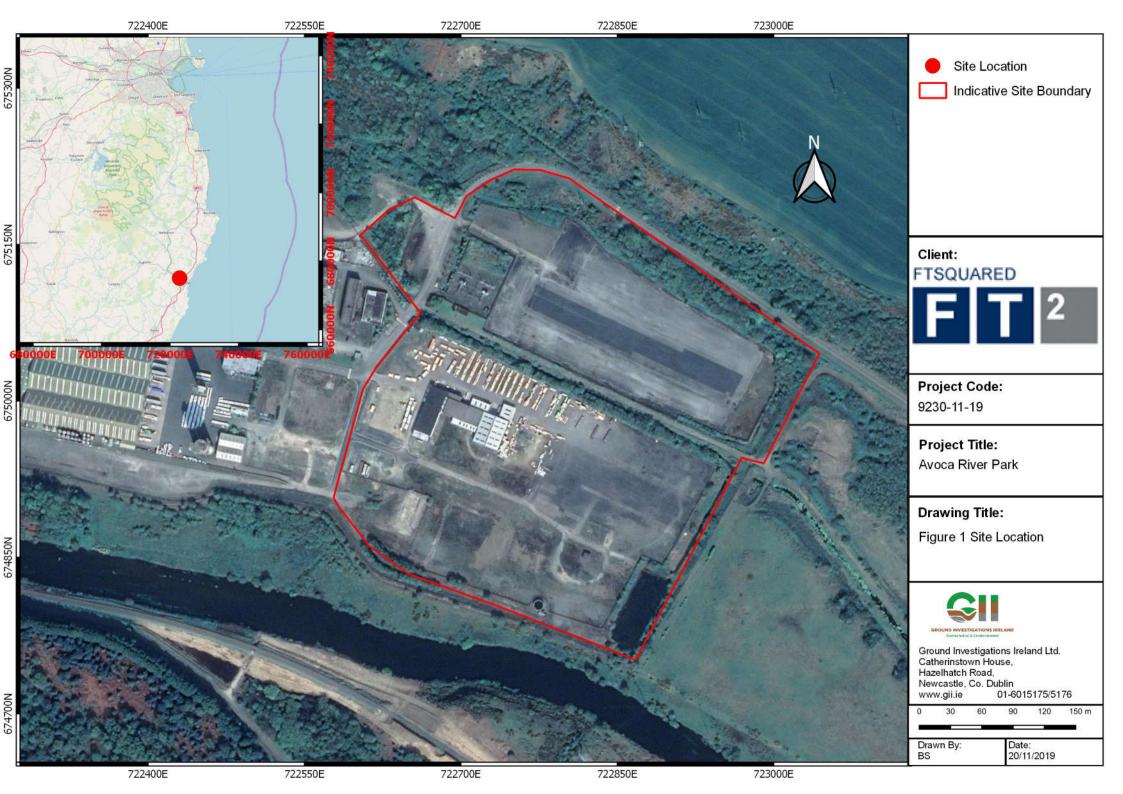
The laboratory testing was competed by Element Materials Technology in the UK; EMT is a UKAS accredited laboratory. The full laboratory report is included in Appendix 4. The analytical methodologies are all ISO/CEN approved or equivalent.

Sample ID	Sample Date	pH (pH Units)	Electrical Conductivity (mS/cm)	Temperature (Celsius)	Redox Potential (mV)	Odour	Colour
SW-01 Downstream	26-08-2020	8.92	0.13	12.0	94	None	Clear
SW-02 Upstream	26-08-2020	9.09	0.12	12.0	98	None	Clear

**Table 1 Surface Water Sampling Field Measurements** 

**APPENDIX 1** - Figures







722550E

722700E



APPENDIX 2 – Trial Pit Records



		vestigations Ir www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow		Trial P Numbe TP3
achine : 6 tonne excavato ethod : Trial Pit	Billion	<b>sions</b> V x 3.0m L	Ground	Level (mOD) 2.18	Client FT Squared		Job Numbe 9230-11
	Locatio	on 22800.8 E 675158.4 N	Dates 21	/07/2020	Project Contractor		<b>Sheet</b> 1/1
Depth (m) Sample / Tes	ts Water (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Descr	ription	Legend
Yan		Water strike(1) at 1.10m.	2.09 1.93 1.18 0.98		TARMACADAM MADE GROUND: Blue grey sa Gravel. MADE GROUND Brown grey s coarse angular Gravel. Soft to firm black grey slightly s Complete at 1.20m	slightly sandy clayey fine to	
					Trial pit sidewalls spalling at 1.0r Groundwater encountered at 1.1 Trial pit terminated and backfilled	n BGL 0m BGL. d upon completion.	
			· ·				
			· ·	· · ·	cale (approx) Lo	ogged By F	gure No.

	Grou	nd In	vestigations I www.gii.ie	reland	Ltd	Site Avoca River Park, Arklow	Trial Pi Numbe TP32
achine:61 ethod:Tr	onne excavator al Pit	Dimens 0.4m W	sions V x 2.6m L	Ground	Level (mOD) 2.28	Client FT Squared	Job Numbe 9230-11-
		Locatio	on 2795.4 E 675155.6 N	Dates 21	/07/2020	Project Contractor GII	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
			Water strike(1) at 1.10m.	2.19 2.08 1.18 1.08		TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND Brown grey slightly sandy clayey fine to coarse angular Gravel. Soft to firm black grey slightly sandy slightly gravelly CLAY. Complete at 1.20m	
Plan .						Remarks Trial pit sidewalls spalling at 1.0m BGL Groundwater encountered at 1.10m BGL.	
					•••	Trial pit terminated and backfilled upon completion.	
•		•					
•	· ·		· · ·		· · ·		
						Scale (approx) Logged By Fig	ure No.

	nd In	vestigations Ire www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow	Trial P Numbo TP3
achine : 6 tonne excavator ethod : Trial Pit	Dimens 0.4m V	<b>sions</b> V x 2.8m L		Level (mOD) 2.23	Client FT Squared	Job Numb 9230-11
	Locatio	22801.3 E 675151.8 N	Dates 21	/07/2020	Project Contractor GII	Sheet
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
		Water strike(1) at 1.10m.	2.14 1.98 1.23 1.03	(0.09) (0.16) (0.75) (0.75) (0.20) (0.20) 1.20	TARMACADAM         MADE GROUND: Blue grey sandy angular fine to coarse Gravel.         MADE GROUND Brown grey slightly sandy clayey fine to coarse angular Gravel.         Soft to firm black grey slightly sandy slightly gravelly CLAY.         Complete at 1.20m	
lan	·				Trial pit sidewalls spalling at 1.0m BGL Groundwater encountered at 1.10m BGL.	
an <u>.</u>					Trial pit terminated and backfilled upon completion.	
an						
an <u> </u>						
ian  		· · · ·		· ·		

		vestigations l www.gii.ie			Site Avoca River Park, Arklow	Trial P Numbe TP3
achine : 6 tonne exca ethod : Trial Pit		<b>sions</b> N x 2.6m L	Ground	Level (mOD) 2.33	Client FT Squared	Job Numbe 9230-11
	Locatio	on 22793.8 E 675147 N	Dates 21	/07/2020	Project Contractor Gli	Sheet 1/1
Depth (m) Sample	/ Tests Water (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
		Water strike(1) at 1.20m.	2.24 2.03 1.23		ADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND Brown slightly sandy slightly gravelly Clay. Complete at 1.20m	
lan .				• •	Remarks Trial pit stable. Groundwater encountered at 1.20m BGL.	
	• •					

Grou	nd In	vestigations Ire www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow	Trial F Numb TP3
achine : 6 tonne excavator ethod :Trial Pit	Dimens 0.4m W	i <b>ons</b> √ x 2.6m L		Level (mOD) 2.25	Client FT Squared	Job Numb 9230-1
	Locatio	<b>n</b> 2757.5 E 675139 N	Dates 21	/07/2020	Project Contractor GII	Sheet 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
		Water strike(1) at 1.00m.	2.16 1.85 1.80 1.15	(0.09) (0.31) (0.31) (0.31) (0.45) (0.65)	TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND: Red Clay- fertilizer by product. Brown slightly sandy clayey fine to coarse Gravel with occasional sub-angular to sub-rounded cobbles. Complete at 1.10m	
an		· · ·			Remarks Trial pit stable. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximu Clay.	um depth of
an	·	· · · ·	· ·		Trial pit stable. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximu	um depth of i
lan  		· · · ·	· ·		Trial pit stable. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximu	um depth of i

SI	Grou	und Inv	vestigations www.gii.ie	Ireland	Ltd	Site Avoca River Park, Arklow		Trial P Numb TP3
achine:6t ethod:Tr	tonne excavator ial Pit	Dimensio 0.4m W >		Ground	Level (mOD) 2.37	Client FT Squared		Job Numb 9230-11
		Location 7227	745.8 E 675112.8 N	Dates 21	/07/2020	Project Contractor		<b>Sheet</b> 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Legend
lan				2.28 2.17 1.27 0.97		TARMACADAM MADE GROUND: Brown s Cobbles. MADE GROUND: Red Cla Very soft dark brown black organic CLAY. Complete at 1.40m		
				•		Trial pit stable. No groundwater encountere Trial pit terminated and back	d. filled upon determining max	imum depth of r
						Clay.	-	
-	-							
		•						
	· ·							
•	· · ·		· · ·		 s	icale (approx)	Logged By	Figure No.

S	Grou	ind In	vestigatior www.gii.ie	ns Ireland I e	Ltd	Site Avoca River Park, Arklow	Trial Pi Numbe TP37
lachine:6 lethod :⊺r	tonne excavator ial Pit	Dimens 0.4m V	i <b>ions</b> V x 2.8m L		Level (mOD) 2.38	Client FT Squared	Job Numbe 9230-11-
		Locatio	n 2771.8 E 675123.9 I		/07/2020	Project Contractor GII	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Reco	rds Level (mOD)	Depth (m) (Thickness)	Description	Legend
.70 .70	BEN		Water strike(1) at 1	2.29 2.08 1.98 1.73 1.38 .50m. 0.88	(0.09) (0.21) (0.21) (0.21) (0.25) (0.35) (0.35) (0.50)	TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND: Brown sandy clayey sub-rounded Cobbles. MADE GROUND: Light brown slightly sandy gravelly Clay MADE GROUND: Red Clay- fertilizer by product. Very soft dark brown black slightly sandy slightly gravelly organic CLAY. Complete at 1.50m	
Plan .						Remarks Trial pit stable. Groundwater encountered at 1.5m BGL.	
·		·			.	Trial pit terminated and backfilled upon determining maximu Clay.	m depth of r
					-		
•	· ·	•	· ·	· · ·			

Grou	nd Inv	estigations I www.gii.ie	reland	Ltd	Site Avoca River Park, Arklow		Trial P Numb TP3
achine : 6 tonne excavator ethod : Trial Pit	Dimension 0.4m W x		Ground	Level (mOD) 2.26	Client FT Squared		Job Numb 9230-11
	Location 7228	27.3 E 675097.1 N	Dates 22	2/07/2020	Project Contractor GII		Sheet 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	De	escription	Legend
00 B EN			2.17 2.01 1.36 0.86 0.66		Gravel with plastic fragmer MADE GROUND: Brown s Gravel. MADE GROUND: Red Cla	lightly silty fine to coarse angul	ar
					Trial pit stable. No groundwater encountered Trial pit terminated and back Clay.	d. filled upon determining maxim	um depth of ı
		· · ·		 s	cale (approx)	Logged By Fi	gure No.

Grou	nd Inv	/estigations l www.gii.ie	reland	Ltd	Site Avoca River Park, Arklow	Trial Pi Numbe TP39
achine : 6 tonne excavator ethod : Trial Pit	Dimensio 0.4m W 2		Ground	Level (mOD) 2.32	Client FT Squared	Job Numbe 9230-11
	Location 7228	802.9 E 675083.3 N	Dates 22	2/07/2020	Project Contractor GII	Sheet 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
			2.23 2.07 1.82 1.57 0.92 0.72	(0.16) 0.25 (0.25) 0.50 (0.25) 0.75 (0.65) 1.40 (0.20) 1.60	TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND: Pinkish slightly gravelly fine to coarse SAND. MADE GROUND: Brown grey sandy sub-angular fine to coarse Gravel with occasional sub-rounded cobbles. MADE GROUND: Red Clay- fertilizer by product. Soft to firm grey slightly sandy slightly gravelly peaty CLAY. Complete at 1.60m	
					Trial pit sidewalls spalling at 1.0m BGL. No groundwater encountered. Trial pit terminated and backfilled upon determining maximum	depth of I
-					Clay.	
			•	•••		
· · · ·		· · ·				

S	Grou	nd In	vestigations In www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow	Trial Pi Numbe TP4(
lachine:6 lethod :⊤	tonne excavator rial Pit	Dimens 0.4m V		Ground	Level (mOD) 2.06	Client FT Squared	Job Numbe 9230-11-
		Locatio	on 22808.8 E 675052.1 N	Dates 22	2/07/2020	Project Contractor Gll	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness	Description	Legend
lan .			Water strike(1) at 0.30m.	1.97 1.91 1.76 0.66 0.46	(0.50) (0.60) (0.60) (0.20) (0.20) 1.60	TARMACADAM         MADE GROUND: Blue grey sandy angular fine to coarse Gravel.         MADE GROUND: Brown grey gravelly sub-bangular to sub-rounded Cobbles.         MADE GROUND: Brown grey slightly sandy silty sub-angular Gravel with occasional sub-rounded cobbles.         MADE GROUND: Red Clay- fertilizer by product.         Soft to firm grey slightly sandy slightly gravelly peaty CLAY.         Complete at 1.60m	
•		•		•		Trial pit stable. Groundwater encountered at 0.30m BGL Trial pit terminated and backfilled upon determining maximum	depth of I
-		-				Clay.	
		•					
•	· ·						
	· · ·	•	· · ·				

Grou	nd In	vestigations Ire www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow	Trial Pi Numbe
achine : 6 tonne excavator ethod : Trial Pit	Dimens 0.4m W	sions V x 2.2m L		Level (mOD) 2.24	Client FT Squared	Job Numbe 9230-11
	Locatio	22832.7 E 675070.3 N	Dates 22	2/07/2020	Project Contractor GII	<b>Sheet</b> 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
		Water strike(1) at 1.00m.	2.15 1.99 1.44 0.94 0.64	(0.09) (0.16) (0.16) (0.55) (0.55) (0.50) (0.30)	TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND: Brown slightly sandy gravelly Silt. MADE GROUND: Red Clay- fertilizer by product. Soft to firm brown grey slightly sandy slightly gravelly peaty CLAY. Complete at 1.60m	
					Jomarka	
an				• •	Remarks Trial pit sidewalls spalling at 1.10m BGL. Groundwater encountered at 1.0m BGL. Trial nit terminated and hackfilled unon determining maximum	depth of
an		· · ·	· ·	• •	Remarks Trial pit sidewalls spalling at 1.10m BGL. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximum Clay.	depth of r
an 		· · · ·	· ·	• •	Trial pit sidewalls spalling at 1.10m BGL. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximum	depth of
lan  	· · · ·	· · · · · · · ·	· · ·	• •	Trial pit sidewalls spalling at 1.10m BGL. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximum	depth of r

Machine : 6 tonne excavator	Dimens			Level (mOD)	Avoca River Park, Arklow Client		Number TP4
lethod : Trial Pit	0.4m V	V x 2.3m L		2.26	FT Squared		Numb 9230-11
	Locatio	on 22869.5 E 675067.2 N	Dates 22	/07/2020	Project Contractor		Sheet 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	De	escription	Legend
		Water strike(1) at 0.60m.	2.17 2.01 1.66 0.86 0.56	(0.09) (0.16) 0.25 (0.35) 0.60 (0.80) 1.40 (0.30) 1.70 1.70	Gravel. MADE GROUND: Brown s coarse Gravel MADE GROUND: Red Cla	y sandy angular fine to coarse lightly sandy silty angular fine to y- fertilizer by product.	
Plan					Remarks		
lan		 	· ·		Trial pit sidewalls spalling at Groundwater encountered at Trial pit terminated and back	1.0m BGL. t 0.60m BGL. filled upon determining maximum	depth of r
an		  	· · ·			1.0m BGL. 0.60m BGL. filled upon determining maximum	depth of
an  	·	· · · ·	· ·		Trial pit sidewalls spalling at Groundwater encountered at Trial pit terminated and back	1.0m BGL. t 0.60m BGL. filled upon determining maximum	depth of r

achine : 6 to	onne excavator	Dimension 0.4m W x			Level (mOD) 1.92	Avoca River Park, Arklow Client FT Squared	Numbe TP43 Job Numbe 9230-11-
		Location 7228	43.7 E 675034.6 N	Dates 22	2/07/2020	Project Contractor Gll	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
Plan				1.83 1.77 1.62 1.52 0.72 0.52		TARMACADAM         MADE GROUND: Blue grey sandy angular fine to coarse Gravel.         MADE GROUND: Brown slightly silty angular fine to coarse angular GROUND: Red Clay- fertilizer by product.         POSSIBLE MADE GROUND: Brown grey fine to coarse angular Gravel with occasional sub-angular to sub-rounded cobbles.         Soft to firm light grey slightly sandy slightly gravelly organic CLAY.         Complete at 1.40m	
						Trial pit unstable. Groundwater encountered at 0.80m BGL Trial pit terminated and backfilled upon determining maximur Clay.	n depth of r
•	· ·		· · ·		· · ·		

Grou	nd In	vestigations Ir www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow	Trial F Numb TP4
achine : 6 tonne excavator ethod :Trial Pit	Dimens 0.4m W	i <b>ons</b> √ x 2.5m L	Ground	Level (mOD) 1.76	Client FT Squared	Job Numb 9230-1
	Locatio	<b>n</b> 2849.8 E 675021.4 N	Dates 22	2/07/2020	Project Contractor GII	Sheet
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
		Water strike(1) at 0.80m.	1.67 1.51 1.16 0.76 0.26	(0,09) (0.16) 0.25 (0.35) 0.60 (0.40) (0.50) 1.50 1.50	ADE GROUND: Blue grey sandy angular fine to coar Gravel. MADE GROUND: Brown slightly sandy slity angular fin coarse Gravel MADE GROUND: Red Clay- fertilizer by product. Soft to firm light grey slightly sandy slightly gravelly org peaty CLAY. Complete at 1.50m	se e to
					Trial pit unstable Groundwater encountered at 0.80m BGL. Trial pit terminated and backfilled upon determining maxi	mum depth of
					Clay.	
				· ·		
			-	s	cale (approx) Logged By	Figure No.

		vestigations I www.gii.ie	reland l	Ltd	Site Avoca River Park, Arklow	Trial Pit Numbe TP45
lachine : 6 tonne excavato lethod :Trial Pit	r Dimensio 0.4m W x			Level (mOD) 1.75	Client FT Squared	Job Numbe 9230-11-
	Location 7228	372.5 E 675021.3 N	Dates 22	/07/2020	Project Contractor GII	Sheet 1/1
Depth (m) Sample / Te	sts Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
70 B EN			1.66 1.55 1.35 0.75 0.35		TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND: Brown yellowish slightly silty angular fin to coarse Gravel with occasional sub-angular cobbles. MADE GROUND: Red Clay- fertilizer by product. Soft to firm light grey slightly sandy slightly gravelly organi CLAY. Complete at 1.40m	
					Trial pit stable. No groundwater encountered. Trial pit terminated and backfilled upon determining maximu Clay.	m depth of r
· ·	 	· · ·	· ·	·		

	Grou	nd In	vestigations Ire www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow	Trial F Numb TP4
lachine:6 lethod :⊤	tonne excavator rial Pit	Dimens 0.4m W	sions V x 2.3m L		Level (mOD) 2.37	Client FT Squared	Job Numb 9230-1
		Locatio	on 22844.9 E 675095.6 N	Dates 22	2/07/2020	Project Contractor GII	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
			Water strike(1) at 1.00m.	2.28 2.07 1.57 1.17 0.77	(0.21) 0.30 (0.50) 0.80 (0.40) 1.20 (0.40)	TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND: Brown slightly silty angular fine to coarse Gravel with occasional sub-angular cobbles. MADE GROUND: Red Clay- fertilizer by product. Soft to firm light grey slightly sandy slightly gravelly organ CLAY. Complete at 1.60m	Se
lan						Remarks	
an .	· .		· · ·			Trial pit unstable. Groundwater encountered at 1.0m BGL	um depth of
an .	· ·	- - -	· · ·	- · ·		Trial pit unstable.	um depth of
an		·	· · · ·			Trial pit unstable. Groundwater encountered at 1.0m BGL Trial pit terminated and backfilled upon determining maxim	um depth of
lan .		- - - - - - - - -				Trial pit unstable. Groundwater encountered at 1.0m BGL Trial pit terminated and backfilled upon determining maxim	um depth of

achine : 6 tonne excavator ethod : Trial Pit Depth (m) Sample / Test	Locatio 72 Water	N x 2.7m L <b>on</b> 22963.3 E 675043.7 N	Dates 24	Level (mOD) 2.04	FT Squared	Job Numbe 9230-11-
Depth (m) Sample / Test	72	22963.3 E 675043.7 N	24	/07/2020		
Depth (m) Sample / Test	Water Depth (m)	Field Records			Project Contractor Gll	<b>Sheet</b> 1/1
			Level (mOD)	Depth (m) (Thickness)	Description	Legend
		Water strike(1) at 0.40m.	1.95 1.84 1.74 1.64 1.04 0.54	(0,09) (0,11) (0,10) (0,50) (0,10) (1,00)	TARMACADAM         MADE GROUND: Blue grey sandy angular fine to coarse Gravel with occasional sub-rounded cobbles.         MADE GROUND: Brown slightly sandy gravelly Silt.         MADE GROUND: Brown grey slightly sandy slightly gravelly organic peaty Clay.         MADE GROUND: Brown slightly sandy gravelly Clay with plastic and metal fragments.         Soft brown grey slightly gravelly CLAY.         Soft brown black organic CLAY with root fragments.         Complete at 2.50m	
lan				•••	Remarks Trial pit stable.	
					Groundwater encountered at 0.40m BGL Trial pit terminated at 2.50m BGL and backfilled upon com	pletion.
		· · ·	· ·	· ·		
					cale (approx) Logged By F	igure No.

	and Inv	estigations Ir www.gii.ie			Site Avoca River Park, Arklow	Trial Pi Numbe TP48
achine : 6 tonne excavator lethod : Trial Pit	Dimension 0.4m W x			Level (mOD) 2.15	Client FT Squared	Job Numbe 9230-11-
	Location 7226	20.3 E 675014.2 N	Dates 23/	/07/2020	Project Contractor	<b>Sheet</b> 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
			2.05	(0.10) 0.10 (0.35)	_MADE GROUND: Grey angular fine to coarse Gravel. MADE GROUND: Red Clay - fertilizer by product.	
			1.70 1.65	- 0.45 0.50	CONCRETE.	
					Remarks	
				•		
an					Thai pit stable.	
an				-	Trial pit stable. No groundwater encountered. Trial pit terminated at 0.50m BGL due to the presence of cc backfilled upon completion.	oncrete and
an		· · ·	· ·		That pill stable. No groundwater encountered. Trial pit terminated at 0.50m BGL due to the presence of co backfilled upon completion.	oncrete and
an		· · · ·	· · ·		That pit stable. No groundwater encountered. Trial pit terminated at 0.50m BGL due to the presence of co backfilled upon completion.	oncrete and

Grou	nd Inv	vestigations l www.gii.ie	reland	Ltd	Site Avoca River Park, Arklow	Trial Pi Numbe
achine : 6 tonne excavator ethod : Trial Pit	Dimension 0.4m W	ons x 2.0m L	Ground	Level (mOD) 2.23	Client FT Squared	Job Numbe 9230-11-
	Location 722	n 2630.5 E 674999.5 N	Dates 23	3/07/2020	Project Contractor GII	<b>Sheet</b> 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
lan	. (m)		2.03 1.95 1.75 1.43	(0.20) (0.28) (0.20) (0.20) 0.48 (0.32) 0.80	MADE GROUND: Grey angular fine to coarse Gravel. MADE GROUND: Red Clay - fertilizer by product. MADE GROUND: Brown grey sub-rounded Cobbles. MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional sub-angular to sub-rounded cobbles. Complete at 0.80m Complete at 0.80m Remarks Trial pit stable. No groundwater encountered. Trial pit stable. No groundwater encountered. Trial pit stable. No groundwater encountered. Trial pit stable. No groundwater encountered. No groundwater of 0.80m BGL and backfilled upon determ maximum depth of the red Clay.	ining the
						J
· · · ·	· ·	· · · ·	· ·	 		

SI	Grou	nd Inv	vestigations www.gii.ie	Ltd	Site Avoca River Park, Arklow			
Machine : 6 tonne excavator Method : Trial Pit		Dimensions 0.4m W x 2.0m L		Ground	l Level (mOD) 2.57	Client FT Squared		Job Numbe 9230-11-
		Location 7220	607.5 E 674980.4 N	Dates 23	3/07/2020	Project Contractor GII		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	De	escription	Legend
.90 .90	B EN			2.17 2.02 1.67 0.97	(0.15) 0.55 (0.35) 0.90 0.90 (0.70)	MADE GROUND: Grey and MADE GROUND: Brown g MADE GROUND: Red slig sub-angular cobbles - fertil Soft to firm brown slightly s CLAY.	rey sub-angular Cobbles. htly sandy gravelly Clay with izer by product.	
Plan .		•			• •	Remarks		
						Trial pit stable. No groundwater encountered Trial pit terminated at 0.80m maximum depth of the red C	d. BGL and backfilled upon de lay.	etermining the
•				•	 	cale (approx)	Logged By	Figure No. 9230-11-19.TF

	nd Inv	vestigations Ire www.gii.ie	land Ltd		Site Avoca River Park, Arklow		Trial Pit Number TP51
Machine : 6 tonne excavator Method : Trial Pit	Dimensions           0.4m W x 2.3m L           Location           722633.4 E 674879.6 N		Ground Level (mOD)           2.20           Dates           23/07/2020		Client FT Squared Project Contractor GII		Job Numbe 9230-11- Sheet 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	De	escription	Legend
.00 В	Α	Water strike(1) at 1.80m.	1.70 1.20 1.00	(0.50) (0.50) (0.50) (0.50) (0.20) (0.20) (0.20) (0.20) (0.20) (1.30) (1.30) (1.30) (1.30)	and plastic fragments. MADE GROUND: Brown g metal and plastic fragment	ly sandy slightly gravelly organic	
lan				- - - - - - - - - - - - - - - - - - -	Remarks		
lan					Trial pit unstable. Collapsing Groundwater encountered a	at 2.0m BGL t 1.80m BGL. BGL and backfilled upon comple	tion
an <u>.</u> 		· · ·	· ·		Trial pit unstable. Collapsing Groundwater encountered a	at 2.0m BGL t 1.80m BGL. BGL and backfilled upon comple	tion
an		· · · ·	· · ·		Trial pit unstable. Collapsing Groundwater encountered a	at 2.0m BGL t 1.80m BGL. BGL and backfilled upon comple	tion
lan 	· · ·	· · · · · · · ·	· · ·		Trial pit unstable. Collapsing Groundwater encountered a	at 2.0m BGL t 1.80m BGL. BGL and backfilled upon comple	tion

Depth (m) Sample / Tests	Location		9230-11-
Depth (m) Sample / Tests	722774.6 E 674854.8 N Water Depth Field Records	Dates 23/07/2020 Project Contractor GII	Sheet 1/1
	Water Depth (m) Field Records	Level Depth (mOD) (Thickness) Description	Legend
70 EN	Water strike(1) at 0.70m.	2.13       (0.10)       MADE GROUND: Brown gravelly Silt with occasional sub-angular to sub-rounded cobbles and metal concrete and plastic fragments.         (0.40)       MADE GROUND: Brown gravelly fine to coarse sand with metal and plastic fragments.         1.73       0.50         (0.30)       MADE GROUND Black grey slightly sandy clayey sub-angular to sub-rounded fine to coarse Gravel.         1.43       0.80         Very soft to soft brown grey slightly sandy gravelly CLAY. Strong hydrocardon odour         (1.70)       Complete at 2.50m	
lan  	.     .     .       .     .     .       .     .     .       .     .     .       .     .     .	.       .       .       .         .       .       .       .         .       .       .       .         .       .       .       .         .       .       .       .         .       .       .       .         .       .       .       .         .       .       .       .         .       .       .       .	tion

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	ind In	vestigations Ir www.gii.ie	eland	Ltd	Site Avoca River Park, Arklow	Trial Pir Numbe
achine : 6 tonne excavator ethod : Trial Pit	Dimens 0.4m V		Ground	Level (mOD) 2.16	Client FT Squared	Job Numbe 9230-11-
	Locatio	on 22836.8 E 674944.1 N	Dates 23	3/07/2020	Project Contractor GII	<b>Sheet</b> 1/1
Depth (m) Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend
Plan		Water strike(1) at 1.10m.	2.07 1.91 1.61 1.51 0.86 0.66	(0.09) (0.16) 0.25 (0.30) 0.55 (0.10) 0.65 1.30 (0.20) 1.50 (0.20) 1.50 2.50 2.50	TARMACADAM         MADE GROUND: Blue grey angular fine to coarse Gravel.         MADE GROUND Black grey slightly sandy silty sub-angular         Cobbles         MADE GROUND: Brown grey slightly gravelly sub-angular         Cobbles         MADE GROUND: Brown slightly sandy slightly clayey         sub-angular fine to coarse Gravel with occasional         sub-angular cobbles.         MADE GROUND: Dark grey slightly sandy slightly gravelly         organic peaty Clay.         Soft dark grey organic CLAY         Complete at 2.50m	SMC S
					Trial pit sidewalls spalling at 1.50m BGL Groundwater encountered at 1.10m BGL. Trial pit terminated at 2.50m BGL and backfilled upon complet	on
	•					
· · · ·	• •			 		

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# APPENDIX 3 – Gas Monitoring Well Records



achine : 6 Tonne Exc ethod : Trial Pit	cavator	Casing	WW Diameter	- ,		Level (mOD) 2.31	Client FT Squared			ob umber 30-11-1
		Location 722		675128.8 N	Dates 24	/07/2020	Project Contractor GII			neet 1/1
Depth (m) Sample	e / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Inst
					2.22 1.81 1.31 1.11		TARMACADAM.         MADE GROUND: Red grey sandy Gravel with red bricks concrete and plastic fragments.         MADE GROUND: Red clay- fertilizer by product.         Very soft dark brown black organic silty CLAY.         Soft to firm red brown mottled grey slightly sandy CLAY.         Complete at 2.50m			
emarks ial pit stable.						<u> </u>		Scale (approx)	Lo	ogged y

Machine: 6 Method: Tr	Tonne excavator ial Pit	Casing	Diamete	vw.gii.ie <sup>r</sup>		Level (mOD) 2.31	Client FT Squared			n <b>ber</b> -11-1
		Locatio		675079.7 N	Dates 24	/07/2020	Project Contractor GII		She	eet 1/1
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	end	Water	Inst
				Water strike(1) at 0.80m.	2.24 1.81 1.41 1.11 0.41 0.31 -0.19	(0.43) (0.43) (0.40) (0.40) (0.30) (0.30) (0.30) (0.70) (0.70) (0.50)	TARMACADAM.       Image angular cobbles and boulders. Red bricks concrete and plastic fragments.         MADE GROUND: Grey brown clayey Gravel with large angular cobbles.       Image angular cobbles.         MADE GROUND: Red clay with dark brown clayey sandy Gravel with large angular cobbles and boulders.       Image angular cobbles and boulders.         MADE GROUND: Red clay with dark brown clayey sandy Gravel with large angular cobbles and boulders.       Image angular cobbles and boulders.         MADE GROUND: Red clay- fertilizer by product       Image angular cobbles and boulders.         Soft dark brown black slightly sandy silty CLAY       Image angular cobbles and boulders.         Soft brown mottled grey slightly sandy CLAY.       Image angular cobbles and complete at 2.50m			
Remarks ial pit spalli roundwater ial pit termi Omm slotted as valve in:	ing at 1.50m BGL. r encountered at 0.8 inated at 2.50m BGL d standpipe installed stalled.	0m BGL. _ and back I from 2.50	filled upc m to 0.5	on insertion of standp Om, plain pipe installe	ipe. ed from 0.5	i0m to ground	level with bentonite seal and raised cover.	5 ; re No		M

achine:6 <sup>-</sup> ethod:Tri	Tonne excavator al Pit	Casing Di	ameter			<b>Level (mOD)</b> 1.89	Client FT Squared		1	ob umbe 30-11-
		Location 7228	52.4 E (	675033.8 N	Dates 24	/07/2020	Project Contractor GII		Sł	<b>heet</b> 1/1
Depth (m)	Sample / Tests	Casing V Depth D (m)	Vater Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Inst
				Water strike(1) at 1.40m.	1.82 1.69 1.39 0.39 0.19 -0.61	(0.07) (0.13) (0.30) (0.30) (0.30) (1.00) (1.00) (0.20) (0.20) (0.80)	TARMACADAM         MADE GROUND: Blue grey sandy Gravel with red         brick and plastic fragments.         MADE GROUND: Red brown sandy clayey Gravel         with large angular cobbles red bricks plastic and concrete fragments.         MADE GROUND: Red clay - fertilizer by product.         Soft grey brown black sandy silty CLAY with rootlets.         Soft to firm dark grey slightly sandy CLAY.         Complete at 2.50m			
emarks al pit spalli oundwater al pit termi mm slotted is valve ins	ng at 1.50m BGL. encountered at 1.4 nated at 2.50m BGL I standpipe installed	0m BGL. and backfill from 2.50m	led upor	n insertion of standpi	ipe.	Om to ground	level with bentonite seal and raised cover.	Scale (approx)		ogge y NM

thine : 6 Tonne ex thod : Trial Pit	cavator	Casing		/w.gii.ie r		Level (mOD) 1.98	Client FT Squared		1	umbei
	-	Location		675045.3 N	Dates	/07/2020	Project Contractor Gll			30-11- neet 1/1
Depth (m) Samp	le / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Inst
				Water strike(1) at 0.40m.	1.89 1.78 1.68 1.58 0.98 0.48		TARMACADAM         MADE GROUND: Blue grey sandy angular fine to coarse Gravel with occasional sub-rounded cobbles.         MADE GROUND: Brown slightly sandy gravelly silt.         MADE GROUND: Brown grey slightly sandy gravelly clay.         MADE GROUND: Brown slightly sandy gravelly Clay with plastic and metal fragments.         Soft brown grey slightly gravelly CLAY.         Soft brown black organic CLAY with root fragments.         Complete at 2.50m			
						<u> </u>				
emarks al pit stable oundwater encount	ered at 0.40	m RCI						Scale (approx)	Lo By	oggeo y

Machine:6	Tonne excavator ial Pit	Casing	Diamete	r	Ground	Level (mOD) 2.32	Client FT Squared		Νι	ob umber 30-11- <i>1</i>
		Location		675001.5 N	Dates 24	/07/2020	Project Contractor Gll			heet 1/1
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Inst
				Water strike(1) at 0.40m.	0.02 -0.18	(0.50) 0.50 (1.80) 2.30 (0.20) 2.50	MADE GROUND: Grey brown gravelly sand with red brick plastic and metal fragments. MADE GROUND: Red clay - fertilizer by product. Soft orange brown mottled grey slightly sandy CLAY. Complete at 2.50m			
<b>Remarks</b> rial pit stabl o groundwa	ater encountered						level with bentonite seal and raised cover.	Scale (approx)	Lo By	oggeo y

Machine:6 <sup>-</sup>	Tonne excavator ial Pit	Casing	Diamete	r		Level (mOD) 2.41	Client FT Squared		N	ob umber 30-11-1
		Location		674939.2 N	Dates 24	/07/2020	Project Contractor Gll			heet 1/1
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Inst
				Water strike(1) at 1.00m.	2.34 2.14 2.06 1.41		TARMACADAM. MADE GROUND: Blue grey gravelly Sand fill with concrete red brick plastic and metal fragments. TARMACADAM. MADE GROUND: Grey brown sandy fine to coarse angular Gravel with large angular cobbles and boulders with plastic concrete and metal fragements. MADE GROUND: Black very soft silty Clay with plastic tree roots and metal fragments. Soft red brown grey mottled slightly sandy silty CLAY. Complete at 2.50m			
Remarks ial pit stable roundwater	encountered at 1.0	m BGL.					level with bentonite seal and raised cover.	Scale (approx)	Lc B	ogged y

achine:6 <sup>-</sup>	Tonne excavator ial Pit	Casing I		/w.gii.ie		Level (mOD) 2.13	Client FT Squared		Job Numb 9230-11
		Location 722		674899.1 N	Dates 24	/07/2020	Project Contractor GII		Sheet 1/1
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Nater Nater
						  (0.60) 	MADE GROUND: Grey brown clayey Gravel with large angular cobbles and boulders with wood concrete plastic and metal fragments.		
					1.53	- 0.60 	Very soft to soft grey brown slightly sandy slightly gravelly CLAY.		///////
					0.63		Very soft to soft grey brown slightly sandy CLAY.		
						(1.00)      			
					-0.37	2.50     	Complete at 2.50m		
marks						- - - - - - - -		, Scale	
al pit stable groundwa al pit termi nm slotteo s valve ins	ater encountered nated at 2.50m BGL d standpipe installed	. and back I from 2.50	filled upo Im to 0.50	on insertion of standp Dm, plain pipe installe	iipe. ed from 0.5	0m to ground	level with bentonite seal and raised cover.	Scale (approx) 1:25 Figure N 9230-1	NM

ethod: Trial Pit	e excavator t	Casing I	Diamete	r	Ground	<b>Leve</b> 2.08	l (mOD)	Client FT Squared		N	ob umbe 30-11-
		Location 722		674906.6 N	Dates 24	/07/2	020	Project Contractor			h <b>eet</b> 1/1
Depth (m) Sa	mple / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	D (Thie	epth (m) ckness)	Description	Legend	Water	Inst
				Water strike(1) at 0.50m.	2.01 1.78 1.58 1.28 0.88 0.68 -0.02 -0.42		(0.077) (0.23) (0.20) (0.30) (0.30) (0.40) 1.20 (0.20) 1.40 (0.70) 2.10 (0.40) 2.50	TARMACADAM MADE GROUND: Blue grey gravelly Sand. MADE GROUND: Red brown sandy Gravel with large angular cobbles and boulders. MADE GROUND: Grey large angular Cobbles and Boulders. MADE GROUND: Brown sandy Gravel - creosote odour noted. Firm brown grey organic CLAY. Soft grey brown organic rich slightly sandy silty CLAY. Soft red brown mottled grey slightly sandy CLAY.		⊻1	
temarks ial pit stable. roundwater enco ial pit terminated omm slotted stan	ountered at 0.50	)m BGI			1				Scale (approx)	Lo	oggeo y

**APPENDIX 4** – Laboratory Reports





Issue :

Element Materials Technology Unit 3 Deeside Point Zone 3 Deeside Industrial Park Deeside CH5 2UA P: +44 (0) 1244 833780 F: +44 (0) 1244 833781

W: www.element.com

Ground Investigations Ireland Catherinestown House Hazelhatch Road Newcastle Co. Dublin Ireland ac-MR Barry Sexton Attention : Date : 6th August, 2020 9230-11-19 Your reference : Our reference : Test Report 20/9984 Batch 1 Avoca River Park Location : Date samples received : 29th July, 2020 Status : Final report

Six samples were received for analysis on 29th July, 2020 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

1

Authorised By:

Phil Sommerton BSc Senior Project Manager

Please include all sections of this report if it is reproduced



Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/9984

#### Report : Solid

EMT Job No:	20/9984						 	 	_		
EMT Sample No.	1-3	4-6	7-9	10-12	13-15						
Sample ID	TP37	TP38	TP45	TP50	TP52						
Depth	0.70	1.00	0.70	0.90	0.70				Bloaco co	n attached n	otos for all
COC No / misc										e attached n ations and a	
Containers	VJT	VJT	VJT	VJT	VJT						
Sample Date		22/07/2020		23/07/2020							
Sample Type	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1				LOD/LOR	Units	Method
Date of Receipt	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020						No.
Antimony	91 <b>AA</b>	<sup>144</sup> AB	55 <sub>AA</sub>	10	7				<1	mg/kg	TM30/PM15
Arsenic <sup>#</sup>	2211.0 <sub>AB</sub>	3132.0 <sub>AC</sub>	1454.0 <sub>AB</sub>	139.9	30.8				<0.5	mg/kg	TM30/PM15
Barium #	61 3.2	25	25	55	184				<1	mg/kg	TM30/PM15 TM30/PM15
Cadmium <sup>#</sup> Chromium <sup>#</sup>	3.2 14.1	6.9 <0.5	5.2 22.6	1.0 82.3	84.7 <sub>AA</sub> 353.3 <sub>AA</sub>				<0.1 <0.5	mg/kg mg/kg	TM30/PM15
Copper <sup>#</sup>	5687 <sub>AD</sub>	7218 <sub>AD</sub>	3049 <sub>AC</sub>	395 <sub>AA</sub>	17440 <sub>AE</sub>				<1	mg/kg	TM30/PM15
Lead <sup>#</sup>	1590	1775	1754	285	479				<5	mg/kg	TM30/PM15
Mercury <sup>#</sup>	0.8	0.6	0.6	0.8	0.4				<0.1	mg/kg	TM30/PM15
Molybdenum #	83.1 <sub>AA</sub>	88.7 <sub>AA</sub>	55.1 <sub>AA</sub>	10.4	58.6 <sub>AA</sub>				<0.1	mg/kg	TM30/PM15
Nickel <sup>#</sup>	2.3	<0.7	16.8	20.1	46.5				<0.7	mg/kg	TM30/PM15
Selenium <sup>#</sup>	2	1	2	2	2				<1	mg/kg	TM30/PM15
Zinc <sup>#</sup>	3383 <sub>AA</sub>	5338 <sub>AA</sub>	2320	351	1287				<5	mg/kg	TM30/PM15
PAH MS											
Naphthalene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	0.18				<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.15	<0.05	<0.05	<0.05	<0.05				<0.05	mg/kg	TM4/PM8
Fluorene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Phenanthrene <sup>#</sup>	0.15	<0.03	<0.03	<0.03	0.13				<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Fluoranthene <sup>#</sup>	0.05	<0.03	<0.03	<0.03	0.12				<0.03	mg/kg	TM4/PM8
Pyrene #	0.04	<0.03	<0.03	<0.03	0.08				<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene <sup>#</sup> Chrysene <sup>#</sup>	<0.06 <0.02	<0.06 <0.02	<0.06 <0.02	<0.06 <0.02	<0.06 0.05				<0.06 <0.02	mg/kg	TM4/PM8 TM4/PM8
Benzo(bk)fluoranthene #	<0.02	<0.02	<0.02	<0.02	<0.03				<0.02	mg/kg mg/kg	TM4/PM8
Benzo(a)pyrene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene <sup>#</sup>	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	<0.04				<0.04	mg/kg	TM4/PM8
PAH 6 Total <sup>#</sup>	<0.22	<0.22	<0.22	<0.22	<0.22				<0.22	mg/kg	TM4/PM8
PAH 17 Total	<0.64	<0.64	<0.64	<0.64	<0.64				<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene Benzo(k)fluoranthene	<0.05 <0.02	<0.05 <0.02	<0.05 <0.02	<0.05 <0.02	<0.05 <0.02				<0.05 <0.02	mg/kg mg/kg	TM4/PM8 TM4/PM8
Benzo(j)fluoranthene	<1	<1	<1	<1	<1				<1	mg/kg	TM4/PM8
PAH Surrogate % Recovery	95	97	101	94	78				<0	%	TM4/PM8
Mineral Oil (C10-C40)	58	<30	<30	41	14049				<30	mg/kg	TM5/PM8/PM16
		l				L	 	L			



Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/9984

#### Report : Solid

EMT Job No:	20/9984					 	 	 -		
EMT Sample No.	1-3	4-6	7-9	10-12	13-15			]		
Sample ID	TP37	TP38	TP45	TP50	TP52					
Depth	0.70	1.00	0.70	0.90	0.70			Discourse		
COC No / misc									e attached r ations and a	
Containers	VIT	VJT	VJT	VIT	VIT					
	VJT			VJT	VJT					
Sample Date	21/07/2020	22/07/2020	22/07/2020	23/07/2020	23/07/2020					
Sample Type	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1			LOD/LOR	Units	Method
Date of Receipt	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020			LOBILOIT	ormo	No.
TPH CWG										
Aliphatics										
>C5-C6 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>			<0.1	mg/kg	TM36/PM12
>C6-C8 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>			<0.1	mg/kg	TM36/PM12
>C8-C10 >C10-C12 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>			<0.1	mg/kg	TM36/PM12 TM5/PM8/PM16
>C10-C12" >C12-C16 <sup>#</sup>	<0.2 <4	<0.2 <4	<0.2 <4	<0.2 <4	>>18.2			<0.2 <4	mg/kg mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
>C12-C16	12	<7	<7	<7	>>311			<7	mg/kg	TM5/PM8/PM16
>C21-C35#	46	<7	<7	41	>>12125			<7	mg/kg	TM5/PM8/PM16
>C35-C40	<7	<7	<7	<7	>>1570			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40	58	<26	<26	41	14049			<26	mg/kg	TM5/TM38/PM8/PM12/PM16
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>			<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	>>2851			<10	mg/kg	TM5/PM8/PM16
>C25-C35	<10	<10	<10	<10	>>9629			<10	mg/kg	TM5/PM8/PM16
Aromatics					01/					
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>			<0.1	mg/kg	TM36/PM12
>EC7-EC8 <sup>#</sup>	<0.1	<0.1	<0.1	<0.1 <0.1	<0.1 <sup>SV</sup>			<0.1	mg/kg	TM36/PM12 TM36/PM12
>EC8-EC10 <sup>#</sup> >EC10-EC12 <sup>#</sup>	<0.1 <0.2	<0.1 <0.2	<0.1 <0.2	<0.1	<0.1 15.8			<0.1 <0.2	mg/kg mg/kg	TM5/PM8/PM16
>EC12-EC16 <sup>#</sup>	<4	<4	<4	<4	22			<4	mg/kg	TM5/PM8/PM16
>EC16-EC21#	<7	<7	<7	<7	90			<7	mg/kg	TM5/PM8/PM16
>EC21-EC35#	<7	<7	<7	<7	3217			<7	mg/kg	TM5/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	566			<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	3911			<26	mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-40)	58	<52	<52	<52	17960			<52	mg/kg	TM5/TM38/PM8/PM12/PM16
>EC6-EC10#	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>			<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	671			<10	mg/kg	TM5/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	2674			<10	mg/kg	TM5/PM8/PM16
MTBE #	<5	<5	<5	<5	<5 <sup>\$V</sup>			<5	ug/kg	TM36/PM12
Benzene <sup>#</sup>	<5	<5	<5	<5	<٥ 9 <sup>sv</sup>			<5	ug/kg	TM36/PM12
Toluene <sup>#</sup>	<5	<5	<5	<5	60 <sup>sv</sup>			<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	<5 <sup>SV</sup>			<5	ug/kg	TM36/PM12
m/p-Xylene <sup>#</sup>	<5	<5	<5	<5	14 <sup>SV</sup>			<5	ug/kg	TM36/PM12
o-Xylene <sup>#</sup>	<5	<5	<5	<5	9 <sup>sv</sup>			<5	ug/kg	TM36/PM12
PCB 28 #	<5	<5	<5	<5	<5			<5	ug/kg	TM17/PM8
PCB 52#	<5	<5	<5	<5	35			<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5	<5	<5	48			<5	ug/kg	TM17/PM8
PCB 118 <sup>#</sup> PCB 138 <sup>#</sup>	<5 <5	<5 <5	<5 <5	<5 <5	57 65			<5 <5	ug/kg ug/kg	TM17/PM8 TM17/PM8
PCB 138	<5	<5	<5	<5	45			<5	ug/kg	TM17/PM8
PCB 180 <sup>#</sup>	<5	<5	<5	<5	<5			<5	ug/kg	TM17/PM8
Total 7 PCBs <sup>#</sup>	<35	<35	<35	<35	250			<35	ug/kg	TM17/PM8

Client Name:
Reference:
Location:
Contact:
EMT Job No.

Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/9984

#### Report : Solid

EMT Job No:	20/9984									_		
EMT Sample No.	1-3	4-6	7-9	10-12	13-15							
Sample ID	TP37	TP38	TP45	TP50	TP52							
Depth	0.70	1.00	0.70	0.90	0.70					Please se	e attached n	otes for all
COC No / misc											ations and a	
Containers	VJT	VJT	VJT	VJT	VJT							
Sample Date												
Sample Type		Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1							
Date of Receipt										LOD/LOR	Units	Method No.
Natural Moisture Content	32.5	50.2	35.5	16.2	18.2					<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)		33.4	26.2	13.9	15.4					<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20
Chromium III	14.1	<0.5	22.6	82.3	353.3					<0.5	mg/kg	NONE/NONE
Total Organic Carbon <sup>#</sup>	0.36	0.06	0.11	0.32	5.16					<0.02	%	TM21/PM24
рН#	6.99	7.46	6.74	8.20	9.17					<0.01	pH units	TM73/PM11
Mass of raw test portion	0.1176	0.1361	0.1273	0.1013	0.1176						kg	NONE/PM17
Mass of dried test portion	0.09	0.09	0.09	0.09	0.09						kg	NONE/PM17
											0	
		1		1	1	1	1	l	l	L		<u> </u>

Client Name: Reference: Location: Contact: EMT Job No: Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/9984

#### Report : Liquid

	20/9904	 	 	 $H=H_2 3 O_4, 2$	 	-5			
EMT Sample No.	16-17								
Sample ID	TP52								
Depth	0.70-1.50						Disect (	o attack = 1	notos for -"
COC No / misc								e attached r ations and a	
Containers	0						l		
	G						1		
Sample Date	23/07/2020						1		
Sample Type	Liquid								
Batch Number	1						LOD/LOR	Units	Method
Date of Receipt	29/07/2020						LOD/LOR	Units	No.
Dissolved Arsenic	2.6						<2.5	ug/l	TM30/PM14
Dissolved Boron	111						<12	ug/l	TM30/PM14
Dissolved Cadmium	<0.5						<0.5	ug/l	TM30/PM14
Dissolved Calcium	12.9						<0.2	mg/l	TM30/PM14
Total Dissolved Chromium	<1.5						<1.5	ug/l	TM30/PM14
Dissolved Copper	2600						<7	ug/l	TM30/PM14
Dissolved Lead	<5						<5	ug/l	TM30/PM14
Dissolved Manganese	28						<2	ug/l	TM30/PM14
Dissolved Mercury	<1						<1	ug/l	TM30/PM14
Dissolved Nickel	<2						<2	ug/l	TM30/PM14
Dissolved Phosphorus	28						<5	ug/l	TM30/PM14
Dissolved Potassium	31.2						<0.1	mg/l	TM30/PM14
Dissolved Zinc	6						<3	ug/l	TM30/PM14 TM30/PM14
Total Dissolved Sulphur as S	18440						<10	ug/l	110130/P10114
PAH MS									
Naphthalene	<1.0 <sub>AB</sub>						<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.130 <sub>AB</sub>						<0.013	ug/l	TM4/PM30
Acenaphthene	0.169 <sub>AB</sub>						<0.013	ug/l	TM4/PM30
Fluorene	<0.140 <sub>AB</sub>						<0.014	ug/l	TM4/PM30
Phenanthrene	0.149 <sub>AB</sub>						<0.011	ug/l	TM4/PM30
Anthracene	<0.130 <sub>AB</sub>						<0.013	ug/l	TM4/PM30
Fluoranthene	<0.120 <sub>AB</sub>						<0.012	ug/l	TM4/PM30
Pyrene	<0.130 <sub>AB</sub>						<0.013	ug/l	TM4/PM30
Benzo(a)anthracene	<0.150 <sub>AB</sub>						<0.015	ug/l	TM4/PM30
Chrysene	<0.110 <sub>AB</sub>						<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene	<0.180 <sub>AB</sub>						<0.018	ug/l	TM4/PM30
Benzo(a)pyrene	<0.160 <sub>AB</sub>						<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.110 <sub>AB</sub>						<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.10 <sub>AB</sub>						<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.110 <sub>AB</sub>						<0.011	ug/l	TM4/PM30
PAH 16 Total	<1.950 <sub>AB</sub>						<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.10 <sub>AB</sub>						<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.10 <sub>AB</sub>						<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	55 <sub>AB</sub>						<0	%	TM4/PM30
Methyl Tertiary Butyl Ether	<0.1						<0.1	ug/l	TM15/PM10
Benzene	1.8						<0.1	ug/l	TM15/PM10
Toluene	89						<5	ug/l	TM15/PM10
Ethylbenzene	<1						<1	ug/l	TM15/PM10
m/p-Xylene	<2						<2	ug/l	TM15/PM10
o-Xylene	<1						<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	96						<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	98						<0	%	TM15/PM10

Client Name:									
Reference:									
Location:									
Contact:									
EMT Job No:									

Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/9984

#### Report : Liquid

EWIT JOD NO:	20/9984					n=n <sub>2</sub> 00 <sub>4</sub> , 2	L=211/40, 14=	NaOH, HN=	11103	_		
EMT Sample No.	16-17											
Sample ID	TP52											
Depth	0.70-1.50										e attached n	
COC No / misc										abbrevia	ations and a	cronyms
Containers	G											
Sample Date	23/07/2020											
-												
Sample Type	Liquid											
Batch Number	1									LOD/LOR	Units	Method
Date of Receipt	29/07/2020											No.
Pesticides												
Organochlorine Pesticides												
Aldrin	<0.01									<0.01	ug/l	TM149/PM30
Alpha-HCH (BHC)	<0.01									<0.01	ug/l	TM149/PM30
Beta-HCH (BHC)	<0.01									<0.01	ug/l	TM149/PM30
Delta-HCH (BHC)	<0.01									<0.01	ug/l	TM149/PM30
Dieldrin	<0.01									<0.01	ug/l	TM149/PM30
Endosulphan I	<0.01									<0.01	ug/l	TM149/PM30
Endosulphan II	<0.01									<0.01	ug/l	TM149/PM30
Endosulphan sulphate	<0.01									<0.01	ug/l	TM149/PM30
	<0.01									<0.01	ug/l	TM149/PM30
Gamma-HCH (BHC)	<0.01									<0.01	ug/l	TM149/PM30
Heptachlor	<0.01									<0.01	ug/l	TM149/PM30 TM149/PM30
Heptachlor Epoxide	<0.01									<0.01	ug/l	TM149/PM30 TM149/PM30
o,p'-Methoxychlor p,p'-DDE	<0.01 <0.01									<0.01 <0.01	ug/l	TM149/PM30
p,p'-DDL	<0.01									<0.01	ug/l ug/l	TM149/PM30
p,p'-DD1	<0.01									<0.01	ug/l	TM149/PM30
p,p'-TDE	<0.01									<0.01	ug/l	TM149/PM30
Organophosphorus Pesticides	10.01									10101	ug,	
Azinphos methyl	<0.01									<0.01	ug/l	TM149/PM30
Diazinon	<0.01									<0.01	ug/l	TM149/PM30
Dichlorvos	<0.01									<0.01	ug/l	TM149/PM30
Disulfoton	<0.01									<0.01	ug/l	TM149/PM30
Ethion	<0.01									<0.01	ug/l	TM149/PM30
Ethyl Parathion (Parathion)	<0.01									<0.01	ug/l	TM149/PM30
Fenitrothion	<0.01									<0.01	ug/l	TM149/PM30
Malathion	<0.01									<0.01	ug/l	TM149/PM30
Methyl Parathion	<0.01									<0.01	ug/l	TM149/PM30
Mevinphos	<0.01									<0.01	ug/l	TM149/PM30
TPH CWG												
Aliphatics												
>C5-C6	<10									<10	ug/l	TM36/PM12
>C6-C8	26									<10	ug/l	TM36/PM12
>C8-C10	<10									<10	ug/l	TM36/PM12
>C10-C12	<5									<5	ug/l	TM5/PM16/PM30 TM5/PM16/PM30
>C12-C16	80									<10	ug/l	TM5/PM16/PM30 TM5/PM16/PM30
>C16-C21 >C21-C35	1550 43850									<10 <10	ug/l	TM5/PM16/PM30 TM5/PM16/PM30
>C21-C35 Total aliphatics C5-35	43850									<10	ug/l ug/l	TM5/FINT6/FW30
	.0000									~10	ugn	
					l							
		1		1		1						1

Client Name:									
Reference:									
Location:									
Contact:									
EMT Job No:									

Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/9984

#### Report : Liquid

EMI JOB NO:	20/9984			$H=H_2SO_4, A$	z = z n A c, $N =$	111103			
EMT Sample No.	16-17								
Sample ID	TP52								
Depth	0.70-1.50						Discourse		
COC No / misc								e attached n ations and a	
Containers	G								
Sample Date									
Sample Type	Liquid								
Batch Number	1						LOD/LOR	Units	Method No.
Date of Receipt	29/07/2020								
TPH CWG									
Aromatics >C5-EC7	<10						<10	ug/l	TM36/PM12
>EC7-EC8	94						<10	ug/l	TM36/PM12
>EC8-EC10	<10						<10	ug/l	TM36/PM12
>EC10-EC12	<5						<5	ug/l	TM5/PM16/PM30
>EC12-EC16	100						<10	ug/l	TM5/PM16/PM30
>EC16-EC21	540						<10	ug/l	TM5/PM16/PM30
>EC21-EC35	15270						<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35	16004						<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35)	61510						<10	ug/l	TM5/TM36/PM12/PM16/PM30
Phenol	<0.01						<0.01	mg/l	TM26/PM0
Sulphate as SO4	54.7						<0.5	ma/l	TM38/PM0
Chloride	13.5						<0.3	mg/l mg/l	TM38/PM0
Nitrate as NO3	42.6						<0.2	mg/l	TM38/PM0
Nitrite as NO2	2.90						<0.02	mg/l	TM38/PM0
								-	
Total Cyanide	<0.01						<0.01	mg/l	TM89/PM0
Hexavalent Chromium	0.020						<0.006	mg/l	TM38/PM0
Total Ammonia as N	73.11						<0.03	mg/l	TM38/PM0
Flastrian Candusticity @250	024								TM70/DM0
Electrical Conductivity @25C pH	824 9.01						<2 <0.01	uS/cm pH units	TM76/PM0 TM73/PM0
pri	9.01						<0.01	pri units	TIVI7 3/FIVIO



Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/9984

#### Report : CEN 10:1 1 Batch

EMI JOD NO:	20/9984										
EMT Sample No.	1-3	4-6	7-9	10-12	13-15						
Sample ID	TP37	TP38	TP45	TP50	TP52						
Depth	0.70	1.00	0.70	0.90	0.70				Diagon on	e attached n	otoo for all
COC No / misc										ations and a	
Containers	VJT	VJT	VJT	VJT	VJT						
Sample Date	21/07/2020	22/07/2020	22/07/2020	23/07/2020	23/07/2020						
Sample Type	Soil	Soil	Soil	Soil	Soil						
Batch Number					1						
	1	1	1	1					LOD/LOR	Units	Method No.
Date of Receipt											
Dissolved Antimony <sup>#</sup>	<0.002	<0.002	0.002	<0.002	<0.002				<0.002	mg/l	TM30/PM17
Dissolved Antimony (A10) #	<0.02	< 0.02	0.02	<0.02	<0.02				<0.02	mg/kg	TM30/PM17
Dissolved Arsenic <sup>#</sup>	0.1819	1.2680	0.5220	0.0816	<0.0025				<0.0025	mg/l	TM30/PM17
Dissolved Arsenic (A10)#	1.818	12.679	5.223	0.816	<0.025				<0.025	mg/kg	TM30/PM17 TM30/PM17
Dissolved Barium #	<0.003	< 0.003	< 0.003	0.006	0.021				<0.003	mg/l	
Dissolved Barium (A10) <sup>#</sup> Dissolved Cadmium <sup>#</sup>	<0.03 <0.0005	<0.03 <0.0005	<0.03 0.0009	0.06	0.21				<0.03 <0.0005	mg/kg mg/l	TM30/PM17 TM30/PM17
Dissolved Cadmium Dissolved Cadmium (A10) #	<0.0005	<0.0005	0.009	<0.005	<0.0005				< 0.005	mg/kg	TM30/PM17
Dissolved Chromium #	<0.003	<0.0015	<0.003	<0.0015	0.0359				<0.003	mg/l	TM30/PM17
Dissolved Chromium (A10) <sup>#</sup>	<0.015	<0.015	<0.015	<0.015	0.359				<0.015	mg/kg	TM30/PM17
Dissolved Copper <sup>#</sup>	0.047	0.021	0.020	< 0.007	0.254				<0.007	mg/l	TM30/PM17
Dissolved Copper (A10) <sup>#</sup>	0.47	0.21	0.20	<0.07	2.54				<0.07	mg/kg	TM30/PM17
Dissolved Lead #	0.012	< 0.005	0.016	< 0.005	<0.005				<0.005	mg/l	TM30/PM17
Dissolved Lead (A10)#	0.12	<0.05	0.16	<0.05	<0.05				<0.05	mg/kg	TM30/PM17
Dissolved Molybdenum #	0.104	0.230	0.082	0.013	0.107				<0.002	mg/l	TM30/PM17
Dissolved Molybdenum (A10) #	1.04	2.30	0.82	0.13	1.07				<0.02	mg/kg	TM30/PM17
Dissolved Nickel <sup>#</sup>	<0.002	<0.002	0.003	<0.002	<0.002				<0.002	mg/l	TM30/PM17
Dissolved Nickel (A10) #	<0.02	<0.02	0.03	<0.02	<0.02				<0.02	mg/kg	TM30/PM17
Dissolved Selenium #	<0.003	0.003	<0.003	0.003	<0.003				<0.003	mg/l	TM30/PM17
Dissolved Selenium (A10) #	<0.03	<0.03	<0.03	<0.03	<0.03				<0.03	mg/kg	TM30/PM17
Dissolved Zinc <sup>#</sup>	0.061	0.127	0.254	0.003	0.006				<0.003	mg/l	TM30/PM17
Dissolved Zinc (A10) #	0.61	1.27	2.54	<0.03	0.06				<0.03	mg/kg	TM30/PM17
Mercury Dissolved by CVAF #	0.00001	<0.00001	<0.00001	0.00003	<0.00001				<0.00001	mg/l	TM61/PM0
Mercury Dissolved by CVAF <sup>#</sup>	<0.0001	<0.0001	<0.0001	0.0003	<0.0001				<0.0001	mg/kg	TM61/PM0
Phenol	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	mg/l	TM26/PM0
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM26/PM0
Fluoride	0.4	<0.3	<0.3	<0.3	<0.3				<0.3	mg/l	TM173/PM0
Fluoride	4	<3	<3	<3	<3				<3	mg/kg	TM173/PM0
Sulphate as SO4 <sup>#</sup>	27.7	53.5	52.6	80.6	19.0				<0.5	mg/l	TM38/PM0
Sulphate as SO4	27.7	53.5	52.6	80.6	19.0				<0.5	mg/i mg/kg	TM38/PM0 TM38/PM0
Chloride <sup>#</sup>	0.6	2.3	1.3	<0.3	1.0				<0.3	mg/l	TM38/PM0
Chloride #	6	23	13	<3	10				<3	mg/kg	TM38/PM0
Dissolved Organic Carbon	3	2	2	2	6				<2	mg/l	TM60/PM0
Dissolved Organic Carbon	30	<20	20	<20	60				<20	mg/kg	TM60/PM0
рН	6.58	7.40	6.89	7.80	9.74				<0.01	pH units	TM73/PM0
Total Dissolved Solids <sup>#</sup>	85	121	133	162	78				<35	mg/l	TM20/PM0
Total Dissolved Solids #	850	1210	1331	1619	780				<350	mg/kg	TM20/PM0

Element Material						Report : EN12457_2									
Client Name: Reference: Location: Contact: EMT Job No:	Ground In 9230-11-1 Avoca Riv Barry Sex 20/9984	er Park	ns Ireland			 Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub									
EMT Sample No.	1-3	4-6	7-9	10-12	13-15										
Sample ID	TP37	TP38	TP45	TP50	TP52										
Depth	0.70	1.00	0.70	0.90	0.70									e attached n	
COC No / misc													abbrevi	ations and a	cronyms
Containers	VJT	VJT	VJT	VJT	VJT										
Sample Date	21/07/2020	22/07/2020	22/07/2020	23/07/2020	23/07/2020										
Sample Type	Soil	Soil	Soil	Soil	Soil										1
Batch Number	1	1	1	1	1					Inert	Stable Non- reactive	Hazardous	LOD LOR	Units	Method No.
Date of Receipt	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020						Todotivo				110.
Solid Waste Analysis Total Organic Carbon <sup>#</sup>	0.36	0.06	0.11	0.32	5.16					3	5	6	<0.02	%	TM21/PM2
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	0.092 <sup>sv</sup>					6	-	-	<0.025	mg/kg	TM36/PM1
Sum of 7 PCBs	<0.035	<0.035	<0.035	<0.035	0.250					1	-	-	<0.035	mg/kg	TM17/PM
Mineral Oil	58	<30	<30	41	14049					500	-	-	<30	mg/kg	TM5/PM8/PM1
PAH Sum of 6	<0.22	<0.22	<0.22	<0.22	<0.22					-	-	-	<0.22	mg/kg	TM4/PM8
PAH Sum of 17	<0.64	<0.64	<0.64	<0.64	<0.64					100	-	-	<0.64	mg/kg	TM4/PM8
CEN 10:1 Leachate															
Arsenic "	1.818	12.679	5.223	0.816	<0.025					0.5	2	25	<0.025	mg/kg	TM30/PM1
Barium #	<0.03	<0.03	<0.03	0.06	0.21					20	100	300	<0.03	mg/kg	TM30/PM1
Cadmium "	<0.005	<0.005	0.009	<0.005	<0.005					0.04	1	5	<0.005	mg/kg	TM30/PM1
Chromium #	<0.015	<0.015	<0.015	<0.015	0.359					0.5	10	70	<0.015	mg/kg	TM30/PM1
Copper #	0.47 <0.0001	0.21	0.20	<0.07	2.54 <0.0001					2 0.01	50 0.2	100 2	<0.07 <0.0001	mg/kg	TM30/PM1 TM61/PM
Mercury # Molybdenum #	1.04	2.30	0.82	0.0003	1.07					0.01	10	30	<0.001	mg/kg mg/kg	TM30/PM1
Nickel <sup>#</sup>	<0.02	<0.02	0.03	<0.02	<0.02					0.4	10	40	<0.02	mg/kg	TM30/PM1
Lead "	0.12	<0.05	0.16	<0.05	<0.05					0.5	10	50	<0.05	mg/kg	TM30/PM1
Antimony #	<0.02	<0.02	0.02	<0.02	<0.02					0.06	0.7	5	<0.02	mg/kg	TM30/PM1
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03					0.1	0.5	7	<0.03	mg/kg	TM30/PM1
Zinc"	0.61	1.27	2.54	<0.03	0.06					4	50	200	<0.03	mg/kg	TM30/PM1
Total Dissolved Solids <sup>#</sup> Dissolved Organic Carbon	850 30	1210 <20	1331 20	1619 <20	780 60					4000 500	60000 800	100000 1000	<350 <20	mg/kg mg/kg	TM20/PM TM60/PM
Dissolved organic oarborr	50	~20	20	~20	00					500	000	1000	~20	ilig/kg	1100/110
Mass of raw test portion	0.1176	0.1361	0.1273	0.1013	0.1176					-	-	-		kg	NONE/PM1
Dry Matter Content Ratio	76.4	66.2	70.6	88.7	76.7					-	-	-	<0.1	%	NONE/PM
Leachant Volume	0.872	0.854	0.863	0.888	0.873					-	-	-		I	NONE/PM1
Eluate Volume	0.75	0.75	0.8	0.78	0.75					-	-	-		I	NONE/PM1
рН "	6.99	7.46	6.74	8.20	9.17					-	-	-	<0.01	pH units	TM73/PM1
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1					1	-	-	<0.1	mg/kg	TM26/PM
Fluoride	4	<3	<3	<3	<3					-	-	-	<3	mg/kg	TM173/PM
Sulphate as SO4 #	277	535	526	806	190					1000	20000	50000	<5	mg/kg	TM38/PM
Chloride #	6	23	13	<3	10					800	15000	25000	<3	mg/kg	TM38/PM
											÷				

Element Material		lology									
Client Name:	Ground In	vestigatior	ns Ireland			VOC Rep	ort :	Liquid			
Reference:	9230-11-1	-									
Location:	Avoca Riv	er Park									
Contact:	Barry Sext	ton									
EMT Job No:	20/9984										
EMT Sample No.	16-17								1		
									Ì		
Sample ID	TP52										
Depth	0.70-1.50										notes for all
COC No / misc									abbrevia	ations and a	cronyms
Containers	G										
Sample Date Sample Type	23/07/2020 Liquid										
Batch Number	1										Method
Date of Receipt	29/07/2020								LOD/LOR	Units	No.
VOC MS											
Dichlorodifluoromethane	<2								<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether	<0.1								<0.1	ug/l	TM15/PM10
Chloromethane	<3								<3	ug/l	TM15/PM10
Vinyl Chloride Bromomethane	0.1								<0.1 <1	ug/l ug/l	TM15/PM10 TM15/PM10
Chloroethane	<1								<1	ug/l	TM15/PM10
Trichlorofluoromethane	<3								<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE)	<3								<3	ug/l	TM15/PM10
Dichloromethane (DCM)	<5								<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene	<3								<3	ug/l	TM15/PM10
1,1-Dichloroethane	<3								<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene	<3								<3	ug/l	TM15/PM10
2,2-Dichloropropane Bromochloromethane	<1 <2								<1 <2	ug/l ug/l	TM15/PM10 TM15/PM10
Chloroform	<2								<2	ug/l	TM15/PM10
1,1,1-Trichloroethane	<2								<2	ug/l	TM15/PM10
1,1-Dichloropropene	<3								<3	ug/l	TM15/PM10
Carbon tetrachloride	<2								<2	ug/l	TM15/PM10
1,2-Dichloroethane	<2								<2	ug/l	TM15/PM10
Benzene	1.8								<0.5	ug/l	TM15/PM10
Trichloroethene (TCE)	<3								<3	ug/l	TM15/PM10
1,2-Dichloropropane	<2								<2	ug/l	TM15/PM10
Dibromomethane Bromodichloromethane	<3 <2								<3 <2	ug/l ug/l	TM15/PM10 TM15/PM10
cis-1-3-Dichloropropene	<2								<2	ug/l	TM15/PM10
Toluene	89								<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2								<2	ug/l	TM15/PM10
1,1,2-Trichloroethane	<2								<2	ug/l	TM15/PM10
Tetrachloroethene (PCE)	<3								<3	ug/l	TM15/PM10
1,3-Dichloropropane	<2								<2	ug/l	TM15/PM10
Dibromochloromethane	<2								<2	ug/l	TM15/PM10 TM15/PM10
1,2-Dibromoethane Chlorobenzene	<2 <2								<2 <2	ug/l ug/l	TM15/PM10 TM15/PM10
1,1,1,2-Tetrachloroethane	<2								<2	ug/l	TM15/PM10
Ethylbenzene	<1								<1	ug/l	TM15/PM10
m/p-Xylene	<2								<2	ug/l	TM15/PM10
o-Xylene	<1								<1	ug/l	TM15/PM10
Styrene	<2								<2	ug/l	TM15/PM10
Bromoform	<2								<2	ug/l	TM15/PM10
Isopropylbenzene 1,1,2,2-Tetrachloroethane	<3 <4								<3 <4	ug/l	TM15/PM10 TM15/PM10
1,1,2,2-Tetrachioroethane Bromobenzene	<4 <2								<4 <2	ug/l ug/l	TM15/PM10 TM15/PM10
1,2,3-Trichloropropane	<2 <3								<2 <3	ug/l	TM15/PM10
Propylbenzene	<3								<3	ug/l	TM15/PM10
2-Chlorotoluene	<3								<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene	<3								<3	ug/l	TM15/PM10
4-Chlorotoluene	<3								<3	ug/l	TM15/PM10
tert-Butylbenzene	<3								<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene	<3								<3	ug/l	TM15/PM10
sec-Butylbenzene 4-Isopropyltoluene	<3 <3								<3 <3	ug/l ug/l	TM15/PM10 TM15/PM10
4-isopropylioluene 1,3-Dichlorobenzene	<3								<3 <3	ug/l	TM15/PM10
1,4-Dichlorobenzene	<3								<3	ug/l	TM15/PM10
n-Butylbenzene	<3								<3	ug/l	TM15/PM10
1,2-Dichlorobenzene	<3								<3	ug/l	TM15/PM1
1,2-Dibromo-3-chloropropane	<2								<2	ug/l	TM15/PM1
1,2,4-Trichlorobenzene	<3								<3	ug/l	TM15/PM1
Hexachlorobutadiene	<3								<3	ug/l	TM15/PM1
Naphthalene	<2								<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3 96								<3 <0	ug/l %	TM15/PM10 TM15/PM10
Surrogate Recovery Toluene D8 Surrogate Recovery 4-Bromofluorobenzene	96								<0 <0	%	TM15/PM1 TM15/PM1

EPH Interpretation Report	EPH In	terpretation	Report
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Matrix		<b>•</b> •• •	
MOtriv		Solid	
	-	JUNU	
		•••••	

Client Name:	Ground Investigations Ireland
Reference:	9230-11-19
Location:	Avoca River Park
Contact:	Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	EPH Interpretation
20/9984	1	TP37	0.70	1-3	No interpretation possible
20/9984	1	TP38	1.00	4-6	No interpretation possible
20/9984	1	TP45	0.70	7-9	No interpretation possible
20/9984	1	TP50	0.90	10-12	No interpretation possible
20/9984	1	TP52	0.70	13-15	Lubricating oil & Dissolved phase compounds

Client Name:	Ground Investigations Ireland
Reference:	19/11/9230
Location:	Avoca River Park
Contact:	Barry Sexton

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/9984	1	TP37	0.70	2	31/07/2020	General Description (Bulk Analysis)	soil.stones
					31/07/2020	Asbestos Fibres	NAD
					31/07/2020	Asbestos ACM	NAD
					31/07/2020	Asbestos Type	NAD
					31/07/2020	Asbestos Level Screen	NAD
20/9984	1	TP38	1.00	5	31/07/2020	General Description (Bulk Analysis)	soil.stones
					31/07/2020	Asbestos Fibres	NAD
					31/07/2020	Asbestos ACM	NAD
					31/07/2020	Asbestos Type	NAD
					31/07/2020	Asbestos Level Screen	NAD
20/9984	1	TP45	0.70	8	31/07/2020	General Description (Bulk Analysis)	soil.stones
					31/07/2020	Asbestos Fibres	NAD
					31/07/2020	Asbestos ACM	NAD
					31/07/2020	Asbestos Type	NAD
					31/07/2020	Asbestos Level Screen	NAD
20/9984	1	TP50	0.90	11	31/07/2020	General Description (Bulk Analysis)	soil.stones
					31/07/2020	Asbestos Fibres	NAD
					31/07/2020	Asbestos ACM	NAD
					31/07/2020	Asbestos Type	NAD
					31/07/2020	Asbestos Level Screen	NAD
20/9984	1	TP52	0.70	14	31/07/2020	General Description (Bulk Analysis)	soil.stones
					31/07/2020	Asbestos Fibres	NAD
					31/07/2020	Asbestos ACM	NAD
					31/07/2020	Asbestos Type	NAD
					31/07/2020	Asbestos Level Screen	NAD

Client Name:Ground Investigations IrelandReference:9230-11-19Location:Avoca River ParkContact:Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
					No deviating sample report results for job 20/9984	

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

# NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

**EMT Job No.:** 20/9984

#### SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCI (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

#### WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

#### **DEVIATING SAMPLES**

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

#### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

#### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

#### BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

#### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

### REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

### **Measurement Uncertainty**

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

# ABBREVIATIONS and ACRONYMS USED

#       ISO17025 (UKAS Ref No. 4225) accredited - UK.         SA       ISO17025 (SANAS Ref No. T0729) accredited - South Africa         B       Indicates analyte found in associated method blank.         DR       Dilution required.         M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect         NFD       No Fibres Detected <th></th> <th></th>		
B       Indicates analyte found in associated method blank.         DR       Dilution required.         M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
DR       Dilution required.         M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	В	Indicates analyte found in associated method blank.
NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	DR	Dilution required.
NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	М	MCERTS accredited.
ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	NA	Not applicable
NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	NAD	No Asbestos Detected.
SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	ND	None Detected (usually refers to VOC and/SVOC TICs).
SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	NDP	No Determination Possible
W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	SS	Calibrated against a single substance
+       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
>>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	W	Results expressed on as received basis.
>>       higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
CO     Suspected carry over       LOD/LOR     Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS       ME     Matrix Effect	*	Analysis subcontracted to an Element Materials Technology approved laboratory.
LOD/LOR     Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS       ME     Matrix Effect	AD	Samples are dried at 35°C ±5°C
ME Matrix Effect	со	Suspected carry over
	LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
NFD No Fibres Detected	ME	Matrix Effect
	NFD	No Fibres Detected
BS AQC Sample	BS	AQC Sample
LB Blank Sample	LB	Blank Sample
N Client Sample	N	Client Sample
TB Trip Blank Sample	ТВ	Trip Blank Sample
OC Outside Calibration Range	OC	Outside Calibration Range
AA x5 Dilution	AA	x5 Dilution

Please include all sections of this report if it is reproduced All solid results are expressed on a dry weight basis unless stated otherwise.

AB	x10 Dilution
AC	x20 Dilution
AD	x50 Dilution
AE	x100 Dilution

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details				
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co- elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE re	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co- elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE re	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co- elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE re	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM61	Determination of Mercury by Cold Vapour Atomic Fluorescence - WATERS: Modified USEPA Method 245.7, Rev 2, Feb 2005. SOILS: Modified USEPA Method 7471B, Rev.2, Feb 2007	PM0	No preparation is required.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377- 3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.				

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377- 3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	Yes
ТМ73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377- 3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.				
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				
TM149	Determination of Pesticides by Large Volume Injection on GC Triple Quad MS, based upon USEPA method 8270D v5:2014	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.			AR	
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	



Issue :

Element Materials Technology Unit 3 Deeside Point Zone 3 Deeside Industrial Park Deeside CH5 2UA P: +44 (0) 1244 833780 F: +44 (0) 1244 833781

W: www.element.com

Ground Investigations Ireland Catherinestown House Hazelhatch Road Newcastle Co. Dublin Ireland ac-MR Barry Sexton Attention : Date : 9th June, 2020 9230-11-19 Your reference : Our reference : Test Report 20/6773 Batch 1 Avoca River Park Location : Date samples received : 29th May, 2020 Status : Final report

Six samples were received for analysis on 29th May, 2020 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

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Authorised By:

Phil Sommerton BSc Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name:
Reference:
Location:
Contact:
EMT Job No:

Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/6773

#### Report : Liquid

EWIT JOD NO:	20/6773						n=n <sub>2</sub> 00 <sub>4</sub> , .	 INAOH, HIN=	-111403			
EMT Sample No.	1-9	10-18	19-27	28-36	37-45	46-54						
Sample ID	BH-02	BH-03	BH-06	BH-10	BH-12	RIVER UPSTREAM						
Depth						0.00-0.10				Please se	e attached r	otos for all
COC No / misc											ations and a	
		V H HN HCL Z BOD G				V H HN HCL Z BOD G						
Sample Date												
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1	1				LOD/LOR	Units	Method
Date of Receipt	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020				LOD/LON	Onito	No.
Dissolved Arsenic <sup>#</sup>	4.5	3.1	29.4	<2.5	16.2	<2.5				<2.5	ug/l	TM30/PM14
Dissolved Boron	16	25	13	59	25	<12				<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5				<0.5	ug/l	TM30/PM14
Dissolved Calcium <sup>#</sup>	36.4	74.6	25.3	36.6	77.8	9.1				<0.2	mg/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5				<1.5	ug/l	TM30/PM14
Dissolved Copper <sup>#</sup>	<7	<7	8	<7	<7	16				<7	ug/l	TM30/PM14
Dissolved Lead <sup>#</sup>	<5	<5	<5	<5	<5	<5				<5	ug/l	TM30/PM14
Dissolved Manganese #	7372	7291	13850 <sub>AA</sub>	5962	14480 <sub>AA</sub>	118				<2	ug/l	TM30/PM14
Dissolved Mercury <sup>#</sup> Dissolved Nickel <sup>#</sup>	<1	<1	<1	<1	<1	<1				<1	ug/l	TM30/PM14 TM30/PM14
	<2 <5	15 <5	5 237	9 13	9 72	<2 25				<2 <5	ug/l ug/l	TM30/PM14
Dissolved Phosphorus <sup>#</sup> Dissolved Potassium <sup>#</sup>	1.5	7.6	2.2	4.4	13.0	1.1				<0.1	mg/l	TM30/PM14
Dissolved Folassium	<3	48	21	5	18	160				<3	ug/l	TM30/PM14
Total Dissolved Sulphur as S	5479	90403 <sub>AB</sub>	27023	27762	168355 <sub>AB</sub>	6407				<10	ug/l	TM30/PM14
		AB			AB						-3.	
PAH MS												
Naphthalene #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	ug/l	TM4/PM30
Acenaphthylene #	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013				<0.013	ug/l	TM4/PM30
Acenaphthene #	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013				<0.013	ug/l	TM4/PM30
Fluorene <sup>#</sup>	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014				<0.014	ug/l	TM4/PM30
Phenanthrene <sup>#</sup>	<0.011	<0.011	<0.011	<0.011	<0.011	0.023				<0.011	ug/l	TM4/PM30
Anthracene <sup>#</sup> Fluoranthene <sup>#</sup>	<0.013	<0.013	<0.013	<0.013 <0.012	<0.013	<0.013 0.025				<0.013	ug/l	TM4/PM30 TM4/PM30
Fluorantnene Pyrene *	<0.012 <0.013	<0.012 <0.013	<0.012 <0.013	<0.012	<0.012 <0.013	0.025				<0.012 <0.013	ug/l ug/l	TM4/PM30 TM4/PM30
Benzo(a)anthracene #	<0.015	<0.015	<0.015	<0.015	<0.015	<0.017				<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	<0.011	<0.011	<0.010	<0.011	<0.011				<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene <sup>#</sup>	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018				<0.018	ug/l	TM4/PM30
Benzo(a)pyrene <sup>#</sup>	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016				<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene <sup>#</sup>	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011				<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene <sup>#</sup>	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011				<0.011	ug/l	TM4/PM30
PAH 16 Total <sup>#</sup>	<0.195	<0.195	<0.195	<0.195	<0.195	<0.195				<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	80	77	85	81	85	79				<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	ug/l	TM15/PM10
Benzene <sup>#</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5				<0.5	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5				<5	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1				<1	ug/l	TM15/PM10
m/p-Xylene <sup>#</sup>	<2	<2	<2	<2	<2	<2				<2	ug/l	TM15/PM10
o-Xylene <sup>#</sup>	<1	<1	<1	<1	<1	<1				<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	89	93	91	79	107	73				<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	101	107	108	104	113	94				<0	%	TM15/PM10

Client Name:
Reference:
Location:
Contact:
EMT Job No:

Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/6773

#### Report : Liquid

								-	_		
EMT Sample No.	1-9	10-18	19-27	28-36	37-45	46-54					
Sample ID	BH-02	BH-03	BH-06	BH-10	BH-12	RIVER UPSTREAM					
Depth						0.00-0.10			Disease	e attached r	
COC No / misc										e attached r ations and a	
Containers	V H HN HCL Z P G	V H HN HCL Z BOD G	V H HN HCL Z P G	V H HN HCL Z BOD G	V H HN HCL Z BOD G	V H HN HCL Z BOD G					
Sample Date					26/05/2020						
Sample Type											
Batch Number	1	1	1	1	1	1			LOD/LOR	Units	Method No.
Date of Receipt	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020					140.
Pesticides											
Organochlorine Pesticides	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01			-0.01		TM140/DM20
Aldrin Alpha-HCH (BHC)	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01			<0.01 <0.01	ug/l	TM149/PM30 TM149/PM30
Beta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l ug/l	TM149/PM30
Delta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Dieldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Endosulphan I	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Endosulphan II	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Endosulphan sulphate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Endrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Gamma-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Heptachlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Heptachlor Epoxide	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
o,p'-Methoxychlor	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01			<0.01 <0.01	ug/l	TM149/PM30 TM149/PM30
p,p'-DDE p,p'-DDT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l ug/l	TM149/PM30
p,p'-Methoxychlor	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
p,p'-TDE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Organophosphorus Pesticides										0	
Azinphos methyl	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Diazinon	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Dichlorvos	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Disulfoton	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Ethion	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Ethyl Parathion (Parathion)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Penitrothion	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01			<0.01 <0.01	ug/l ug/l	TM149/PM30 TM149/PM30
Methyl Parathion	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
Mevinphos	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30
										- 5	
TPH CWG											
Aliphatics											
>C5-C6 <sup>#</sup>	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>C6-C8 *	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>C8-C10 <sup>#</sup>	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12
>C10-C12 <sup>#</sup>	<5	<5	<5	<5	<5	<5			<5	ug/l	TM5/PM16/PM30
>C12-C16 <sup>#</sup>	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30
>C16-C21 # >C21-C35 <sup>#</sup>	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/l	TM5/PM16/PM30 TM5/PM16/PM30
>C21-C35 Total aliphatics C5-35 <sup>#</sup>	<10	<10	<10	<10	<10	<10			<10	ug/l ug/l	TM5/FW10/FW30
	.10					.10				~g/i	

Client Name:
Reference:
Location:
Contact:
EMT Job No:

Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/6773

#### Report : Liquid

ENT JOB NO.	20/0113						$1 = 1_2 = 0.04$	- ,	,			
EMT Sample No.	1-9	10-18	19-27	28-36	37-45	46-54						
Sample ID	BH-02	BH-03	BH-06	BH-10	BH-12	RIVER UPSTREAM						
Depth						0.00-0.10				Diama		
COC No / misc											e attached n ations and a	
Containers						V H HN HCL Z BOD G						
Sample Date	26/05/2020	26/05/2020	26/05/2020	26/05/2020	26/05/2020	26/05/2020						
Sample Type	Ground Water											
Batch Number	1	1	1	1	1	1				LOD/LOR	Units	Method
Date of Receipt	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020				LOD/LOR	Units	No.
TPH CWG												
Aromatics												
>C5-EC7#	<10	<10	<10	<10	<10	<10				<10	ug/l	TM36/PM12
>EC7-EC8#	<10	<10	<10	<10	<10	<10				<10	ug/l	TM36/PM12
>EC8-EC10#	<10	<10	<10	<10	<10	<10				<10	ug/l	TM36/PM12
>EC10-EC12#	<5	<5	<5	<5	<5	<5				<5	ug/l	TM5/PM16/PM30
>EC12-EC16 <sup>#</sup>	<10	<10	<10	<10	<10	<10				<10	ug/l	TM5/PM16/PM30
>EC16-EC21 # >EC21-EC35 #	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10				<10 <10	ug/l ug/l	TM5/PM16/PM30 TM5/PM16/PM30
Total aromatics C5-35 <sup>#</sup>	<10	<10	<10	<10	<10	<10				<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10	<10	<10				<10	ug/l	TM5/TM36/PM12/PM16/PM30
											0	
Phenol #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	mg/l	TM26/PM0
Sulphate as SO4 #	18.8	234.2	89.5	89.5	455.7	21.1				<0.5	mg/l	TM38/PM0
Chloride <sup>#</sup>	25.0	22.2	25.9	26.4	30.5	12.5				<0.3	mg/l	TM38/PM0
Nitrate as NO3 <sup>#</sup>	8.9	<0.2	<0.2	10.6	<0.2	6.6				<0.2	mg/l	TM38/PM0
Nitrite as NO2 <sup>#</sup>	0.13	<0.02	<0.02	0.04	<0.02	0.02				<0.02	mg/l	TM38/PM0
					0.04							TH 400 (TH 40
Total Cyanide <sup>#</sup>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01				<0.01	mg/l	TM89/PM0
Ammoniacal Nitrogen as NH3 #	1.20	8.53	6.28	5.26	98.36	0.09				<0.03	mg/l	TM38/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006				<0.006	mg/l	TM38/PM0
Flanting Conductivity @250#	386	646	200	427	1252	125				-0		
Electrical Conductivity @25C <sup>#</sup>	7.38	646 6.47	390 6.64	6.98	1353 6.67	7.59				<2 <0.01	uS/cm pH units	TM76/PM0 TM73/PM0
рп	7.30	0.47	0.04	0.98	0.07	1.55				<0.01	pri units	1101/ 3/ F100

# **Element Materials Technology**

Client Name:
Reference:
Location:
Contact:
EMT Job No:

Ground Investigations Ireland 9230-11-19 Avoca River Park Barry Sexton 20/6773 VOC Report : Liquid

EMT Job No:	20/6773										
EMT Sample No.	1-9	10-18	19-27	28-36	37-45	46-54					
Sample ID	BH-02	BH-03	BH-06	BH-10	BH-12	RIVER UPSTREAM					
Depth						0.00-0.10			Please se	e attached n	otes for all
COC No / misc									abbrevia	ations and a	cronyms
Containers	V H HN HCL Z P G	V H HN HCL Z BOD G									
Sample Date	26/05/2020		26/05/2020		26/05/2020						
Sample Type	Ground Water		Ground Water		Ground Water						
Batch Number Date of Receipt	1 29/05/2020	1 29/05/2020	1 29/05/2020	1 29/05/2020	1 29/05/2020	1 29/05/2020			LOD/LOR	Units	Method No.
VOC MS	29/03/2020	29/03/2020	29/03/2020	29/03/2020	29/03/2020	29/03/2020		 			
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	0.8	<0.1			<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Trichlorofluoromethane <sup>#</sup> 1,1-Dichloroethene (1,1 DCE) <sup>#</sup>	<3 <3	<3 <3	<3 <3	<3 <3	<3 4	<3 <3			<3 <3	ug/l ug/l	TM15/PM10 TM15/PM10
Dichloromethane (DCM) <sup>#</sup>	<5	<5	<5	<5	4 <5	<5			<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	28	<3			<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	7	<3			<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,1,1-Trichloroethane <sup>#</sup>	<2	<2	<2	<2	9	<2			<2	ug/l	TM15/PM10 TM15/PM10
1,1-Dichloropropene <sup>#</sup> Carbon tetrachloride <sup>#</sup>	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2			<3 <2	ug/l ug/l	TM15/PM10 TM15/PM10
1,2-Dichloroethane <sup>#</sup>	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Benzene <sup>#</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5	ug/l	TM15/PM10
Trichloroethene (TCE)#	<3	<3	<3	<3	4	<3			<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Toluene <sup>#</sup> trans-1-3-Dichloropropene	<5 <2	<5 <2	<5 <2	<5 <2	<5 <2	<5 <2			<5 <2	ug/l ug/l	TM15/PM10 TM15/PM10
1,1,2-Trichloroethane <sup>#</sup>	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) <sup>#</sup>	<3	<3	<3	<3	5	<3			<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane <sup>#</sup>	<2 <1	<2 <1	<2 <1	<2 <1	<2 <1	<2 <1			<2 <1	ug/l	TM15/PM10
Ethylbenzene <sup>#</sup> m/p-Xylene <sup>#</sup>	<1	<1	<1	<1	<1	<1			<1	ug/l ug/l	TM15/PM10 TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1	<1			<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
Bromoform <sup>#</sup>	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
lsopropylbenzene <sup>#</sup>	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4			<4	ug/l	TM15/PM10
Bromobenzene <sup>#</sup>	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2,3-Trichloropropane <sup>#</sup>	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10 TM15/PM10
Propylbenzene <sup>#</sup> 2-Chlorotoluene <sup>#</sup>	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/l ug/l	TM15/PM10 TM15/PM10
2-Chlorotoluene 1,3,5-Trimethylbenzene <sup>#</sup>	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
tert-Butylbenzene <sup>#</sup>	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene <sup>#</sup>	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
sec-Butylbenzene#	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,3-Dichlorobenzene#	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
1,4-Dichlorobenzene <sup>#</sup>	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10 TM15/PM10
n-Butylbenzene <sup>#</sup> 1,2-Dichlorobenzene <sup>#</sup>	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/l ug/l	TM15/PM10 TM15/PM10
1,2-Dichlorobenzene " 1,2-Dibromo-3-chloropropane	<3	<3 <2	<3	<3	<3	<3			<3 <2	ug/I	TM15/PM10 TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2			<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3			<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	89	93	91	79	107	73			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	101	107	108	104	113	94			<0	%	TM15/PM10

# **Element Materials Technology**

Client Name:Ground Investigations IrelandReference:9230-11-19Location:Avoca River ParkContact:Barry Sexton

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
					No deviating sample report results for job 20/6773	

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

## NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/6773

### SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCI (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

#### WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

#### **DEVIATING SAMPLES**

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

#### SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

#### DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

### BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

### NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

## REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

### **Measurement Uncertainty**

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

## ABBREVIATIONS and ACRONYMS USED

#       ISO17025 (UKAS Ref No. 4225) accredited - UK.         SA       ISO17025 (SANAS Ref No. T0729) accredited - South Africa         B       Indicates analyte found in associated method blank.         DR       Dilution required.         M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect         NFD       No Fibres Detected <th></th> <th></th>		
B       Indicates analyte found in associated method blank.         DR       Dilution required.         M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
DR       Dilution required.         M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
M       MCERTS accredited.         NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	В	Indicates analyte found in associated method blank.
NA       Not applicable         NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	DR	Dilution required.
NAD       No Asbestos Detected.         ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	М	MCERTS accredited.
ND       None Detected (usually refers to VOC and/SVOC TICs).         NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	NA	Not applicable
NDP       No Determination Possible         SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significar higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	NAD	No Asbestos Detected.
SS       Calibrated against a single substance         SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	ND	None Detected (usually refers to VOC and/SVOC TICs).
SV       Surrogate recovery outside performance criteria. This may be due to a matrix effect.         W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	NDP	No Determination Possible
W       Results expressed on as received basis.         +       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	SS	Calibrated against a single substance
+       AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.         >>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
>>       Results above calibration range, the result should be considered the minimum value. The actual result could be significan higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	W	Results expressed on as received basis.
>>       higher, this result is not accredited.         *       Analysis subcontracted to an Element Materials Technology approved laboratory.         AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
AD       Samples are dried at 35°C ±5°C         CO       Suspected carry over         LOD/LOR       Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS         ME       Matrix Effect	>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
CO     Suspected carry over       LOD/LOR     Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS       ME     Matrix Effect	*	Analysis subcontracted to an Element Materials Technology approved laboratory.
LOD/LOR     Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS       ME     Matrix Effect	AD	Samples are dried at 35°C ±5°C
ME Matrix Effect	со	Suspected carry over
	LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
NFD No Fibres Detected	ME	Matrix Effect
	NFD	No Fibres Detected
BS AQC Sample	BS	AQC Sample
LB Blank Sample	LB	Blank Sample
N Client Sample	N	Client Sample
TB Trip Blank Sample	ТВ	Trip Blank Sample
OC Outside Calibration Range	OC	Outside Calibration Range
AA x5 Dilution	AA	x5 Dilution

Please include all sections of this report if it is reproduced All solid results are expressed on a dry weight basis unless stated otherwise.

AB	x10 Dilution
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# **Element Materials Technology**

EMT Job No: 20/6773

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
ТМЗО	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co- elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE re	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			

# **Element Materials Technology**

EMT Job No: 20/6773

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377- 3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			
TM149	Determination of Pesticides by Large Volume Injection on GC Triple Quad MS, based upon USEPA method 8270D v5:2014	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				

**APPENDIX 5** – Gas Monitoring Data





Catherinestown House, Hazelhatch Road, Newcastle, Co. Dublin. D22 YD52

Tel: 01 601 5175 / 5176 Email: info@gii.ie Web: www.gii.ie

			Project	t Informa	ation			
Project Nu	mber		9230-1			ample Date	14/0	8/2020
Client	-		FT Squ	ared		Well I.D.	G	S-01
Site Nar	ne	A	voca Riv	ver Park		Weather		Dry
Sampler		PN	1	Weat	her Previous 24 hours		Vet	
odnipici				/ell Data		nours		
					Stand	pipe Type uPV		
Casing Diamet			N/.			etc.		DPE
Standpipe Diam			52m			Well Depth (m		2.40
Stick Up (I			180r		Wate	r Level (mBTOC		27
Weathe	er		Dr	У	6	Odour as Valve/Cap	N	one
Gas Meter I	Model	G	eotech	GA5000		Condition	G	ood
			G	as Data				
Sample I.D.	Location Type	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat
GS-01	Monitoring Well	0.3%	0.5%	4ppm	1ppm	20.8%	1016	0.0 l/h



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			Project	t Informa	ation			
Project Nu	mber		9230-1			ample Date	14/0	8/2020
Client			FT Squ	ared		Well I.D.	G	S-02
Site Nar	ne	A	voca Riv	ver Park		Weather	[	Dry
Sampler I.D.			ΡN	1	Weat	her Previous 24 hours		Vet
Sumpler				/ell Data		nours	*	ver
					Stand	pipe Type uPV		
Casing Diamet			N//			etc.		DPE
Standpipe Diam			52m			Well Depth (m		.50
Stick Up (I			230n		Wate	r Level (mBTOC		.98
Weathe	er		Dr	У	Ga	Odour as Valve/Cap	N	one
Gas Meter I	Model	G	eotech	GA5000		Condition	G	ood
	1		G	as Data		1		
Sample I.D.	Location Type	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat
GS-02	Monitoring Well	0.2%	0.2%	4ppm	2ppm	20.8%	1016	0.0 l/h
	ts/Observatior							



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			Project	t Informa	ation			
Project Nu	mber		9230-1			ample Date	14/0	8/2020
Client	t		FT Squ	ared		Well I.D.	G	S-03
Site Nar	ne	A	voca Riv	ver Park		Weather		Dry
Sampler		٩N	1	Weat	her Previous 2: hours		Vet	
<u> </u>			W	ell Data				
Casing Diame	tor (mm)		N/J	٨	Stand	lpipe Type uPV etc.		DPE
			52m		Total	Well Depth (m		2.60
Standpipe Diameter (mm) Stick Up (mm)			140n			r Level (mBTO		).65
Weath			Dr	y		Odour		one
Gas Meter	Model	G	eotech	GA5000	G	as Valve/Cap Condition	G	ood
				as Data				
Sample I.D.	Location Type	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat
GS-03	Monitoring Well	9.9%	6.4%	4ppm	2ppm	16.2%	1016	-0.4 l/h
ditional Comment	to (Observation							



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		Gas		_	eld Sheet				
				ugust 20 t Informa					
Project Nu	ımber		9230-1			ample Date	14/0	8/2020	
Clien			FT Squ	ared		Well I.D.		iS-04	
Site Na	me	A	voca Riv	ver Park		Weather		Dry	
Sampler		PN	24	Wet					
			W	/ell Data					
Casing Diame	ter (mm)		N/.	A	Stand	pipe Type uP etc.		IDPE	
Standpipe Diam	neter (mm)		52m	ım	Total	Well Depth (	m) 2	2.75	
Stick Up (	mm)		300r	nm	Wate	r Level (mBTC	DC) (	).45	
Weath	er		Dr	у		Odour	Ν	None	
Gas Meter	Gas Meter Model			GA5000	G	as Valve/Cap Condition	G	iood	
			G	ias Data					
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Internal Flow Rate	
GS-04	Monitoring Well	6.4%	2.3%	3ppm	2ppm	14.1%	1016	0.0 l/h	
Additional Commen	ts/Observation	<u>ıs:</u>	I	1		1	1	1	



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				ugust 201				
			-	Informa				
Project Nu			9230-1		S	ample Date		8/2020
Clien			FT Squ			Well I.D.		<u>S-05</u>
Site Na	me	A	/oca Riv	er Park	Weat	Weather her Previous 24		Dry
Sampler	I.D.		٩N	1		hours		Wet
			W	ell Data				
Casing Diame	eter (mm)		N//	4	Stand	pipe Type uPV( etc.		IDPE
Standpipe Dian			52m		Total	Well Depth (m)		2.50
Stick Up			200n	nm		r Level (mBTOC		l.18
Weath			Dry	ý		Odour		lone
Cas Matar				GA5000		as Valve/Cap Condition		`
Gas Meter	Model	G		as Data		Condition		iood
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Internal Flow Rat
GS-05	Monitoring Well	0.4%	4.3%	1ppm	0ppm	17.1%	1016	0.0 l/h
ditional Commen	ts/Observation	IS:						



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			Project	Informa	ition			
Project Nu	mber		9230-1	.1-19	S	Sample Date		8/2020
Client			FT Squared			Well I.D.		S-06
Site Nar	ne	A	Avoca River Park			Weather		Dry
Sampler	I.D.		PM			her Previous 24 hours		Vet
				· /ell Data				
					Stand	pipe Type uPV		
Casing Diameter (mm) Standpipe Diameter (mm)			N//			etc.		DPE
Standpipe Diameter (mm)			52mm			Well Depth (m		.73
	ick Up (mm)		160mm			r Level (mBTOC		.99
Weathe	er		Dr	y	Ga	Odour as Valve/Cap	N	one
Gas Meter I	Gas Meter Model		eotech	GA5000		Condition	G	ood
			G	as Data		T T		
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat
GS-06	Monitoring Well	0.4%	1.5%	1ppm	1ppm	19.4%	1016	0.0 l/h
ditional Comment	s/Observation	16.						



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				ugust 20 t Informa					
Project Nu	mber		9230-1			ample Date	14/0	8/2020	
Client			FT Squ			Well I.D.		s-07	
Site Nar	ne	A	Avoca River Park			Weather		Dry	
Sampler	I.D.		PM			ther Previous 2 hours		Wet	
		W	ell Data	•		·			
Casing Diameter (mm)			N//	A	Stand	pipe Type uP\ etc.		DPE	
Standpipe Diameter (mm)			52m	ım	Total	Well Depth (r	n) 1	.86	
Stick Up (mm)			240r	nm	Wate	er Level (mBTO	C) C	).42	
Weather			Dry			Odour	N	None	
Gas Meter I	Gas Meter Model		Geotech GA5000			as Valve/Cap Condition	G	iood	
			G	as Data					
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Ra	
GS-07	Monitoring Well	1.7%	3.3%	3ppm	1ppm	13.9%	1016	0.0 l/h	
ditional Comment									



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				ugust 20	-					
Draiget Nu	mbor			t Informa		Comm	la Data	14/0	08/2020	
Project Nu Clien			9230-1			Sample Date Well I.D.			)8/2020 iS-08	
Site Na			FT Squared Avoca River Park				ather		Dry	
Site Na	ine		Avoca River Park				Previous 2		DIY	
Sampler	I.D.		PN	1		h	ours		Wet	
			W	ell Data	Sta	ndning	e Type uPV			
Casing Diame	ter (mm)		N/	A	Sta		e Type uPv etc.		IDPE	
Standpipe Diameter (mm)			52m	ım	Tot	al We	ll Depth (n	n) 2	2.45	
Stick Up (mm)			200mm			ter Lev	vel (mBTO	C) (	0.88	
Weather			Dry			Odour			None	
Gas Meter	Model	G	entech	GA5000			alve/Cap dition		Good	
	Wodel			as Data		con				
Sample I.D.	Location Type	CH4	CO2	со	H2S		02	Barometric Pressure	Interna Flow Rat	
GS-08	Monitoring Well	0.3%	0.1%	1ppm	2ppm	n 📃	20.8%	1016	0.0 l/h	
ditional Commen	ts/Observation	<u>s:</u>								



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			Droins	-	tion			
Drojoct Nu	mbor		9230-1	t Informa		ample Date	10/0	00/2020
Project Nu Clien						Sample Date Well I.D.		8/2020 S-01
Site Na			FT Squared Avoca River Park			Weather		Dry
Site Na						ther Previous 24		Diy
Sampler	I.D.		NN	Λ		hours	١	Net
			W	ell Data	Chara		~	
Casing Diame	eter (mm)		N/J	A	Stand	lpipe Type uPV etc.		IDPE
Standpipe Diameter (mm)			52mm			Well Depth (m	)	-
Stick Up (mm)			180mm			r Level (mBTOC	-	-
Weath	ier		Dry			Odour	None	
C. Maha	N. a. d. d			C 4 5 0 0 0	G	as Valve/Cap		I
Gas Meter Model		G		GA5000 as Data		Condition	G	iood
Course I D	Location	<u></u>				02	Barometric	Interna
Sample I.D.	Туре	CH4	CO2	CO	H2S	02	Pressure	Flow Rat
GS-01	Monitoring Well	0.3%	3.0%	1ppm	0ppm	17.8%	1005	4.5 l/h



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			(V1 A	ugust 20	18)			
			Project	Informa	tion			
Project Nu	umber		9230-1	.1-19	S	Sample Date		08/2020
Clien	t		FT Squared			Well I.D.	G	iS-02
Site Na	me	A	voca Riv	ver Park		Weather		Dry
Sampler	· I.D.		NM			her Previous 24 hours		Wet
ii			w	ell Data	·		•	
Casing Diame	eter (mm)		N//	A	Stand	pipe Type uPVC etc.		IDPE
Standpipe Diar	neter (mm)		52mm			Well Depth (m)		-
Stick Up	Stick Up (mm)		230mm			Water Level (mBTOC)		-
Weath	ner		Dr	y		Odour	Ν	lone
Gas Meter	Model	G	entech	GA5000		as Valve/Cap Condition	0	Good
Gas Meter	Wouch			as Data		condition		1000
Sample I.D.	Location Type	CH4	CO2	СО	H2S	O2 <sup>6</sup>	Barometric Pressure	Interna Flow Rat
GS-02	Monitoring Well	0.1%	2.4%	2ppm	0ppm	13.2%	1005	8.1 l/h
dditional Commen	ts/Observation	<u>is:</u>						



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			(V1 A	ugust 20	18)				
			Project	Informa	tion				
Project Nu	mber		9230-1	1-19		Sample Date		18/08/2020	
Client	t		FT Squared			Well I.D.		GS-03	
Site Nar	me	A	Avoca River Park			Weather			Dry
Sampler	LD.		NM			eather Previous hours	24	١	Vet
				ell Data		110010			
					Sta	ndpipe Type ul	PVC		
Casing Diame <sup>-</sup>			N//			etc.		Н	DPE
Standpipe Diameter (mm)			52m			al Well Depth			-
	Stick Up (mm)		140mm			ter Level (mBT	OC)	-	
Weath	Weather		Dry			Odour Gas Valve/Cap			one
Gas Meter	Model	G	eotech	GA5000		Condition		G	ood
			G	as Data					
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02		rometric ressure	Interna Flow Rat
GS-03	Monitoring Well	0.3%	0.1%	2ppm	0ppm	า 18.7%		1005	0.2 l/h
<u></u> _									
	ts/Observatior								



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			-	ugust 20					
			Project	Informa	ation				
Project Nu	ımber		9230-1	.1-19	S	Sample Date		8/2020	
Clien	t		FT Squared			Well I.D.	G	iS-04	
Site Na	me	A	Avoca River Park			Weather		Dry	
Sampler	I.D.		NN	1	vveat	her Previous 2: hours		Wet	
·		•	W	ell Data					
o · • • •				•	Stand	lpipe Type uPV			
Casing Diame			N//			etc.		IDPE	
Standpipe Diameter (mm)			52m	IM	Iotal	Well Depth (m	1)	-	
Stick Up (mm)			300mm			r Level (mBTO	C)	-	
Weath	Weather		Dry			Odour	Ν	lone	
Gas Meter	Model	G	entech	GA5000	Ga	as Valve/Cap Condition	6	Good	
Gus Meter	Wodel	0.		as Data		condition			
Sample I.D.	Location Type	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat	
GS-04	Monitoring Well	1.9%	2.2%	3ppm	1ppm	17.1%	1005	0.1 l/h	
ditional Commen									



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			-	t Informa	tion				
Project Nu			9230-11-19				nple Date		08/2020
Clien			FT Squared				Vell I.D.	G	iS-05
Site Na	me	A	voca Riv	ver Park	10/		Veather er Previous 24		Dry
Sampler	I.D.		NN	Л		catin	hours		Wet
			w	/ell Data					
	tor (mm)		N/J	٨	Sta	andpi	ipe Type uPV etc.		IDPE
Casing Diame			52m		То	11 \A	/ell Depth (m		-
Standpipe Diameter (mm) Stick Up (mm)							_evel (mBTOC		-
Weather			200mm				Odour		- Ione
weath	weather		Dry				Valve/Cap		one
Gas Meter	Model	Ge	eotech	GA5000		С	ondition	6	iood
			G	ias Data					
Sample I.D.	Location Type	CH4	CO2	СО	H2S	5	02	Barometric Pressure	Internal Flow Rat
GS-05	Monitoring Well	0.3%	4.7%	5ppm	2ppr	m	13.4%	1005	0.0 l/h
Iditional Commen	ts/Observation	<u>s:</u>							



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			Project	t Informa	tion			
Project Nu	mber		9230-1			Sample Date		8/2020
Client	t		FT Squared			Well I.D.		S-06
Site Na	ne	A	Avoca River Park			Weather		Dry
Sampler	L D		NM			her Previous 24 hours		Net
Sampler i.b.				/ell Data		nours		<i>Net</i>
					Stand	pipe Type uPV	C	
Casing Diame			N//			etc.		IDPE
Standpipe Diameter (mm)			52mm			Well Depth (m		-
Stick Up (			160n	nm	Wate	Water Level (mBTOC)		-
Weath	er		Dr	У	6	Odour Gas Valve/Cap		lone
Gas Meter	Gas Meter Model		eotech	GA5000		Condition	G	iood
			G	as Data				
Sample I.D.	Location Type	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat
GS-06	Monitoring Well	0.3%	1.9%	3ppm	1ppm	17.8%	1005	0.0 l/h
ditional Commen	ts/Observatior	<u>15:</u>						



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		FIUJEC	t Informa	ation			
mber		9230-1			ample Date	18/0	8/2020
:		FT Squared			Well I.D.		S-07
ne	Av	Avoca River Park			Weather		Dry
							Vet
Sumpler i.B.					nours		vel
	<u> </u>			Stand	lpipe Type uPV		
					etc.		DPE
Standpipe Diameter (mm)					-		-
Stick Up (mm)		240mm					-
er		Dr	У	Gi		N	one
Gas Meter Model		eotech	GA5000		Condition	G	ood
1		G	as Data		1		
Туре	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat
Monitoring Well	1.0%	2.3%	5ppm	2ppm	15.5%	1005	-0.1 l/h
+							
Client         Site Name         Sampler I.D.         Casing Diameter (mm)         candpipe Diameter (mm)         Stick Up (mm)         Weather         Gas Meter Model         mple I.D.       Location         Type         GS-07	ne Av I.D. ter (mm) eter (mm) mm) er Model Gv Location CH4 Type 1.0%	ne Avoca Riv I.D. NN ter (mm) N/z eter (mm) 52m mm) 240n er Dr Model Geotech G Location CH4 CO2 Monitoring 1.0% 2.3%	ne Avoca River Park I.D. NM Well Data ter (mm) N/A eter (mm) 52mm mm) 240mm er Dry Model Geotech GA5000 Gas Data Location Type CH4 CO2 CO Monitoring 1.0% 2.3% 5ppm	ne Avoca River Park I.D. NM Weat Weat Well Data Stand ter (mm) S2mm Total mm) 240mm Wate er Dry Gas Model Geotech GA5000 Gas Data Location CH4 CO2 CO H2S Monitoring 1.0% 2.3% 5mm 2mm	ne     Avoca River Park     Weather       I.D.     NM     Weather Previous 24 hours       Well Data     Weather Previous 24 hours       Well Data       ter (mm)     N/A       Standpipe Type uPVC etc.       ter (mm)     52mm       Total Well Depth (m)       mm)       240mm       Water Level (mBTOC er       Dry       Odour       Gas Valve/Cap Condition       Gas Data       Location Type     CH4     CO2     CO     H2S     O2     15       Monitoring     1.0%     2.3%     Spam     2pam     15.5%	ne     Avoca River Park     Weather       I.D.     NM     Weather Previous 24 hours     NM       Well Data     Weather Previous 24 hours     NM       Well Data     Standpipe Type uPVC etc.     NM       ter (mm)     N/A     etc.     H       eter (mm)     52mm     Total Well Depth (m)     M       mm)     240mm     Water Level (mBTOC)     M       er     Dry     Odour     N       Gas Valve/Cap     Gas Valve/Cap     Gas Valve/Cap       Vodel     Geotech GA5000     Condition     G       Gas Data       Location     CH4     CO2     CO     H2S     O2     Barometric Pressure       Monitoring     1.0%     2.3%     5ppm     2ppm     15.5%     1005	



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			Project	t Informa	ation			
Project Nu	mber		9230-1			Sample Date		8/2020
Client	t		FT Squared			Well I.D.		S-08
Site Nar	ne	A	Avoca River Park			Weather		Dry
Sampler	חו		NM			her Previous 2: hours		Vet
				/ell Data		nours		WCC
					Stand	lpipe Type uPV		
Casing Diame			N//			etc.		DPE
Standpipe Diameter (mm)			52m			Well Depth (m		-
Stick Up (			200n		Wate	r Level (mBTO		
Weath	er		Dr	У	Ga	Odour as Valve/Cap	N	lone
Gas Meter	Gas Meter Model		eotech	GA5000		Condition	G	iood
	T		G	as Data		· · · ·		
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat
GS-08	Monitoring Well	0.3%	0.4%	3ppm	1ppm	19.5%	1005	0.1 l/h



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				t Informa				
Project Nu			9230-1		S	Sample Date		8/2020
Clien	it		FT Squared			Well I.D.	G	S-01
Site Na	me	A	Avoca River Park			Weather her Previous 2		Dry
Sampler	r I.D.		NN	Λ	vveau	hours		Vet
		·	W	/ell Data				
					Stand	pipe Type uPV		
Casing Diameter (mm) Standpipe Diameter (mm)			N//			etc.		DPE
			52mm			Well Depth (m		2.40
Stick Up (mm)			180mm			r Level (mBTOC		).55
Weather			Dry			Odour as Valve/Cap	N	one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood
			G	as Data				
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat
GS-01	Monitoring Well	0.4%	0.9%	2ppm	0ppm	18.2%	989	-6.0 l/h



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			Project	t Informa	tion			
Project Nu	ımber		9230-1			ample Date	21/0	8/2020
Clien	t		FT Squ	Squared Well I.D.		G	S-02	
Site Na	me	A	voca Riv	ver Park		Weather		Dry
Sampler	חו		NN	Л	Weat	her Previous 2 hours		Vet
Sumpler				/ell Data		nours		ver
					Stand	pipe Type uPV		
Casing Diame			N//			etc.		DPE
Standpipe Diam			52m			Well Depth (m		2.50
Stick Up (			230n		Wate	r Level (mBTO		0.30
Weath	er		Dr	У	Ga	Odour as Valve/Cap	N	one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood
			G	as Data		TT		
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat
GS-02	Monitoring Well	0.3%	0.7%	2ppm	0ppm	15.3%	989	2.1 l/h
	ts/Observatior							



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			Project	t Informa	ation					
Project Nu	mber		9230-1			ample Date	21/0	8/2020		
Client	t		FT Squ	ared		Well I.D.		Well I.D.		S-03
Site Nar	ne	A	voca Riv	ver Park		Weather		Dry		
Sampler	I.D.		NN	Λ	Weat	her Previous 2 hours		Vet		
·			w	ell Data						
					Stand	pipe Type uPV				
Casing Diame			N//		Tatal	etc.		DPE		
Standpipe Diam			52m			Well Depth (m	-			
Stick Up (			140n		wate	r Level (mBTOC		0.20		
Weath	ei		Dr	у	Ga	Odour as Valve/Cap		one		
Gas Meter	Model	G		GA5000		Condition	G	ood		
	1		G	as Data		1	Deve			
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat		
GS-03	Monitoring Well	0.3%	0.7%	2ppm	1ppm	16.1%	989	0.2 l/h		



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				t Informa				
Project Nu	ımber		9230-1			ample Date	21/0	8/2020
Clien	t		FT Squ	ared		Well I.D.	G	iS-04
Site Na	me	A	voca Riv	ver Park		Weather		Dry
Sampler	I.D.		NN	Л	Weat	her Previous hours		Wet
			W	/ell Data				
Casing Diame	ter (mm)		N/.	A	Stand	pipe Type uP etc.		IDPE
Standpipe Dian	neter (mm)		52m	ım	Total	Well Depth (I	m) 2	2.70
Stick Up (	(mm)		300r	nm	Wate	r Level (mBTC	DC) (	0.35
Weath	er		Dr	у		Odour	N	lone
Gas Meter	Model	G	eotech	GA5000		as Valve/Cap Condition	6	iood
			G	ias Data				
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	1.0%	1.2%	2ppm	1ppm	19.3%	989	0.1 l/h
Additional Commen	ts/Observation	<u>is:</u>				•		



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				ugust 20				
			-	t Informa				
Project Nu			9230-1		S	ample Date		8/2020
Clien			FT Squ			Well I.D.		S-05
Site Na	ime	A	voca Riv	ver Park	Weat	Weather her Previous 24		Dry
Sampler	r I.D.		NN	Λ		hours		Net
			W	ell Data				
Casing Diame	eter (mm)		N/J	А	Stand	pipe Type uPVC etc.		IDPE
Standpipe Dian			52m		Total	Well Depth (m)		2.35
Stick Up			200n			r Level (mBTOC		).67
Weath			Dr			Odour		lone
0.14				-		as Valve/Cap		. I
Gas Meter	NIOdel	G		GA5000 as Data		Condition		iood
Sample I.D.	Location	CH4	CO2	со	H2S	O2 E	Barometric	Interna
Sample I.D.	Type Monitoring	014	02		1125	02	Pressure	Flow Rat
GS-05	Well	0.3%	3.2%	2ppm	0ppm	15.1%	988	1.5 l/h



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			Project	t Informa	ation			
Project Nu	mber		9230-1			ample Date	21/0	8/2020
Client			FT Squ	ared		Well I.D.	G	S-06
Site Nar	ne	A	voca Riv	ver Park		Weather	[	Dry
Sampler	חו		NN	Л	Weat	her Previous 2: hours		Vet
Jampier	1.0.			/ell Data		nours		vet
					Stand	lpipe Type uPV		
Casing Diame			N//			etc.		DPE
Standpipe Diam			52m			otal Well Depth (m) 2.70		
Stick Up (			160n		Wate	r Level (mBTO	-	0.80
Weath	er		Dr	У	G	Odour as Valve/Cap	N	one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood
	T		G	as Data				
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat
GS-06	Monitoring Well	2.4%	1.2%	1ppm	0ppm	18.9%	987	3.2 l/h
ditional Comment								



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Project Nu	mber		9230-1			Sample Date		21/0	8/2020		
Client			FT Squ		Well I.D.			GS-07			
Site Nar	ne	A		ver Park	Weather			Dry			
Sampler	I.D.		NN	Λ	Wea	ther Previous hours	24	Wet			
			W	ell Data							
Casing Diame	ter (mm)		N//	A	Stan	dpipe Type uP etc.	VC	Н	DPE		
Standpipe Diam	ieter (mm)		52m	ım	Tota	l Well Depth (	m)	1	84		
Stick Up (	mm)		240n	nm	Wate	er Level (mBT(	DC)			0.20	
Weath	er		Dr	у		Odour		N	one		
Gas Meter	Model	G	eotech	GA5000	G	as Valve/Cap Condition		Good			
			G	as Data							
Sample I.D.	Location Type	CH4	CO2	со	H2S	02		metric ssure	Interna Flow Rat		
GS-07	Monitoring Well	0.5%	1.1%	1ppm	0ppm	19.3%	9	88	0.4 l/h		
ditional Comment											



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				ugust 20 t Informa				
Project Nu	mber		9230-1			ample Date	21/0	8/2020
Client			FT Squ			Well I.D.		S-08
Site Nar		A		ver Park		Weather		Dry
Sampler	ID		NN	Λ	Weat	her Previous 2 hours		Vet
Sampler	1.0.			/ell Data		nours		
			~~~		Stand	pipe Type uPV	'C	
Casing Diame	ter (mm)		N//	A		etc.	Н	DPE
Standpipe Diam	neter (mm)		52m	ım	Total	Well Depth (m	ı) 2	2.45
Stick Up (	mm)		200n	nm	Wate	r Level (mBTO	c) c	).80
Weath	er		Dr	у		Odour	N	one
Gas Meter	Model	G	eotech	GA5000		as Valve/Cap Condition	G	ood
			G	as Data			I	
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Ra
GS-08	Monitoring Well	0.4%	0.1%	0ppm	0ppm	20.6%	987	0.5 l/h
ditional Commen								



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				-	ns Ireland Id Sheet			
			(V1 A	ugust 20	18)			
			Project	Informa	tion			
Project N	umber		9230-1	.1-19	S	ample Date	26/0	08/2020
Clier	nt		FT Squ	ared		Well I.D.	G	iS-01
Site Na	ime	A	voca Riv	ver Park		Weather		Dry
Samplei	r I.D.		PN	1	Weat	her Previous 24 hours		Wet
			w	ell Data				
Casing Diame	eter (mm)		N//	A	Stand	pipe Type uPV( etc.		IDPE
Standpipe Diar	meter (mm)		52m	ım	Total	Well Depth (m)		2.40
Stick Up	(mm)		180r	nm	Wate	r Level (mBTOC	) (	0.42
Weath	ner		Dr	y		Odour None		lone
Gas Meter	Model	G	entech	GA5000		as Valve/Cap Condition	6	Good
				as Data				
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat
GS-01	Monitoring Well	0.2%	0.9%	5ppm	2ppm	18.7%	1015	-3.7 l/h
dditional Commer	nts/Observatior	<u>is:</u>	1			<u> </u>		1



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			Project	t Informa	ation			
Project Nu	ımber		9230-1			ample Date	26/0	8/2020
Clien	t		FT Squ	ared		Well I.D.		S-02
Site Na	me	A	voca Riv	ver Park		Weather	I	Dry
Sampler	I.D.		ΡN	1	Weat	her Previous 2 hours		Vet
				ell Data				
					Stand	lpipe Type uPV		
Casing Diame			N//			etc.		DPE
Standpipe Diam			52m			Well Depth (m		2.50
Stick Up (			230n		Wate	r Level (mBTOC	,	0.34
Weath	er		Dr	У	G	Odour as Valve/Cap	N	one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood
			G	as Data				
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat
GS-02	Monitoring Well	0.2%	0.8%	4ppm	2ppm	19.7%	1015	6.5 l/h
	ts/Observatior							



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				ugust 20						
Project Nu	mbor		9230-1	Informa		Sample Date		26/0	0/2020	
Project Nu Clien					Well I.D.			8/2020		
Site Na				ver Park		Weather		GS-03 Dry		
					Wea	ther Previous	24		ыу	
Sampler	I.D.		PN	1		hours		١	Vet	
			W	ell Data	Stan	dpipe Type uP	VC			
Casing Diame	ter (mm)		N//	Ą	Stall	etc.	vC	Н	DPE	
Standpipe Diam	neter (mm)		52m	ım	Tota	l Well Depth (I	m)	2	2.60	
Stick Up (	mm)		140n	nm	Wate	er Level (mBTC	DC)	(	).24	
Weath	er		Dr	y		Odour		N	lone	
Gas Meter	Model	G	antach	GA5000	G	as Valve/Cap Condition		G	iood	
	Woder			as Data		condition			000	
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02		rometric ressure	Interna Flow Rat	
GS-03	Monitoring Well	0.2%	0.1%	4ppm	2ppm	20.7%		1015	0.2 l/h	
lditional Commen										



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			Project	Informa	ation			
Project Nu	ımber		9230-1	.1-19	S	ample Date	26/0	8/2020
Clien	t		FT Squ	ared		Well I.D.	G	iS-04
Site Na	me	A	voca Riv	ver Park		Weather		Dry
Sampler	I.D.		٩N	1	weat	her Previous 2 hours		Wet
•		1	w	ell Data			1	
					Stand	pipe Type uPV		
Casing Diame			N//			etc.		
Standpipe Dian	neter (mm)		52m	Im	Total	Well Depth (m	n) 2.70	
Stick Up (	(mm)		300n	nm	Wate	r Level (mBTO	C) (	D.18
Weath	er		Dr	y		Odour	Ν	lone
Gas Meter	Model	G	entech	GA5000	Ga	as Valve/Cap Condition	6	Good
	Wodel			as Data		condition		1000
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat
GS-04	Monitoring Well	0%	0.2%	6ppm	2ppm	20.8%	1015	0.0 l/h



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Project Nu			9230-11-19			Sample Date		8/2020
Clien			FT Squared			Well I.D.		<u>S-05</u>
Site Na	me	A	voca Riv	er Park	Weat	Weather her Previous 24		Dry
Sampler	<sup>-</sup> I.D.		٩N	1		hours		Net
			W	ell Data				
Casing Diame	eter (mm)		N//	Δ	Stand	pipe Type uPVC etc.		IDPE
	Standpipe Diameter (mm)		52m		Total	Well Depth (m)		2.35
Stick Up			200n			r Level (mBTOC		).54
Weath			Dry			Odour		lone
0.14				-		as Valve/Cap		
Gas Meter	Model	G		GA5000 as Data		Condition		iood
Sample L D	Location	CH4		co	1125	02	Barometric	Interna
Sample I.D.	Type	СП4	CO2	0	H2S	02	Pressure	Flow Rat
GS-05	Monitoring Well	0.4%	2.7%	1ppm	0ppm	16.8%	1015	-0.3 l/h



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Project Nu	mber		9230-1			ample Date	26/0	8/2020		
Client	t		FT Squared			Well I.D.	G	S-06		
Site Na	ne	A	Avoca River Park			Weather	I	Dry		
Sampler	ID		PM			her Previous 24 hours		Vet		
Sumpler			/ell Data		nours		vet			
					Stand	pipe Type uPV				
Casing Diame			N/.			etc.		DPE		
Standpipe Diam			52m			Well Depth (m		.70		
Stick Up (			160r		Water Level (mBTC			0.65		
Weath	er		Dry		67	Odour Gas Valve/Cap		Odour Gas Valve/Cap		one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood		
	1		G	as Data						
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat		
GS-06	Monitoring Well	1.0%	0.3%	4ppm	1ppm	18.0%	1015	0.0 l/h		
ditional Commen	ts/Observatior	15:								



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Project Nu	ımber		9230-1			ample Date	26/0	8/2020
Clien	t		FT Squared			Well I.D.		S-07
Site Na	me	A	Avoca River Park			Weather		Dry
Sampler	I.D.		PM			her Previous 2 hours		Vet
•		•	w	ell Data				
	t ()					pipe Type uPV		
Casing Diameter (mm) Standpipe Diameter (mm)			N/. 52m		Total	etc.		DPE 82
Standpipe Dian Stick Up (			240r			Well Depth (m		
Weath			Dr		Wate	Water Level (mBTOC) Odour		lone
						Gas Valve/Cap		
Gas Meter	Model	G		GA5000 as Data		Condition	G	ood
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat
GS-07	Monitoring Well	1.2%	0.8%	4ppm	0ppm	15.7%	1015	1.7 l/h
ditional Commen	ts/Observation	<u>IS:</u>						



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Project Nu	ımber		9230-1			ample Date	26/0	8/2020
Client	t		FT Squared			Well I.D.	G	S-08
Site Na	me	A	Avoca River Park			Weather	[	Dry
Sampler	I.D.		PM			her Previous 2 hours		Vet
<u>campier</u>				/ell Data		nours		
					Stand	pipe Type uPV		
Casing Diame			N/.			etc.		DPE
Standpipe Diam			52m			Well Depth (m		.45
Stick Up (	mm)		200r	nm	Water Level (mBTC		C) C	).50
Weath	er		Dr	У	6	Odour Gas Valve/Cap		one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood
			G	as Data				
Sample I.D.	Location Type	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat
GS-08	Monitoring Well	0.2%	0.3%	3ppm	1ppm	19.4%	1015	0.1 l/h
ditional Commen	ts/Observatior	<u>15:</u>						



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Project Nu	ımber		9230-1			ample Date	31/0	8/2020				
Client	t		FT Squared			Well I.D.	G	S-01				
Site Nar	me	A	Avoca River Park			Weather		Dry				
Sampler	חו		NM			her Previous 2 hours		Dry				
Sampler			/ell Data		nours		Jiy					
					Stand	pipe Type uPV	с					
Casing Diame			N//			etc.		DPE				
Standpipe Diam			52m			Well Depth (m		.40				
Stick Up (			180mm		Wate	Water Level (mBTOC)		.80				
Weath	er		Dry		6	Odour Gas Valve/Cap						one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood				
			G	as Data								
Sample I.D.	Location Type	CH4	CO2	со	H2S	02	Barometric Pressure	Interna Flow Rat				
GS-01	Monitoring Well	0.1%	0.9%	2ppm	0ppm	19.5%	1021	-0.2 l/h				
ditional Commen	ts/Observation	)S:										



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Clien			FT Squared			Well I.D.		s-02						
Site Na	me	A	Avoca River Park			Weather		Dry						
C l						her Previous 2	4	-						
Sampler		NN			hours		Dry							
			VV	ell Data	Stand	pipe Type uPV	'C							
Casing Diame	eter (mm)		N//	Ą		etc.		DPE						
Standpipe Diameter (mm)			52m	im	Total	Well Depth (n	ו) 2	2.50						
Stick Up (	(mm)		230n	nm	Wate	r Level (mBTO	C) C	).88						
Weath	er		Dr	Dry		Odour				Odour Gas Valve/Cap				one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood						
		·	G	as Data			·							
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat						
GS-02	Monitoring Well	0.1%	1.3%	1ppm	0ppm	18.8%	1021	0.4 l/h						
ditional Commen	ts/Observatior	15:												



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Project Nu	mber		9230-1			ample Date	31/0	8/2020		
Client	t		FT Squared			Well I.D.		S-03		
Site Nar	ne	A	Avoca River Park			Weather		Dry		
Sampler	I.D.		NM			her Previous 2: hours		Dry		
Sumpler				ell Data		nours	•	517		
					Stand	lpipe Type uPV				
Casing Diame			N//			etc.		DPE		
Standpipe Diam			52m			Well Depth (m		2.60		
Stick Up (			140n		Water Level (mBTC			).50		
Weath	er		Dry		G	Odour Gas Valve/Cap				one
Gas Meter	Model	G	eotech	GA5000		Condition	G	ood		
			G	as Data						
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat		
GS-03	Monitoring Well	0.2%	0.5%	1ppm	0ppm	20.1%	1021	0.3 l/h		
ditional Comment	ts/Observation	15.								



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			-	ugust 20	-				
Project Nu	ımher		9230-1	t Inform		San	nple Date	31/0	08/2020
Clien			FT Squ			Well I.D.			is-04
Site Na		A	Avoca River Park				/eather		Dry
Sampler	I.D.		NM				er Previous hours		Dry
			W	/ell Data					
Casing Diame	ter (mm)		N/.	A	Sta	ndpi	pe Type uP etc.		IDPE
Standpipe Diam	Standpipe Diameter (mm)		52m	ım	Tot	tal W	'ell Depth (	m) 2	2.70
Stick Up (	mm)		300r	nm	Wa	iter L	evel (mBTC	DC) (	0.50
Weath	er		Dr	у			Odour	Ν	lone
Gas Meter	Model	G	eotech	GA5000			Valve/Cap ondition	(	Good
		·	G	as Data					
Sample I.D.	Location Type	CH4	CO2	СО	H2S		02	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	0.2%	1.9%	1ppm	0ppn	n	19.9%	1021	0.4 l/h
Additional Commen	ts/Observatior	is:							



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			-	Informa				
Project Nu		9230-11-19			Si	Sample Date		8/2020
Clien			FT Squared			Well I.D.		S-05
Site Na	ime	A	voca Riv	er Park	Weat	Weather her Previous 24		Dry
Sampler	r I.D.		NN	1		hours		Dry
		- 1	W	ell Data			1	
Casing Diame	eter (mm)		N//	Δ	Stand	pipe Type uPVC etc.		IDPE
Standpipe Dian			52m		Total	Well Depth (m)		2.35
Stick Up			200n			r Level (mBTOC		).79
Weath			Dry			Odour		lone
				-		as Valve/Cap		
Gas Meter	Model	Ge		GA5000		Condition	G	iood
	Location			as Data			Barometric	Internal
Sample I.D.	Туре	CH4	CO2	CO	H2S	02	Pressure	Flow Rat
GS-05	Monitoring Well	0.1%	2.6%	1ppm	0ppm	17.6%	1021	0.4 l/h



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Project Nu	mber		9230-1			ample Date	31/0	8/2020		
Client			FT Squared			Well I.D.		S-06		
Site Nan	ne	A	Avoca River Park			Weather		Dry		
Sampler	I.D.		NM			ther Previous 2 hours		Dry		
				ell Data				- ,		
					Stand	lpipe Type uPV				
Casing Diamet			N//			etc.		DPE		
Standpipe Diam			52m			Well Depth (n		.70		
Stick Up (r			160mm		wate	Water Level (mBTOC)				.88
Weathe	21		Dry		G	Odour Gas Valve/Cap				one
Gas Meter I	Model	G		GA5000		Condition	G	ood		
	Location		G	as Data		1 1	Barometric	Interna		
Sample I.D.	Туре	CH4	CO2	СО	H2S	02	Pressure	Flow Rat		
GS-06	Monitoring Well	0.2%	1.0%	0ppm	0ppm	20.2%	1021	0.6 l/h		



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Project Nu	mber		9230-1			ample Date	31/0	8/2020				
Client			FT Squared			Well I.D.	G	S-07				
Site Nar	ne	A	Avoca River Park			Weather		Dry				
Sampler	חו		NM			her Previous 2: hours		Dry				
Jampier			vell Data		nours		ыу					
					Stand	pipe Type uP\						
Casing Diamet			N//			etc.		DPE				
Standpipe Diam			52m			Well Depth (n		82				
Stick Up (I			240n		Water Level (mBT0			).43				
Weathe	er		Dr	y	G	Odour Gas Valve/Cap						one
Gas Meter I	Model	G	eotech	GA5000		Condition	G	ood				
			G	as Data								
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Ra				
GS-07	Monitoring Well	0.3%	0.5%	1ppm	0ppm	19.0%	1021	0.5 l/h				



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Project Nu	mber		9230-1			ample Date	31/0	8/2020
Client			FT Squared			Well I.D.		S-08
Site Na		A	Avoca River Park			Weather		Dry
						her Previous 2	4	
Sampler	I.D.		NN			hours		Dry
			W	ell Data	Stand	pipe Type uPV	с	
Casing Diame	ter (mm)		N/.	A		etc.		DPE
Standpipe Diameter (mm)			52m	ım	Total	Well Depth (m	i) 2	.45
Stick Up (	mm)		200r	nm	Wate	r Level (mBTO	C) C	.88
Weath	er		Dr	у	Odour		N	one
Gas Meter	Model	G	eotech	GA5000		Gas Valve/Cap Condition		ood
			G	as Data				
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat
GS-08	Monitoring Well	0.2%	1.6%	0ppm	0ppm	18.6%	1021	0.6 l/h
ditional Commen	ts/Observatior	ns:						



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Project Nu	mber		9230-1			ample Date	03/0	9/2020	
Client	t		FT Squ	ared		Well I.D.	G	S-01	
Site Nar	ne	A	voca Riv	ver Park		Weather	[	Dry	
Sampler	LD.		NN	Л	Weat	her Previous 2 hours		Vet	
campier				ell Data		nours			
					Stand	pipe Type uPV			
Casing Diame			N//			etc.		DPE	
Standpipe Diam			52m			Well Depth (m		.40	
Stick Up (			180n		Wate	r Level (mBTOC		0.57	
Weather			Dry			Odour as Valve/Cap	N	None	
Gas Meter Model		G	Geotech GA5000			Condition	G	Good	
	1		G	as Data					
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat	
GS-01	Monitoring Well	0.3%	1.8%	2ppm	1ppm	16.1%	1013	0.8 l/h	



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Project Nu	mber		9230-1			ample Date	03/0	9/2020	
Client			FT Squ	ared		Well I.D.	G	S-02	
Site Nar	ne	A	voca Riv	ca River Park Weather				Dry	
Sampler	ID		NN	Л	Weat	her Previous 24 hours		Vet	
Sampler	1.0.			/ell Data		nours			
					Stand	pipe Type uPV			
Casing Diame			N//			etc.		HDPE	
Standpipe Diam			52m			Well Depth (m		2.50	
Stick Up (			230r		Wate	r Level (mBTOC		0.60	
Weather			Dry			Odour as Valve/Cap	N	None	
Gas Meter Model		G	Geotech GA5000			Condition	G	ood	
	1		G	as Data		1 1			
Sample I.D.	Location Type	CH4	CO2	CO	H2S	02	Barometric Pressure	Interna Flow Rat	
GS-02	Monitoring Well	0.3%	1.2%	2ppm	1ppm	18.6%	1013	0.2 l/h	



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Droject Nu	mahar			Informa		ample Data	02/	00/2020	
Project Nu			9230-1			Sample Date		09/2020	
Client			FT Squ			Well I.D.		<u>3S-03</u>	
Site Nar	ne	A		er Park	Wea	Weather ther Previous 2	24	Dry	
Sampler	I.D.		NN	1		hours		Wet	
			W	ell Data					
Casing Diame	ter (mm)		N/J	Δ	Stand	pipe Type uP\ etc.		HDPE	
Standpipe Diam			52m		Tota	Well Depth (r		2.60	
						er Level (mBTO		0.22	
Stick Up (mm) Weather			140mm Dry			Odour		None	
weather						Gas Valve/Cap			
Gas Meter Model		G	Geotech GA5000			Condition	(	Good	
	Location		G	as Data			Barometric	Interna	
Sample I.D.	Туре	CH4	CO2	СО	H2S	02	Pressure	Flow Rat	
GS-03	Monitoring Well	0.4%	0.5%	2ppm	1ppm	20.4%	1013	0.1 l/h	



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			Project	Informa	ation				
Project Nu	umber		9230-1	.1-19	S	ample Date	03/0	9/2020	
Clien	t		FT Squared			Well I.D.	G	iS-04	
Site Na	me	A	voca Riv	ver Park		Weather		Dry	
Sampler	· I.D.		NN	1	Weat	her Previous 2 hours		Wet	
				ell Data					
					Stand	pipe Type uP\			
Casing Diame			N//			etc.		IDPE	
Standpipe Dian	neter (mm)		52m	Im	Total	Well Depth (n	n) 2	2.70	
Stick Up (mm)			300mm			Water Level (mBTOC)		0.45	
Weath	ner	Dr		y		Odour	Ν	lone	
Gas Meter Model		6	ootoch (	GA5000	Ga	as Valve/Cap Condition		iood	
	INIOUEI			as Data		Condition		1000	
Sample I.D.	Location	CH4	CO2	со	H2S	02	Barometric	Interna	
	Type Monitoring						Pressure	Flow Ra	
GS-04	Well	0.4%	3.1%	3ppm	1ppm	19.8%	1013	0.1 l/h	



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				t Informa					
Project Nu			9230-1		S	Sample Date		9/2020	
Clien			FT Squ			Well I.D.		iS-05	
Site Na	me	A	voca Riv	ver Park	Weat	Weather her Previous 24		Dry	
Sampler	1.D.		NN	Л	i cu	hours		Wet	
			W	/ell Data	- 1				
Casing Diame	eter (mm)		N/	Δ	Stand	lpipe Type uPV etc.		IDPE	
Standpipe Dian			52m		Total	Well Depth (m		2.35	
Stick Up (			200r			r Level (mBTOC		).78	
Weather			Dry			Odour		None	
Gas Meter Model					G	Gas Valve/Cap Condition		<b>`</b>	
Gas Meter	Model	G		GA5000 ias Data		Condition		iood	
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat	
GS-05	Monitoring Well	0.3%	2.6%	2ppm	0ppm	17.6%	1013	0.2 l/h	
dditional Commen	ts/Observation	<u>IS:</u>							



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				ugust 20 : Informa						
Project Nu	mber		9230-1			Sa	ample Date	03/0	9/2020	
Client			FT Squ				Well I.D.		s-06	
Site Nar	ne	A		ver Park			Weather		Dry	
Sampler	LD.		NN	1	V	Veath	ner Previous 2 hours		Wet	
<u> </u>				ell Data			nours			
						tandı	pipe Type uPV			
Casing Diamet			N//				etc.		HDPE	
Standpipe Diam			52m				Well Depth (n	-	2.70	
Stick Up (mm)			160n		V	vater	Level (mBTO		0.90	
Weather			Dry			Odour Gas Valve/Cap		N	one	
Gas Meter Model		G	Geotech GA5000				Condition	G	ood	
			G	as Data						
Sample I.D.	Location Type	CH4	CO2	CO	H2	<u>2</u> S	02	Barometric Pressure	Interna Flow Ra	
GS-06	Monitoring Well	0.6%	0.8%	1ppm	0pp	om	20.1%	1013	0.3 l/h	



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				-	ns Ireland Id Sheet				
			(V1 A	ugust 20	18)				
			Project	Informa	tion				
Project Nu	umber		9230-1	.1-19	S	ample Date	03/0	9/2020	
Clien	t		FT Squ	ared		Well I.D.	G	S-07	
Site Na	me	A	voca Riv	ver Park		Weather		Dry	
Sampler	· I.D.		NN	1	Weat	her Previous 24 hours		Net	
		•	w	ell Data					
Casing Diame	eter (mm)		N//	A	Stand	pipe Type uPVC etc.		IDPE	
Standpipe Diar	neter (mm)		52m	ım	Total	Well Depth (m)		1.82	
Stick Up (mm)			240n	nm	Wate	r Level (mBTOC	) (	0.37	
Weather			Dry			Odour		None	
Gas Meter Model		G	entech	GA5000		as Valve/Cap Condition	6	iood	
				as Data	<b>I</b>				
Sample I.D.	Location Type	CH4	CO2	СО	H2S	02	Barometric Pressure	Interna Flow Rat	
GS-07	Monitoring Well	0.4%	0.6%	1ppm	0ppm	18.0%	1013	0.4 l/h	
dditional Commen	ts/Observation	<u>is:</u>							



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			Project	Informa	ation				
Project Nu	mber		9230-1			ample Date	03/0	9/2020	
Client	t		FT Squ	ared		Well I.D.	G	S-08	
Site Nar	ne	A	voca Riv	ver Park		Weather		Dry	
Sampler	I.D.		NN	1	Weat	ther Previous 2 hours		Wet	
				ell Data					
					Stand	pipe Type uP			
Casing Diame			N//			etc.		DPE	
Standpipe Diam			52m			Well Depth (n		2.45	
Stick Up (mm)			200n		wate	r Level (mBTO Odour		0.89	
Weather			Dry			Gas Valve/Cap		None	
Gas Meter	Model	G		GA5000		Condition	G	ood	
	1		G	as Data		1	Denematic	المراجع المراجع	
Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Interna Flow Rat	
GS-08	Monitoring Well	0.3%	0.8%	1ppm	0ppm	19.7%	1013	0.3 l/h	