

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

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Renewables

Appendix 9.1j

Phase 3 Environmental Assessment



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Geotechnical & Environmental

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Ground Investigations Ireland

Avoca River Park

FT Squared

Phase 3 Environmental Assessment
Factual Report

September 2020





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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

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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 through 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 Gll 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 completed 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 14th, 18th, 21st, 26th and 31st August and 3rd 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 26th 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.

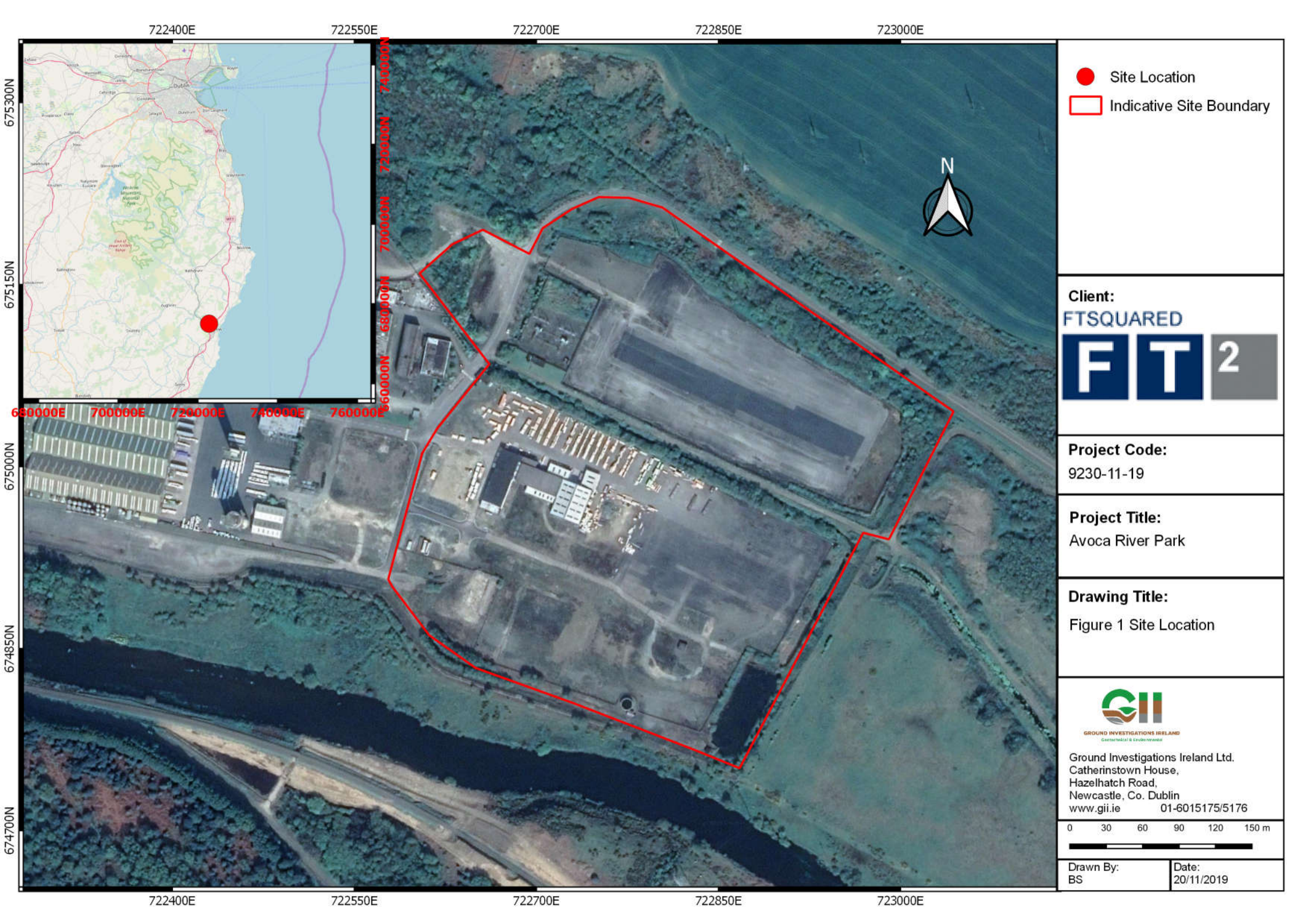
The laboratory testing was completed by Element Materials Technology in the UK; EMT is a UKAS accredited laboratory. The full laboratory report is included in Appendix 4. The analytical methodologies are all ISO/CEN approved or equivalent.

Table 1 Surface Water Sampling Field Measurements

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

APPENDIX 1 - Figures





722400E 722550E 722700E 722850E 723000E

675300N

675150N

675000N

674850N

674700N



680000E 700000E 720000E 740000E 760000E

740000N
720000N
700000N
680000N
660000N

- Site Location
- Indicative Site Boundary



Client:
FTSQUARED
FT²

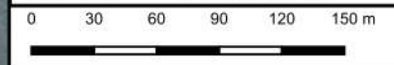
Project Code:
 9230-11-19

Project Title:
 Avoca River Park

Drawing Title:
 Figure 1 Site Location



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Drawn By: BS	Date: 20/11/2019
------------------------	----------------------------

722400E 722550E 722700E 722850E 723000E

722550E

722700E

722850E

723000E

675150N

675000N

674850N

722550E

722700E

722850E

723000E



- Indicative Site Boundary
- Canal
- + Trial Pit
- Red Material Extent

Client:
FITSQUARED
FT2

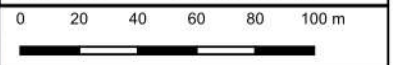
Project Code:
 9230-11-19

Project Title:
 Avoca River Park

Drawing Title:
 Figure 2 Trial Pit Locations
 Red Material Extent



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Drawn By: BS	Date: 04/09/2020
------------------------	----------------------------

722400E 722550E 722700E 722850E 723000E

675150N





675000N

674850N

674700N

722400E 722550E 722700E 722850E 723000E



-  Indicative Site Boundary
-  Canal
-  Gas Well
-  Surface Water Sampe

Client:
FITSQUARED
FT 2

Project Code:
 9230-11-19

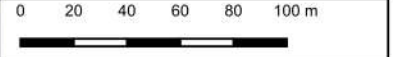
Project Title:
 Avoca River Park

Drawing Title:
 Figure 3 Gas Well and
 Surface Water Sample
 Locations



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Drawn By: BS
Date: 04/09/2020

APPENDIX 2 – Trial Pit Records





Machine : 6 tonne excavator Method : Trial Pit		Dimensions 0.4m W x 3.0m L	Ground Level (mOD) 2.18	Client FT Squared	Job Number 9230-11-19
		Location 722800.8 E 675158.4 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
					2.09 (0.09)	TARMACADAM		
					1.93 (0.16)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					0.25	MADE GROUND Brown grey slightly sandy clayey fine to coarse angular Gravel.		
					(0.75)			
					1.18 1.00	Soft to firm black grey slightly sandy slightly gravelly CLAY.		∇1
			Water strike(1) at 1.10m.		(0.20)			
					0.98 1.20	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.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP31</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP31				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.6m L	Ground Level (mOD) 2.28	Client FT Squared	Job Number 9230-11-19
	Location 722795.4 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
				2.19	(0.09)	TARMACADAM		
				2.08	(0.09) (0.11) 0.20	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					(0.90)	MADE GROUND Brown grey slightly sandy clayey fine to coarse angular Gravel.		
			Water strike(1) at 1.10m.	1.18	1.10	Soft to firm black grey slightly sandy slightly gravelly CLAY.		∇1
				1.08	(0.10) 1.20	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.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP32</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP32				



Machine : 6 tonne excavator Method : Trial Pit		Dimensions 0.4m W x 2.8m L	Ground Level (mOD) 2.23	Client FT Squared	Job Number 9230-11-19
		Location 722801.3 E 675151.8 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
2.14					(0.09) 0.09	TARMACADAM		
1.98					(0.16) 0.25	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					(0.75)	MADE GROUND Brown grey slightly sandy clayey fine to coarse angular Gravel.		
1.23					1.00 (0.20)	Soft to firm black grey slightly sandy slightly gravelly CLAY.		∇1
1.03			Water strike(1) at 1.10m.		1.20	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.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP33</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP33				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.6m L	Ground Level (mOD) 2.33	Client FT Squared	Job Number 9230-11-19
	Location 722793.8 E 675147 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
				2.24	(0.09) 0.09	TARMACADAM		
				2.03	(0.21) 0.30	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					(0.80)	MADE GROUND Brown slightly sandy slightly gravelly Clay.		
			Water strike(1) at 1.20m.	1.23	1.10	Complete at 1.20m		∇1

Plan .	Remarks Trial pit stable. Groundwater encountered at 1.20m BGL.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP34</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP34				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.6m L	Ground Level (mOD) 2.25	Client FT Squared	Job Number 9230-11-19
	Location 722757.5 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
				2.16	(0.09) 0.09	TARMACADAM		
				1.85	(0.31) 0.40	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
				1.80	0.45	MADE GROUND: Red Clay- fertilizer by product.		
					(0.65)	Brown slightly sandy clayey fine to coarse Gravel with occasional sub-angular to sub-rounded cobbles.		
			Water strike(1) at 1.00m.	1.15	1.10	Complete at 1.10m		∇1

Plan .	Remarks Trial pit stable. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximum depth of red Clay.	
		Scale (approx) 1:25



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.8m L	Ground Level (mOD) 2.37	Client FT Squared	Job Number 9230-11-19
	Location 722745.8 E 675112.8 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
				2.28	(0.09)	TARMACADAM		
				2.17	(0.11)	MADE GROUND: Brown sandy clayey sub-rounded Cobbles.		
					(0.20)	MADE GROUND: Red Clay- fertilizer by product.		
					(0.90)			
				1.27	1.10	Very soft dark brown black slightly sandy slightly gravelly organic CLAY.		
					(0.30)			
				0.97	1.40	Complete at 1.40m		

Plan .	Remarks Trial pit stable. No groundwater encountered. Trial pit terminated and backfilled upon determining maximum depth of red Clay.		
	<table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By NM</td> <td>Figure No. 9230-11-19.TP36</td> </tr> </table>	Scale (approx) 1:25	Logged By NM
Scale (approx) 1:25	Logged By NM	Figure No. 9230-11-19.TP36	



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.8m L	Ground Level (mOD) 2.38	Client FT Squared	Job Number 9230-11-19
	Location 722771.8 E 675123.9 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
0.70 0.70	B EN				2.29 (0.09) 0.09	TARMACADAM		
					(0.21)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
				2.08 (0.30) 1.98 (0.10) 0.40		MADE GROUND: Brown sandy clayey sub-rounded Cobbles.		
					(0.25)	MADE GROUND: Light brown slightly sandy gravelly Clay.		
				1.73 (0.65)		MADE GROUND: Red Clay- fertilizer by product.		
				1.38 (1.00)		Very soft dark brown black slightly sandy slightly gravelly organic CLAY.		
					(0.50)			
			Water strike(1) at 1.50m.	0.88 (1.50)		Complete at 1.50m		▽1

Plan .	Remarks Trial pit stable. Groundwater encountered at 1.5m BGL. Trial pit terminated and backfilled upon determining maximum depth of red Clay.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP37</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP37				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.1m L	Ground Level (mOD) 2.26	Client FT Squared	Job Number 9230-11-19
	Location 722827.3 E 675097.1 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00 1.00	B EN			2.17 2.01 1.36 0.86 0.66	(0.09) 0.09 (0.16) 0.25 (0.65) 0.90 (0.50) 1.40 (0.20) 1.60	TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel with plastic fragments MADE GROUND: Brown slightly silty fine to coarse angular Gravel. MADE GROUND: Red Clay- fertilizer by product. Soft to firm grey slightly sandy slightly gravelly peaty CLAY. Complete at 1.60m		

Plan .	Remarks Trial pit stable. No groundwater encountered. Trial pit terminated and backfilled upon determining maximum depth of red Clay.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP38</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP38				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.6m L	Ground Level (mOD) 2.32	Client FT Squared	Job Number 9230-11-19
	Location 722802.9 E 675083.3 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				2.23	(0.09) 0.09	TARMACADAM		
				2.07	(0.16) 0.25	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
				1.82	(0.25) 0.50	MADE GROUND: Pinkish slightly gravelly fine to coarse SAND.		
				1.57	(0.25) 0.75	MADE GROUND: Brown grey sandy sub-angular fine to coarse Gravel with occasional sub-rounded cobbles.		
					(0.65)	MADE GROUND: Red Clay- fertilizer by product.		
				0.92	1.40 (0.20)	Soft to firm grey slightly sandy slightly gravelly peaty CLAY.		
				0.72	1.60	Complete at 1.60m		

Plan .	Remarks Trial pit sidewalls spalling at 1.0m BGL. No groundwater encountered. Trial pit terminated and backfilled upon determining maximum depth of red Clay.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP39</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP39				



Machine : 6 tonne excavator Method : Trial Pit		Dimensions 0.4m W x 2.1m L	Ground Level (mOD) 2.06	Client FT Squared	Job Number 9230-11-19
		Location 722808.8 E 675052.1 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Water strike(1) at 0.30m.	1.97	(0.09)	TARMACADAM		
				1.91	0.15	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
				1.76	(0.15)	MADE GROUND: Brown grey gravelly sub-bangular to sub-rounded Cobbles.		∇1
					0.30	MADE GROUND: Brown grey slightly sandy silty sub-angular Gravel with occasional sub-rounded cobbles.		
					(0.50)	MADE GROUND: Red Clay- fertilizer by product.		
				1.26	0.80	MADE GROUND: Red Clay- fertilizer by product.		
					(0.60)	Soft to firm grey slightly sandy slightly gravelly peaty CLAY.		
				0.66	1.40	Soft to firm grey slightly sandy slightly gravelly peaty CLAY.		
					(0.20)	Complete at 1.60m		
				0.46	1.60	Complete at 1.60m		

Plan .	Remarks Trial pit stable. Groundwater encountered at 0.30m BGL Trial pit terminated and backfilled upon determining maximum depth of red Clay.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP40</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP40				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.2m L	Ground Level (mOD) 2.24	Client FT Squared	Job Number 9230-11-19
	Location 722832.7 E 675070.3 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				2.15	(0.09)	TARMACADAM		
				1.99	(0.16)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					0.25	MADE GROUND: Brown slightly sandy gravelly Silt.		
					(0.55)			
				1.44	0.80	MADE GROUND: Red Clay- fertilizer by product.		
			Water strike(1) at 1.00m.		(0.50)			∇1
				0.94	1.30	Soft to firm brown grey slightly sandy slightly gravelly peaty CLAY.		
					(0.30)			
				0.64	1.60	Complete at 1.60m		

Plan .	Remarks Trial pit sidewalls spalling at 1.10m BGL. Groundwater encountered at 1.0m BGL. Trial pit terminated and backfilled upon determining maximum depth of red Clay.		
		<table border="1"> <tr> <td>Scale (approx) 1:25</td> <td>Logged By NM</td> <td>Figure No. 9230-11-19.TP41</td> </tr> </table>	Scale (approx) 1:25
Scale (approx) 1:25	Logged By NM	Figure No. 9230-11-19.TP41	



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.3m L	Ground Level (mOD) 2.26	Client FT Squared	Job Number 9230-11-19
	Location 722869.5 E 675067.2 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				2.17	(0.09)	TARMACADAM		
				2.01	(0.16)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					0.25	MADE GROUND: Brown slightly sandy silty angular fine to coarse Gravel		
			Water strike(1) at 0.60m.	1.66	0.60	MADE GROUND: Red Clay- fertilizer by product.	▽1	
					(0.80)			
				0.86	1.40	Soft to firm light grey slightly sandy slightly gravelly organic CLAY.		
					(0.30)			
				0.56	1.70	Complete at 1.70m		

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Remarks

Trial pit sidewalls spalling at 1.0m BGL.
Groundwater encountered at 0.60m BGL.
Trial pit terminated and backfilled upon determining maximum depth of red Clay.

Scale (approx) 1:25	Logged By NM	Figure No. 9230-11-19.TP42
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Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.3m L	Ground Level (mOD) 1.92	Client FT Squared	Job Number 9230-11-19
	Location 722843.7 E 675034.6 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				1.83	(0.09)	TARMACADAM		
				1.77	0.15 (0.15)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
				1.62	0.30 (0.10)	MADE GROUND: Brown slightly silty angular fine to coarse Gravel.		
				1.52	0.40	MADE GROUND: Red Clay- fertilizer by product.		
					(0.80)	POSSIBLE MADE GROUND: Brown grey fine to coarse angular Gravel with occasional sub-angular to sub-rounded cobbles.		
				0.72	1.20 (0.20)	Soft to firm light grey slightly sandy slightly gravelly organic CLAY.		
				0.52	1.40	Complete at 1.40m		

Plan .	Remarks Trial pit unstable. Groundwater encountered at 0.80m BGL Trial pit terminated and backfilled upon determining maximum depth of red Clay.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP43</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP43				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.5m L	Ground Level (mOD) 1.76	Client FT Squared	Job Number 9230-11-19
	Location 722849.8 E 675021.4 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Water strike(1) at 0.80m.	1.67	(0.09)	TARMACADAM		
				1.51	(0.16)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					(0.25)	MADE GROUND: Brown slightly sandy silty angular fine to coarse Gravel		
				1.16	(0.35)	MADE GROUND: Red Clay- fertilizer by product.		
					(0.40)			∇ ₁
				0.76	(0.40)	Soft to firm light grey slightly sandy slightly gravelly organic peaty CLAY.		
				(0.50)				
				0.26	(0.50)	Complete at 1.50m		

Plan

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Remarks

Trial pit unstable
Groundwater encountered at 0.80m BGL.
Trial pit terminated and backfilled upon determining maximum depth of red Clay.

Scale (approx) 1:25	Logged By NM	Figure No. 9230-11-19.TP44
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Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.1m L	Ground Level (mOD) 1.75	Client FT Squared	Job Number 9230-11-19
	Location 722872.5 E 675021.3 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.70 0.70	B EN			1.66 1.55 1.35 0.75 0.35	(0.09) (0.09) (0.11) 0.20 (0.20) 0.40 (0.60) 1.00 (0.40) 1.40	TARMACADAM MADE GROUND: Blue grey sandy angular fine to coarse Gravel. MADE GROUND: Brown yellowish 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 organic CLAY. Complete at 1.40m		

Plan 	Remarks Trial pit stable. No groundwater encountered. Trial pit terminated and backfilled upon determining maximum depth of red Clay.		
	Scale (approx) 1:25	Logged By NM	Figure No. 9230-11-19.TP45



Machine : 6 tonne excavator Method : Trial Pit		Dimensions 0.4m W x 2.3m L	Ground Level (mOD) 2.37	Client FT Squared	Job Number 9230-11-19
		Location 722844.9 E 675095.6 N	Dates 22/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					2.28	(0.09) TARMACADAM		
					(0.21) 2.07	MADE GROUND: Blue grey sandy angular fine to coarse Gravel.		
					0.30 (0.50)	MADE GROUND: Brown slightly silty angular fine to coarse Gravel with occasional sub-angular cobbles.		
					1.57	0.80 MADE GROUND: Red Clay- fertilizer by product.		
			Water strike(1) at 1.00m.		(0.40) 1.17	Soft to firm light grey slightly sandy slightly gravelly organic CLAY.		∇1
					0.77	1.60 Complete at 1.60m		

Plan
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Remarks

Trial pit unstable.
Groundwater encountered at 1.0m BGL
Trial pit terminated and backfilled upon determining maximum depth of red Clay.

Scale (approx) 1:25	Logged By NM	Figure No. 9230-11-19.TP46
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Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.7m L	Ground Level (mOD) 2.04	Client FT Squared	Job Number 9230-11-19
	Location 722963.3 E 675043.7 N	Dates 24/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			Water strike(1) at 0.40m.	1.95	(0.09)	TARMACADAM		
				1.84	(0.11)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel with occasional sub-rounded cobbles.		
				1.74	(0.20)	MADE GROUND: Brown slightly sandy gravelly Silt.		
				1.64	(0.30)	MADE GROUND: Brown grey slightly sandy slightly gravelly organic peaty Clay.		∇1
					(0.40)	MADE GROUND: Brown slightly sandy gravelly Clay with plastic and metal fragments.		
					(0.60)			
				1.04	1.00	Soft brown grey slightly gravelly CLAY.		
					(0.50)			
				0.54	1.50	Soft brown black organic CLAY with root fragments.		
					(1.00)			
				-0.46	2.50	Complete at 2.50m		

Plan .	Remarks Trial pit stable. Groundwater encountered at 0.40m BGL Trial pit terminated at 2.50m BGL and backfilled upon completion.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP47</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP47				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 1.8m L	Ground Level (mOD) 2.15	Client FT Squared	Job Number 9230-11-19
	Location 722620.3 E 675014.2 N	Dates 23/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				2.05	(0.10) 0.10	MADE GROUND: Grey angular fine to coarse Gravel.		
					(0.35)	MADE GROUND: Red Clay - fertilizer by product.		
				1.70 1.65	0.45 0.50	CONCRETE. Complete at 0.50m		

Plan 	Remarks Trial pit stable. No groundwater encountered. Trial pit terminated at 0.50m BGL due to the presence of concrete and backfilled upon completion.	
		Scale (approx) 1:25



Machine : 6 tonne excavator Method : Trial Pit		Dimensions 0.4m W x 2.0m L	Ground Level (mOD) 2.23	Client FT Squared	Job Number 9230-11-19
		Location 722630.5 E 674999.5 N	Dates 23/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Grey angular fine to coarse Gravel.		
				2.03	(0.20)	MADE GROUND: Red Clay - fertilizer by product.		
				1.95	(0.28)	MADE GROUND: Brown grey sub-rounded Cobbles.		
				1.75	0.48	MADE GROUND: Dark brown slightly sandy slightly gravelly Clay with occasional sub-angular to sub-rounded cobbles.		
				1.43	0.80	Complete at 0.80m		

Plan 	Remarks Trial pit stable. No groundwater encountered. Trial pit terminated at 0.80m BGL and backfilled upon determining the maximum depth of the red Clay.	
		Scale (approx) 1:25



Machine : 6 tonne excavator Method : Trial Pit		Dimensions 0.4m W x 2.0m L	Ground Level (mOD) 2.57	Client FT Squared	Job Number 9230-11-19
		Location 722607.5 E 674980.4 N	Dates 23/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.90	B EN			2.17	0.40 (0.40)	MADE GROUND: Grey angular fine to coarse Gravel.		
0.90				2.02	0.40 (0.15) 0.55 (0.35)	MADE GROUND: Brown grey sub-angular Cobbles.		
				1.67	0.90 (0.70)	MADE GROUND: Red slightly sandy gravelly Clay with sub-angular cobbles - fertilizer by product.		
				0.97	1.60	Soft to firm brown slightly sandy slightly gravelly organic CLAY.		
						Complete at 1.60m		

Plan .	Remarks Trial pit stable. No groundwater encountered. Trial pit terminated at 0.80m BGL and backfilled upon determining the maximum depth of the red Clay.					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP50</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP50				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.3m L	Ground Level (mOD) 2.20	Client FT Squared	Job Number 9230-11-19
	Location 722633.4 E 674879.6 N	Dates 23/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	B				(0.50)	MADE GROUND: Brown gravelly Silt with occasional sub-angular to sub-rounded cobbles and metal concrete and plastic fragments.		
				1.70	0.50 (0.50)	MADE GROUND: Brown gravelly fine to coarse sand with metal and plastic fragments.		
				1.20	1.00 (0.20)	Soft to firm light grey slightly sandy slightly gravelly organic CLAY.		
				1.00	1.20	Soft light brown slightly sandy slightly gravelly CLAY.		
2.00	B		Water strike(1) at 1.80m.		(1.30)			▽1
				-0.30	2.50	Complete at 2.50m		

Plan .	Remarks Trial pit unstable. Collapsing at 2.0m BGL Groundwater encountered at 1.80m BGL. Trial pit terminated at 2.50m BGL and backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP51</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP51				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.3m L	Ground Level (mOD) 2.23	Client FT Squared	Job Number 9230-11-19
	Location 722774.6 E 674854.8 N	Dates 23/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.70	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.		▽1
					0.40	MADE GROUND: Brown gravelly fine to coarse sand with metal and plastic fragments.		
					0.50	MADE GROUND Black grey slightly sandy clayey sub-angular to sub-rounded fine to coarse Gravel.		
					0.30			
				1.43	0.80	Very soft to soft brown grey slightly sandy gravelly CLAY. Strong hydrocarbon odour		
					(1.70)			
					2.50	Complete at 2.50m		
				-0.27				

Plan .	Remarks Trial pit sidewalls spalling at 1.50m BGL Groundwater encountered at 0.70m BGL. Trial pit terminated at 2.50m BGL and backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP52</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP52				



Machine : 6 tonne excavator Method : Trial Pit	Dimensions 0.4m W x 2.3m L	Ground Level (mOD) 2.16	Client FT Squared	Job Number 9230-11-19
	Location 722836.8 E 674944.1 N	Dates 23/07/2020	Project Contractor GII	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				2.07	(0.09) 0.09	TARMACADAM		
				1.91	(0.16) 0.25	MADE GROUND: Blue grey angular fine to coarse Gravel.		
				1.61	(0.30) 0.55	MADE GROUND Black grey slightly sandy silty sub-angular fine to coarse Gravel.		
				1.51	(0.10) 0.65	MADE GROUND: Brown grey slightly gravelly sub-angular Cobbles		
			Water strike(1) at 1.10m.		(0.65)	MADE GROUND: Brown slightly sandy slightly clayey sub-angular fine to coarse Gravel with occasional sub-angular cobbles.		∇1
				0.86	(0.20) 1.30	MADE GROUND: Dark grey slightly sandy slightly gravelly organic peaty Clay.		
				0.66	1.50	Soft dark grey organic CLAY		
					(1.00)			
				-0.34	2.50	Complete at 2.50m		

Plan .	Remarks Trial pit sidewalls spalling at 1.50m BGL Groundwater encountered at 1.10m BGL. Trial pit terminated at 2.50m BGL and backfilled upon completion					
	<table border="1"> <tr> <td>Scale (approx)</td> <td>Logged By</td> <td>Figure No.</td> </tr> <tr> <td>1:25</td> <td>NM</td> <td>9230-11-19.TP53</td> </tr> </table>	Scale (approx)	Logged By	Figure No.	1:25	NM
Scale (approx)	Logged By	Figure No.				
1:25	NM	9230-11-19.TP53				

APPENDIX 3 –Gas Monitoring Well Records





Machine : 6 Tonne Excavator Method : Trial Pit		Casing Diameter	Ground Level (mOD) 2.31	Client FT Squared	Job Number 9230-11-19
		Location 722755.1 E 675128.8 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	Water	Instr
					2.22	(0.09) 0.09	TARMACADAM.			
						(0.41)	MADE GROUND: Red grey sandy Gravel with red bricks concrete and plastic fragments.			
					1.81	0.50	MADE GROUND: Red clay- fertilizer by product.			
						(0.50)				
					1.31	1.00	Very soft dark brown black organic silty CLAY.			
						(0.20)				
					1.11	1.20	Soft to firm red brown mottled grey slightly sandy CLAY.			
						(1.30)				
					-0.19	2.50	Complete at 2.50m			

Remarks Trial pit stable. No groundwater encountered. Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe. 50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover. Gas valve installed.	Scale (approx)	Logged By
	1:25	NM
Figure No. 9230-11-19.GS01		



Machine : 6 Tonne excavator Method : Trial Pit	Casing Diameter	Ground Level (mOD) 2.31	Client FT Squared	Job Number 9230-11-19
	Location 722817.1 E 675079.7 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	Water	Instr
				Water strike(1) at 0.80m.	2.24	(0.07)	TARMACADAM.			
					1.81	0.50 (0.43)	MADE GROUND: Blue grey clayey sandy Gravel with large angular cobbles and boulders. Red bricks concrete and plastic fragments.			
					1.41	0.90 (0.40)	MADE GROUND: Grey brown clayey Gravel with large angular cobbles.			
					1.11	1.20 (0.30)	MADE GROUND: Red clay with dark brown clayey sandy Gravel with large angular cobbles and boulders.			
					0.41	1.90 (0.70)	MADE GROUND: Red clay- fertilizer by product			
					0.31	2.00 (0.50)	Soft dark brown black slightly sandy silty CLAY with organic matter.			
							Soft brown mottled grey slightly sandy CLAY.			
					-0.19	2.50	Complete at 2.50m			

Remarks Trial pit spalling at 1.50m BGL. Groundwater encountered at 0.80m BGL. Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe. 50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover. Gas valve installed.	Scale (approx)	Logged By
	1:25	NM
Figure No. 9230-11-19.GS02		



Machine : 6 Tonne excavator Method : Trial Pit		Casing Diameter	Ground Level (mOD) 1.89	Client FT Squared	Job Number 9230-11-19
		Location 722852.4 E 675033.8 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	Water	Instr
					1.82	(0.07)	TARMACADAM			
					1.69	(0.13) 0.20	MADE GROUND: Blue grey sandy Gravel with red brick and plastic fragments.			
					1.39	(0.30) 0.50	MADE GROUND: Red brown sandy clayey Gravel with large angular cobbles red bricks plastic and concrete fragments.			
							MADE GROUND: Red clay - fertilizer by product.			
						(1.00)				
				Water strike(1) at 1.40m.	0.39	1.50 (0.20)	Soft grey brown black sandy silty CLAY with rootlets.			
					0.19	1.70	Soft to firm dark grey slightly sandy CLAY.			
						(0.80)				
					-0.61	2.50	Complete at 2.50m			

Remarks Trial pit spalling at 1.50m BGL. Groundwater encountered at 1.40m BGL. Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe. 50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover. Gas valve installed.	Scale (approx) 1:25	Logged By NM
	Figure No. 9230-11-19.GS03	



Machine : 6 Tonne excavator Method : Trial Pit		Casing Diameter	Ground Level (mOD) 1.98	Client FT Squared	Job Number 9230-11-19
		Location 722960.9 E 675045.3 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	Water	Instr
				Water strike(1) at 0.40m.	1.89	(0.09)	TARMACADAM			
					1.78	(0.11)	MADE GROUND: Blue grey sandy angular fine to coarse Gravel with occasional sub-rounded cobbles.			
					1.68	(0.20)				
					1.58	(0.30)	MADE GROUND: Brown slightly sandy gravelly Silt.			
						(0.40)	MADE GROUND: Brown grey slightly sandy slightly gravelly organic peaty Clay.			
						(0.60)	MADE GROUND: Brown slightly sandy gravelly Clay with plastic and metal fragments.			
					0.98	1.00	Soft brown grey slightly gravelly CLAY.			
						(0.50)				
					0.48	1.50	Soft brown black organic CLAY with root fragments.			
						(1.00)				
					-0.52	2.50	Complete at 2.50m			

Remarks Trial pit stable Groundwater encountered at 0.40m BGL. Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe. 50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover. Gas valve installed.	Scale (approx) 1:25	Logged By NM
	Figure No. 9230-11-19.GS04	



Machine : 6 Tonne excavator Method : Trial Pit	Casing Diameter	Ground Level (mOD) 2.32	Client FT Squared	Job Number 9230-11-19
	Location 722616.5 E 675001.5 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	Water	Instr
				Water strike(1) at 0.40m.	1.82	(0.50)	MADE GROUND: Grey brown gravelly sand with red brick plastic and metal fragments.		∇1	
						(1.80)	MADE GROUND: Red clay - fertilizer by product.			
					0.02	2.30 (0.20)	Soft orange brown mottled grey slightly sandy CLAY.			
					-0.18	2.50	Complete at 2.50m			

Remarks Trial pit stable No groundwater encountered. Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe. 50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover. Gas valve installed.	Scale (approx)	Logged By
	1:25	NM
Figure No. 9230-11-19.GS05		



Machine : 6 Tonne excavator Method : Trial Pit	Casing Diameter	Ground Level (mOD) 2.41	Client FT Squared	Job Number 9230-11-19
	Location 722781.7 E 674939.2 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	Water	Instr
					2.34	(0.07)	TARMACADAM.			
					2.14	(0.20)	MADE GROUND: Blue grey gravelly Sand fill with concrete red brick plastic and metal fragments.			
					2.06	(0.08)	TARMACADAM.			
						(0.35)	MADE GROUND: Grey brown sandy fine to coarse angular Gravel with large angular cobbles and boulders with plastic concrete and metal fragments.			
				Water strike(1) at 1.00m.	1.41	1.00	MADE GROUND: Black very soft silty Clay with plastic tree roots and metal fragments.		∇1	
						(1.40)				
					0.01	2.40	Soft red brown grey mottled slightly sandy silty CLAY.			
					-0.09	(0.10)				
						2.50	Complete at 2.50m			

Remarks

Trial pit stable
Groundwater encountered at 1.0m BGL.
Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe.
50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover.
Gas valve installed.

Scale (approx)
1:25

Logged By
NM

Figure No.
9230-11-19.GS06



Machine : 6 Tonne excavator Method : Trial Pit	Casing Diameter	Ground Level (mOD) 2.13	Client FT Squared	Job Number 9230-11-19
	Location 722724.2 E 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	Water	Instr
						(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.			
						(0.90)				
					0.63	1.50	Very soft to soft grey brown slightly sandy CLAY.			
						(1.00)				
					-0.37	2.50	Complete at 2.50m			

Remarks Trial pit stable. No groundwater encountered Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe. 50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover. Gas valve installed.	Scale (approx)	Logged By
	1:25	NM
Figure No. 9230-11-19.GS07		



Machine : 6 Tonne excavator Method : Trial Pit		Casing Diameter	Ground Level (mOD) 2.08	Client FT Squared	Job Number 9230-11-19
		Location 722833.6 E 674906.6 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	Water	Instr	
				Water strike(1) at 0.50m.	2.01	(0.07)	TARMACADAM				
							(0.23)	MADE GROUND: Blue grey gravelly Sand.			
						1.78	0.30	MADE GROUND: Red brown sandy Gravel with large angular cobbles and boulders.			
						1.58	0.50	MADE GROUND: Grey large angular Cobbles and Boulders.		∇1	
							(0.30)				
						1.28	0.80	MADE GROUND: Brown sandy Gravel - creosote odour noted.			
							(0.40)				
						0.88	1.20	Firm brown grey organic CLAY.			
						0.68	1.40	Soft grey brown organic rich slightly sandy silty CLAY.			
							(0.70)				
					-0.02	2.10	Soft red brown mottled grey slightly sandy CLAY.				
						(0.40)					
					-0.42	2.50	Complete at 2.50m				

Remarks Trial pit stable. Groundwater encountered at 0.50m BGL. Trial pit terminated at 2.50m BGL and backfilled upon insertion of standpipe. 50mm slotted standpipe installed from 2.50m to 0.50m, plain pipe installed from 0.50m to ground level with bentonite seal and raised cover. Gas valve installed.	Scale (approx)	Logged By
	1:25	NM
Figure No. 9230-11-19.GS08		

APPENDIX 4 – Laboratory Reports



Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland



Attention : Barry Sexton
Date : 6th August, 2020
Your reference : 9230-11-19
Our reference : Test Report 20/9984 Batch 1
Location : Avoca River Park
Date samples received : 29th July, 2020
Status : Final report
Issue : 1

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.

Authorised By:



Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

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

Report : Solid

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								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
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								
Date of Receipt	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020								
						LOD/LOR	Units	Method No.	Please see attached notes for all abbreviations and acronyms				
Antimony	91 ^{AA}	144 ^{AB}	55 ^{AA}	10	7	<1	mg/kg	TM30/PM15					
Arsenic #	2211.0 ^{AB}	3132.0 ^{AC}	1454.0 ^{AB}	139.9	30.8	<0.5	mg/kg	TM30/PM15					
Barium #	61	25	25	55	184	<1	mg/kg	TM30/PM15					
Cadmium #	3.2	6.9	5.2	1.0	84.7 ^{AA}	<0.1	mg/kg	TM30/PM15					
Chromium #	14.1	<0.5	22.6	82.3	353.3 ^{AA}	<0.5	mg/kg	TM30/PM15					
Copper #	5687 ^{AD}	7218 ^{AD}	3049 ^{AC}	395 ^{AA}	17440 ^{AE}	<1	mg/kg	TM30/PM15					
Lead #	1590	1775	1754	285	479	<5	mg/kg	TM30/PM15					
Mercury #	0.8	0.6	0.6	0.8	0.4	<0.1	mg/kg	TM30/PM15					
Molybdenum #	83.1 ^{AA}	88.7 ^{AA}	55.1 ^{AA}	10.4	58.6 ^{AA}	<0.1	mg/kg	TM30/PM15					
Nickel #	2.3	<0.7	16.8	20.1	46.5	<0.7	mg/kg	TM30/PM15					
Selenium #	2	1	2	2	2	<1	mg/kg	TM30/PM15					
Zinc #	3383 ^{AA}	5338 ^{AA}	2320	351	1287	<5	mg/kg	TM30/PM15					
PAH MS													
Naphthalene #	<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 #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8					
Phenanthrene #	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 #	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 #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8					
Chrysene #	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	mg/kg	TM4/PM8					
Benzo(bk)fluoranthene #	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8					
Benzo(a)pyrene #	<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 #	<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 #	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8					
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	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					

Element Materials Technology

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

Report : Solid

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															
COC No / misc																				
Containers	V J T	V J T	V J T	V J T	V J T															
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															
Date of Receipt	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020															
																		LOD/LOR	Units	Method No.
TPH CWG																				
Aliphatics																				
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	>>18.2													<0.2	mg/kg	TMS/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	>>25													<4	mg/kg	TMS/PM8/PM16
>C16-C21 #	12	<7	<7	<7	>>311													<7	mg/kg	TMS/PM8/PM16
>C21-C35 #	46	<7	<7	41	>>12125													<7	mg/kg	TMS/PM8/PM16
>C35-C40	<7	<7	<7	<7	>>1570													<7	mg/kg	TMS/PM8/PM16
Total aliphatics C5-40	58	<26	<26	41	14049													<26	mg/kg	TMS/PM8/PM16
>C6-C10	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>C10-C25	<10	<10	<10	<10	>>2851													<10	mg/kg	TMS/PM8/PM16
>C25-C35	<10	<10	<10	<10	>>9629													<10	mg/kg	TMS/PM8/PM16
Aromatics																				
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	15.8													<0.2	mg/kg	TMS/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	22													<4	mg/kg	TMS/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	90													<7	mg/kg	TMS/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	3217													<7	mg/kg	TMS/PM8/PM16
>EC35-EC40	<7	<7	<7	<7	566													<7	mg/kg	TMS/PM8/PM16
Total aromatics C5-40	<26	<26	<26	<26	3911													<26	mg/kg	TMS/PM8/PM16
Total aliphatics and aromatics(C5-40)	58	<52	<52	<52	17960													<52	mg/kg	TMS/PM8/PM16
>EC6-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1 ^{SV}													<0.1	mg/kg	TM36/PM12
>EC10-EC25	<10	<10	<10	<10	671													<10	mg/kg	TMS/PM8/PM16
>EC25-EC35	<10	<10	<10	<10	2674													<10	mg/kg	TMS/PM8/PM16
MTBE #	<5	<5	<5	<5	<5 ^{SV}													<5	ug/kg	TM36/PM12
Benzene #	<5	<5	<5	<5	9 ^{SV}													<5	ug/kg	TM36/PM12
Toluene #	<5	<5	<5	<5	60 ^{SV}													<5	ug/kg	TM36/PM12
Ethylbenzene #	<5	<5	<5	<5	<5 ^{SV}													<5	ug/kg	TM36/PM12
m/p-Xylene #	<5	<5	<5	<5	14 ^{SV}													<5	ug/kg	TM36/PM12
o-Xylene #	<5	<5	<5	<5	9 ^{SV}													<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 #	<5	<5	<5	<5	57													<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5	<5	<5	65													<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5	<5	<5	45													<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5	<5	<5	<5													<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35	<35	<35	250													<35	ug/kg	TM17/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

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

Report : Solid

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																	
COC No / misc																						
Containers	V J T	V J T	V J T	V J T	V J T																	
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																	
Date of Receipt	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020																	
											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)	24.5	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 #	0.36	0.06	0.11	0.32	5.16														<0.02	%	TM21/PM24	
pH #	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	

Please see attached notes for all abbreviations and acronyms

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

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No. 16-17 Sample ID TP52 Depth 0.70-1.50 COC No / misc Containers G Sample Date 23/07/2020 Sample Type Liquid Batch Number 1 Date of Receipt 29/07/2020										Please see attached notes for all abbreviations and acronyms		
										LOD/LOR	Units	Method 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
Total Dissolved Sulphur as S	18440									<10	ug/l	TM30/PM14
PAH MS												
Naphthalene	<1.0 _{AB}									<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.130 _{AB}									<0.013	ug/l	TM4/PM30
Acenaphthene	0.169 _{AB}									<0.013	ug/l	TM4/PM30
Fluorene	<0.140 _{AB}									<0.014	ug/l	TM4/PM30
Phenanthrene	0.149 _{AB}									<0.011	ug/l	TM4/PM30
Anthracene	<0.130 _{AB}									<0.013	ug/l	TM4/PM30
Fluoranthene	<0.120 _{AB}									<0.012	ug/l	TM4/PM30
Pyrene	<0.130 _{AB}									<0.013	ug/l	TM4/PM30
Benzo(a)anthracene	<0.150 _{AB}									<0.015	ug/l	TM4/PM30
Chrysene	<0.110 _{AB}									<0.011	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.180 _{AB}									<0.018	ug/l	TM4/PM30
Benzo(a)pyrene	<0.160 _{AB}									<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.110 _{AB}									<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.10 _{AB}									<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.110 _{AB}									<0.011	ug/l	TM4/PM30
PAH 16 Total	<1.950 _{AB}									<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.10 _{AB}									<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.10 _{AB}									<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	55 _{AB}									<0	%	TM4/PM30
Methyl Tertiary Butyl Ether	<0.1									<0.1	ug/l	TM15/PM10
Benzene	1.8									<0.5	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

Element Materials Technology

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

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

EMT Sample No.	16-17												
Sample ID	TP52												
Depth	0.70-1.50												
COC No / misc													
Containers	G												
Sample Date	23/07/2020												
Sample Type	Liquid												
Batch Number	1												
Date of Receipt	29/07/2020												
										LOD/LOR	Units	Method No.	
Please see attached notes for all abbreviations and acronyms													
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	
Endrin	<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	
Heptachlor Epoxide	<0.01									<0.01	ug/l	TM149/PM30	
o,p'-Methoxychlor	<0.01									<0.01	ug/l	TM149/PM30	
p,p'-DDE	<0.01									<0.01	ug/l	TM149/PM30	
p,p'-DDT	<0.01									<0.01	ug/l	TM149/PM30	
p,p'-Methoxychlor	<0.01									<0.01	ug/l	TM149/PM30	
p,p'-TDE	<0.01									<0.01	ug/l	TM149/PM30	
Organophosphorus Pesticides													
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	
>C12-C16	80									<10	ug/l	TM5/PM16/PM30	
>C16-C21	1550									<10	ug/l	TM5/PM16/PM30	
>C21-C35	43850									<10	ug/l	TM5/PM16/PM30	
Total aliphatics C5-35	45506									<10	ug/l	TM5/PM16/PM30	

Element Materials Technology

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

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	16-17											
Sample ID	TP52											
Depth	0.70-1.50											
COC No / misc												
Containers	G											
Sample Date	23/07/2020											
Sample Type	Liquid											
Batch Number	1											
Date of Receipt	29/07/2020											
LOD/LOR												
Units												
Method No.												
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/PM16/PM30
Total aliphatics and aromatics(C5-35)	61510								<10	ug/l		TM5/PM16/PM30
Phenol	<0.01								<0.01	mg/l		TM26/PM0
Sulphate as SO4	54.7								<0.5	mg/l		TM38/PM0
Chloride	13.5								<0.3	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
Electrical Conductivity @25C	824								<2	uS/cm		TM76/PM0
pH	9.01								<0.01	pH units		TM73/PM0

Element Materials Technology

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

Report : EN12457_2

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										
COC No / misc															
Containers	V J T	V J T	V J T	V J T	V J T										
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										
Date of Receipt	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020										
						Inert	Stable Non-reactive	Hazardous	LOD LOR	Units	Method No.	Please see attached notes for all abbreviations and acronyms			
Solid Waste Analysis															
Total Organic Carbon #	0.36	0.06	0.11	0.32	5.16	3	5	6	<0.02	%	TM21/PM24				
Sum of BTEX	<0.025	<0.025	<0.025	<0.025	0.092 ^{9V}	6	-	-	<0.025	mg/kg	TM36/PM12				
Sum of 7 PCBs #	<0.035	<0.035	<0.035	<0.035	0.250	1	-	-	<0.035	mg/kg	TM17/PM8				
Mineral Oil	58	<30	<30	41	14049	500	-	-	<30	mg/kg	TM5/PM8/PM16				
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/PM17				
Barium #	<0.03	<0.03	<0.03	0.06	0.21	20	100	300	<0.03	mg/kg	TM30/PM17				
Cadmium #	<0.005	<0.005	0.009	<0.005	<0.005	0.04	1	5	<0.005	mg/kg	TM30/PM17				
Chromium #	<0.015	<0.015	<0.015	<0.015	0.359	0.5	10	70	<0.015	mg/kg	TM30/PM17				
Copper #	0.47	0.21	0.20	<0.07	2.54	2	50	100	<0.07	mg/kg	TM30/PM17				
Mercury #	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	0.01	0.2	2	<0.0001	mg/kg	TM61/PM0				
Molybdenum #	1.04	2.30	0.82	0.13	1.07	0.5	10	30	<0.02	mg/kg	TM30/PM17				
Nickel #	<0.02	<0.02	0.03	<0.02	<0.02	0.4	10	40	<0.02	mg/kg	TM30/PM17				
Lead #	0.12	<0.05	0.16	<0.05	<0.05	0.5	10	50	<0.05	mg/kg	TM30/PM17				
Antimony #	<0.02	<0.02	0.02	<0.02	<0.02	0.06	0.7	5	<0.02	mg/kg	TM30/PM17				
Selenium #	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	0.5	7	<0.03	mg/kg	TM30/PM17				
Zinc #	0.61	1.27	2.54	<0.03	0.06	4	50	200	<0.03	mg/kg	TM30/PM17				
Total Dissolved Solids #	850	1210	1331	1619	780	4000	60000	100000	<350	mg/kg	TM20/PM0				
Dissolved Organic Carbon	30	<20	20	<20	60	500	800	1000	<20	mg/kg	TM60/PM0				
Mass of raw test portion	0.1176	0.1361	0.1273	0.1013	0.1176	-	-	-		kg	NONE/PM17				
Dry Matter Content Ratio	76.4	66.2	70.6	88.7	76.7	-	-	-	<0.1	%	NONE/PM4				
Leachant Volume	0.872	0.854	0.863	0.888	0.873	-	-	-		l	NONE/PM17				
Eluate Volume	0.75	0.75	0.8	0.78	0.75	-	-	-		l	NONE/PM17				
pH #	6.99	7.46	6.74	8.20	9.17	-	-	-	<0.01	pH units	TM73/PM11				
Phenol	<0.1	<0.1	<0.1	<0.1	<0.1	1	-	-	<0.1	mg/kg	TM26/PM0				
Fluoride	4	<3	<3	<3	<3	-	-	-	<3	mg/kg	TM173/PM0				
Sulphate as SO4 #	277	535	526	806	190	1000	20000	50000	<5	mg/kg	TM38/PM0				
Chloride #	6	23	13	<3	10	800	15000	25000	<3	mg/kg	TM38/PM0				

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

Matrix : Solid

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 Ireland
Reference: 9230-11-19
Location: Avoca River Park
Contact: 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 HCl (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 overestimate 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.

Please include all sections of this report if it is reproduced

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 significantly 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
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

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

EMT Job No: 20/9984

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

EMT Job No: 20/9984

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

EMT Job No: 20/9984

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/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.				

EMT Job No: 20/9984

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
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.	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	

Ground Investigations Ireland
Catherinestown House
Hazelhatch Road
Newcastle
Co. Dublin
Ireland



Attention : Barry Sexton
Date : 9th June, 2020
Your reference : 9230-11-19
Our reference : Test Report 20/6773 Batch 1
Location : Avoca River Park
Date samples received : 29th May, 2020
Status : Final report
Issue : 1

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.

Authorised By:



Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name: Ground Investigations Ireland
Reference: 9230-11-19
Location: Avoca River Park
Contact: Barry Sexton
EMT Job No: 20/6773

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

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													
COC No / misc																			
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	26/05/2020	26/05/2020	26/05/2020	26/05/2020	26/05/2020													
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water													
Batch Number	1	1	1	1	1	1													
Date of Receipt	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020													
									LOD/LOR	Units	Method No.								
Pesticides																			
Organochlorine Pesticides																			
Aldrin	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30								
Alpha-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30								
Beta-HCH (BHC)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	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	ug/l	TM149/PM30								
p,p'-DDE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30								
p,p'-DDT	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	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																			
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								
Fenitrothion	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	TM149/PM30								
Malathion	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			<0.01	ug/l	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								
TPH CWG																			
Aliphatics																			
>C5-C6 #	<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 #	<10	<10	<10	<10	<10	<10			<10	ug/l	TM36/PM12								
>C10-C12 #	<5	<5	<5	<5	<5	<5			<5	ug/l	TM5/PM16/PM30								
>C12-C16 #	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30								
>C16-C21 #	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30								
>C21-C35 #	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30								
Total aliphatics C5-35 #	<10	<10	<10	<10	<10	<10			<10	ug/l	TM5/PM16/PM30								

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Ground Investigations Ireland
Reference: 9230-11-19
Location: Avoca River Park
Contact: Barry Sexton
EMT Job No: 20/6773

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

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								
COC No / misc														
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	26/05/2020	26/05/2020	26/05/2020	26/05/2020	26/05/2020								
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water								
Batch Number	1	1	1	1	1	1								
Date of Receipt	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020								
												LOD/LOR	Units	Method 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 #	<10	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10	<10	<10	<10						<10	ug/l	TM5/PM16/PM30
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 #	25.0	22.2	25.9	26.4	30.5	12.5						<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	8.9	<0.2	<0.2	10.6	<0.2	6.6						<0.2	mg/l	TM38/PM0
Nitrite as NO2 #	0.13	<0.02	<0.02	0.04	<0.02	0.02						<0.02	mg/l	TM38/PM0
Total Cyanide #	<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
Electrical Conductivity @25C #	386	646	390	427	1353	125						<2	uS/cm	TM76/PM0
pH #	7.38	6.47	6.64	6.98	6.67	7.59						<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Ground Investigations Ireland
 Reference: 9230-11-19
 Location: Avoca River Park
 Contact: Barry Sexton
 EMT Job No: 20/6773

VOC 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						
COC No / misc												
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	26/05/2020	26/05/2020	26/05/2020	26/05/2020	26/05/2020						
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1	1						
Date of Receipt	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020	29/05/2020						
							LOD/LOR	Units	Method No.	Please see attached notes for all abbreviations and acronyms		
VOC MS												
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 #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	4	<3	<3	ug/l	TM15/PM10			
Dichloromethane (DCM) #	<5	<5	<5	<5	<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 #	<2	<2	<2	<2	9	<2	<2	ug/l	TM15/PM10			
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10			
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10			
Benzene #	<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 #	<5	<5	<5	<5	<5	<5	<5	ug/l	TM15/PM10			
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10			
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10			
Tetrachloroethene (PCE) #	<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 #	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10			
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10			
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	ug/l	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 #	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10			
Isopropylbenzene #	<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 #	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10			
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
1,3,5-Trimethylbenzene #	<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 #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
1,2,4-Trimethylbenzene #	<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 #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10			
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	ug/l	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			

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.	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 HCl (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 overestimate 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.

Please include all sections of this report if it is reproduced

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 significantly 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
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution

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				
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	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			

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





**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-01
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.40
Stick Up (mm)	180mm	Water Level (mBTOC)	1.27
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-01	Monitoring Well	0.3%	0.5%	4ppm	1ppm	20.8%	1016	0.0 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-02
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.50
Stick Up (mm)	230mm	Water Level (mBTOC)	0.98
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-02	Monitoring Well	0.2%	0.2%	4ppm	2ppm	20.8%	1016	0.0 l/h

Additional Comments/Observations:



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Ground Investigations Ireland Gas Monitoring Field Sheet

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-03
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.60
Stick Up (mm)	140mm	Water Level (mBTOC)	0.65
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-03	Monitoring Well	9.9%	6.4%	4ppm	2ppm	16.2%	1016	-0.4 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-04
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.75
Stick Up (mm)	300mm	Water Level (mBTOC)	0.45
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	6.4%	2.3%	3ppm	2ppm	14.1%	1016	0.0 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-05
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.50
Stick Up (mm)	200mm	Water Level (mBTOC)	1.18
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-05	Monitoring Well	0.4%	4.3%	1ppm	0ppm	17.1%	1016	0.0 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-06
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.73
Stick Up (mm)	160mm	Water Level (mBTOC)	0.99
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-06	Monitoring Well	0.4%	1.5%	1ppm	1ppm	19.4%	1016	0.0 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-07
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	1.86
Stick Up (mm)	240mm	Water Level (mBTOC)	0.42
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-07	Monitoring Well	1.7%	3.3%	3ppm	1ppm	13.9%	1016	0.0 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	14/08/2020
Client	FT Squared	Well I.D.	GS-08
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.45
Stick Up (mm)	200mm	Water Level (mBTOC)	0.88
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-08	Monitoring Well	0.3%	0.1%	1ppm	2ppm	20.8%	1016	0.0 l/h

Additional Comments/Observations:



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<p style="text-align: center;">Ground Investigations Ireland Gas Monitoring Field Sheet (V1 August 2018)</p>								
Project Information								
Project Number	9230-11-19	Sample Date	18/08/2020					
Client	FT Squared	Well I.D.	GS-01					
Site Name	Avoca River Park	Weather	Dry					
Sampler I.D.	NM	Weather Previous 24 hours	Wet					
Well Data								
Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE					
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	-					
Stick Up (mm)	180mm	Water Level (mBTOC)	-					
Weather	Dry	Odour	None					
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good					
Gas Data								
Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-01	Monitoring Well	0.3%	3.0%	1ppm	0ppm	17.8%	1005	4.5 l/h
Additional Comments/Observations:								



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	18/08/2020
Client	FT Squared	Well I.D.	GS-02
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	-
Stick Up (mm)	230mm	Water Level (mBTOC)	-
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-02	Monitoring Well	0.1%	2.4%	2ppm	0ppm	13.2%	1005	8.1 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	18/08/2020
Client	FT Squared	Well I.D.	GS-03
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	-
Stick Up (mm)	140mm	Water Level (mBTOC)	-
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-03	Monitoring Well	0.3%	0.1%	2ppm	0ppm	18.7%	1005	0.2 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	18/08/2020
Client	FT Squared	Well I.D.	GS-04
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	-
Stick Up (mm)	300mm	Water Level (mBTOC)	-
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	1.9%	2.2%	3ppm	1ppm	17.1%	1005	0.1 l/h

Additional Comments/Observations:



Ground Investigations Ireland Gas Monitoring Field Sheet								
(V1 August 2018)								
Project Information								
Project Number	9230-11-19	Sample Date	18/08/2020					
Client	FT Squared	Well I.D.	GS-05					
Site Name	Avoca River Park	Weather	Dry					
Sampler I.D.	NM	Weather Previous 24 hours	Wet					
Well Data								
Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE					
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	-					
Stick Up (mm)	200mm	Water Level (mBTOC)	-					
Weather	Dry	Odour	None					
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good					
Gas Data								
Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-05	Monitoring Well	0.3%	4.7%	5ppm	2ppm	13.4%	1005	0.0 l/h
Additional Comments/Observations:								



Ground Investigations Ireland Gas Monitoring Field Sheet (V1 August 2018)								
Project Information								
Project Number	9230-11-19			Sample Date		18/08/2020		
Client	FT Squared			Well I.D.		GS-06		
Site Name	Avoca River Park			Weather		Dry		
Sampler I.D.	NM			Weather Previous 24 hours		Wet		
Well Data								
Casing Diameter (mm)	N/A			Standpipe Type uPVC etc.		HDPE		
Standpipe Diameter (mm)	52mm			Total Well Depth (m)		-		
Stick Up (mm)	160mm			Water Level (mBTOC)		-		
Weather	Dry			Odour		None		
Gas Meter Model	Geotech GA5000			Gas Valve/Cap Condition		Good		
Gas Data								
Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-06	Monitoring Well	0.3%	1.9%	3ppm	1ppm	17.8%	1005	0.0 l/h
Additional Comments/Observations:								



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	18/08/2020
Client	FT Squared	Well I.D.	GS-07
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	-
Stick Up (mm)	240mm	Water Level (mBTOC)	-
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-07	Monitoring Well	1.0%	2.3%	5ppm	2ppm	15.5%	1005	-0.1 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	18/08/2020
Client	FT Squared	Well I.D.	GS-08
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	-
Stick Up (mm)	200mm	Water Level (mBTOC)	-
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-08	Monitoring Well	0.3%	0.4%	3ppm	1ppm	19.5%	1005	0.1 l/h

Additional Comments/Observations:



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Ground Investigations Ireland Gas Monitoring Field Sheet (V1 August 2018)								
Project Information								
Project Number	9230-11-19			Sample Date	21/08/2020			
Client	FT Squared			Well I.D.	GS-01			
Site Name	Avoca River Park			Weather	Dry			
Sampler I.D.	NM			Weather Previous 24 hours	Wet			
Well Data								
Casing Diameter (mm)	N/A			Standpipe Type uPVC etc.	HDPE			
Standpipe Diameter (mm)	52mm			Total Well Depth (m)	2.40			
Stick Up (mm)	180mm			Water Level (mBTOC)	0.55			
Weather	Dry			Odour	None			
Gas Meter Model	Geotech GA5000			Gas Valve/Cap Condition	Good			
Gas Data								
Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-01	Monitoring Well	0.4%	0.9%	2ppm	0ppm	18.2%	989	-6.0 l/h
Additional Comments/Observations:								



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	21/08/2020
Client	FT Squared	Well I.D.	GS-02
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.50
Stick Up (mm)	230mm	Water Level (mBTOC)	0.30
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-02	Monitoring Well	0.3%	0.7%	2ppm	0ppm	15.3%	989	2.1 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	21/08/2020
Client	FT Squared	Well I.D.	GS-03
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.60
Stick Up (mm)	140mm	Water Level (mBTOC)	0.20
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-03	Monitoring Well	0.3%	0.7%	2ppm	1ppm	16.1%	989	0.2 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	21/08/2020
Client	FT Squared	Well I.D.	GS-04
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	300mm	Water Level (mBTOC)	0.35
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	1.0%	1.2%	2ppm	1ppm	19.3%	989	0.1 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	21/08/2020
Client	FT Squared	Well I.D.	GS-05
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.35
Stick Up (mm)	200mm	Water Level (mBTOC)	0.67
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-05	Monitoring Well	0.3%	3.2%	2ppm	0ppm	15.1%	988	1.5 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	21/08/2020
Client	FT Squared	Well I.D.	GS-06
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	160mm	Water Level (mBTOC)	0.80
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-06	Monitoring Well	2.4%	1.2%	1ppm	0ppm	18.9%	987	3.2 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	21/08/2020
Client	FT Squared	Well I.D.	GS-07
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	1.84
Stick Up (mm)	240mm	Water Level (mBTOC)	0.20
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-07	Monitoring Well	0.5%	1.1%	1ppm	0ppm	19.3%	988	0.4 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	21/08/2020
Client	FT Squared	Well I.D.	GS-08
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.45
Stick Up (mm)	200mm	Water Level (mBTOC)	0.80
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-08	Monitoring Well	0.4%	0.1%	0ppm	0ppm	20.6%	987	0.5 l/h

Additional Comments/Observations:



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Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	26/08/2020
Client	FT Squared	Well I.D.	GS-01
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.40
Stick Up (mm)	180mm	Water Level (mBTOC)	0.42
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-01	Monitoring Well	0.2%	0.9%	5ppm	2ppm	18.7%	1015	-3.7 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	26/08/2020
Client	FT Squared	Well I.D.	GS-02
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.50
Stick Up (mm)	230mm	Water Level (mBTOC)	0.34
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-02	Monitoring Well	0.2%	0.8%	4ppm	2ppm	19.7%	1015	6.5 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	26/08/2020
Client	FT Squared	Well I.D.	GS-03
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.60
Stick Up (mm)	140mm	Water Level (mBTOC)	0.24
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-03	Monitoring Well	0.2%	0.1%	4ppm	2ppm	20.7%	1015	0.2 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	26/08/2020
Client	FT Squared	Well I.D.	GS-04
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	300mm	Water Level (mBTOC)	0.18
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	0%	0.2%	6ppm	2ppm	20.8%	1015	0.0 l/h

Additional Comments/Observations:



Ground Investigations Ireland Gas Monitoring Field Sheet								
(V1 August 2018)								
Project Information								
Project Number	9230-11-19	Sample Date	26/08/2020					
Client	FT Squared	Well I.D.	GS-05					
Site Name	Avoca River Park	Weather	Dry					
Sampler I.D.	PM	Weather Previous 24 hours	Wet					
Well Data								
Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE					
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.35					
Stick Up (mm)	200mm	Water Level (mBTOC)	0.54					
Weather	Dry	Odour	None					
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good					
Gas Data								
Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-05	Monitoring Well	0.4%	2.7%	1ppm	0ppm	16.8%	1015	-0.3 l/h
Additional Comments/Observations:								



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	26/08/2020
Client	FT Squared	Well I.D.	GS-06
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	160mm	Water Level (mBTOC)	0.65
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-06	Monitoring Well	1.0%	0.3%	4ppm	1ppm	18.0%	1015	0.0 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	26/08/2020
Client	FT Squared	Well I.D.	GS-07
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	1.82
Stick Up (mm)	240mm	Water Level (mBTOC)	0.14
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-07	Monitoring Well	1.2%	0.8%	4ppm	0ppm	15.7%	1015	1.7 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	26/08/2020
Client	FT Squared	Well I.D.	GS-08
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	PM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.45
Stick Up (mm)	200mm	Water Level (mBTOC)	0.50
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-08	Monitoring Well	0.2%	0.3%	3ppm	1ppm	19.4%	1015	0.1 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	31/08/2020
Client	FT Squared	Well I.D.	GS-01
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Dry

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.40
Stick Up (mm)	180mm	Water Level (mBTOC)	0.80
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-01	Monitoring Well	0.1%	0.9%	2ppm	0ppm	19.5%	1021	-0.2 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	31/08/2020
Client	FT Squared	Well I.D.	GS-02
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Dry

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.50
Stick Up (mm)	230mm	Water Level (mBTC)	0.88
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-02	Monitoring Well	0.1%	1.3%	1ppm	0ppm	18.8%	1021	0.4 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	31/08/2020
Client	FT Squared	Well I.D.	GS-03
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Dry

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.60
Stick Up (mm)	140mm	Water Level (mBTOC)	0.50
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-03	Monitoring Well	0.2%	0.5%	1ppm	0ppm	20.1%	1021	0.3 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	31/08/2020
Client	FT Squared	Well I.D.	GS-04
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Dry

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	300mm	Water Level (mBTOC)	0.50
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	0.2%	1.9%	1ppm	Oppm	19.9%	1021	0.4 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	31/08/2020
Client	FT Squared	Well I.D.	GS-05
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Dry

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.35
Stick Up (mm)	200mm	Water Level (mBTOC)	0.79
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-05	Monitoring Well	0.1%	2.6%	1ppm	0ppm	17.6%	1021	0.4 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	31/08/2020
Client	FT Squared	Well I.D.	GS-06
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Dry

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	160mm	Water Level (mBTOC)	0.88
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-06	Monitoring Well	0.2%	1.0%	0ppm	0ppm	20.2%	1021	0.6 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	31/08/2020
Client	FT Squared	Well I.D.	GS-07
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Dry

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	1.82
Stick Up (mm)	240mm	Water Level (mBTOC)	0.43
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-07	Monitoring Well	0.3%	0.5%	1ppm	0ppm	19.0%	1021	0.5 l/h

Additional Comments/Observations:



Ground Investigations Ireland Gas Monitoring Field Sheet (V1 August 2018)								
Project Information								
Project Number		9230-11-19		Sample Date		31/08/2020		
Client		FT Squared		Well I.D.		GS-08		
Site Name		Avoca River Park		Weather		Dry		
Sampler I.D.		NM		Weather Previous 24 hours		Dry		
Well Data								
Casing Diameter (mm)		N/A		Standpipe Type uPVC etc.		HDPE		
Standpipe Diameter (mm)		52mm		Total Well Depth (m)		2.45		
Stick Up (mm)		200mm		Water Level (mBTOC)		0.88		
Weather		Dry		Odour		None		
Gas Meter Model		Geotech GA5000		Gas Valve/Cap Condition		Good		
Gas Data								
Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-08	Monitoring Well	0.2%	1.6%	0ppm	0ppm	18.6%	1021	0.6 l/h
<u>Additional Comments/Observations:</u>								



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-01
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.40
Stick Up (mm)	180mm	Water Level (mBTOC)	0.57
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-01	Monitoring Well	0.3%	1.8%	2ppm	1ppm	16.1%	1013	0.8 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-02
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.50
Stick Up (mm)	230mm	Water Level (mBTOC)	0.60
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-02	Monitoring Well	0.3%	1.2%	2ppm	1ppm	18.6%	1013	0.2 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-03
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.60
Stick Up (mm)	140mm	Water Level (mBTOC)	0.22
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-03	Monitoring Well	0.4%	0.5%	2ppm	1ppm	20.4%	1013	0.1 l/h

Additional Comments/Observations:



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**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-04
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	300mm	Water Level (mBTOC)	0.45
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-04	Monitoring Well	0.4%	3.1%	3ppm	1ppm	19.8%	1013	0.1 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-05
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.35
Stick Up (mm)	200mm	Water Level (mBTOC)	0.78
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-05	Monitoring Well	0.3%	2.6%	2ppm	Oppm	17.6%	1013	0.2 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-06
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.70
Stick Up (mm)	160mm	Water Level (mBTOC)	0.90
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-06	Monitoring Well	0.6%	0.8%	1ppm	0ppm	20.1%	1013	0.3 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-07
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	1.82
Stick Up (mm)	240mm	Water Level (mBTOC)	0.37
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-07	Monitoring Well	0.4%	0.6%	1ppm	0ppm	18.0%	1013	0.4 l/h

Additional Comments/Observations:



**Ground Investigations Ireland
Gas Monitoring Field Sheet**

(V1 August 2018)

Project Information

Project Number	9230-11-19	Sample Date	03/09/2020
Client	FT Squared	Well I.D.	GS-08
Site Name	Avoca River Park	Weather	Dry
Sampler I.D.	NM	Weather Previous 24 hours	Wet

Well Data

Casing Diameter (mm)	N/A	Standpipe Type uPVC etc.	HDPE
Standpipe Diameter (mm)	52mm	Total Well Depth (m)	2.45
Stick Up (mm)	200mm	Water Level (mBTOC)	0.89
Weather	Dry	Odour	None
Gas Meter Model	Geotech GA5000	Gas Valve/Cap Condition	Good

Gas Data

Sample I.D.	Location Type	CH4	CO2	CO	H2S	O2	Barometric Pressure	Internal Flow Rate
GS-08	Monitoring Well	0.3%	0.8%	1ppm	0ppm	19.7%	1013	0.3 l/h

Additional Comments/Observations: