

ARKLOW BANK WIND PARK
PHASE 2

**ONSHORE GRID
INFRASTRUCTURE**

VOLUME III

Chapter 9 APPENDICES

Appendix 9.1b GI Reports - Cable Route
Factual Report

Appendix 9.1b

Cable Route Site

Investigations Factual Report

IRISH DRILLING LIMITED

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ARKLOW BANK WIND PARK ONSHORE GROUND INVESTIGATION

CABLE ROUTE SITE INVESTIGATIONS FACTUAL REPORT

Sure Partners Ltd,
South County Business Park,
Leopardstown,
Dublin 18.

ARUP,
Consulting Engineers,
50 Ringsend Road,
Dublin,
D04 T6X0.

	Prepared by	Approved by	Rev. Issue Date:	Revision No.
	Ronan Killeen	Declan Joyce	22 nd January 2021	20 WW_101/03c
Signature	RK	DJ		

Report No.: LF100034-ENG-GT-ONX-RPT-0002

FOREWORD

The borehole and trial pit records have been compiled from an examination of the samples by a Geotechnical Engineer and from the Drillers' descriptions.

The report presents an opinion on the configuration of the strata within the site based on the borehole and trial pit results. The assumptions, though reasonable, are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes and trial pits.

The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930, 2015 Code of Practice for Site Investigations with precedence given to IS EN 1997-2 where applicable.

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1.0 Introduction.

Irish Drilling Ltd. (IDL) was instructed by Sure Partners Limited (SPL), to carry out a site investigation at the site of the proposed landfall site for the Arklow Bank Wind Park (ABWP) Onshore Grid Infrastructure Project.

This site investigation was carried out to provide detailed factual geotechnical information of the underlying ground conditions at the proposed cable route site.

The fieldwork commenced on October 12th 2020 and was completed on November 5th 2020.

2.0 Site & Geology

The site is located north and west of Arklow Town and links the landfall site (which is situated at Johnstown North) and the route traverses mainly agricultural farmland with two major road crossings at the R772 and M11 motorway where it links with the substation site (which is situated near Shelton Abbey, adjacent to the Avoca River).

The route is approximately 6.1km in length and is accessed from public roads via existing field entrances.

The site can generally be described as arable farmland bound by hedgerows and forestry.

Site Plans, prepared by the client's representatives and amended by IDL to show 'as-built' locations, is included with this report as Appendix 10.

The following were the main published information sources used:

Subsoil Geology

General Classification:

Cable Percussive borehole, Trial Pit data, the Teagasc Subsoil Mapping (2004) and the Quaternary Geology of Ireland – Sediments Map: 1 to 50,000 were reviewed to obtain information on subsoil classifications within the proposed locations.

Solid Geology

General Classification:

The 1:100,000 scale map series Geological Survey of Ireland: A geological Description: Sheet 16 and the Geological Survey of Ireland Map Viewer were used to establish the probable geological rock formations underlying the proposed location.

Site investigation data is available as point source data along the proposed route, and the majority of the ground in between the points can only be assumed to follow the characteristics of the nearest available data.

A summary of the ground conditions recorded in published data for the region (including GSI database) is outlined as follows:

Glacial Till:

Generally, glacial till is what was often referred to as Boulder Clay. Here we have the calcareous Irish Sea till, a diverse material that has been largely deposited sub-glacially and has a wide range of characteristics due to the variety of parent materials and processes of deposition. Tills derived from lower Paleozoic sandstones and shales have also been observed and recorded.

Tills are generally tightly packed, unsorted, heterogeneous, unbedded, and can have a wide range of particle sizes and types, which are often but not exclusively angular or sub-angular.

Bedrock:

The GSI database shows the site to be underlain by the Maulin Formation (identified as dark blue grey slates, phylites and schists) and/or the Kilmacrea Formation of the Ordovician Metasediments Group.

The Kilmacrea formation is generally composed of a series of layered sandstones, siltstones and shales. From core samples thus identified as Ordovician Shales: and seen greenish grey, grey and dark grey fine-grained shale with subordinate greenish brown and brown fine and medium grained sandstone.

In summary the cable route encounters a combination of Irish sea tills, tills derived from lower Palaeozoic sandstones and shales, rock outcropping and alluvium channels.

3.0 Fieldwork.

3.1 Fieldwork Plant:

The following plant was mobilised to site to carry out fieldwork operations:

Hyundai 140x Excavator.
DeltaBase 520 Rotary Core Drill Rig.
GT1100 GoTract Drill Rig.

Fieldwork carried out to date has included the following:

3.2 Cable Percussive Boreholes:

Two cable percussion (Shell & Auger) boreholes were completed using Dando 2000 Cable Percussive Boring Rigs. The boreholes were bored to 'refusal' or to depths as instructed by the client's representatives.

The borehole depths ranged from 8.40m to 19.80m below ground level.

In-Situ testing consisting of Standard Penetration Tests were carried out at regular intervals (predominantly 1.0m intervals) or as instructed by the client's representatives.

Disturbed bulk and jar soil samples were taken at each change in strata and were returned to the laboratory and logged by a Geotechnical Engineer and presented for testing. Undisturbed soil samples (U4) were also recovered where possible in cohesive soils and groundwater samples were also obtained if encountered.

3.3 Rotary Core Boreholes:

Three rotary core boreholes were carried out to establish overburden conditions and rockhead and to establish the nature and integrity of the underlying rock.

The rotary core boreholes were carried out as 'stand-alone' and/or 'follow-on' boreholes and used a water based flush system as the drilling medium while a biodegradable polymer gel was also used where necessary to aid the drilling and soil / rock recovery process.

The boreholes were predominantly completed using wireline drilling techniques, with HQ and GeoboreS size (64mm core/95mm hole diameter and 100mm core / 155mm hole diameter) drill strings to recover soil and rock core samples.

The samples were stored in wooden boxes and returned to the laboratory where there were logged and photographed by a Geotechnical Engineer and presented for testing.

A 50mm diameter standpipe was installed in the following rotary core boreholes to allow for the monitoring of groundwater levels over a prolonged period of time: BH 201 and BH 202.

The rotary core boreholes were carried out to depths ranging from 25.00m to 29.40m below ground level.

3.4 Trial Pits:

Nine trial pits were excavated on site using a 13T wide-padded tracked excavator. The pits were logged and photographed by an Engineer with observations made on ground conditions, pit stability, water ingress and services encountered.

Small and bulk disturbed soil samples were recovered at each change in strata and returned to the laboratory and presented for testing.

In-Situ tests consisting of Shear Vane Tests were carried out where possible in cohesive soils in a number of trial pits.

In-Situ tests consisting of thermal conductivity/thermal resistivity were also carried out at all of the trial pit location. The tests were carried out using a TLS-100 Portable Thermal Conductivity/Thermal Resistivity Meter and the results are included as Appendix 3 of this factual report.

3.5 Soil Resistivity Test:

Eight soil resistivity test (SR 01 to 06 and SR 08-09) was carried out on site.

The test was carried out using a Megger Resistivity Unit with electrode spacings of 1m, 2m and 3m used to complete the test.

The records of the soil resistivity test are included as Appendix 4 of this factual report.

3.6 General Summary:

The borehole and trial pit locations were set out on site using a Trimble CU Bluetooth GPS Surveying Unit and the co-ordinates are included on the logs presented in the appendices.

All fieldwork co-ordinates are reported to Irish Transverse Mercator (ITM) with Reduced Levels recorded relative to Malin Head Datum and with an accuracy level of + or – 0.10m.

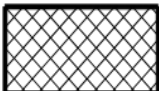
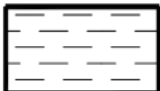
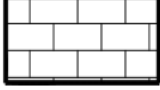
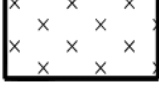
The Glacial Till in general consisted of slightly sandy slightly gravelly silt/clay and/or silty sands and gravels with cobbles and boulders.

Intact bedrock was not encountered during the drilling of the rotary core boreholes with possible weathered bedrock encountered in borehole BH 206 at a depth of 13.50m below ground level.

Reference should be made to the engineering logs for a detailed description of the ground conditions encountered.

The fieldwork was carried out in accordance with IS EN 1997-2 and BS5930, 2015 Code of Practice for Site Investigations with precedence given to IS EN 1997-2 where applicable.

The following Key Legend Table details the symbology used on the engineering logs to describe ground conditions encountered:

Legend:	
	Made ground=mg
	Clay=cl
	Boulders and cobbles=b/c
	Peat=p
	Gravel=g
	Silty sand=s/si
	Sand=s
	Rock=r
	Silt=si

4.0 Laboratory Testing

Representative samples recovered from the boreholes and trial pits were scheduled for testing in the laboratory.

The test schedules were prepared by the Client's Engineer and included some or all of the following tests on disturbed and/or undisturbed soil samples recovered from the cable percussive boreholes and trial pits:

- * 30nr Natural Moisture Content.
- * 16nr Atterberg Limits.
- * 27nr Particle Size Distribution.
- * 14nr Sedimentation.
- * 5nr Chemical (pH, Sulphate, Total Sulphur).
- * 8nr Compaction.
- * 8nr Moisture Content Relationship.
- * 1nr Triaxial.
- * 18nr Environmental Suite.
- * 49nr Thermal Resistivity.

The test schedules also included some or all of the following tests on soil and/or rock core samples recovered from the rotary core boreholes:

- * 9nr Natural Moisture Content.
- * 6nr Atterberg Limits.
- * 9nr Particle Size Distribution.
- * 6nr Sedimentation.
- * 2nr Triaxial.

A full summary of the soil and rock test results is included as Appendix 6 with the environmental suite test results included as Appendix 7.

The results of environmental suite tests carried out on water samples recovered from borehole BH 202 are also included in Appendix 7.

A number of laboratory test results not available on issuance of this report will be presented as an Addendum to this report accordingly.

The test schedules were carried out predominantly at the IDL Laboratory located at Loughrea, County Galway.

A number of specialist tests not available at the IDL laboratory were carried out by designated laboratories on a subcontract basis as follows:

Laboratory chemical and environmental tests were carried out by Alcontrol Laboratories, UK. Triaxial soil tests were carried out by NMTL, Carlow.

The soil and rock descriptions as noted on the borehole and trial pit logs are in general visual descriptions as observed and logged by our Engineers and are described in accordance with IS EN 1997-2 and BS5930, 2015 Code of Practice for Site Investigations.

Where laboratory classification tests have been carried out on soil or rock samples then these visual descriptions have been amended accordingly to take into account the results of these classification tests.

The records of all fieldwork, laboratory test results completed to date and photographs are included in the appendices of this Factual Report.



Appendix 1

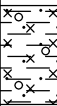
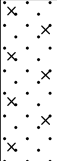
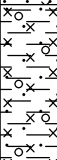
Borehole Records



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DRILLHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		DRILLHOLE No BH201
Job No 2020WW102	Date 12-10-20 14-10-20	Ground Level (m OD) 34.18	Co-Ordinates () E 724,944.0 N 675,234.0		
Engineer ARUP					Sheet 1 of 3 Rev. 1

RUN DETAILS						STRATA		Geology	Instrument/	Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail			
0.00	0 (-) -	NA			(1.60)	0.00 - 25.00 m: overburden		Open hole drilling - no recovery.		
1.60			32.58		1.60					
2.50	44 (-) -	NA 4.00 (24)	31.68		(0.90) 2.50			Orangish brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to medium of assorted sandstone mudstone and shale.		
4.00	33 (-) -		30.18		(1.50) 4.00			Brown silty medium SAND.		
5.50	27 (-) -		28.68		(1.50) 5.50			Orangish brown slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to medium of assorted sandstone mudstone and shale.		
7.00	0 (-) -	5.50 (32)			(1.50)			No recovery as washout of fines during drilling. No record of cavity. Drillers comment: washed away sand.		
8.50	33 (-) -	7.00 (24)	25.68		(1.50) 8.50			Subangular to subrounded fine to coarse GRAVEL of assorted sandstone mudstone and shale. (0.50m recovered).		
10.00	0 (-) -	8.50 (10)						No recovery as washout of fines during drilling. No record of cavity. Drillers comment: washed away.		
	0 (-) -	10.00 (11)								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia	Core Dia mm	Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
12-10-20	17.00	7.00	6.00	146	102			0	25.00	polymer	100	
13-10-20	08.30	7.00	6.00	146	102							
All dimensions in metres Scale 1:68.75		Client: Sure Partners Ltd			Method/ Plant Used Hydreq				Bit GBS Design		Driller PMcG	Logged By EAT

IDL ACS UK DH (SPTS) ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE GDT 15/1/21



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DRILLHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		DRILLHOLE No BH201
Job No 2020WW102	Date 12-10-20 14-10-20	Ground Level (m OD) 34.18	Co-Ordinates () E 724,944.0 N 675,234.0		
Engineer ARUP					Sheet 2 of 3 Rev. 1

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
Date						Discontinuities	Detail	Main		
11.50		11.50 (17)			(6.00)			No recovery as washout of fines during drilling. No record of cavity. Drillers comment: washed away. (continued)		
	0 (-) -	NR								
13.00		13.00 (13)								
	0 (-) -									
14.50			19.68		14.50					
		14.50 (17)	19.58		14.60			Medium dense subangular to subrounded fine to coarse GRAVEL of assorted sandstone mudstone and shale. (0.50m recovered).		
16.00	100 (-) -	16.00 (35)						Dark orangish brown slightly sandy slightly gravelly silty CLAY. Gravel is subrounded to subangular fine to medium of assorted sandstone mudstone and shale.		
	20 (-) -	NA								
17.50		17.50 (34)								
	13 (-) -				(7.20)					
19.00		19.00 (35)								
	100 (-) -									
20.50		20.50 (25)								
	53 (-) -									
22.00			12.38		21.80					

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Casing		Core Dia	Water		From (m)	To (m)	Type	Return (%)	
		Depth	Depth	Dia	mm	Strike	Standing					
13-10-20	17.00	20.50	9.00	146	102							Hand dig inspection pit. 4 gallons polydrill used. 50mm standpipe installed. Response zone 9.00m to 12.00m bgl.
14-10-20	08.30	20.50	9.00	146	102							
All dimensions in metres Scale 1:68.75		Client: Sure Partners Ltd			Method/ Plant Used Hydreq				Bit GBS Design		Driller PMcG	Logged By EAT

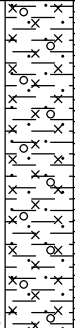
IDL ACS UK DH (SPTS) ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE GDT 15/1/21



Irish drilling LTD

DRILLHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		DRILLHOLE No BH201
Job No 2020WW102	Date 12-10-20 14-10-20	Ground Level (m OD) 34.18	Co-Ordinates () E 724,944.0 N 675,234.0		
Engineer ARUP					Sheet 3 of 3 Rev. 1

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth Date	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
						Discontinuities	Detail	Main		
23.50	100 (-) -	22.00 (32) NA			(3.20)			Very stiff greenish brown slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of assorted sandstone mudstone and shale. <i>(continued)</i>		
25.00	17 (-) -	23.50 (33)	9.18		25.00			BH terminated at 25.00m bgl on REs instruction.		
		25.00 (34)								

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia	Core Dia mm	Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
14-10-20	13.00	25.00	9.00	146	102							Hand dig inspection pit. 4 gallons polydrill used. 50mm standpipe installed. Response zone 9.00m to 12.00m bgl.

All dimensions in metres Scale 1:68.75	Client: Sure Partners Ltd	Method/ Plant Used	Hydreq	Bit Design	GBS	Driller PMcG	Logged By EAT

IDL AGS UK DH (SPTS) ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE GDT 15/1/21



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BOREHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		BOREHOLE No BH202
Job No 2020WW102	Date 14-10-20 19-10-20	Ground Level (m OD) 34.89	Co-Ordinates () E 724,851.0 N 675,231.0		
Engineer ARUP		GROUNDWATER STRIKES	Water strikes: 1st: dry 2nd: 3rd:	Rose to (@ 20 min.): Sealed at:	Sheet 1 of 3 Rev. 1

SAMPLES & TESTS			Water	STRATA			Geology	Instrument/Backfill
Depth	Type No	Test Result		Reduced Level	Legend (Thickness)	DESCRIPTION		
0.00-1.00	B1					Firm brown gravelly CLAY with cobbles. Cobbles are rounded.		
1.00	CPT	N = 24 (3, 5, 4, 7, 7, 6)			(1.80)			
1.00	D2							
1.00-1.50	B4			33.09	1.80			
1.50	D5							
2.00	CPT	N = 24 (4, 5, 5, 5, 6, 8)			(1.80)	Medium dense brown very silty fine and medium SAND.		
2.00-2.50	B7							
2.50	D8							
3.00	CPT	N = 16 (2, 2, 3, 4, 4, 5)						
3.00-3.50	B10			31.29	3.60			
3.50	D11					Firm brown slightly sandy slightly gravelly laminated SILT.		
4.00	SPT	N = 20 (5, 4, 5, 4, 4, 7)			(1.10)	4.00m: stiff.		
4.00-4.50	B13			30.19	4.70			
4.50	D14							
5.00	CPT	N = 41 (8, 9, 11, 10, 9, 11)			(2.80)	Dense dry gravelly coarse SAND.		
5.00-5.50	B16							
5.50	D17							
6.50	CPT	N = 45 (7, 10, 10, 10, 11, 14)						
6.50-7.00	B19							
7.00	D20			27.39	7.50			
8.00	CPT	N = 13 (2, 2, 3, 2, 4, 4)			(3.50)	Medium dense brown silty gravelly fine and coarse SAND.		
8.00-8.50	B22							
8.50	D23							
9.50	CPT	N = 3 (1, 0, 0, 1, 1, 1)				9.50m: loose.		
9.50-10.00	B25							
10.00	D26			23.89	11.00			

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
											Rotary follow on. 2 gallons polydrill used. 50mm standpipe installed. Response zone 7.50m to 11.00m bgl.
All dimensions in metres Scale 1:68.75		Client: Sure Partners Ltd		Method/ Plant Used		Dando 2000/Hydreq		Bit HQ3 Design		Driller BT/PMcG	Logged By EAT

IDL AQS3 UK BH ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE GDT 15/1/21



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BOREHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		BOREHOLE No BH202
Job No 2020WW102	Date 14-10-20 19-10-20	Ground Level (m OD) 34.89	Co-Ordinates () E 724,851.0 N 675,231.0		
Engineer ARUP		GROUNDWATER STRIKES	Water strikes: 1st: dry 2nd: 3rd:	Rose to (@ 20 min.): Sealed at:	Sheet 2 of 3 Rev. 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend (Thick-ness)	Depth	DESCRIPTION		
11.00	CPT	N = 19 (3, 3, 2, 4, 5, 8)		23.39		11.50	Medium dense brown rounded GRAVEL.		
11.00-11.50	B28 D29					(1.70)	Medium dense wet grey brown slightly gravelly very silty fine SAND with cobbles.		
12.50	CPT	N = 23 (4, 5, 5, 6, 5, 7)		21.69		13.20	Firm to stiff grey brown slightly sandy slightly gravelly SILT with cobbles and possible boulders.		
12.50-13.00	B31 D32								
13.00	B32								
13.20	B33								
13.20	D34								
14.00-14.45	U10035	36 blows							
14.50	D36								
15.50	SPT	N = 40 (5, 6, 8, 10, 10, 12)					15.50m: very stiff.		
15.50-16.00	B38 D39					(6.30)			
16.00									
17.00-17.45	U10040	50 blows NR							
17.00-17.50	B41 SPT	N = 44 (6, 6, 8, 9, 13, 14)							
17.50	D42								
17.50-18.00	B44 D45								
17.50									
19.00	CPT	N = 41 (5, 8, 10, 9, 11, 11)		15.39		19.50			
19.00-19.50	B47 D48			15.09		19.80	Very stiff brown sandy CLAY with cobbles.		
19.50									
19.60		15 for 10 mm (25, 35, 15)							
19.60-19.80	B50						Borehole continued as a Cored Drillhole		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
14-10-20	17.00	13.50	13.50	203	12.00	19.7	19.8	1			Rotary follow on. 2 gallons polydrill used. 50mm standpipe installed. Response zone 7.50m to 11.00m bgl.
15-10-20	08.30	13.50	13.50	203	11.90						
15-10-20	17.00	19.80	18.00	203	12.00						
All dimensions in metres Scale 1:68.75		Client: Sure Partners Ltd		Method/ Plant Used		Dando 2000/Hydreq		Bit HQ3 Design		Driller BT/PMcG	Logged By EAT

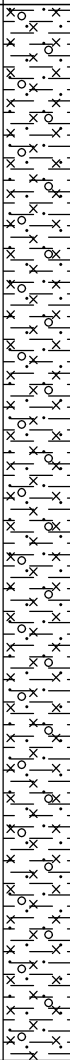
IDL ACS3 UK BH ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE GDT 15/1/21



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DRILLHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		DRILLHOLE No BH202
Job No 2020WW102	Date 14-10-20 19-10-20	Ground Level (m OD) 34.89	Co-Ordinates () E 724,851.0 N 675,231.0		
Engineer ARUP					Sheet 3 of 3 Rev. 1

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
Date						Discontinuities	Detail	Main		
45.10	19.80	11 (-) -	NA	15.09		19.80	19.80 - 29.40 m: overburden	Light orangish brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of assorted sandstone mudstone and shale.		
	20.60	-								
		10 (-) -								
	22.10	-								
		10 (-) -								
	23.60	-						23.60m: becoming greenish brown.		
		10 (-) -	NA							
	25.10	-								
		20 (-) -								
	26.60	-								
		14 (-) -								
	28.00	-								
		7 (-) -								
19.10	29.40	-		5.49		29.40		BH terminated at 29.40m bgl on REs instruction.		

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia	Core Dia mm	Strike	Water Standing	From (m)	To (m)	Type	Return (%)	
15-10-20	17.00	19.80	18.00	203			12.00	19.8	29.40	polymer	100	Rotary follow on. 2 gallons polydrill used. 50mm standpipe installed. Response zone 7.50m to 11.00m bgl.
19-10-20	16.00	29.40	19.30	99	61							

All dimensions in metres Scale 1:68.75	Client: Sure Partners Ltd	Method/ Plant Used	Dando 2000/Hydreq	Bit Design	HQ3	Driller BT/PMcG	Logged By EAT

IDL AGS UK DH (SPTS) ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020 GPJ IDL TP TEMPLATE GDT 15/1/21



Irish drilling LTD

BOREHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site				Location Arklow, County Wicklow		BOREHOLE No BH206		
Job No 2020WW102		Date 02-11-20 05-11-20		Ground Level (m OD) 24.75			Co-Ordinates () E 724,935.2 N 675,761.9	
Engineer ARUP				GROUNDWATER STRIKES		Water strikes: Rose to (@ 20 min.): Sealed at: 1st: dry 2nd: 3rd:		Sheet 1 of 3 Rev. 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.00-1.00	B1			24.55		0.20	TOPSOIL.		
				24.15		0.60	Brownish red silty CLAY.		
1.00	CPT	N = 14 (3, 3, 4, 3, 4, 3)				(1.60)	Firm grey brown slightly sandy slightly gravelly SILT with cobbles and possible boulders.		
1.00	D2								
1.00-1.50	B4								
2.00	CPT	N = 22 (4, 5, 5, 6, 5, 6)		22.55		2.20	Stiff brown slightly sandy slightly gravelly SILT with cobbles and possible boulders.		
2.00	D5								
2.00-2.50	B7								
3.00	CPT	N = 38 (5, 7, 13, 8, 8, 9)					3.00m: becoming very stiff.		
3.00	D8								
3.00-3.50	B10								
4.00	CPT	N = 38 (6, 11, 9, 10, 9, 10)							
4.00	D11								
4.00-4.50	B13								
5.00	CPT	N = 44 (4, 6, 10, 10, 11, 13)				(6.20)			
5.00	D14								
5.00-5.50	B16								
6.00	CPT	N = 44 (8, 9, 9, 10, 13, 12)							
6.00	D17								
6.00-6.50	B19								
7.00	CPT	N = 43 (6, 7, 7, 8, 12, 16)							
7.00	D20								
7.00-7.50	B22								
8.00	CPT	50 for 175 mm (10, 10, 18, 22, 10)		16.35		8.40	Borehole continued as a Cored Drillhole		
8.00	D23								
8.00-8.40	B25								

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia. mm	Water (bgl) Depth, m	From	To	Hours	From	To	
02-11-20	17.00	6.00	6.00	203	dry	5.2	5.5	0.5			
03-11-20	08.00	6.00	6.00	203	7.10	7.7	7.9	0.5			
03-11-20	13.00	8.40	8.40	203	7.00	8.4	8.4	1			
All dimensions in metres Scale 1:68.75		Client: Sure Partners Ltd			Method/ Plant Used	Dando 2000/Hydrreq			Bit PQ Design	Driller DK/PMcG	Logged By EAT

IDL AQS3 UK BH ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE.GDT 15/1/21



Irish drilling LTD

DRILLHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		DRILLHOLE No BH206
Job No 2020WW102	Date 02-11-20 05-11-20	Ground Level (m OD) 24.75	Co-Ordinates () E 724,935.2 N 675,761.9		
Engineer ARUP					Sheet 2 of 3 Rev. 1

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth	TCR (SCR)	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
Date	RQD					Discontinuities	Detail	Main		
03.11 8.50		8.40(50/150mm)	16.35		8.40			Brown sandy gravelly silty CLAY with cobbles. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse of assorted sandstone mudstone and shale. Cobbles are of assorted grey limestone.		
	11 (-) -									
10.70					(5.10)					
	75 (-) -									
11.50								11.50m to 13.50m: orangish brown.		
	40 (-) -	NA								
12.50										
	40 (-) -									
13.50			11.25		13.50					
	30 (0) 0					13.50 - 25.00 Non-intact as possible weathered rock. No recovery as washout of fines during drilling. No record of cavity.		Possible weathered rock. Recovered as angular fine to coarse gravel sized clasts of strong fine and medium grained siltstone with surficial orange and orangish brown iron stain.		
04.11 14.50										
	13 (0) 0									
16.00										
	20 (0) 0	NR/NI?								
17.50										
	20 (0) 0									
19.00										
					(11.50)					

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS	
Date	Time	Depth	Depth	Casing Dia	Core Dia mm	Strike	Water Standing	From (m)	To (m)	Type	Return (%)		
03-11-20	13.00	8.40	8.40	203			7.00	8.4	25.00	polymer	100		
04-11-20	17.00	14.50	9.50	123	84								
05-11-20	08.30	14.50	9.50	123	84		g/l						
All dimensions in metres Scale 1:68.75		Client: Sure Partners Ltd			Method/ Plant Used		Dando 2000/Hydreq			Bit PQ Design		Driller DK/PMcG	Logged By EAT

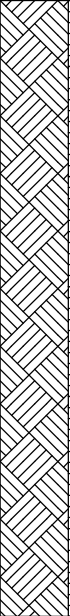
IDL AGS UK DH (SPTS) ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE GDT 15/1/21



Irish drilling LTD

DRILLHOLE LOG

Project Arklow Bank Wind Park - Cable Route Site			Location Arklow, County Wicklow		DRILLHOLE No BH206
Job No 2020WW102	Date 02-11-20 05-11-20	Ground Level (m OD) 24.75	Co-Ordinates () E 724,935.2 N 675,761.9		
Engineer ARUP					Sheet 3 of 3 Rev. 1

RUN DETAILS						STRATA			Geology	Instrument/ Backfill
Depth	TCR (SCR) RQD	(SPT) Fracture Spacing	Red'cd Level	Legend	Depth (Thick- ness)	DESCRIPTION				
Date						Discontinuities	Detail	Main		
	13 (0) 0	NR/NI?						Possible weathered rock. Recovered as angular fine to coarse gravel sized clasts of strong fine and medium grained siltstone with surficial orange and orangish brown iron stain. <i>(continued)</i>		
20.50										
22.00	20 (0) 0									
23.50	13 (0) 0									
25.00	20 (0) 0		-0.25		25.00					
								BH terminated at 25.00m bgl on REs instruction.		

Drilling Progress and Water Observations								Rotary Flush				GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia	Core Dia mm	Strike	Water Standing g/l	From (m)	To (m)	Type	Return (%)	
05-11-20	16.00	25.00	9.50	123	84							Rotary follow on. 4 gallons polydrill used. 50mm standpipe installed. Response zone 14.50m to 18.00m bgl. Artesian water encountered at 14.50m bgl. Standpipe decommissioned 9 November 2020 due to artesian water pressure.

All dimensions in metres Scale 1:68.75	Client: Sure Partners Ltd	Method/ Plant Used	Dando 2000/Hydreq	Bit Design	PQ	Driller DK/PMcG	Logged By EAT

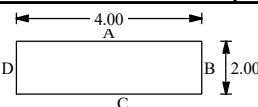
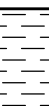
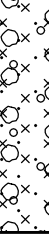
IDL ACS UK DH (SPTS) ARKLOW BANK RC CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IDL TP TEMPLATE GDT 15/1/21

Appendix 2

Trial Pit Records

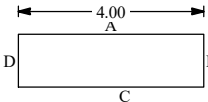
PROJECT: Arklow Bank Wind Park - Cable Route Site LOCATION: Arklow, County Wicklow							TRIALPIT: TP201 Sheet 1 of 1			
CLIENT: Sure Partners Ltd. ENGINEER: ARUP					Co-ordinates: E 726,865.1 N 676,958.1		Rig: Hyundai 140LC9 Rev: 1			
Ground level: 23.79m O.D.							DATE: 16.10.20			
GROUNDWATER Water strikes: Rose to after: 1st: dry 2nd: 3rd:					PIT DIRECTION: 040-220 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC				Shoring/Support: N/A Stability: Pit stable.	
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION	
0									TOPSOIL: Grass over firm brown slightly gravelly silty CLAY with low cobble content and some rootlets. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subrounded of shale quartz and assorted volcanic clasts.	
							23.49	0.30		
			S 1 B 2	0.50-0.60 0.50-0.60			23.19	0.60	Firm mottled grey brown and orange slightly gravelly slightly sandy silty CLAY with low cobble content and some rootlets. Sand is fine. Gravel is subrounded to rounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subrounded of shale quartz and assorted volcanic clasts.	
			VANE	0.80	19mm vane used 19 kN/m ²				Stiff brownish bluish grey slightly gravelly slightly sandy organic SILT with low cobble content and some rootlets and some shell fragments. Gravel is subrounded to rounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subrounded to rounded of shale quartz and assorted volcanic clasts.	
1			P 3	1.10-1.20						
			S 4 B 5	1.50-1.60 1.50-1.60						
2										
			B 6	2.40-2.50						
3										
4			B 7	4.00-4.10			19.69	4.10		
						END			TP terminated at 4.10m bgl on REs instruction.	
5										
Remarks: Hand shear vanes carried out in-situ or on irregular lump samples from pit arisings (set of 3). Thermal resistivity carried out in trial pit at 1.20m bgl. TP dry on excavation. TP backfilled with arisings.									Scale: 1:27.5	
Irish drilling LTD									Ph. Fax	

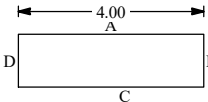
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PROJECT: Arklow Bank Wind Park - Cable Route Site										TRIALPIT: TP203	
LOCATION: Arklow, County Wicklow										Sheet 1 of 1	
CLIENT: Sure Partners Ltd.							Co-ordinates: E 725,199.0 N 675,387.9			Rig: Hyundai 140LC9	
ENGINEER: ARUP										Rev: 1	
Ground level: 28.56m O.D.										DATE: 12.10.20	
GROUNDWATER					PIT DIRECTION: 280-100 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC  Shoring/Support: N/A Stability: Pit unstable. Sidewall collapse from 2.40m bgl.						
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION		
0									TOPSOIL: Grass over firm damp brown slightly gravelly sandy clayey SILT. Sand is fine. Gravel is subangular to rounded fine to coarse of shale quartz and assorted volcanic clasts.		
			S 1 B 2	0.50-0.60 0.50-0.60			28.16 28.06	0.40 0.50	Damp light greyish brown gravelly medium SAND. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts.		
							27.76	0.80	Moist dark brown slightly gravelly clayey silty medium SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to subrounded of shale quartz and assorted volcanic clasts.		
1			P 3	1.10-1.20			26.86	1.70	Firm damp greyish orangish brown slightly gravelly sandy SILT with low cobble content. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to subrounded of shale quartz and assorted volcanic clasts.		
			S 4 B 5	1.60-1.70 1.60-1.70			26.46	2.10	Firm damp bluish grey gravelly silty CLAY with low cobble content. Gravel is angular to subangular fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to subrounded of shale quartz and assorted volcanic clasts.		
2			B 6	2.30-2.40			26.16	2.40	Moist grey sandy subangular to subrounded fine to coarse GRAVEL of shale quartz and assorted volcanic clasts with low cobble content. Sand is coarse. Cobbles are subangular to subrounded of shale quartz and assorted volcanic clasts.		
						END			TP terminated at 2.40m bgl. Unable to keep TP open - sidewall collapse.		
3											
4											
5											
Remarks: Thermal resistivity carried out in trial pit at 1.20m bgl. Ingress of water at 2.10m bgl. TP backfilled with arisings.										Scale: 1:27.5	
Irish drilling LTD										Ph. Fax	

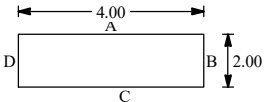
TRIAL PIT VANE & WL RISES ARKLOW BANK TPS CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IRISHDR.L.GDT 15/1/21

PROJECT: Arklow Bank Wind Park - Cable Route Site										TRIALPIT: TP207	
LOCATION: Arklow, County Wicklow										Sheet 1 of 1	
CLIENT: Sure Partners Ltd.						Co-ordinates: E 726,462.1 N 676,552.6		Rig: Hyundai 140LC9			
ENGINEER: ARUP								Rev: 1			
Ground level: 20.34m O.D.								DATE: 27.10.20			
GROUNDWATER Water strikes: 1st: dry 2nd: 3rd: Rose to after:						PIT DIRECTION: 170-350 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC		Shoring/Support: N/A Stability: Pit stable.			
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION		
0									TOPSOIL: Grass over firm brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts.		
			S 1 B 2	0.40-0.50 0.40-0.50			20.04	0.30	Firm greyish brown slightly gravelly sandy SILT with low cobble content. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to subrounded of shale quartz and assorted volcanic clasts.		
1			ANE D 3 B 4	1.00 1.00-1.10 1.00-1.10	19mm vane used 17 kN/m²		19.74	0.60	Stiff mottled orangish brownish grey slightly sandy slightly gravelly organic SILT with some rootlets and some shell fragments and some wood. Gravel is of shale quartz and assorted volcanic clasts. Wood is up to 30mm thick.		
			S 5 B 6	1.60-1.70 1.60-1.70					1.40m to 2.90m: with lenses of fine to medium sand. Lenses are up to 40mm thick.		
2											
			B 7	2.90-3.00			17.44	2.90	Weathered SHALE rock.		
3						END	17.24	3.10	Recovered as angular to subangular fine to coarse gravel and cobble sized clasts of shale with slightly clayey gravel. TP terminated at 3.10m bgl as probable rock.		
4											
5											
Remarks: Hand shear vanes carried out in-situ or on irregular lump samples from pit arisings (set of 3). Thermal resistivity carried out in trial pit at 1.20m bgl. TP dry on excavation. TP backfilled with arisings.										Scale: 1:27.5	
Irish drilling LTD										Ph. Fax	

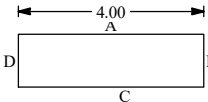
PROJECT: Arklow Bank Wind Park - Cable Route Site							TRIALPIT: TP209		
LOCATION: Arklow, County Wicklow							Sheet 1 of 1		
CLIENT: Sure Partners Ltd.					Co-ordinates: E 726,270.3 N 676,281.9		Rig: Hyundai 140LC9		
ENGINEER: ARUP							Rev: 1		
Ground level: 21.33m O.D.							DATE: 27.10.20		
GROUNDWATER Water strikes: Rose to after: 1st: dry 2nd: 3rd:					PIT DIRECTION: 050-230 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC		 Shoring/Support: N/A Stability: Pit unstable. Sidewall collapse from 1.70m bgl.		
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									TOPSOIL: Grass over firm brown slightly gravelly silty CLAY with low cobble content and low boulder content and some rootlets. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to subrounded of shale. Boulders are up to 350mm in length.
			S 1 B 2	0.50-0.60 0.50-0.60			20.83	0.50	Greyish orangish brown gravelly very silty SAND with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to subrounded of shale quartz and assorted volcanic clasts.
							20.63	0.70	
1			D 3 B 4 VANE	1.10-1.20 1.10-1.20 1.20	19mm vane used 17 kN/m ²				Firm mottled orangish greyish brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse of shale.
			S 5 B 6	1.50-1.60 1.50-1.60			19.83	1.50	Firm brownish bluish grey slightly sandy gravelly sandy clayey SILT with low cobble content. Sand is fine. Gravel is angular to subrounded fine to coarse of shale. Cobbles are subangular to subrounded of shale.
							19.63	1.70	
2									Weathered SHALE rock. Recovered as angular to subangular fine to coarse gravel cobble and boulder sized clasts of orangish brownish grey shale with slightly silty clayey gravel. Boulders are up to 300mm in length.
			B 7	2.20-2.30			19.03	2.30	TP terminated at 2.30m bgl as probable rock.
3									
4									
5									
Remarks: Hand shear vanes carried out in-situ or on irregular lump samples from pit arisings (set of 3). Thermal resistivity carried out in trial pit at 1.20m bgl. TP dry on excavation. TP backfilled with arisings.									Scale: 1:27.5
 Irish drilling LTD									Ph. Fax

PROJECT: Arklow Bank Wind Park - Cable Route Site							TRIALPIT: TP210		
LOCATION: Arklow, County Wicklow							Sheet 1 of 1		
CLIENT: Sure Partners Ltd.					Co-ordinates: E 726,072.4 N 676,135.2		Rig: Hyundai 140LC9		
ENGINEER: ARUP							Rev: 1		
Ground level: 26.84m O.D.							DATE: 27.10.20		
GROUNDWATER Water strikes: 1st: 2.20m Rose to after: 2nd: 5min 2.05m 3rd:					PIT DIRECTION: 280-100 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC		 Shoring/Support: N/A Stability: Pit unstable. Sidewall collapse from 1.60m bgl.		
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION
0									TOPSOIL: Grass over firm greyish brown slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts.
			S 1 B 2	0.40-0.60 0.40-0.60			26.44	0.40	Orangish brownish grey slightly gravelly sandy clayey SILT with low cobble content. Sand is fine. Gravel is subangular to rounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to rounded of shale quartz and assorted volcanic clasts.
			ANE D 3 B 4	1.10 1.10-1.20 1.10-1.20	19mm vane used 19 kN/m ²		25.44	1.40	Firm light orangish brownish grey slightly gravelly slightly sandy SILT with low cobble content. Gravel is subangular to rounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subrounded to rounded of shale quartz and assorted volcanic clasts.
			S 5	1.50-1.60			25.24	1.60	Greyish brown slightly clayey sandy silty subangular to subrounded fine to coarse GRAVEL of shale quartz and assorted volcanic clasts with low cobble content. Cobbles are subangular to rounded of shale quartz and assorted volcanic clasts.
							24.14	2.70	Orangish brown slightly sandy silty subangular to subrounded fine to coarse GRAVEL of shale quartz and assorted volcanic clasts with low cobble content. Cobbles are subangular to subrounded of shale quartz and assorted volcanic clasts.
						END			TP terminated at 2.70m bgl. Unable to keep TP open - sidewall collapse and ingress of water.
3									
4									
5									
Remarks: Hand shear vanes carried out in-situ or on irregular lump samples from pit arisings (set of 3). Thermal resistivity carried out in trial pit at 1.20m bgl. TP dry on excavation. TP backfilled with arisings.									Scale: 1:27.5
Irish drilling LTD									Ph. Fax

TRIAL PIT VANE & WL RISES ARKLOW BANK TPS CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IRISHDR.L.GDT 15/1/21

PROJECT: Arklow Bank Wind Park - Cable Route Site										TRIALPIT: TP220	
LOCATION: Arklow, County Wicklow										Sheet 1 of 1	
CLIENT: Sure Partners Ltd.							Co-ordinates: E 724,905.9 N 675,785.0		Rig: Hyundai 140LC9		
ENGINEER: ARUP									Rev: 1		
Ground level: 27.15m O.D.									DATE: 30.10.20		
GROUNDWATER Water strikes: Rose to after: 1st: dry 2nd: 3rd:							PIT DIRECTION: 160-340 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC		 Shoring/Support: N/A Stability: Pit stable.		
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION		
0									TOPSOIL: Grass over firm brown slightly gravelly slightly sandy clayey SILT. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts.		
			S 1 B 2	0.40-0.50 0.40-0.50			26.85	0.30	Damp grey very silty very sandy GRAVEL with low cobble content. Sand is fine. Gravel is subangular to rounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subrounded of shale quartz and assorted volcanic clasts.		
			ANE D 3 B 4	1.10 1.10-1.20 1.10-1.20	19mm vane used 14 kN/m ²				Stiff orangish brown slightly sandy slightly gravelly SILT with low cobble content and low boulder content. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subrounded to rounded of shale quartz and assorted volcanic clasts. Boulders are up to 300mm in length.		
			S 5 B 6	1.90-2.00 1.90-2.00							
			B 7	3.00-3.10							
							23.45	3.70	TP terminated at 3.70m bgl on REs instruction - hard digging.		
4						END					
5											
Remarks: Hand shear vanes carried out in-situ or on irregular lump samples from pit arisings (set of 3). Thermal resistivity carried out in trial pit at 1.20m bgl. TP dry on excavation. TP backfilled with arisings.									Scale: 1:27.5		
 Irish drilling LTD										Ph. Fax	

TRIAL PIT VANE & WL RISES ARKLOW BANK TPS CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IRISHDR.L.GDT 15/1/21

PROJECT: Arklow Bank Wind Park - Cable Route Site										TRIALPIT: TP221	
LOCATION: Arklow, County Wicklow										Sheet 1 of 1	
CLIENT: Sure Partners Ltd.							Co-ordinates: E 724,328.3 N 675,454.0		Rig: Hyundai 140LC9		
ENGINEER: ARUP									Rev: 1		
Ground level: 40.17m O.D.									DATE: 30.10.20		
GROUNDWATER Water strikes: Rose to after: 1st: dry 2nd: 3rd:							PIT DIRECTION: 040-220 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC		 Shoring/Support: N/A Stability: Pit unstable. Sidewall collapse.		
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION		
0									TOPSOIL: Grass over firm brown slightly gravelly clayey SILT. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts.		
			S 1 B 2	0.40-0.50 0.40-0.50			39.87	0.30	Reddish brownish orange slightly gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse of shale quartz and assorted volcanic clasts.		
			P 3 B 4 VANE	1.10-1.20 1.10-1.20 1.20	19mm vane used 22 kN/m ²				Firm light orangish brown slightly gravelly sandy SILT. Sand is fine. Gravel is subrounded to rounded fine to coarse of shale quartz and assorted volcanic clasts.		
			S 5 B 6	1.90-2.00 1.90-2.00							
			B 7	2.90-3.00			37.17	3.00	TP terminated at 3.00m bgl. Unable to keep TP open - sidewall collapse.		
3						END					
4											
5											
Remarks: Hand shear vanes carried out in-situ or on irregular lump samples from pit arisings (set of 3). Thermal resistivity carried out in trial pit at 1.20m bgl. TP dry on excavation. TP backfilled with arisings.										Scale: 1:27.5	
 Irish drilling LTD										Ph. Fax	

TRIAL PIT VANE & WL RISES ARKLOW BANK TPS CABLE ROUTE ALL FILE DRAFT 1 DEC 7 2020.GPJ IRISHDR.LGDT 15/1/21

PROJECT: Arklow Bank Wind Park - Cable Route Site										TRIALPIT: TP222	
LOCATION: Arklow, County Wicklow										Sheet 1 of 1	
CLIENT: Sure Partners Ltd.							Co-ordinates: E 724,545.4 N 675,729.7		Rig: Hyundai 140LC9		
ENGINEER: ARUP									Rev: 1		
Ground level: 40.57m O.D.									DATE: 30.1.20		
GROUNDWATER Water strikes: 1st: 2.00m Rose to after: 2nd: 2.50m 5min 1.70m 3rd: 5min 2.00m							PIT DIRECTION: 280-100 PIT DIMENSION: 2.00 * 4.00m LOGGED BY: PC				
Shoring/Support: N/A Stability: Pit unstable. Sidewall collapse from 2.00m bgl.											
Depth (m)	Date	Water	Samples	Depth (m)	In-situ Vane Tests	LEGEND	Elevation m O.D.	Depth (m)	DESCRIPTION		
0									TOPSOIL: Grass over firm brown slightly gravelly silty CLAY with some rootlets. Gravel is subangular to subrounded fine to coarse of shale quartz and assorted volcanic clasts.		
			ANE S 1 B 2	0.40 0.40-0.50 0.40-0.50	19mm vane used 18 kN/m ²		40.27	0.30	Orangish brown very gravelly very silty fine and medium SAND.		
			ANE S 3 B 4	1.10 1.10-1.20 1.10-1.20	19mm vane used 18 kN/m ²		40.07	0.50	Firm orangish greyish brown slightly gravelly sandy clayey SILT. Sand is fine. Gravel is subangular to rounded fine to medium of shale quartz and assorted volcanic clasts.		
			S 5 B 6	1.40-1.50 1.40-1.50			39.27	1.30	Reddish orangish brown gravelly silty fine to coarse SAND with low cobble content. Gravel is subangular to rounded fine to coarse of shale quartz and assorted volcanic clasts. Cobbles are subangular to rounded of shale quartz and assorted volcanic clasts.		
		1									
		2									
			B 7	2.00-2.10			38.57	2.00	Orangish greyish brown silty gravelly coarse SAND. Gravel is fine to medium of shale quartz and assorted volcanic clasts.		
							38.07	2.50	Greyish brown slightly silty very gravelly medium and coarse SAND. Gravel is subrounded to rounded fine to coarse, of shale quartz and assorted volcanic clasts.		
			B 8	2.70-2.80			37.77	2.80	TP terminated at 2.80m bgl. Unable to keep TP open - sidewall collapse.		
3						END					
4											
5											
Remarks: Hand shear vanes carried out in-situ or on irregular lump samples from pit arisings (set of 3). Thermal resistivity carried out in trial pit at 1.20m bgl. Ingress of water at 2.00m bgl. Ingress of water at 2.50m bgl. TP backfilled with arisings.											
										Scale: 1:27.5	
										Ph. Fax	

Appendix 3 Thermal Resistivity/ Conductivity Records

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	Project: ABWP Onshore Ground Investigations-Cable Route Site Client: Sure Partners Ltd Location: Arklow, County Wicklow Date: 02/12/2020	Sheet No. 1 Checked: RK

Thermal Conductivity / Thermal Resistivity Records

Date	Location	Depth m(bgl)	Thermal Conductivity (W/m.K) K	Thermal Resistivity (K.m/W) R	Temperature Celcius
16/10/2020	TP 201	1.20	1.67 1.758 1.704	0.599 0.569 0.587	12.772 12.637 12.633
12/10/2020	TP 202	1.20	1.5 2.303 1.738	0.667 0.434 0.575	13.098 12.601 12.976
12/10/2020	TP 203	1.20	2.249 2.055 2.561	0.445 0.487 0.391	12.101 12.071 11.987
27/10/2020	TP 207	1.20	1.396 1.325 1.272	0.716 0.755 0.786	11.065 11.041 10.958
27/10/2020	TP 209	1.20	1.676 1.667 1.75	0.597 0.6 0.571	11.345 11.201 11.111
13/10/2020	TP 210	1.20	2.127 2.156 2.178	0.47 0.464 0.459	11.612 11.651 11.59
30/10/2020	TP 220	1.20	1.729 1.518 1.805	0.578 0.659 0.554	11.572 11.562 11.461
30/10/2020	TP 221	1.20	1.564 1.161 1.459	0.639 0.861 0.686	11.794 11.84 11.852
30/10/2020	TP 222	1.20	2.624 1.964 1.968	0.381 0.509 0.508	11.194 11.232 11.29

Appendix 4 Soil Resistivity Tests

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861	Project: ABWP Onshore Ground Investigations - Cable Route	
	Client: Sure Partners Ltd	
	Location: Landfall Site, County Wicklow	
Date: 02/12/2020		Sheet No. 1
		Checked: RK

Soil Resistivity Survey

Date	Location	orientation	Spacing	Reading in Ohms	Notes
02.11.2020	SR3	N/S	1.0m	3.75	C1 at South end
			2.0m	3	
			3.0m	2.34	
		E/W	1.0m	3.82	C1 at West end
			2.0m	3.09	
			3.0m	2.28	
	SR4	N/S	1.0m	3.98	C1 at South end
			2.0m	3.32	
			3.0m	2.67	
		E/W	1.0m	3.95	C1 at East end
			2.0m	3.35	
			3.0m	2.93	
03.11.2020	SR01	N/S	1.0m	5.5	C1 at North end
			2.0m	2.5	Ground stiff-no second orientation
			3.0m	1.5	
	SR08	N/S	1.0m	4.62	C1 at South end
			2.0m	3.78	
			3.0m	3.43	
		E/W	1.0m	4.83	C1 at West end
			2.0m	3.878	
			3.0m	3.28	
04.11.2020	SR06	N/S	1.0m	2.69	C1 at South end
			2.0m	1.06	
			3.0m	0.7	
		E/W	1.0m	2.81	C1 at East end
			2.0m	1.11	
			3.0m	0.73	
	SR05	N/S	1.0m	2.75	C1 at South end
			2.0m	1.1	
			3.0m	0.66	
		E/W	1.0m	3.03	C1 at East end
			2.0m	1.01	
			3.0m	0.61	
05.11.2020	SR09	N/S	1.0m	3.95	C1 at South end
			2.0m	3.09	
			3.0m	2.1	
		E/W	1.0m	3.91	C1 at East end
			2.0m	3.02	
			3.0m	1.97	
	SR02	N/S	1.0m	3.32	C1 at North end
			2.0m	2.26	
			3.0m	1.48	
			1.0m	3.33	C1 at South end
			2.0m	2.23	
			3.0m	1.48	

Appendix 5 Groundwater Readings

IRISH DRILLING LTD. Loughrea Co. Galway Tel: (091) 841274 Fax: (091) 880861			Project: ABWP Onshore Ground Investigations - Cable Route Site Client: Sure Partners Ltd. Location: Cable Route, County Wicklow Date: 11/12/2020				Sheet No. 1 Checked: RK	
Water Levels in Standpipes								
Date	Location	Depth	Comments				Remarks	
18.11.2020	BH 201	8.76m	before purge				50mm standpipe, Rotary Core Borehole	
		9.37m	after purge					
	BH 202	9.89m	before purge				50mm standpipe, Rotary Core Borehole	
		10.46m	after purge					
25.11.2020	BH 201	7.75m					No water sample recovered -baler blocked.	
	BH 202	8.53m						
09.12.2020	Borehole	Depth	Dissolved Oxygen (mg/L)	Dissovled Oxygen (%L)	pH	Temp (C°)		
	BH 201	7.81m						
	BH 202	8.62m	0.15	2.1	7.57	9.9		

Remarks:
 All readings record depth from ground level to top of water level.

Appendix 6 Laboratory Tests Results

					Summary of Classification Test Results											
Project No. 2020WW102					Project Name Arklow Bank Windpark											
Hole No.	Sample					Soil Description	Density		w	Passing 425µm	LL	PL	PI	Particle density Mg/m3	Remarks	
	Ref	Top	Base	Type			bulk	dry								
									Mg/m3	%	%	%	%	%		
BH202	7	2.00	2.50	B		Orange-brown very silty medium and fine SAND.			17.0	97						
BH202	13	4.00	4.50	B		Orange-brown slightly gravelly slightly sandy SILT.			24.0	96	33	18	15		CL	
BH202	22	8.00	8.50	B		Dark grey silty very gravelly coarse SAND.			11.0	32						
BH202	31	12.50	13.00	B		Dark brown slightly gravelly very silty fine SAND.			17.0	89						
BH202	38	15.50	16.00	B		Dark brown slightly gravelly slightly sandy SILT.			18.0	94	37	20	17		CI	
BH202	47	19.00	19.50	B		Dark brown slightly gravelly slightly sandy SILT.			18.0	79	37	21	16		CI	
BH206	4	1.00	1.50	B		Dark brown slightly sandy slightly gravelly SILT.			22.0	55	34	18	16		CL	
BH206	13	4.00	4.50	B		Brown slightly gravelly slightly sandy SILT.			19.0	70	35	23	12		CL	
BH206	25	8.00	8.40	B		Brown slightly gravelly slightly sandy SILT.			20.0	62	38	22	16		CL	
BH206		8.50	10.70	C		Brown slightly sandy slightly gravelly SILT. Gravel si coarse.			9.4	69						
BH206		10.70	11.50	C		Brown slightly sandy gravelly SILT.			12.0	54	35	20	15		CI	
BH206		12.50	13.50	C		Light brown slightly gravelly slightly sandy SILT.			31.0	90	49	39	10		MI	
RC201		2.50	4.00	C		Brown silty medium SAND.			22.0	99						
RC201		7.00	8.50	C		Brown coarse GRAVEL.			2.6	0						
RC201		20.50	22.00	C		Dark brown slightly sandy slightly gravelly SILT. Gravel is medium.			14.0	61	32	17	15		CL	
RC201		23.50	25.00	C		Brown slightly gravelly slightly sandy SILT.			14.0	65	33	20	13		CL	
RC202		23.60	25.10	C		Brown slightly sandy slightly gravelly SILT. Gravel is medium.			8.5	61	36	26	10		MI	
TP201	5	1.50	1.60	B		Dark brown slightly sandy SILT.			22.0	95	46	25	21		CI	
TP201	7	4.00	4.10	B		Dark brown slightly sandy SILT.			29.0							
TP202	5	1.40	1.50	B		Brown slightly sandy SILT. Sand is fine.			17.0							
TP202	6	2.40	2.50	B		Orange-brown silty medium SAND.			20.0	96						
TP202	8	3.90	4.00	B		Grey very sandy medium GRAVEL. Sand is coarse.			5.6	5						
TP203	2	0.50	0.60	B		Dark brown slightly gravelly silty SAND.			16.0							
TP203	5	1.60	1.70	B		Mottled dark grey and brown slightly gravelly sandy SILT. Sand is fine.			23.0	89						
TP207	2	0.40	0.50	B		Brown slightly gravelly sandy SILT. Sand is fine.			21.0	88	57	31	26		MH	
TP207	6	1.60	1.70	B		Mottled grey-brown slightly sandy SILT.			22.0	98	41	27	14		MI	
All tests performed in accordance with BS1377:1990 unless specified otherwise																
Key w = water content, LL = Liquid Limit, PL = Plastic Limit, PI = Plasticity Index Density test Liquid Limit Particle density Linear measurement unless : 4pt cone unless : sp - small pyknometer wd - water displacement 1pt - single point test gj - gas jar wi - immersion in water NP - Non Plastic									Date Printed 14/01/2021 QC From No: R1			Approved By Administrator		Table 1 sheet 1		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

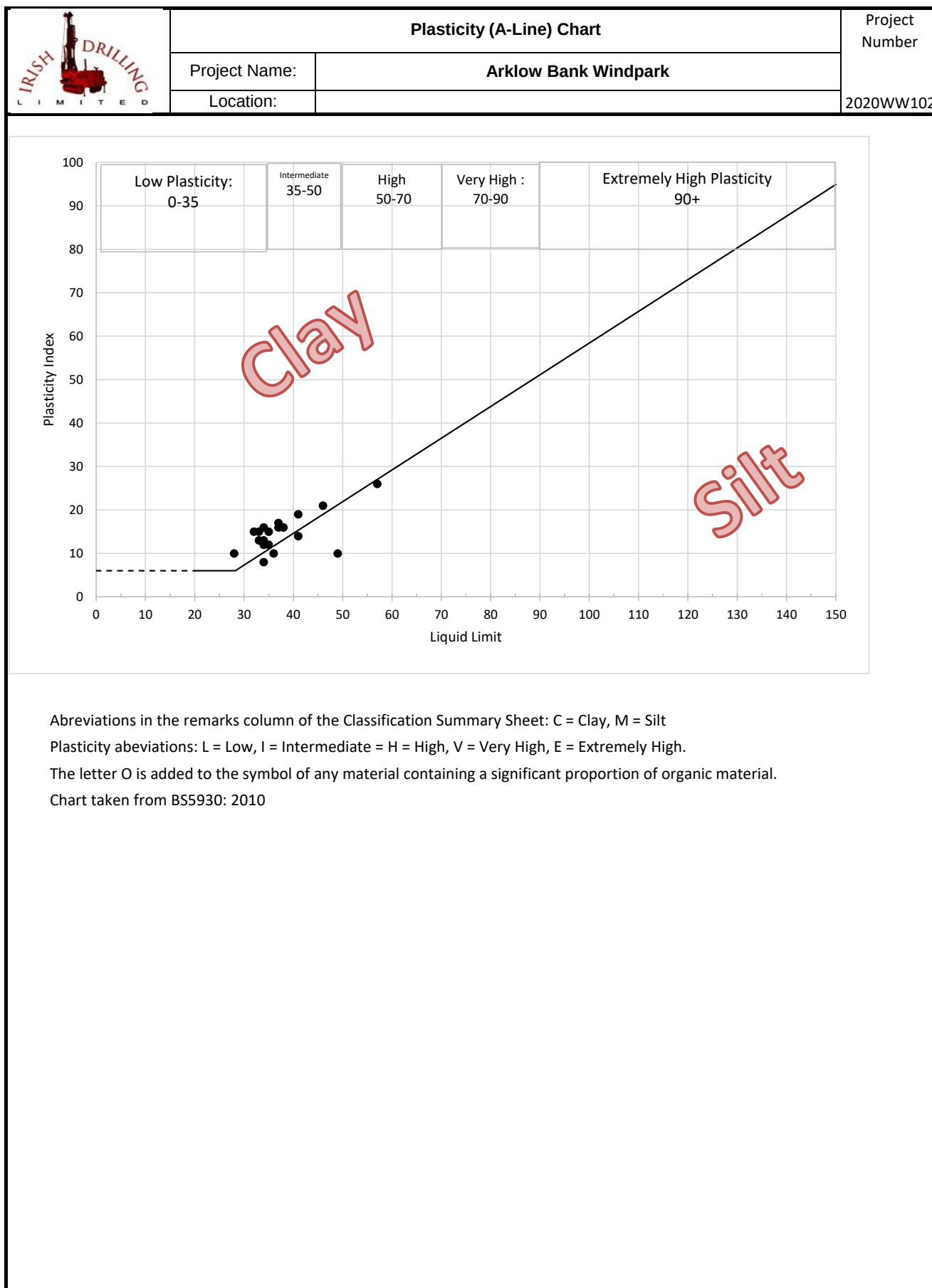


Project Name

Arklow Bank Windpark

All tests performed in accordance with BS1377:1990 unless specified otherwise

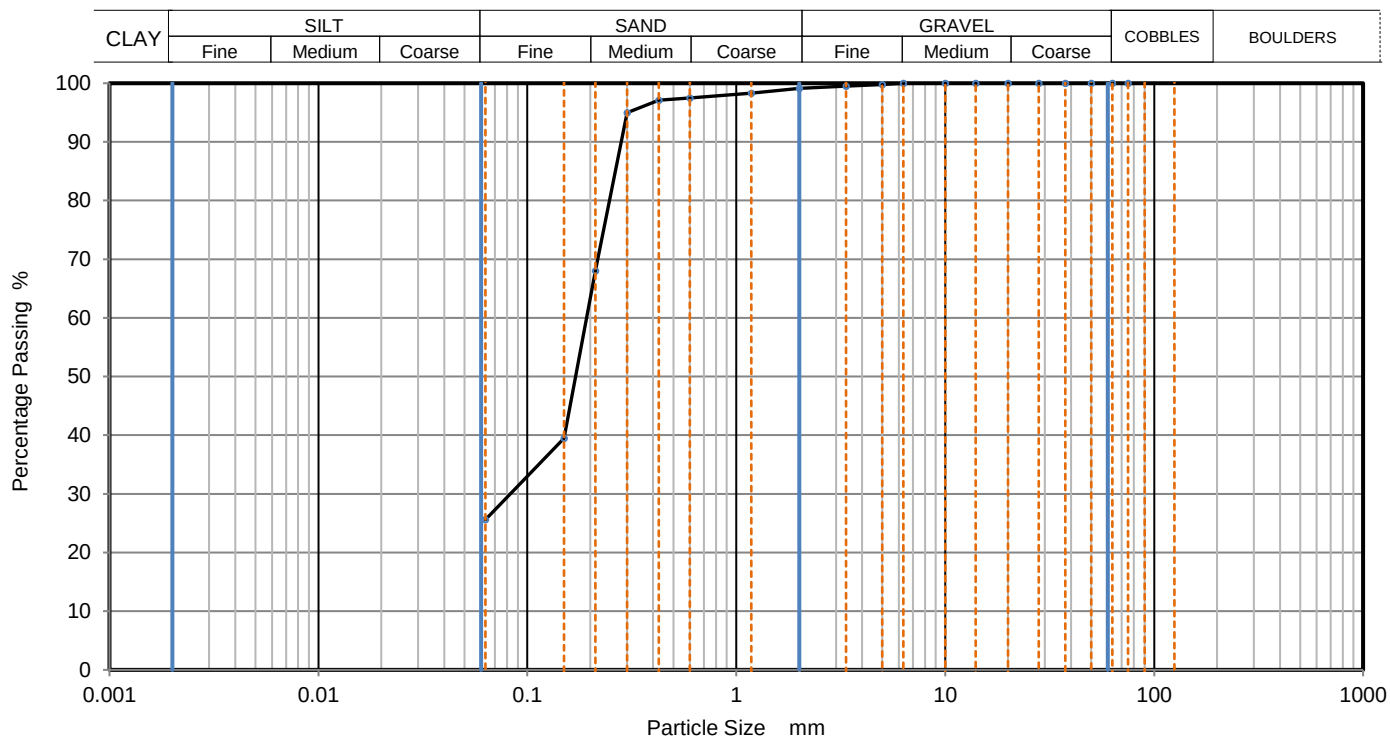
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Approved By: DCD

QC Form: R1

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH202
Site Name	Arklow Bank Windpark			Sample No.	7
Soil Description	Orange-brown very silty medium and fine SAND.			Depth, m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12020102713



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	99		
1.18	98		
0.6	98		
0.425	97		
0.3	95		
0.212	68		
0.15	40		
0.063	26		

Dry Mass of sample, g

615

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	74
Fines <0.063mm	26

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

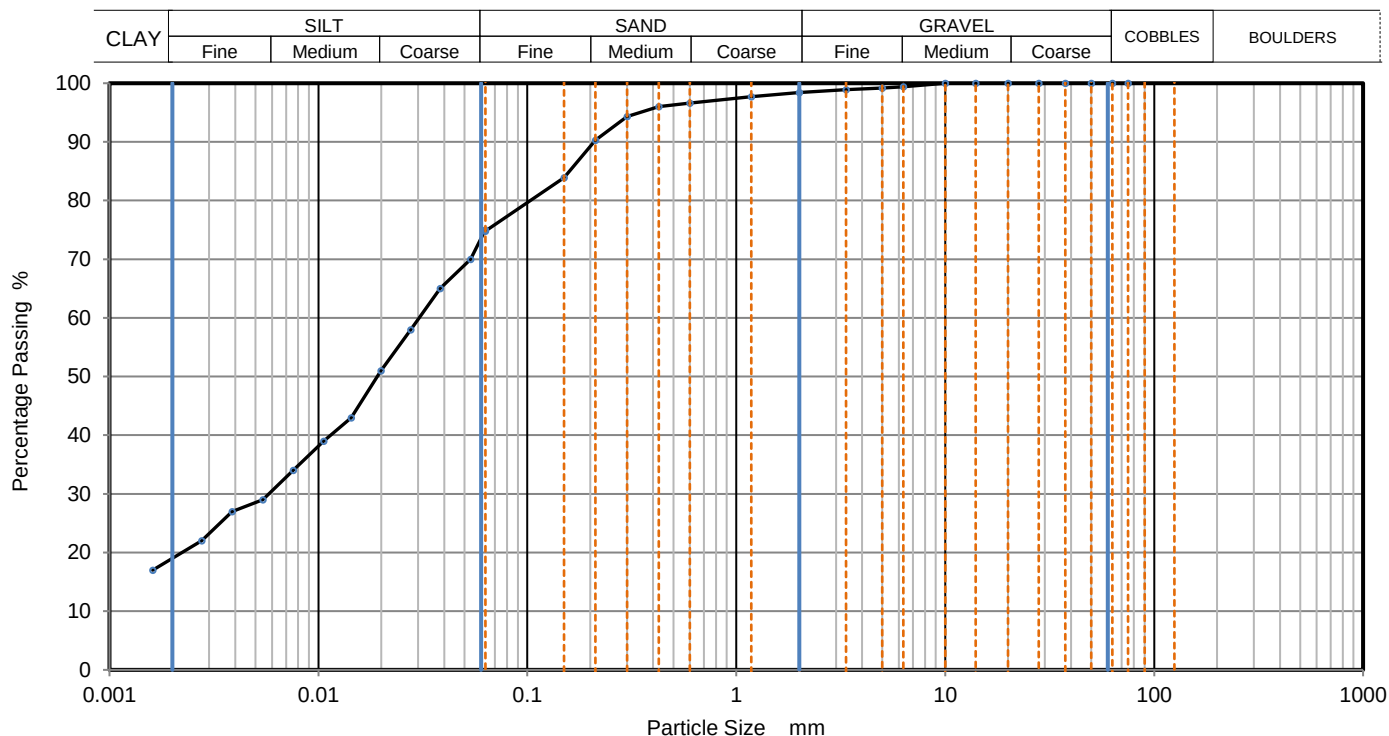
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH202
Site Name	Arklow Bank Windpark			Sample No.	13
Soil Description	Orange-brown slightly gravelly slightly sandy SILT.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020102719



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	75
		0.0534	70
75	100	0.0383	65
63	100	0.0276	58
50	100	0.0199	51
37.5	100	0.0143	43
28	100	0.0106	39
20	100	0.0076	34
14	100	0.0054	29
10	100	0.0039	27
6.3	99	0.0028	22
5	99	0.0016	17
3.35	99		
2	98		
1.18	98		
0.6	97	Particle density (assumed) 2.65 Mg/m ³	
0.425	96		
0.3	94		
0.212	90		
0.15	84		
0.063	75		

Dry Mass of sample, g

605

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	24
Silt	56
Clay	19

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

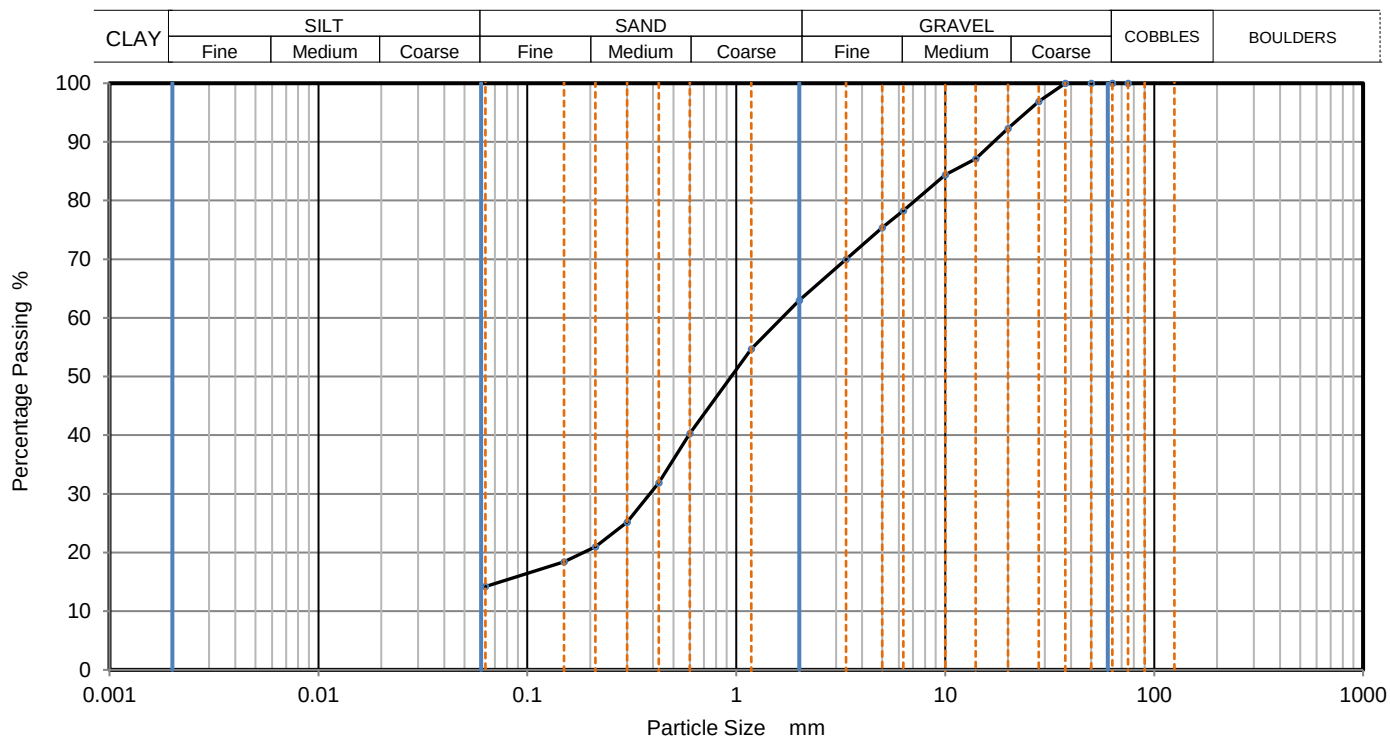
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				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH202
Site Name	Arklow Bank Windpark			Sample No.	22
Soil Description	Dark grey silty very gravelly coarse SAND.			Depth, m	8.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12020102728



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	97		
20	92		
14	87		
10	84		
6.3	78		
5	75		
3.35	70		
2	63		
1.18	55		
0.6	40		
0.425	32		
0.3	25		
0.212	21		
0.15	18		
0.063	14		

Dry Mass of sample, g

788

Sample Proportions	% dry mass
Very coarse	0
Gravel	37
Sand	49
Fines <0.063mm	14

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

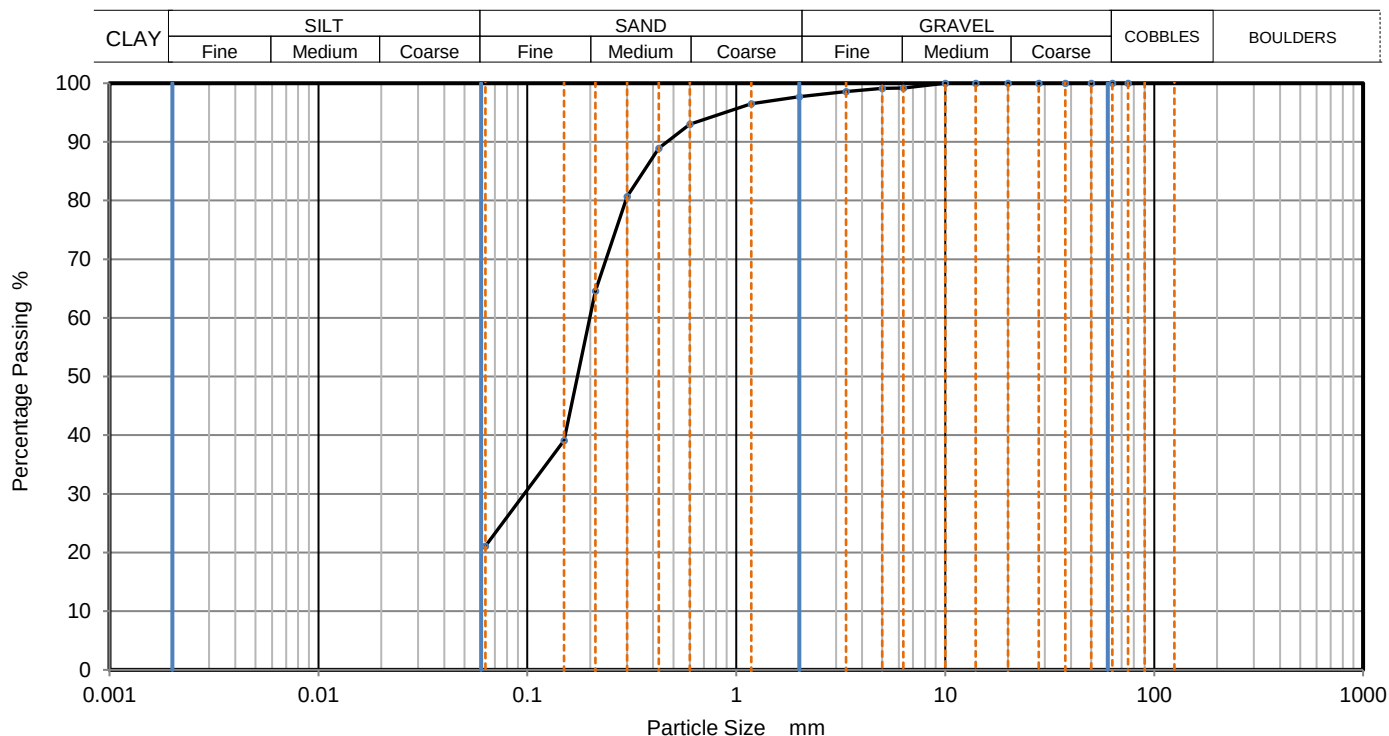
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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH202
Site Name	Arklow Bank Windpark			Sample No.	31
Soil Description	Dark brown slightly gravelly very silty fine SAND.			Depth, m	12.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12020102737



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	97		
0.6	93		
0.425	89		
0.3	81		
0.212	65		
0.15	39		
0.063	21		

Dry Mass of sample, g

731

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	77
Fines <0.063mm	21

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

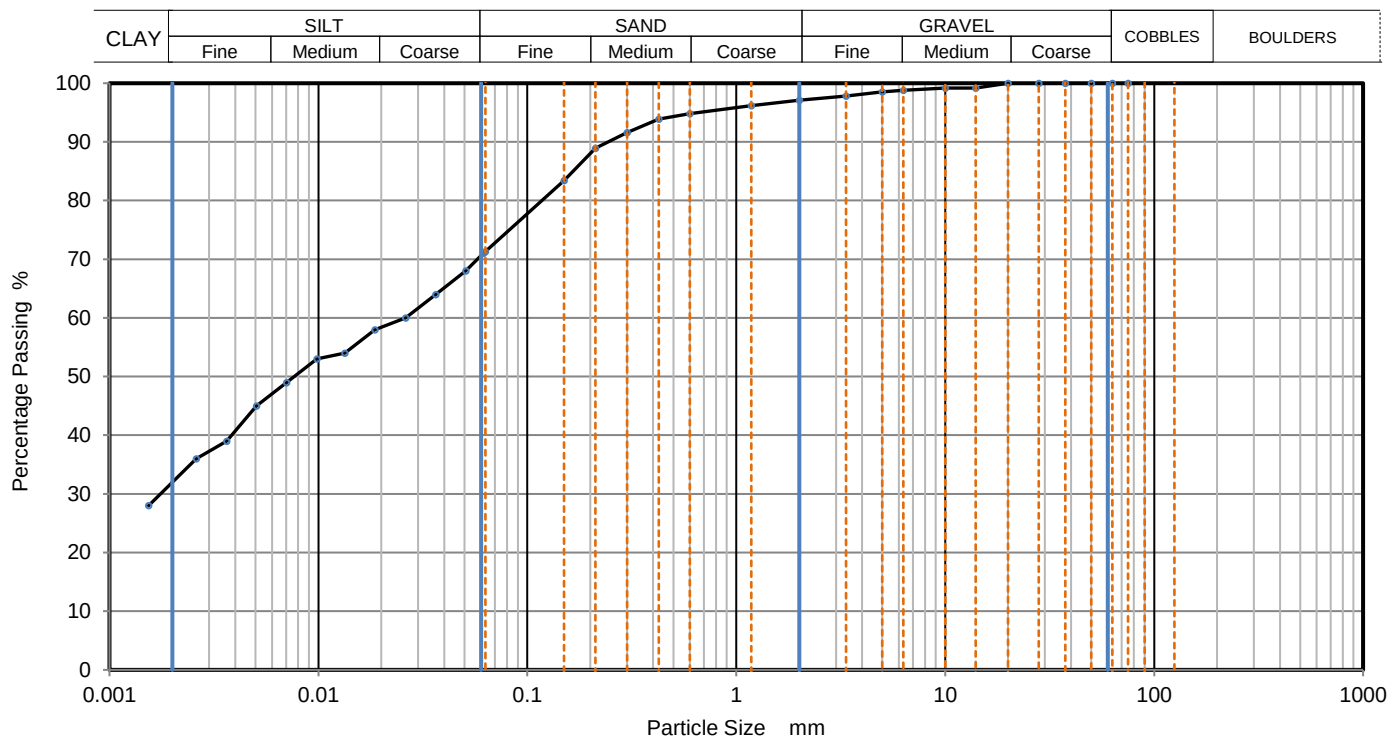
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Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH202
Site Name	Arklow Bank Windpark			Sample No.	38
Soil Description	Dark brown slightly gravelly slightly sandy SILT.			Depth, m	15.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020102744



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0616	71
		0.0507	68
75	100	0.0364	64
63	100	0.0261	60
50	100	0.0186	58
37.5	100	0.0134	54
28	100	0.0098	53
20	100	0.0070	49
14	99	0.0050	45
10	99	0.0036	39
6.3	99	0.0026	36
5	99	0.0015	28
3.35	98		
2	97		
1.18	96		
0.6	95	Particle density (assumed) 2.65 Mg/m3	
0.425	94		
0.3	92		
0.212	89		
0.15	83		
0.063	71		

Dry Mass of sample, g

548

Sample Proportions	% dry mass
Very coarse	0
Gravel	3
Sand	26
Silt	39
Clay	32

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

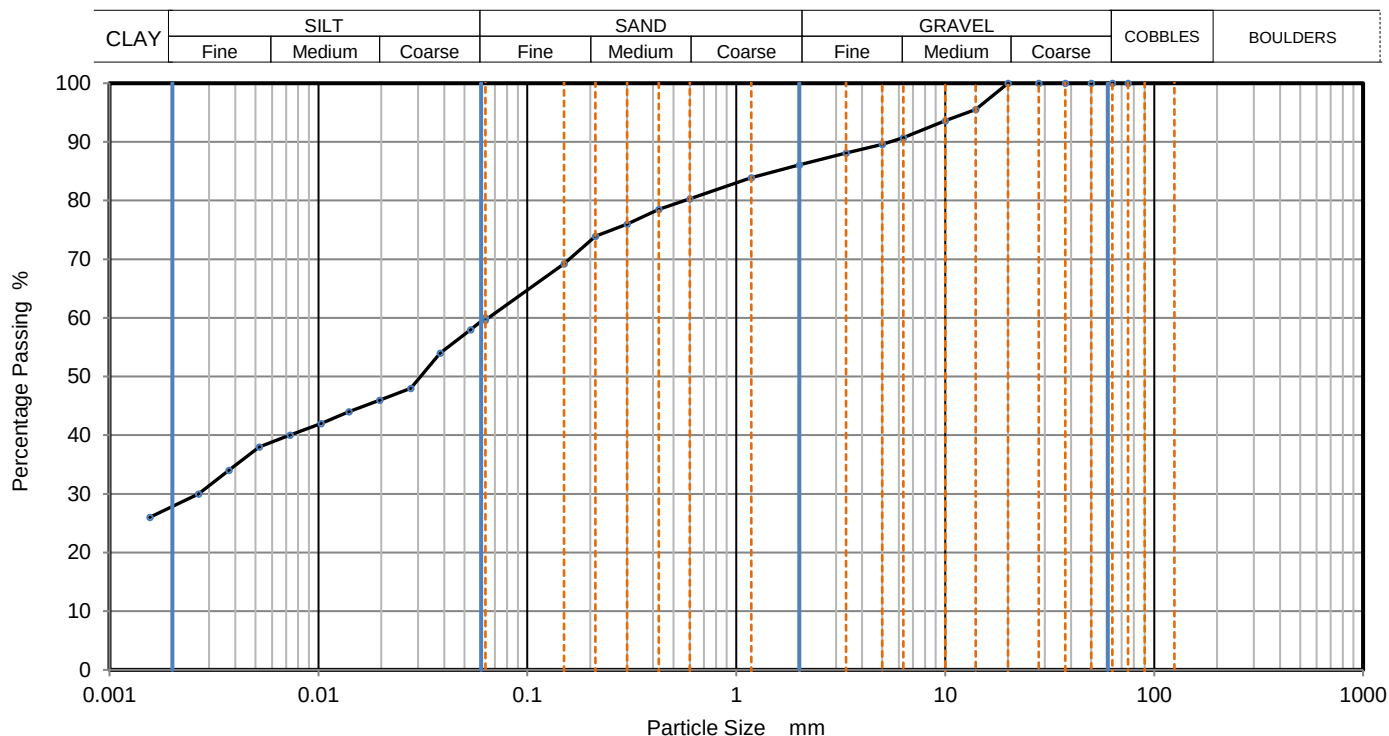
Preparation and testing in accordance with BS1377 unless noted below

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				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH202
Site Name	Arklow Bank Windpark			Sample No.	47
Soil Description	Dark brown slightly gravelly slightly sandy SILT.			Depth, m	19.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020102753



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	60
		0.0534	58
75	100	0.0383	54
63	100	0.0276	48
50	100	0.0197	46
37.5	100	0.0140	44
28	100	0.0103	42
20	100	0.0073	40
14	96	0.0052	38
10	94	0.0037	34
6.3	91	0.0027	30
5	90	0.0016	26
3.35	88		
2	86		
1.18	84		
0.6	80	Particle density (assumed) 2.65 Mg/m3	
0.425	79		
0.3	76		
0.212	74		
0.15	69		
0.063	60		

Dry Mass of sample, g

649

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	27
Silt	32
Clay	28

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

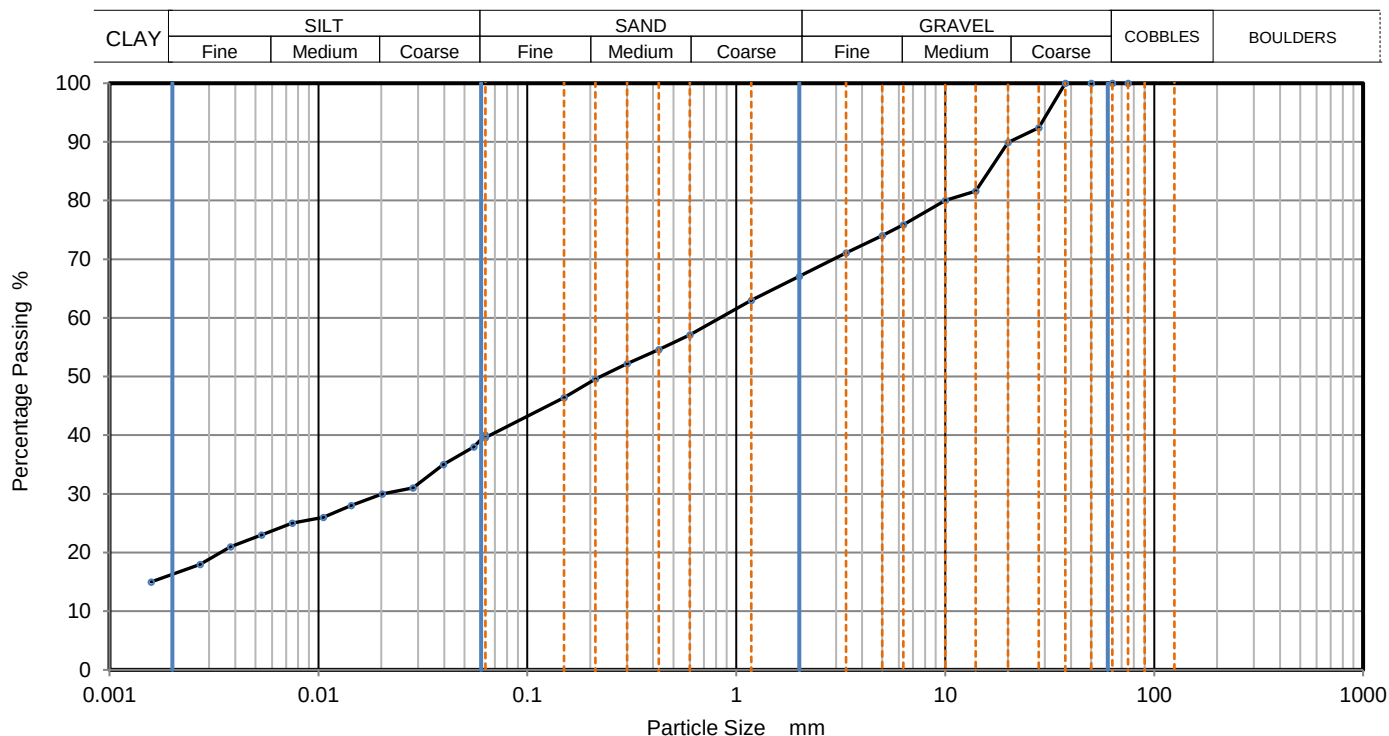
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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH206
Site Name	Arklow Bank Windpark			Sample No.	4
Soil Description	Dark brown slightly sandy slightly gravelly SILT.			Depth, m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL120201109198



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	40
		0.0553	38
75	100	0.0396	35
63	100	0.0284	31
50	100	0.0202	30
37.5	100	0.0144	28
28	92	0.0106	26
20	90	0.0075	25
14	82	0.0053	23
10	80	0.0038	21
6.3	76	0.0027	18
5	74	0.0016	15
3.35	71		
2	67		
1.18	63		
0.6	57	Particle density (assumed) 2.65 Mg/m3	
0.425	55		
0.3	52		
0.212	50		
0.15	46		
0.063	40		

Dry Mass of sample, g

711

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	28
Silt	23
Clay	16

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

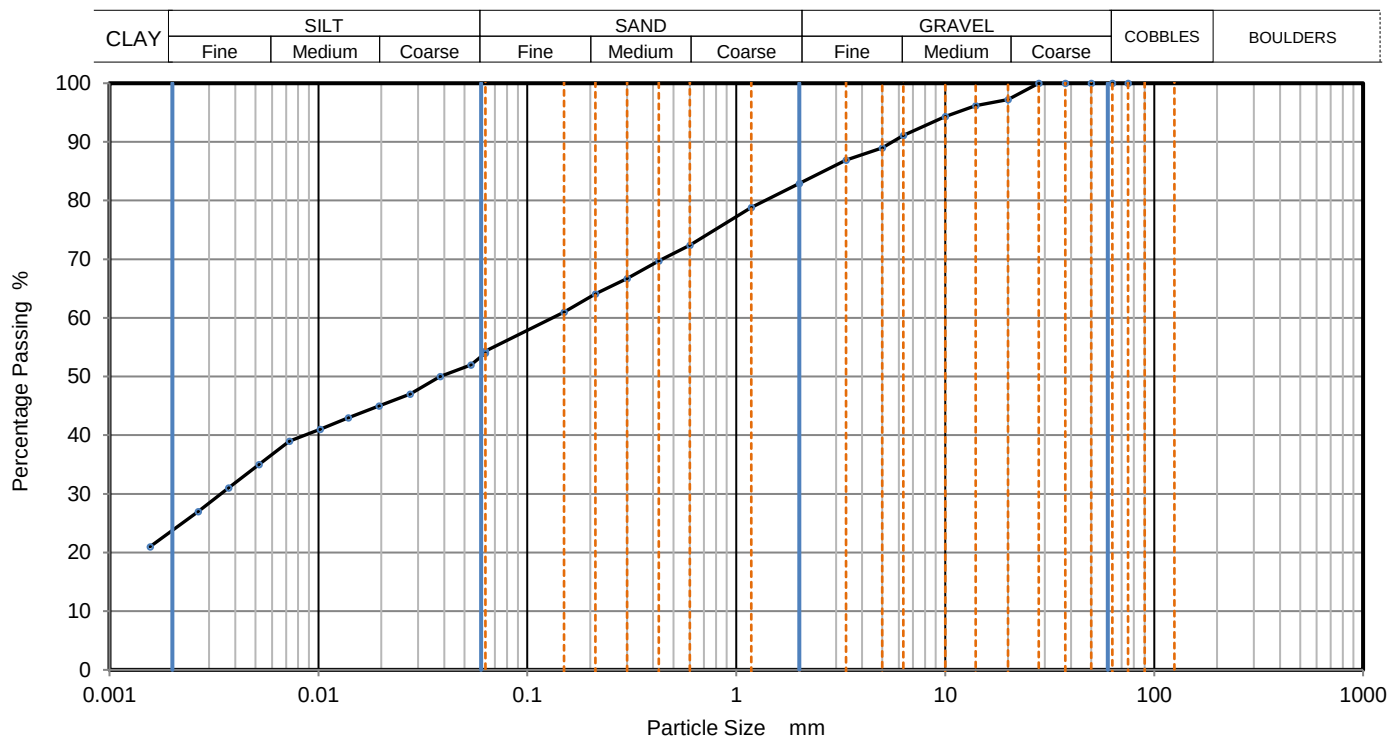
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH206
Site Name	Arklow Bank Windpark			Sample No.	13
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth, m	4.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL120201109207



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	54
		0.0537	52
75	100	0.0383	50
63	100	0.0274	47
50	100	0.0195	45
37.5	100	0.0139	43
28	100	0.0102	41
20	97	0.0073	39
14	96	0.0052	35
10	94	0.0037	31
6.3	91	0.0027	27
5	89	0.0016	21
3.35	87		
2	83		
1.18	79		
0.6	72	Particle density (assumed) 2.65 Mg/m3	
0.425	70		
0.3	67		
0.212	64		
0.15	61		
0.063	54		

Dry Mass of sample, g

599

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	29
Silt	30
Clay	24

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

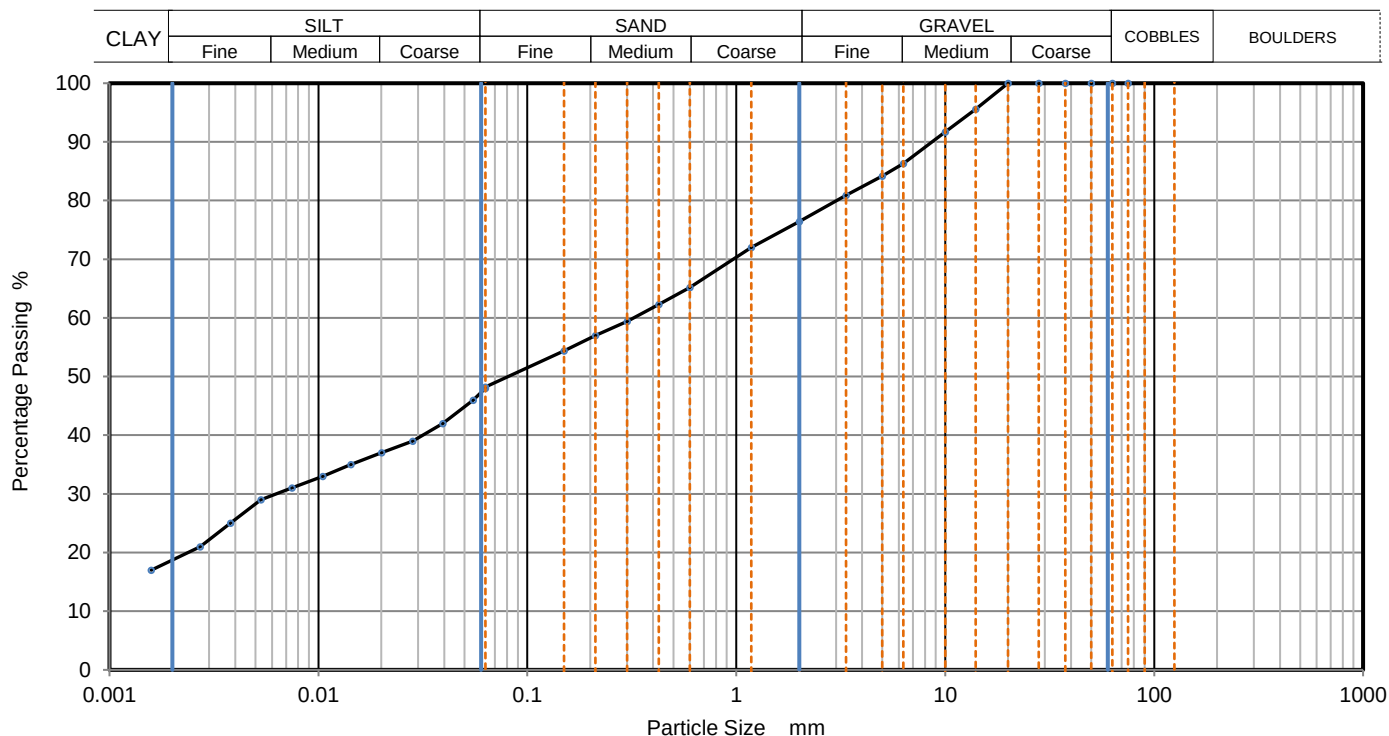
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH206
Site Name	Arklow Bank Windpark			Sample No.	25
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth, m	8.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL120201109219



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0550	46
75	100	0.0394	42
63	100	0.0282	39
50	100	0.0201	37
37.5	100	0.0143	35
28	100	0.0105	33
20	100	0.0075	31
14	96	0.0053	29
10	92	0.0038	25
6.3	86	0.0027	21
5	84	0.0016	17
3.35	81		
2	76		
1.18	72		
0.6	65	Particle density (assumed) 2.65 Mg/m3	
0.425	62		
0.3	59		
0.212	57		
0.15	54		
0.063	48		

Dry Mass of sample, g

599

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	28
Silt	29
Clay	19

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

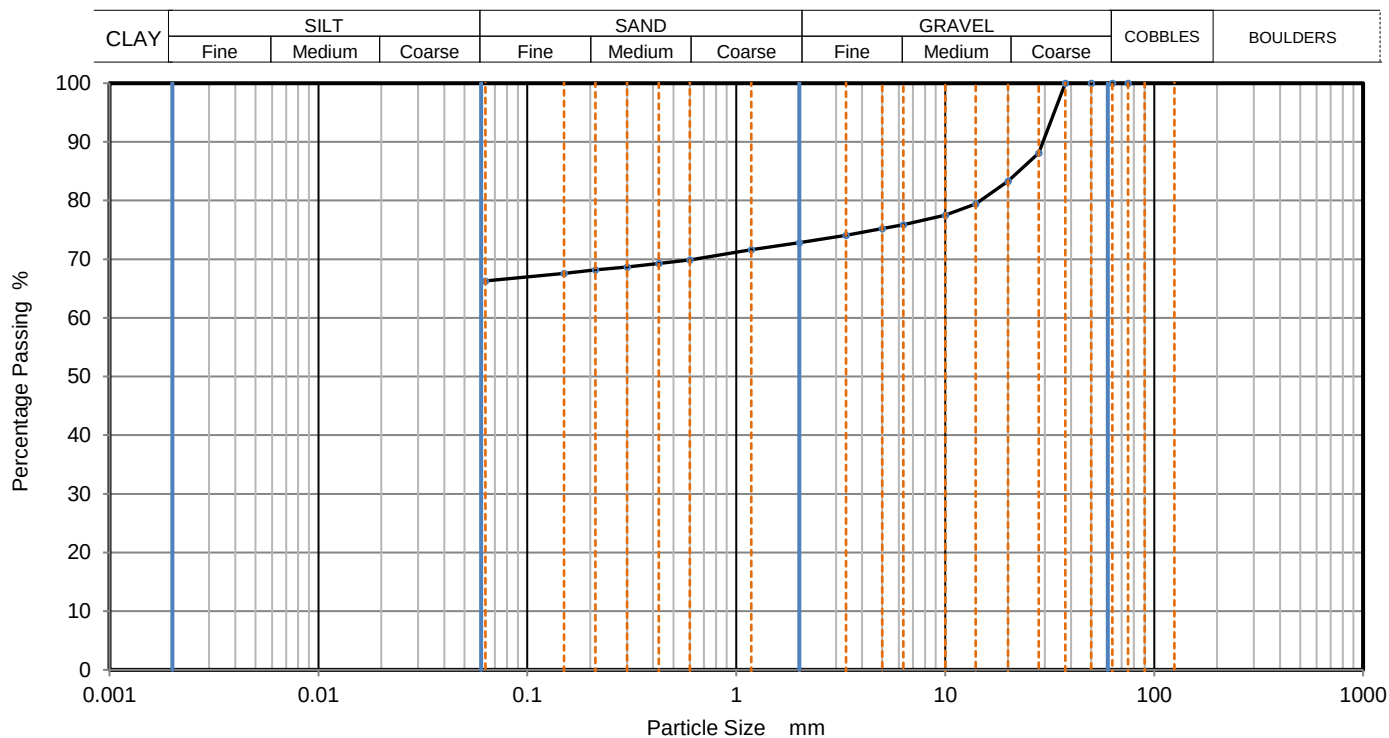
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH206
Site Name	Arklow Bank Windpark			Sample No.	
Soil Description	Brown slightly sandy slightly gravelly SILT. Gravel si coarse.			Depth, m	8.50
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202011131



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	88		
20	83		
14	79		
10	78		
6.3	76		
5	75		
3.35	74		
2	73		
1.18	72		
0.6	70		
0.425	69		
0.3	69		
0.212	68		
0.15	68		
0.063	66		

Dry Mass of sample, g

1880

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	7
Fines <0.063mm	66

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

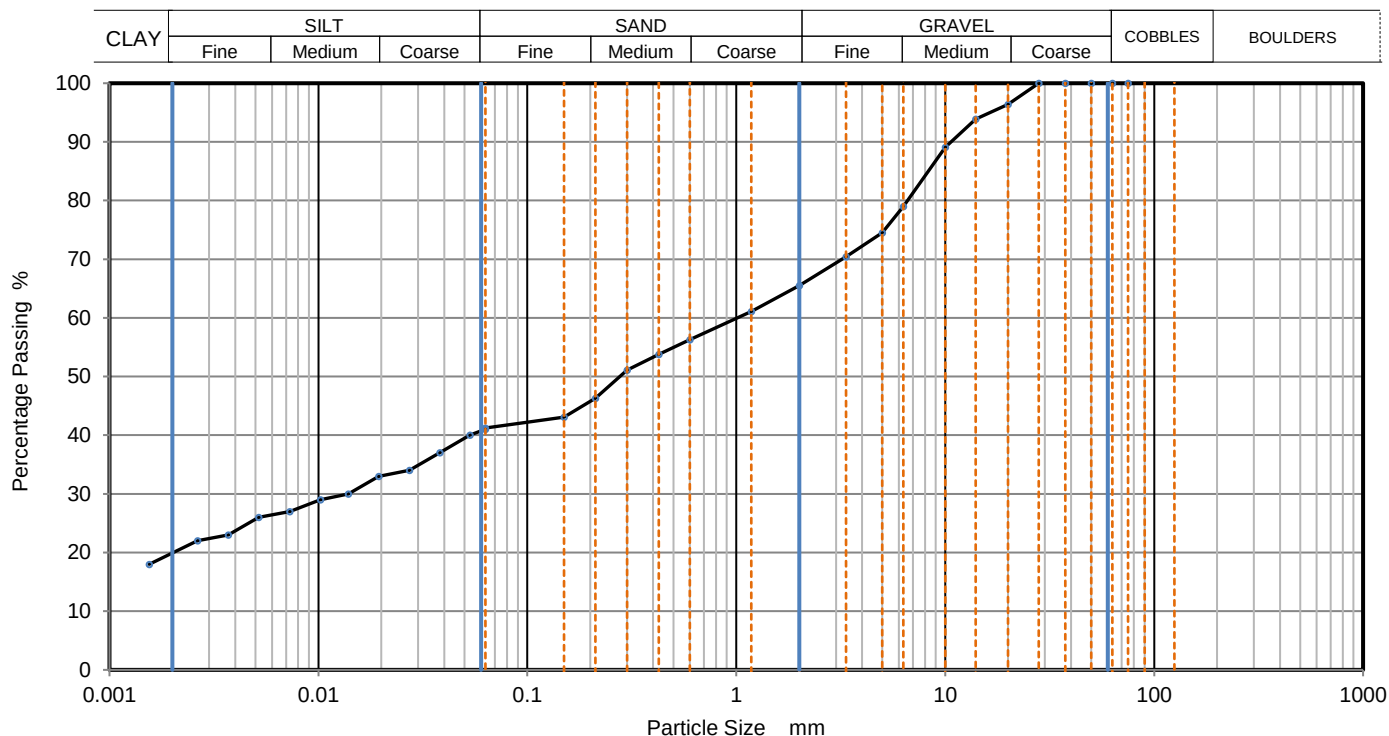
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH206
Site Name	Arklow Bank Windpark			Sample No.	
Soil Description	Brown slightly sandy gravelly SILT.			Depth, m	10.70
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL1202011132



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	41
		0.0531	40
75	100	0.0381	37
63	100	0.0273	34
50	100	0.0194	33
37.5	100	0.0139	30
28	100	0.0102	29
20	96	0.0073	27
14	94	0.0052	26
10	89	0.0037	23
6.3	79	0.0026	22
5	75	0.0015	18
3.35	70		
2	66		
1.18	61		
0.6	56	Particle density (assumed) 2.65 Mg/m3	
0.425	54		
0.3	51		
0.212	46		
0.15	43		
0.063	41		

Dry Mass of sample, g

670

Sample Proportions	% dry mass
Very coarse	0
Gravel	35
Sand	24
Silt	21
Clay	20

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

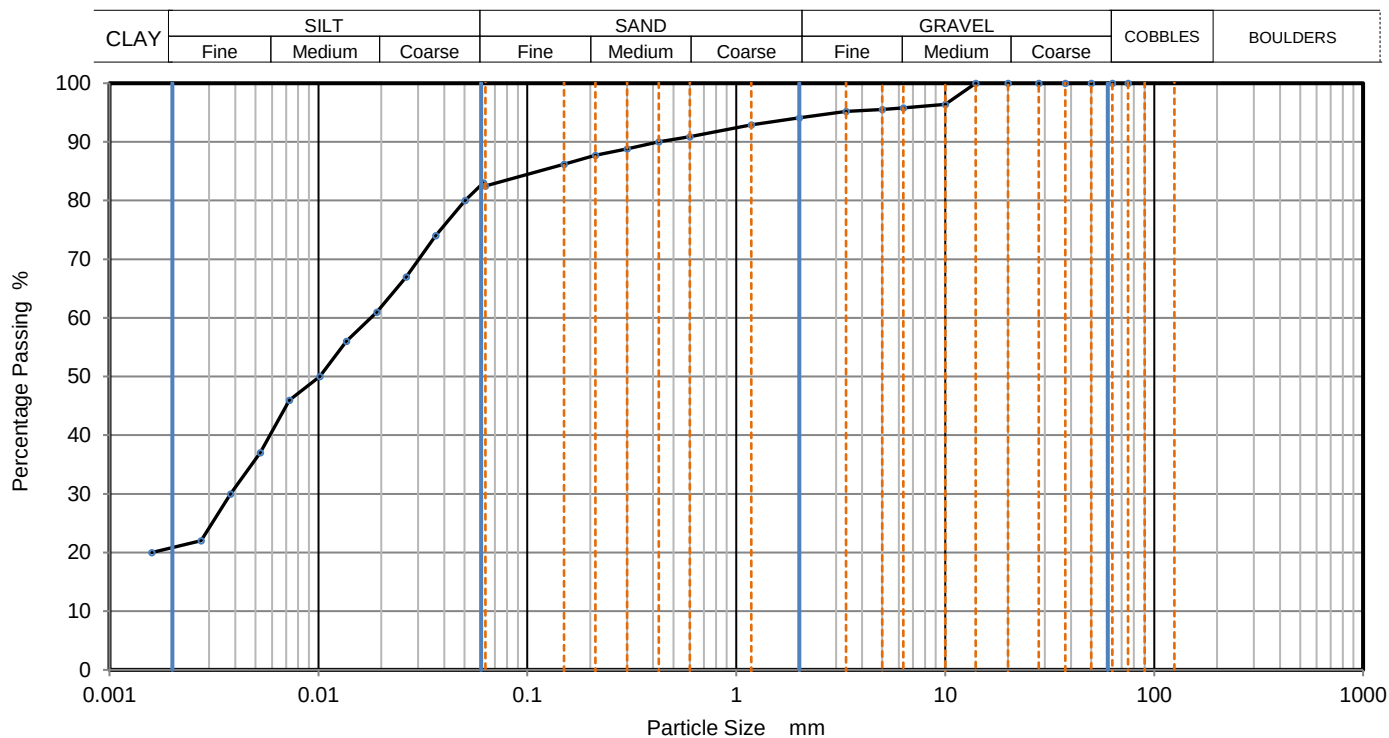
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	BH206
Site Name	Arklow Bank Windpark			Sample No.	
Soil Description	Light brown slightly gravelly slightly sandy SILT.			Depth, m	12.50
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL1202011134



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0616	83
		0.0503	80
75	100	0.0364	74
63	100	0.0263	67
50	100	0.0190	61
37.5	100	0.0136	56
28	100	0.0102	50
20	100	0.0073	46
14	100	0.0053	37
10	96	0.0038	30
6.3	96	0.0027	22
5	96	0.0016	20
3.35	95		
2	94		
1.18	93		
0.6	91	Particle density (assumed) 2.65 Mg/m3	
0.425	90		
0.3	89		
0.212	88		
0.15	86		
0.063	83		

Dry Mass of sample, g

516

Sample Proportions	% dry mass
Very coarse	0
Gravel	6
Sand	12
Silt	62
Clay	20

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

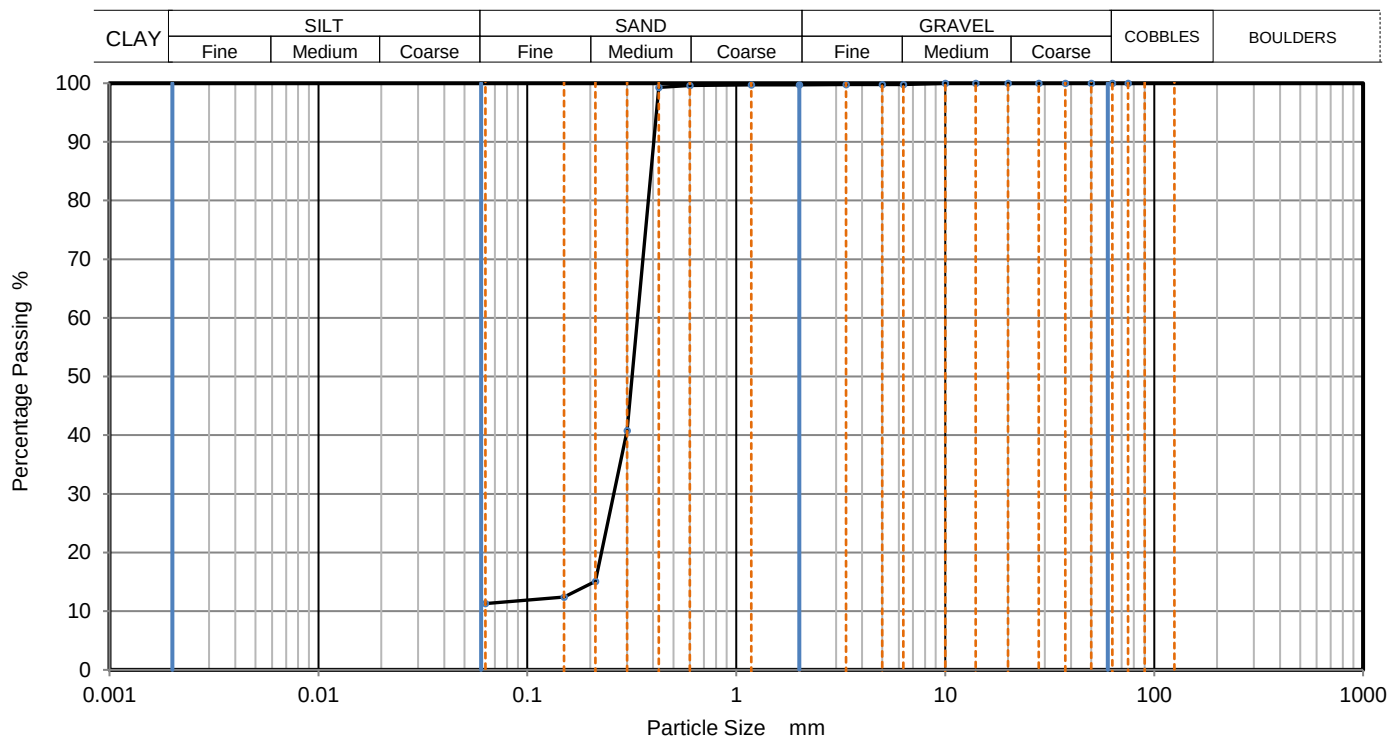
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	PARTICLE SIZE DISTRIBUTION		Job Ref	2020WW102	
			Borehole/Pit No.	RC201	
Site Name	Arklow Bank Windpark		Sample No.		
Soil Description	Brown silty medium SAND.		Depth, m	2.50	
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clause 9.2		KeyLAB ID	IDL1202011202	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	41		
0.212	15		
0.15	12		
0.063	11		

Dry Mass of sample, g

834

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	88
Fines <0.063mm	11

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

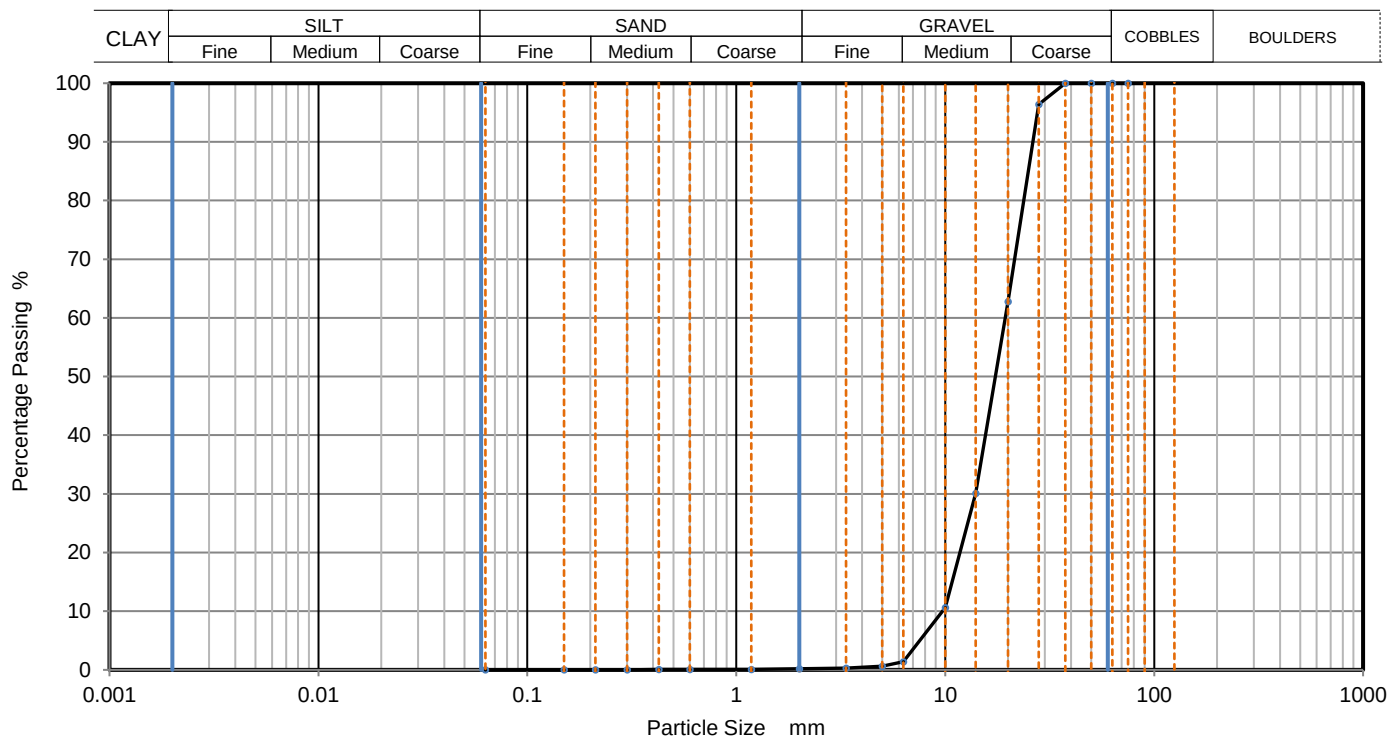
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	RC201
Site Name	Arklow Bank Windpark			Sample No.	
Soil Description	Brown coarse GRAVEL.			Depth, m	7.00
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202011207



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	63		
14	30		
10	11		
6.3	1		
5	1		
3.35	0		
2	0		
1.18	0		
0.6	0		
0.425	0		
0.3	0		
0.212	0		
0.15	0		
0.063	0		

Dry Mass of sample, g

1080

Sample Proportions	% dry mass
Very coarse	0
Gravel	100
Sand	0
Fines <0.063mm	0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	2
Curvature Coefficient	1

Remarks

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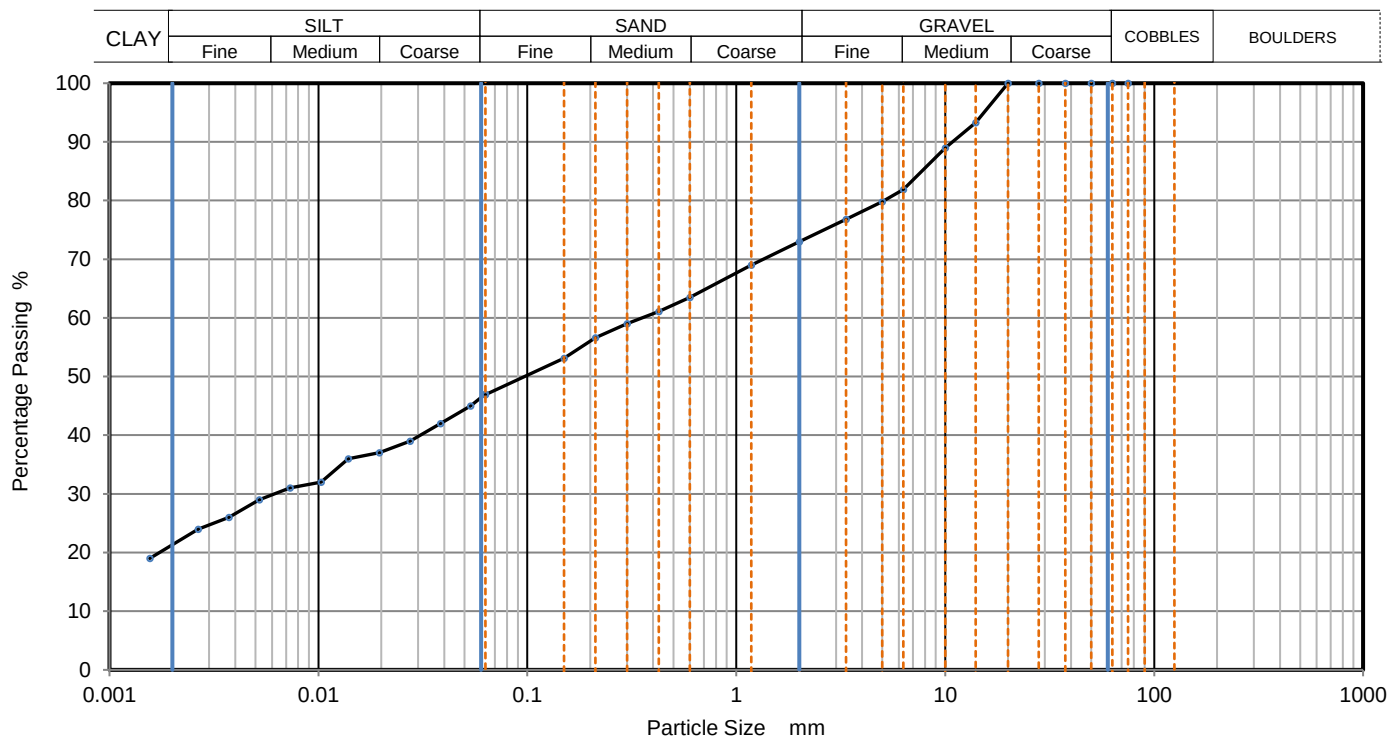
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	RC201
Site Name	Arklow Bank Windpark			Sample No.	
Soil Description	Dark brown slightly sandy slightly gravelly SILT. Gravel is medium.			Depth, m	20.50
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020112025



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	47
		0.0535	45
75	100	0.0384	42
63	100	0.0275	39
50	100	0.0196	37
37.5	100	0.0139	36
28	100	0.0103	32
20	100	0.0073	31
14	93	0.0052	29
10	89	0.0037	26
6.3	82	0.0027	24
5	80	0.0016	19
3.35	77		
2	73		
1.18	69		
0.6	64	Particle density (assumed) 2.65 Mg/m3	
0.425	61		
0.3	59		
0.212	57		
0.15	53		
0.063	47		

Dry Mass of sample, g

756

Sample Proportions	% dry mass
Very coarse	0
Gravel	27
Sand	26
Silt	25
Clay	22

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

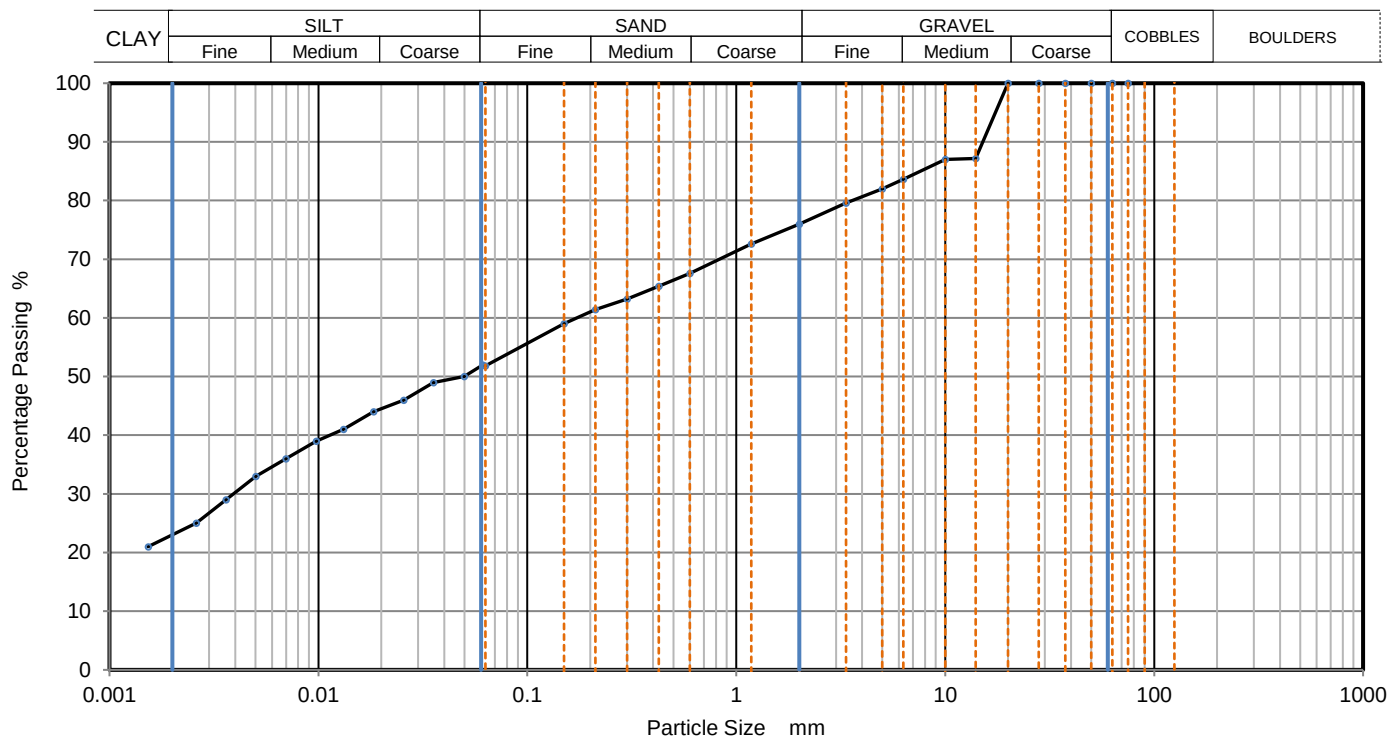
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	RC201
Site Name	Arklow Bank Windpark			Sample No.	
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth, m	23.50
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020112029



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0611	52
		0.0499	50
75	100	0.0356	49
63	100	0.0256	46
50	100	0.0183	44
37.5	100	0.0132	41
28	100	0.0098	39
20	100	0.0070	36
14	87	0.0050	33
10	87	0.0036	29
6.3	84	0.0026	25
5	82	0.0015	21
3.35	80		
2	76		
1.18	73		
0.6	68	Particle density (assumed) 2.65 Mg/m3	
0.425	65		
0.3	63		
0.212	61		
0.15	59		
0.063	52		

Dry Mass of sample, g

493

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	24
Silt	29
Clay	23

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

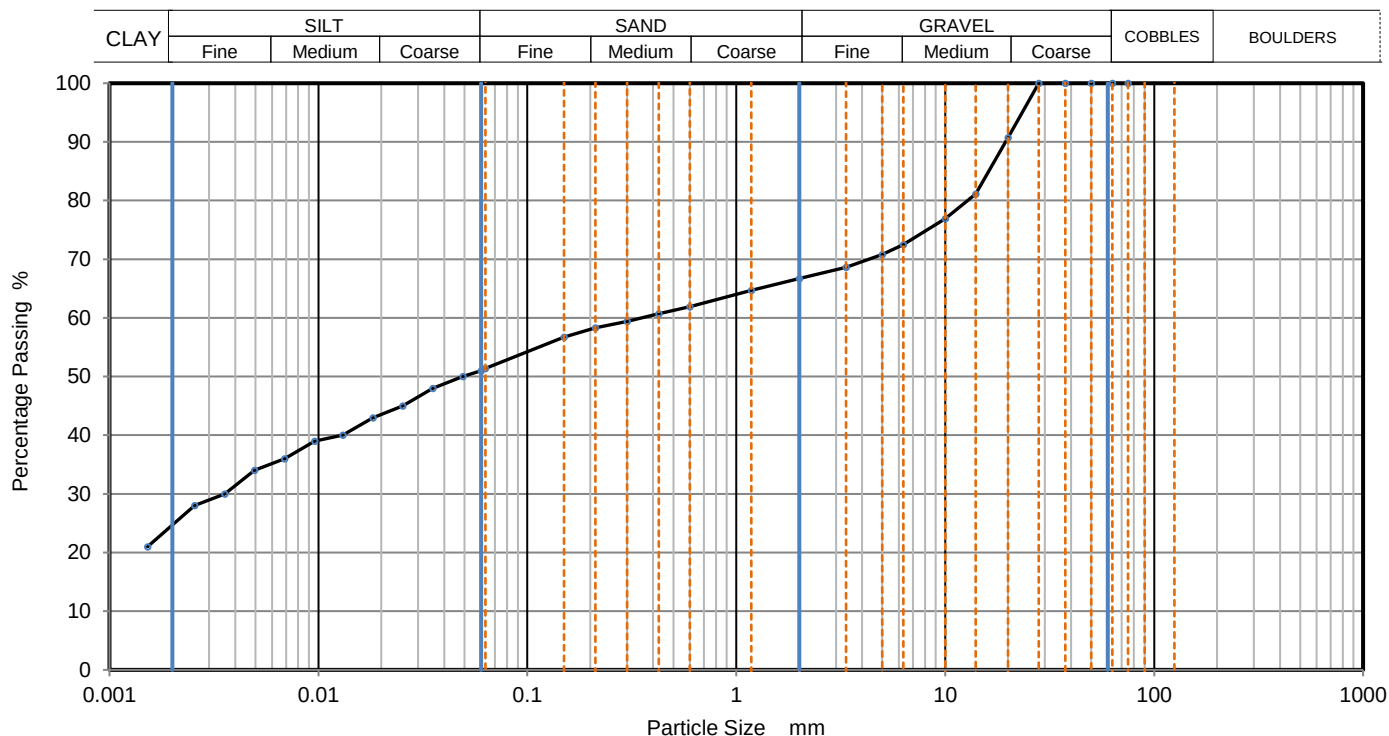
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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	RC202
Site Name	Arklow Bank Windpark			Sample No.	
Soil Description	Brown slightly sandy slightly gravelly SILT. Gravel is medium.			Depth, m	23.60
Specimen Reference		Specimen Depth	m	Sample Type	C
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020112036



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0601	51
		0.0491	50
75	100	0.0353	48
63	100	0.0254	45
50	100	0.0182	43
37.5	100	0.0131	40
28	100	0.0096	39
20	91	0.0069	36
14	81	0.0049	34
10	77	0.0036	30
6.3	73	0.0026	28
5	71	0.0015	21
3.35	69		
2	67		
1.18	65		
0.6	62	Particle density (assumed) 2.65 Mg/m3	
0.425	61		
0.3	59		
0.212	58		
0.15	57		
0.063	51		

Dry Mass of sample, g

438

Sample Proportions	% dry mass
Very coarse	0
Gravel	33
Sand	15
Silt	27
Clay	25

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

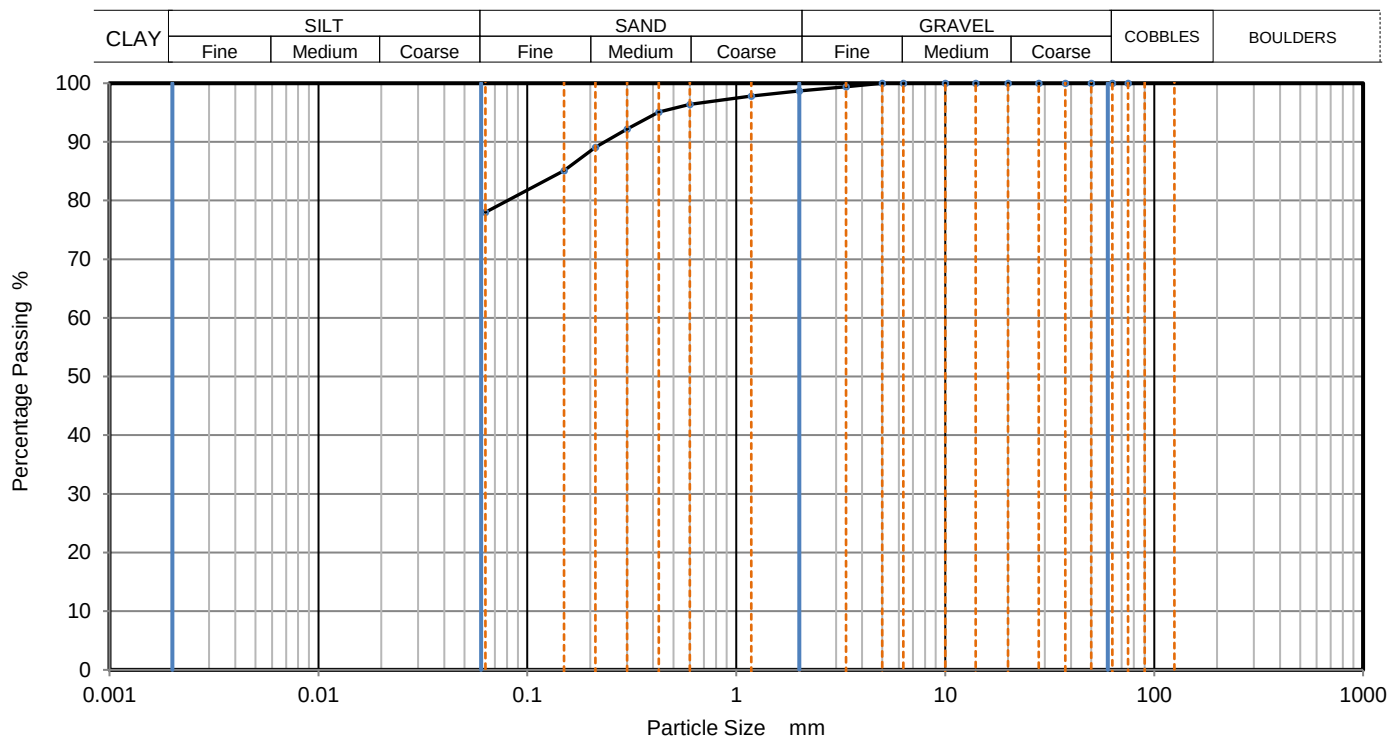
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Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP201
Site Name	Arklow Bank Windpark			Sample No.	5
Soil Description	Dark brown slightly sandy SILT.			Depth, m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120201028308



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	99		
2	99		
1.18	98		
0.6	96		
0.425	95		
0.3	92		
0.212	89		
0.15	85		
0.063	78		

Dry Mass of sample, g

474

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	21
Fines <0.063mm	78

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

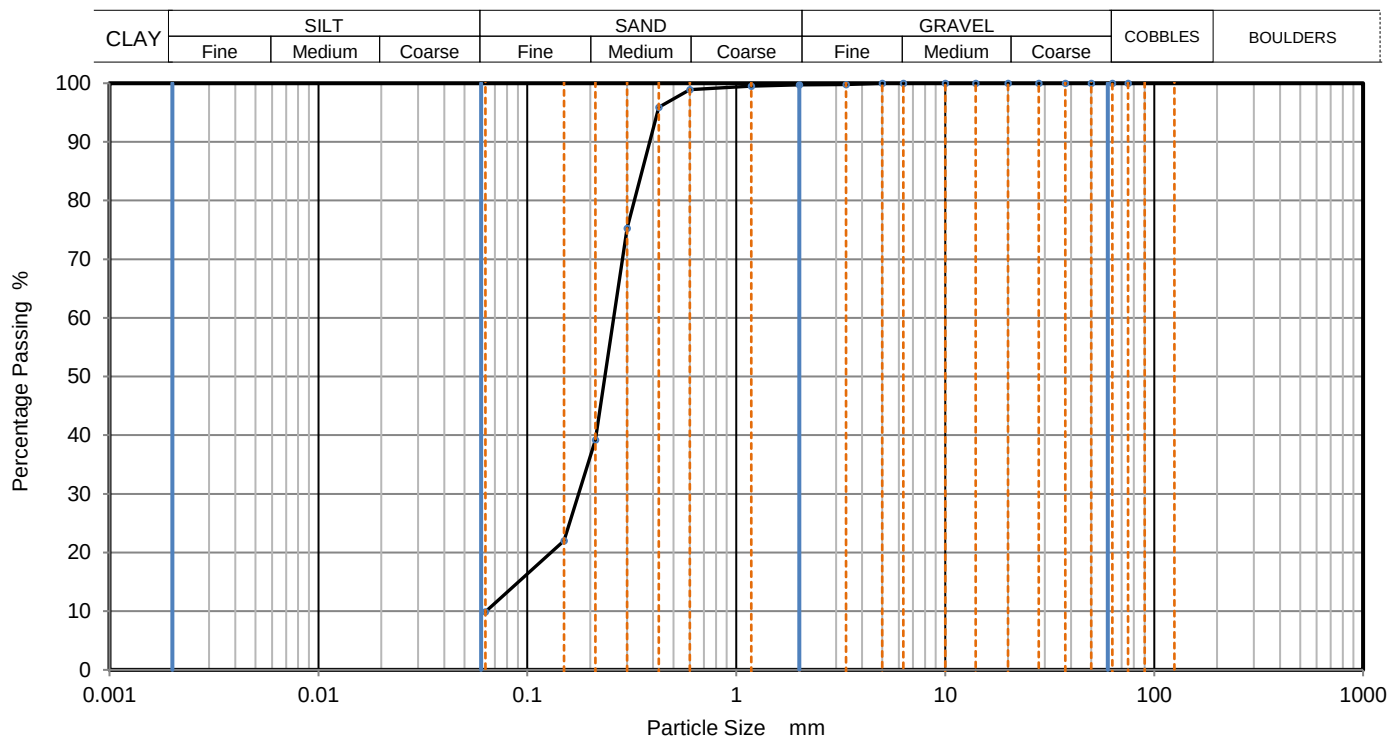
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP202
Site Name	Arklow Bank Windpark			Sample No.	6
Soil Description	Orange-brown silty medium SAND.			Depth, m	2.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120201028316



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	96		
0.3	75		
0.212	39		
0.15	22		
0.063	10		

Dry Mass of sample, g

569

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	90
Fines <0.063mm	10

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

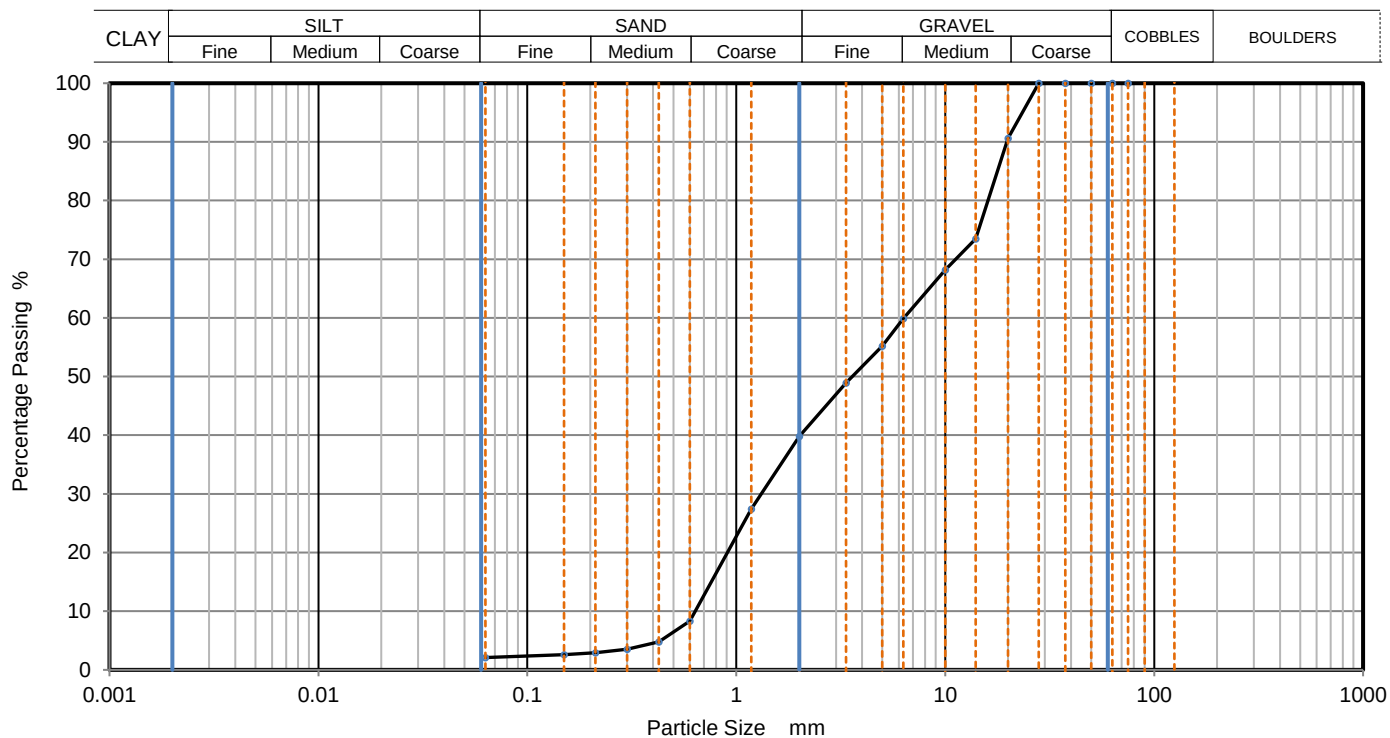
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP202
Site Name	Arklow Bank Windpark			Sample No.	8
Soil Description	Grey very sandy medium GRAVEL. Sand is coarse.			Depth, m	3.90
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120201028318



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	91		
14	74		
10	68		
6.3	60		
5	55		
3.35	49		
2	40		
1.18	27		
0.6	8		
0.425	5		
0.3	4		
0.212	3		
0.15	3		
0.063	2		

Dry Mass of sample, g

691

Sample Proportions	% dry mass
Very coarse	0
Gravel	60
Sand	38
Fines <0.063mm	2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

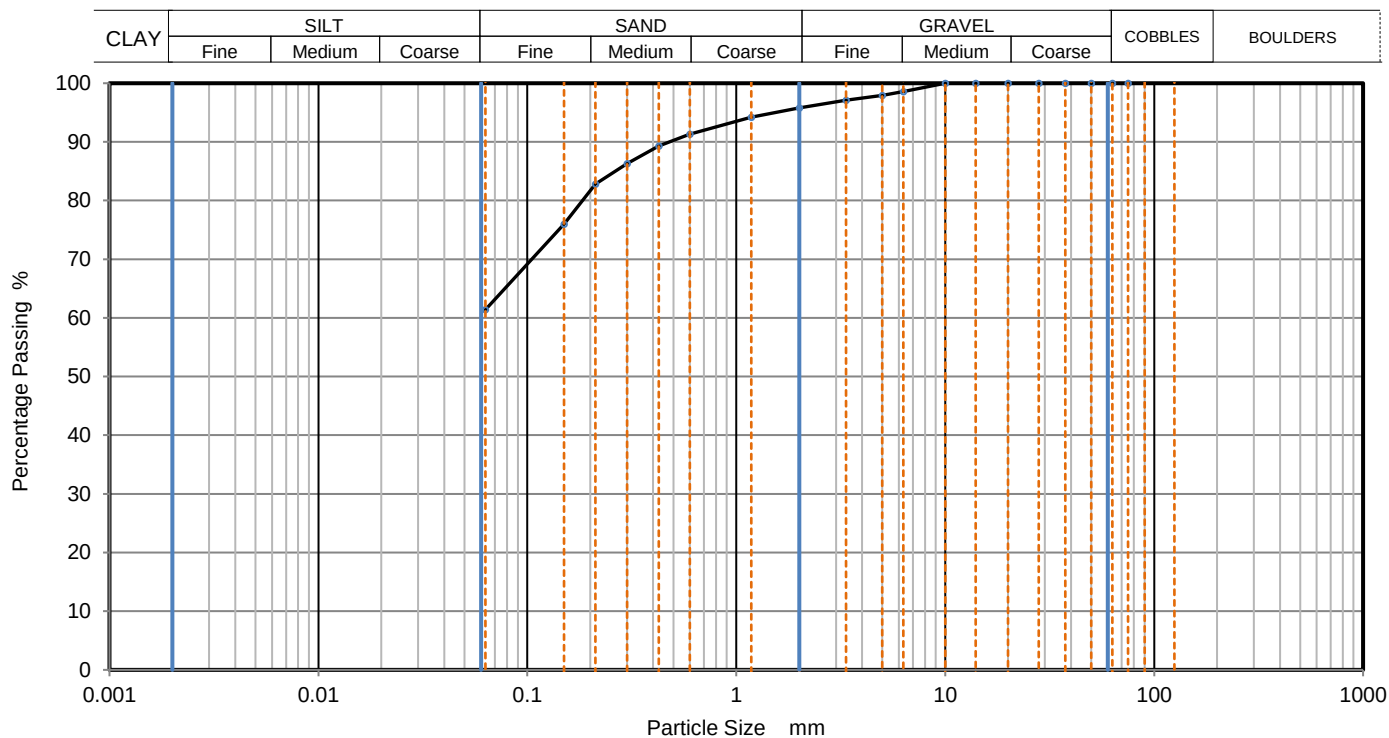
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP203
Site Name	Arklow Bank Windpark			Sample No.	5
Soil Description	Mottled dark grey and brown slightly gravelly sandy SILT. Sand is fine.			Depth, m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120201028323



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	97		
2	96		
1.18	94		
0.6	91		
0.425	89		
0.3	86		
0.212	83		
0.15	76		
0.063	61		

Dry Mass of sample, g

565

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	34
Fines <0.063mm	61

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

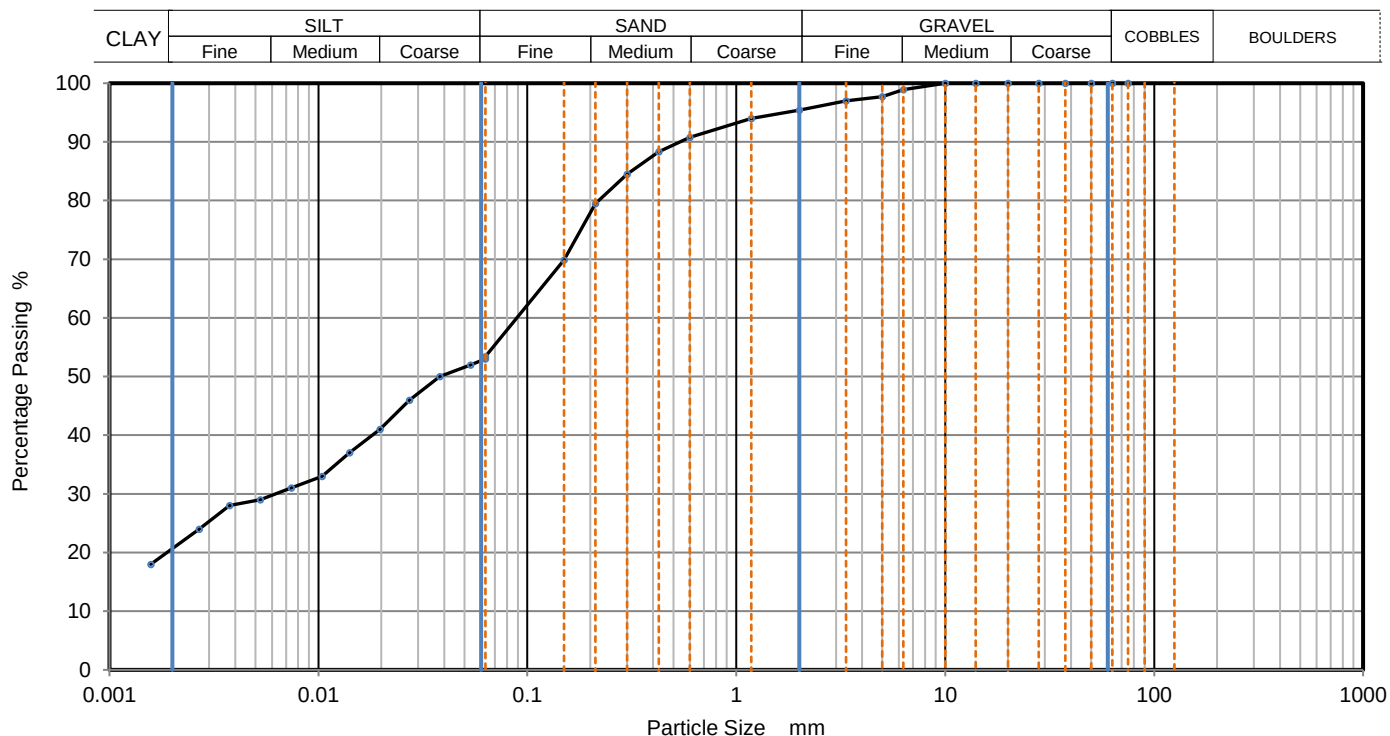
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP207
Site Name	Arklow Bank Windpark			Sample No.	2
Soil Description	Brown slightly gravelly sandy SILT. Sand is fine.			Depth, m	0.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL1202011041



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	53
		0.0535	52
75	100	0.0381	50
63	100	0.0273	46
50	100	0.0197	41
37.5	100	0.0141	37
28	100	0.0104	33
20	100	0.0074	31
14	100	0.0053	29
10	100	0.0038	28
6.3	99	0.0027	24
5	98	0.0016	18
3.35	97		
2	95		
1.18	94		
0.6	91	Particle density (assumed) 2.65 Mg/m3	
0.425	88		
0.3	85		
0.212	80		
0.15	70		
0.063	53		

Dry Mass of sample, g

404

Sample Proportions	% dry mass
Very coarse	0
Gravel	5
Sand	42
Silt	33
Clay	21

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

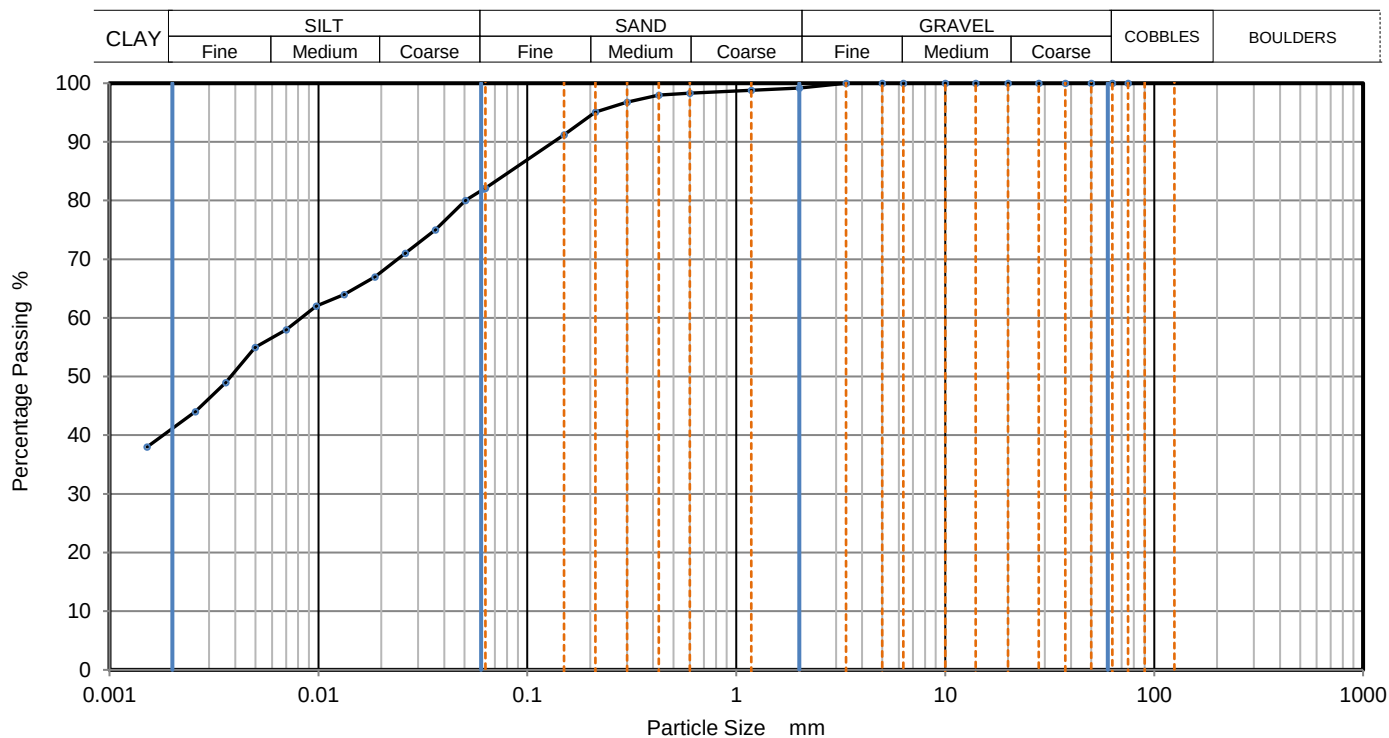
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP207
Site Name	Arklow Bank Windpark			Sample No.	6
Soil Description	Mottled grey-brown slightly sandy SILT.			Depth, m	1.60
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL1202011046



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0621	82
		0.0505	80
75	100	0.0362	75
63	100	0.0260	71
50	100	0.0187	67
37.5	100	0.0133	64
28	100	0.0098	62
20	100	0.0070	58
14	100	0.0050	55
10	100	0.0036	49
6.3	100	0.0026	44
5	100	0.0015	38
3.35	100		
2	99		
1.18	99		
0.6	98	Particle density (assumed) 2.65 Mg/m3	
0.425	98		
0.3	97		
0.212	95		
0.15	91		
0.063	82		

Dry Mass of sample, g

504

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	17
Silt	41
Clay	41

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

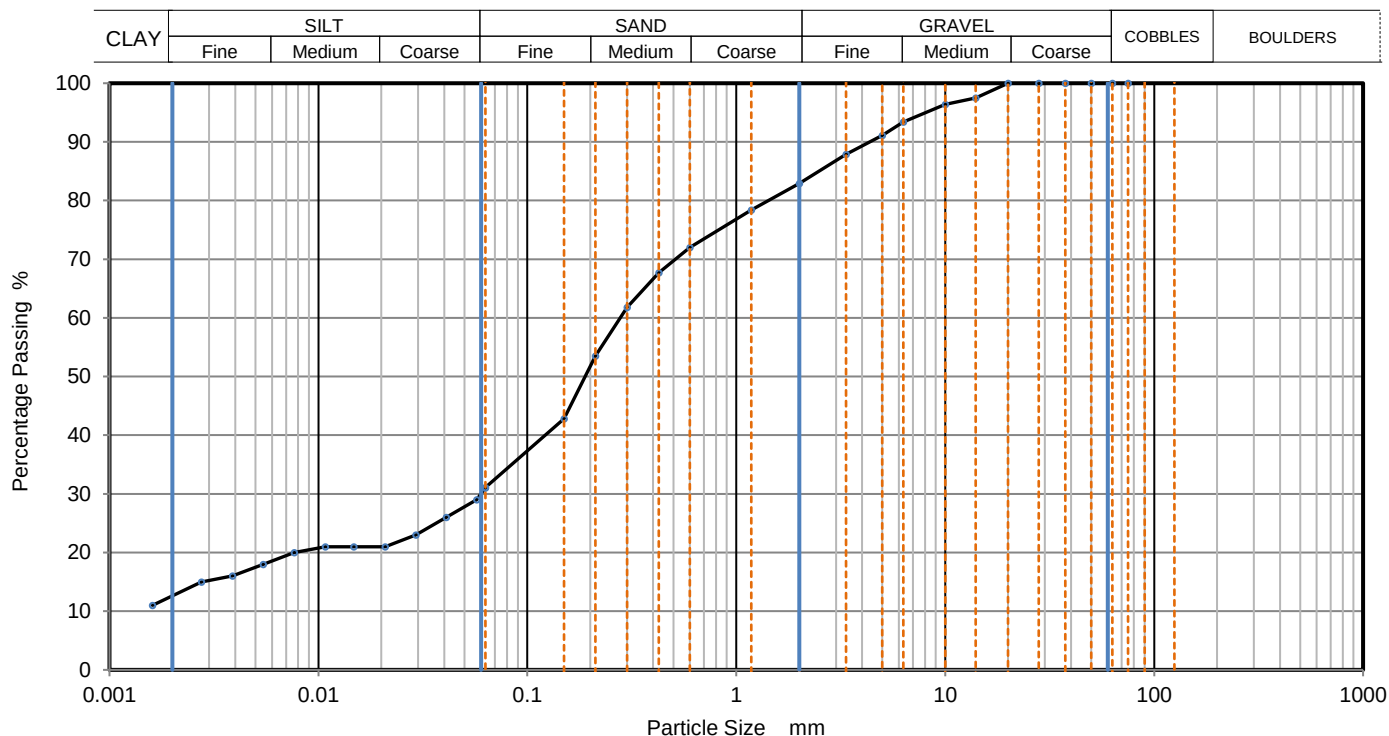
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP209
Site Name	Arklow Bank Windpark			Sample No.	2
Soil Description	Brown gravelly very silty fine and medium SAND.			Depth, m	0.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL1202011049



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	31
		0.0572	29
75	100	0.0410	26
63	100	0.0293	23
50	100	0.0208	21
37.5	100	0.0147	21
28	100	0.0108	21
20	100	0.0077	20
14	98	0.0054	18
10	96	0.0039	16
6.3	93	0.0028	15
5	91	0.0016	11
3.35	88		
2	83		
1.18	78		
0.6	72	Particle density (assumed) 2.65 Mg/m ³	
0.425	68		
0.3	62		
0.212	54		
0.15	43		
0.063	31		

Dry Mass of sample, g

695

Sample Proportions	% dry mass
Very coarse	0
Gravel	17
Sand	52
Silt	18
Clay	13

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

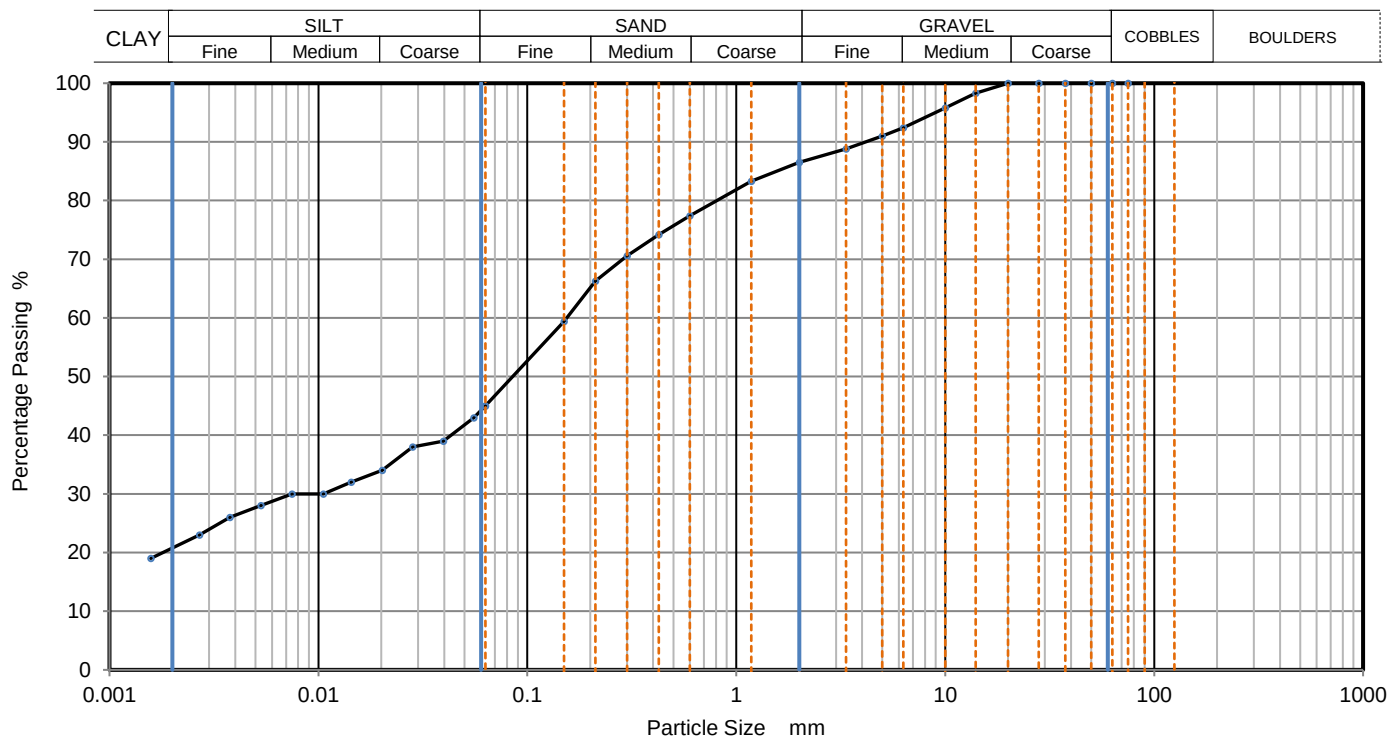
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP209
Site Name	Arklow Bank Windpark			Sample No.	6
Soil Description	Dark grey slightly gravelly sandy SILT.			Depth, m	1.50
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020110414



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	45
		0.0553	43
75	100	0.0396	39
63	100	0.0282	38
50	100	0.0202	34
37.5	100	0.0144	32
28	100	0.0106	30
20	100	0.0075	30
14	98	0.0053	28
10	96	0.0038	26
6.3	92	0.0027	23
5	91	0.0016	19
3.35	89		
2	87		
1.18	83		
0.6	77	Particle density (assumed) 2.65 Mg/m3	
0.425	74		
0.3	71		
0.212	66		
0.15	59		
0.063	45		

Dry Mass of sample, g

544

Sample Proportions	% dry mass
Very coarse	0
Gravel	14
Sand	42
Silt	25
Clay	20

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

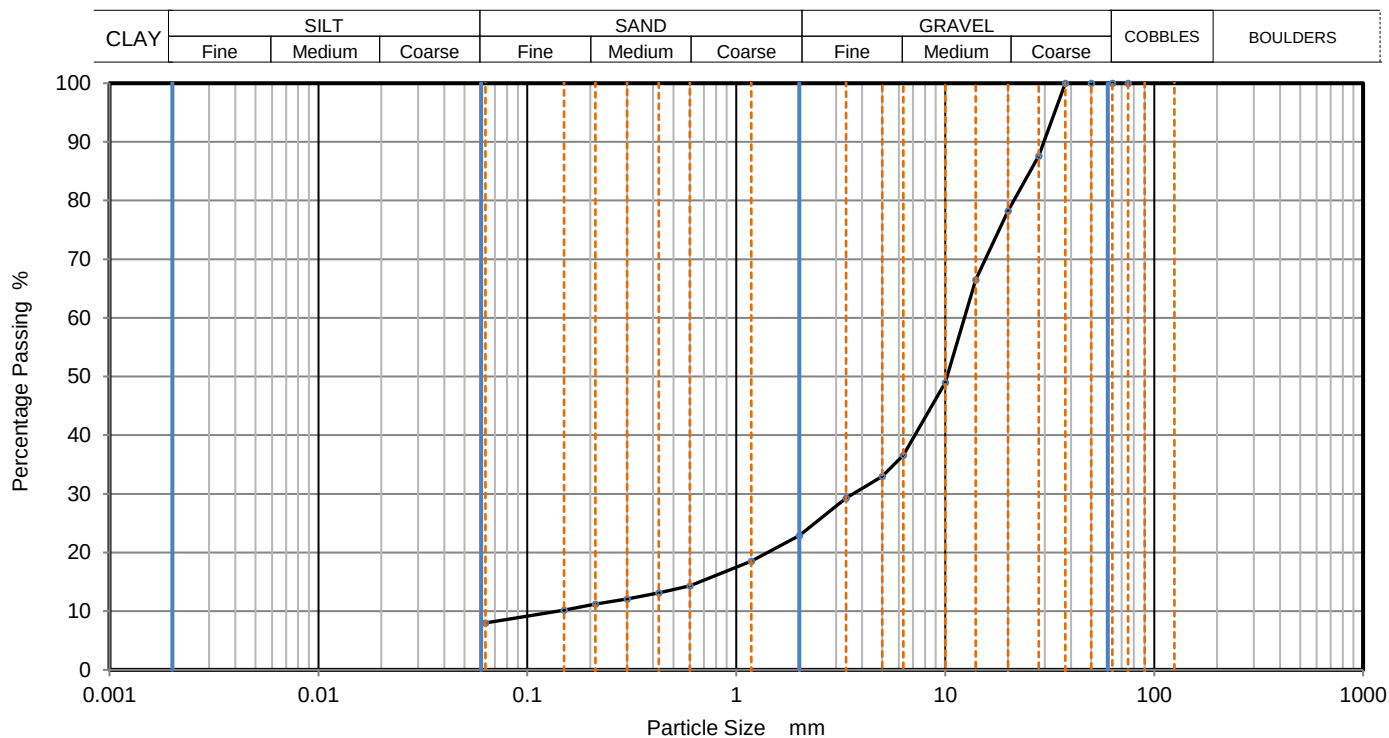
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP209
Site Name	Arklow Bank Windpark			Sample No.	7
Soil Description	Grey silty sandy medium angular GRAVEL.			Depth, m	2.20
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL12020110415



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	88		
20	78		
14	67		
10	49		
6.3	37		
5	33		
3.35	29		
2	23		
1.18	19		
0.6	14		
0.425	13		
0.3	12		
0.212	11		
0.15	10		
0.063	8		

Dry Mass of sample, g

797

Sample Proportions	% dry mass
Very coarse	0
Gravel	77
Sand	15
Fines <0.063mm	8

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	89
Curvature Coefficient	7.6

Remarks

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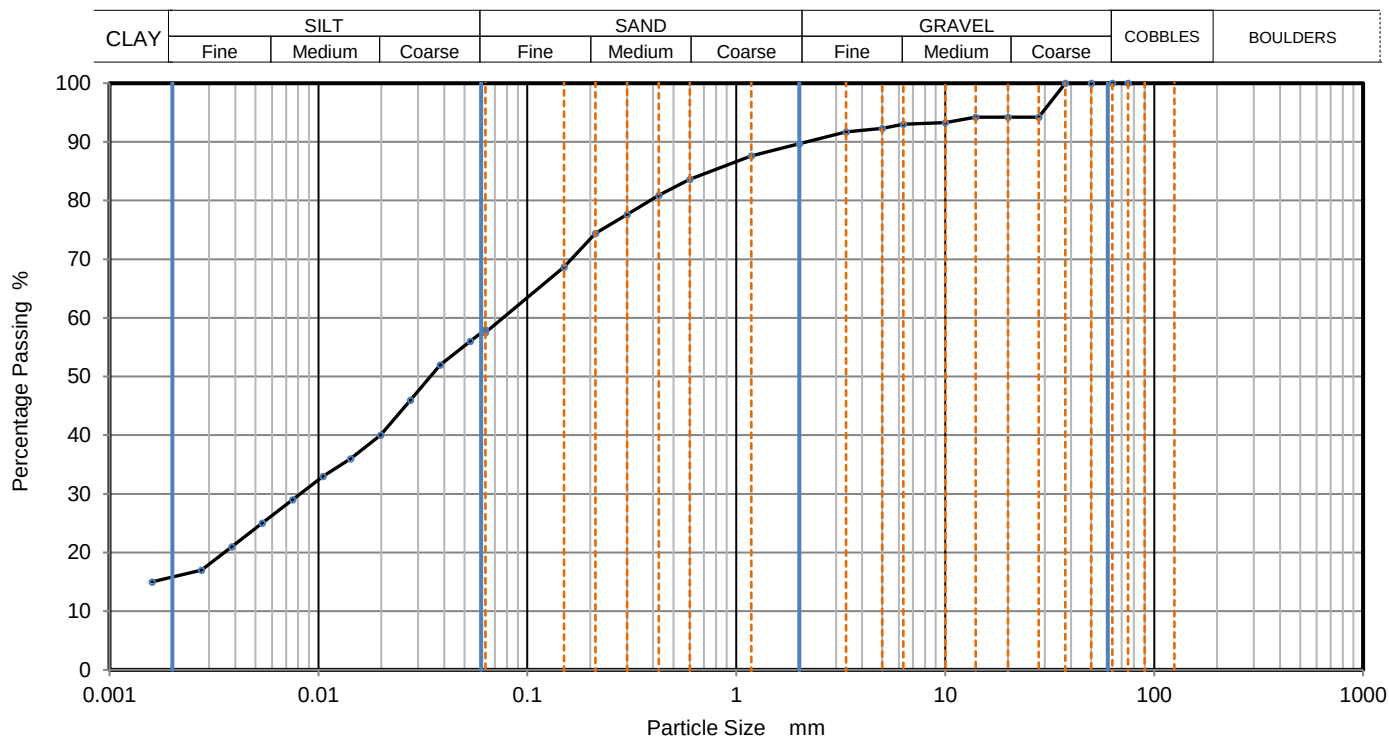
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP210
Site Name	Arklow Bank Windpark			Sample No.	4
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth, m	1.10
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL12020110420



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	58
		0.0533	56
75	100	0.0382	52
63	100	0.0276	46
50	100	0.0199	40
37.5	100	0.0142	36
28	94	0.0105	33
20	94	0.0075	29
14	94	0.0054	25
10	93	0.0038	21
6.3	93	0.0028	17
5	92	0.0016	15
3.35	92		
2	90		
1.18	88		
0.6	84	Particle density (assumed) 2.65 Mg/m3	
0.425	81		
0.3	78		
0.212	74		
0.15	69		
0.063	58		

Dry Mass of sample, g

500

Sample Proportions	% dry mass
Very coarse	0
Gravel	10
Sand	32
Silt	41
Clay	16

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

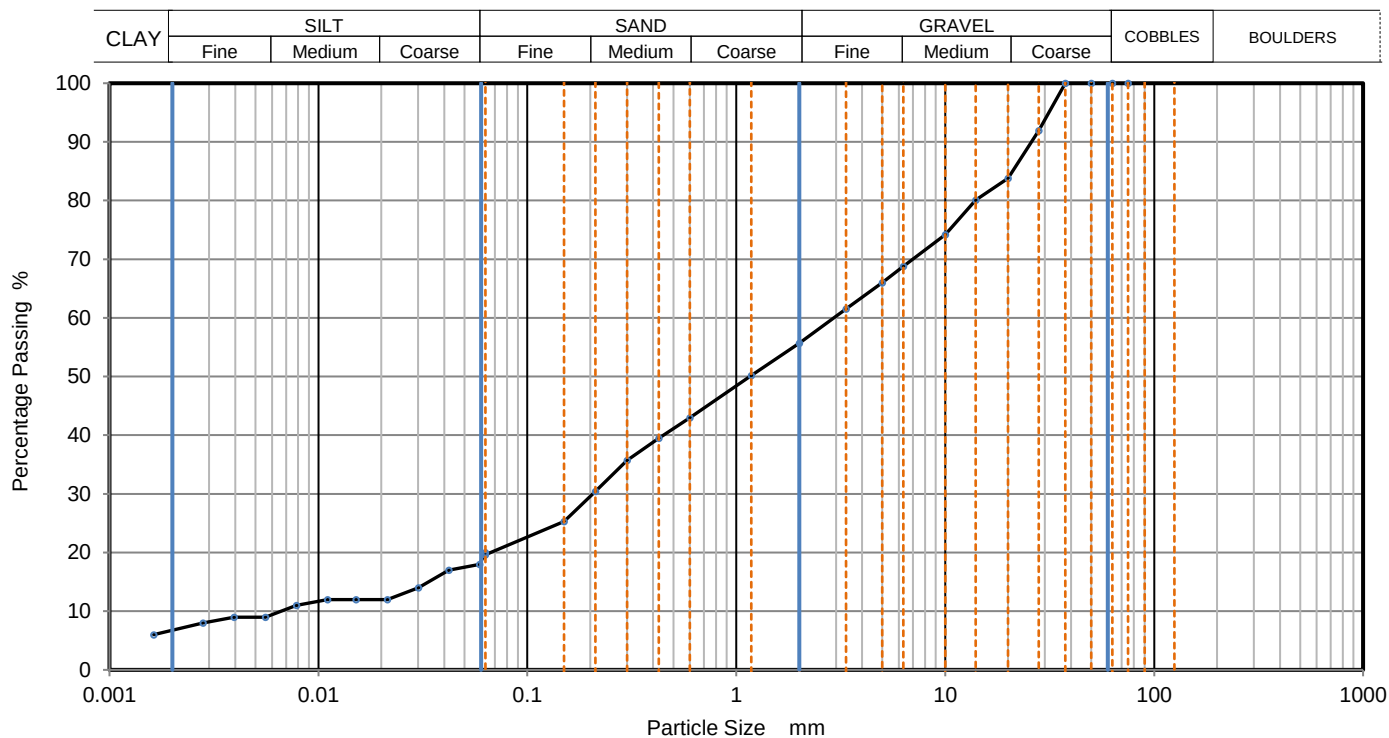
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP220
Site Name	Arklow Bank Windpark			Sample No.	2
Soil Description	Light grey very silty very sandy GRAVEL.			Depth, m	0.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL120201109222



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	20
		0.0591	18
75	100	0.0421	17
63	100	0.0301	14
50	100	0.0214	12
37.5	100	0.0151	12
28	92	0.0110	12
20	84	0.0078	11
14	80	0.0056	9
10	74	0.0039	9
6.3	69	0.0028	8
5	66	0.0016	6
3.35	62		
2	56		
1.18	50		
0.6	43	Particle density (assumed) 2.65 Mg/m3	
0.425	40		
0.3	36		
0.212	30		
0.15	25		
0.063	20		

Dry Mass of sample, g

912

Sample Proportions	% dry mass
Very coarse	0
Gravel	44
Sand	36
Silt	13
Clay	7

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

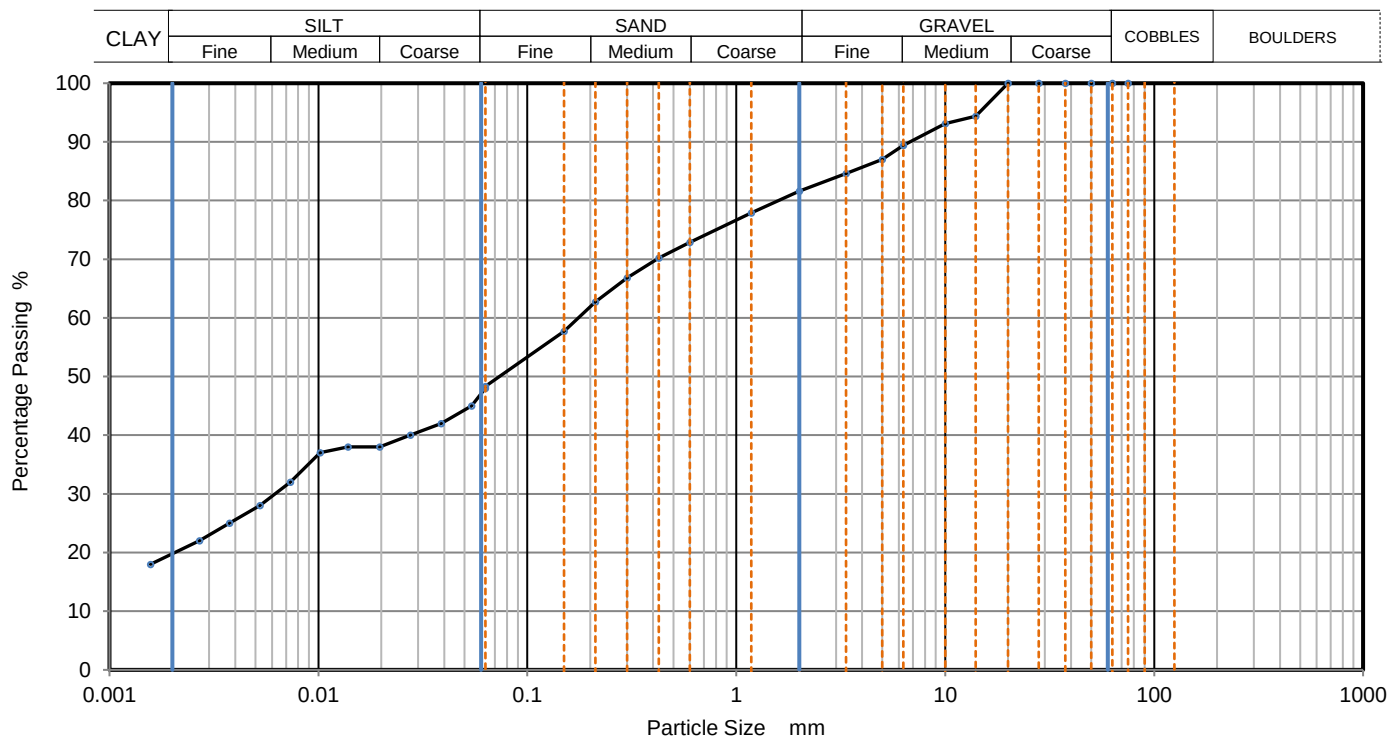
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	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP220
Site Name	Arklow Bank Windpark			Sample No.	6
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth, m	1.90
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL120201109227



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	48
		0.0540	45
75	100	0.0387	42
63	100	0.0276	40
50	100	0.0196	38
37.5	100	0.0139	38
28	100	0.0102	37
20	100	0.0073	32
14	94	0.0053	28
10	93	0.0038	25
6.3	89	0.0027	22
5	87	0.0016	18
3.35	85		
2	82		
1.18	78		
0.6	73	Particle density (assumed) 2.65 Mg/m3	
0.425	70		
0.3	67		
0.212	63		
0.15	58		
0.063	48		

Dry Mass of sample, g

599

Sample Proportions	% dry mass
Very coarse	0
Gravel	18
Sand	33
Silt	29
Clay	20

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

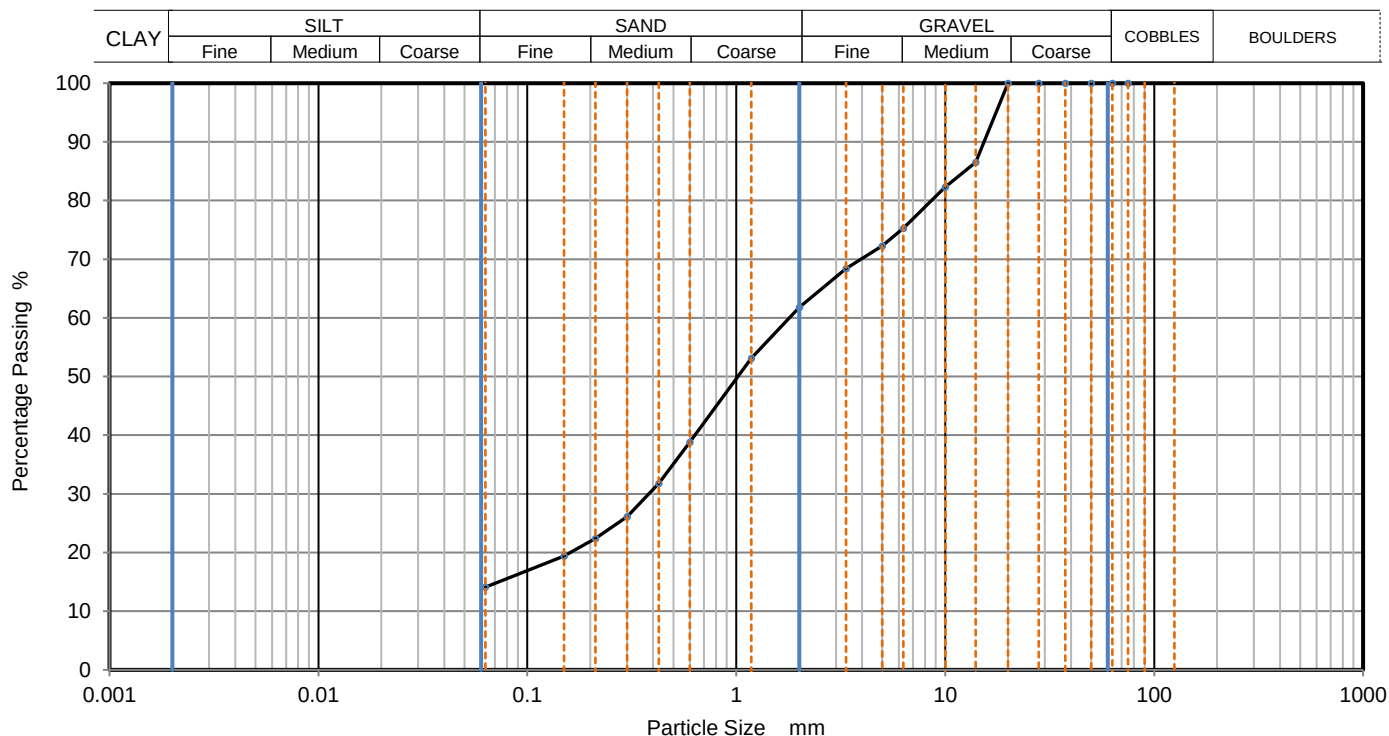
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				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP221
Site Name	Arklow Bank Windpark			Sample No.	2
Soil Description	Dark brown silty very gravelly coarse SAND.			Depth, m	0.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202011061



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	87		
10	82		
6.3	75		
5	72		
3.35	68		
2	62		
1.18	53		
0.6	39		
0.425	32		
0.3	26		
0.212	22		
0.15	19		
0.063	14		

Dry Mass of sample, g

739

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	48
Fines <0.063mm	14

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377 unless noted below

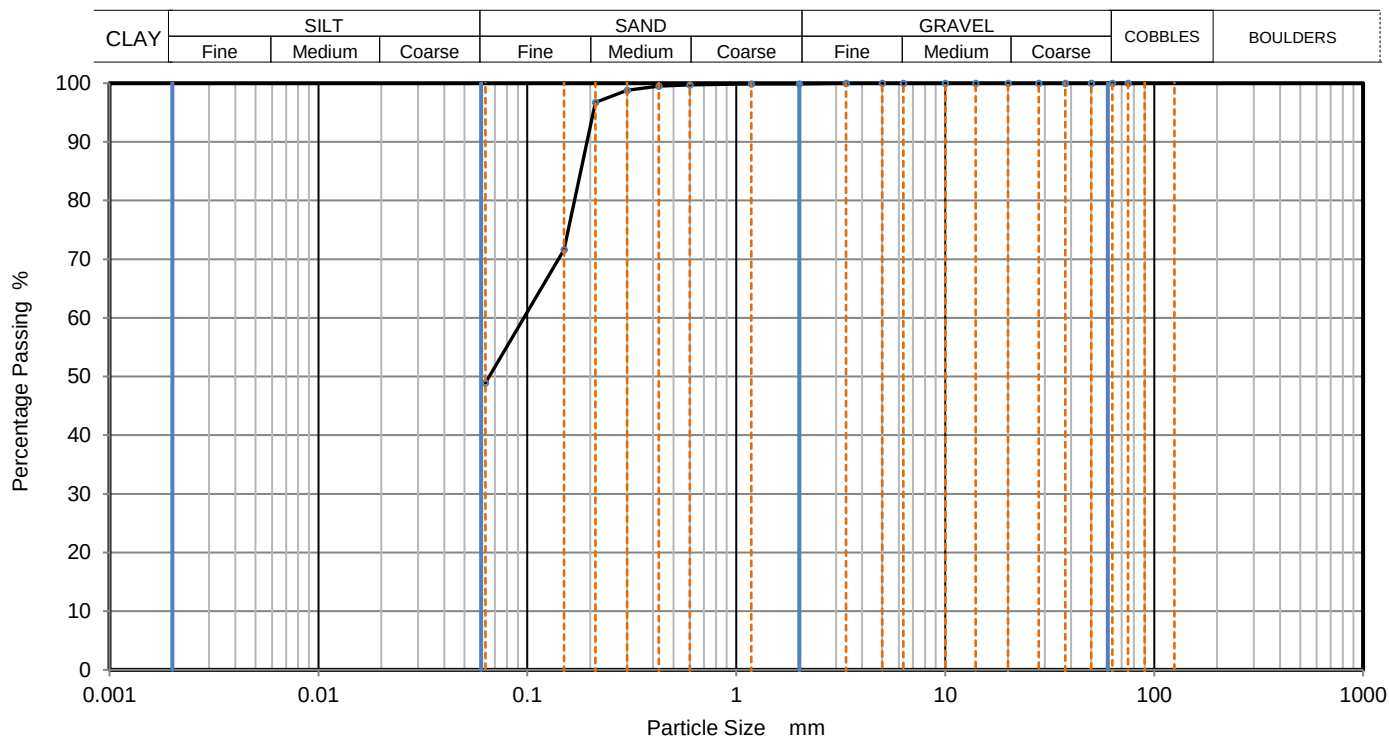
Operator	Checked	Approved	Sheet printed	1
ED	DCD	Dympna Darcy B.Sc.	14/01/2021 09:29	

QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP221
Site Name	Arklow Bank Windpark			Sample No.	6
Soil Description	Brown sandy SILT. Sand is fine.			Depth, m	1.90
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL1202011066



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	97		
0.15	72		
0.063	49		

Dry Mass of sample, g

736

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	51
Fines <0.063mm	49

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

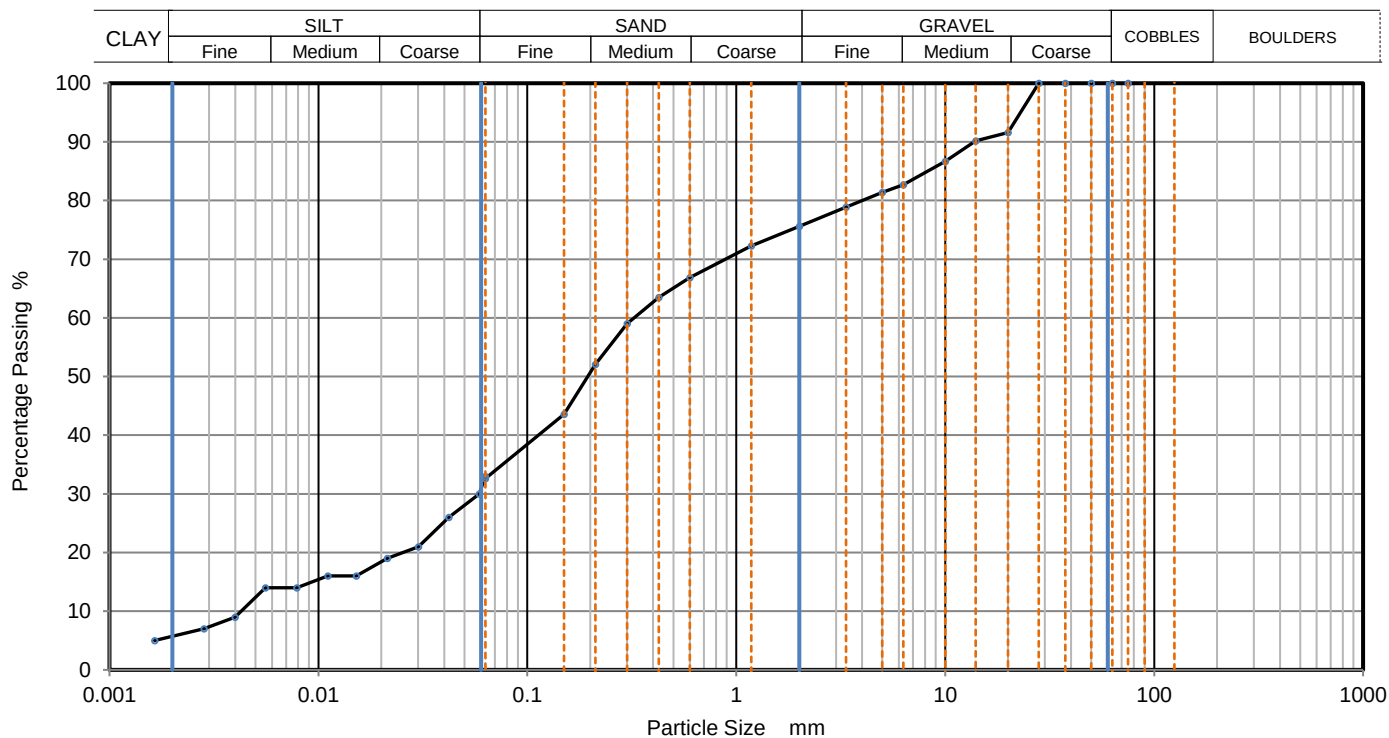
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
ED	DCD	Dympna Darcy B.Sc.	14/01/2021 09:29	
				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP222
Site Name	Arklow Bank Windpark			Sample No.	2
Soil Description	Orange-brown very gravelly very silty fine and medium SAND.			Depth, m	0.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	IDL120201109231



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0630	33
		0.0588	30
75	100	0.0421	26
63	100	0.0301	21
50	100	0.0214	19
37.5	100	0.0152	16
28	100	0.0111	16
20	92	0.0079	14
14	90	0.0056	14
10	87	0.0040	9
6.3	83	0.0028	7
5	81	0.0016	5
3.35	79		
2	76		
1.18	72		
0.6	67	Particle density (assumed) 2.65 Mg/m ³	
0.425	64		
0.3	59		
0.212	52		
0.15	44		
0.063	33		

Dry Mass of sample, g

574

Sample Proportions	% dry mass
Very coarse	0
Gravel	24
Sand	43
Silt	27
Clay	6

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

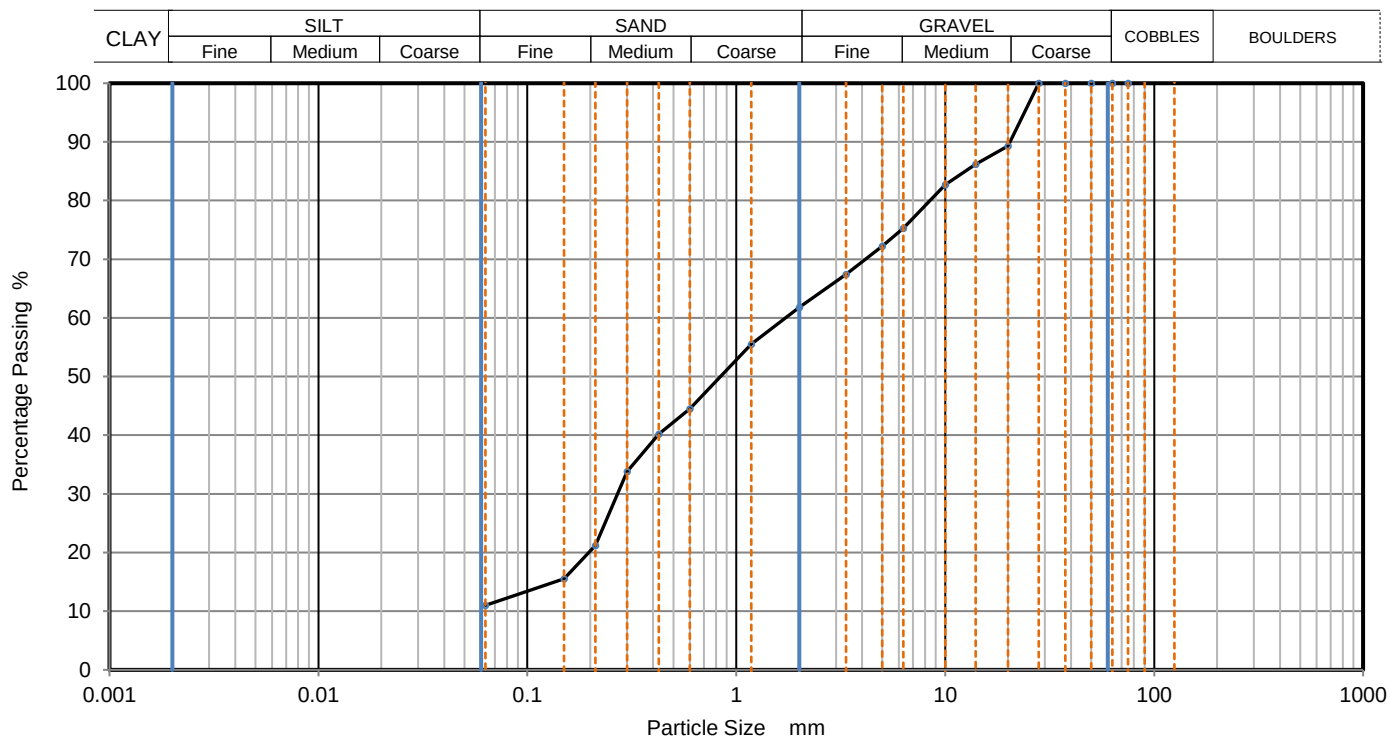
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
ED	DCD	Dympna Darcy B.Sc.	14/01/2021 09:29	
				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP222
Site Name	Arklow Bank Windpark			Sample No.	6
Soil Description	Brown silty very gravelly medium SAND.			Depth, m	1.40
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120201109236



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	89		
14	86		
10	83		
6.3	75		
5	72		
3.35	67		
2	62		
1.18	56		
0.6	45		
0.425	40		
0.3	34		
0.212	21		
0.15	16		
0.063	11		

Dry Mass of sample, g

872

Sample Proportions	% dry mass
Very coarse	0
Gravel	38
Sand	51
Fines <0.063mm	11

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

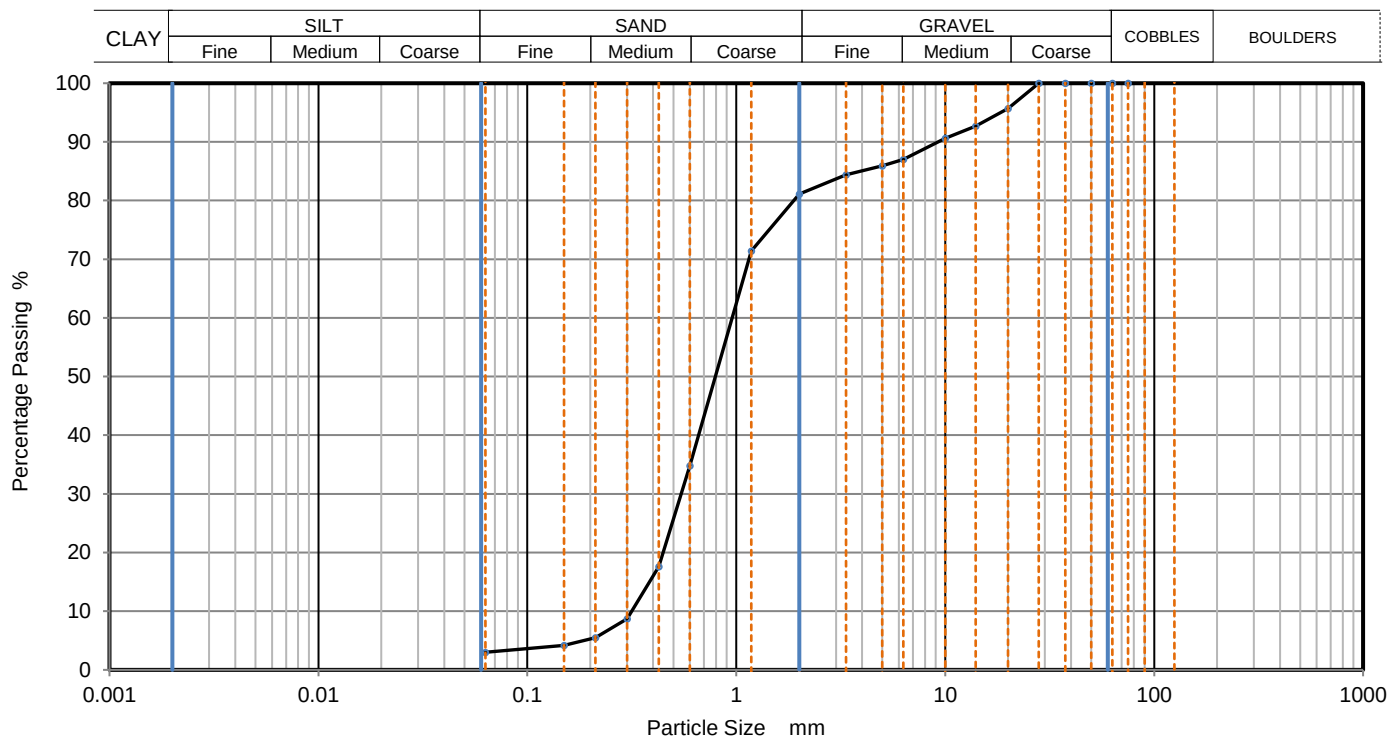
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
ED	DCD	Dympna Darcy B.Sc.	14/01/2021 09:29	
				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP222
Site Name	Arklow Bank Windpark			Sample No.	7
Soil Description	Brown slightly silty gravelly coarse SAND.			Depth, m	2.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120201109237



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	93		
10	91		
6.3	87		
5	86		
3.35	84		
2	81		
1.18	71		
0.6	35		
0.425	18		
0.3	9		
0.212	6		
0.15	4		
0.063	3		

Dry Mass of sample, g

607

Sample Proportions	% dry mass
Very coarse	0
Gravel	19
Sand	78
Fines <0.063mm	3

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	3
Curvature Coefficient	0.98

Remarks

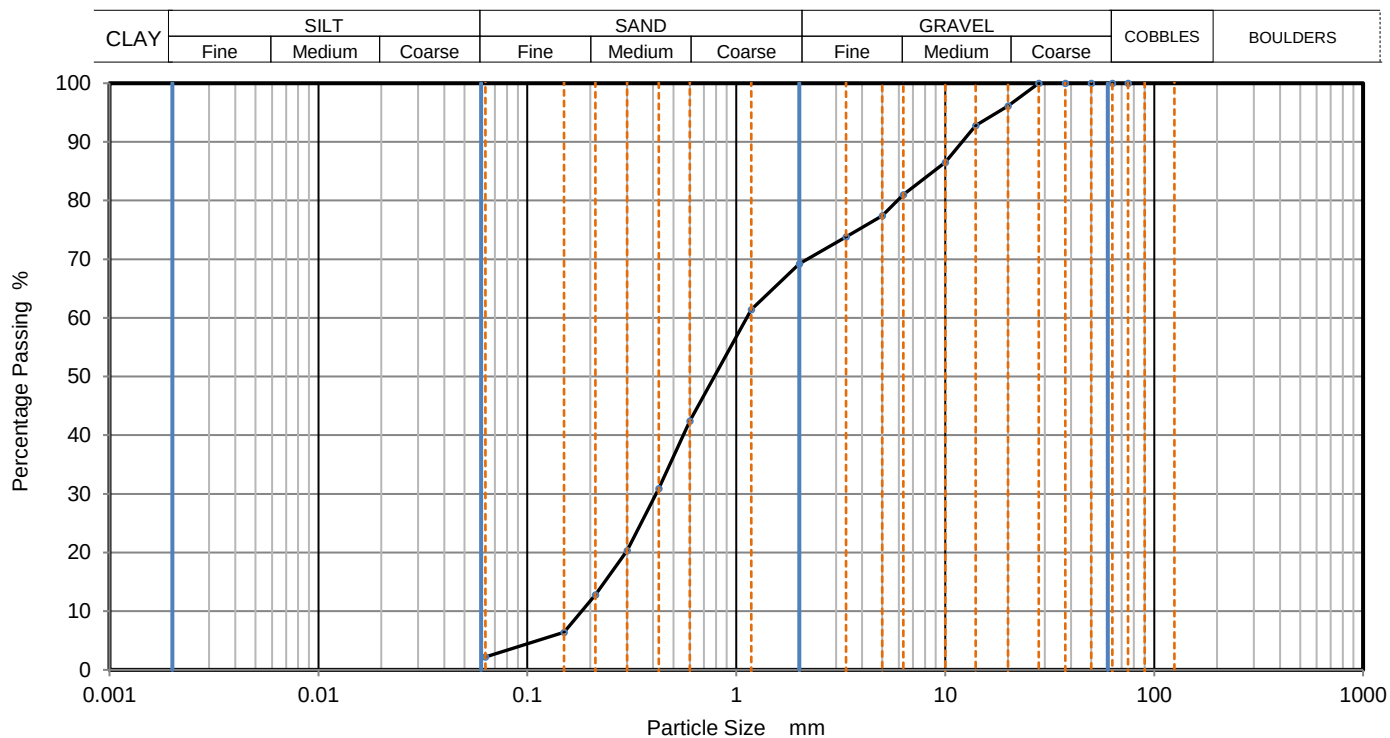
Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
ED	DCD	Dympna Darcy B.Sc.	14/01/2021 09:29	
				QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	PARTICLE SIZE DISTRIBUTION			Job Ref	2020WW102
				Borehole/Pit No.	TP222
Site Name	Arklow Bank Windpark			Sample No.	8
Soil Description	Brown slightly silty very gravelly medium and coarse SAND.			Depth, m	2.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	IDL120201109238



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	93		
10	87		
6.3	81		
5	77		
3.35	74		
2	69		
1.18	61		
0.6	42		
0.425	31		
0.3	20		
0.212	13		
0.15	6		
0.063	2		

Dry Mass of sample, g

786

Sample Proportions	% dry mass
Very coarse	0
Gravel	31
Sand	67
Fines <0.063mm	2

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	6.2
Curvature Coefficient	0.83

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator	Checked	Approved	Sheet printed	1
ED	DCD	Dympna Darcy B.Sc.	14/01/2021 09:29	

QC From No:R2

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.



Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

CERTIFICATE OF ANALYSIS

Date of report Generation:	23 December 2020
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	201216-122
Your Reference:	2020WW102
Location:	Arklow Bank
Report No:	581362

We received 5 samples on Wednesday December 16, 2020 and 5 of these samples were scheduled for analysis which was completed on Wednesday December 23, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201216-122
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 581362
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23446074	TP201	B5	1.50 - 1.60	16/10/2020
23446077	TP201	B7	4.00 - 4.10	16/10/2020
23446081	TP203	B4	1.60 - 1.70	12/10/2020
23446089	TP207	B4	1.00 - 1.10	27/10/2020
23446093	TP221	B2	0.40 - 0.50	30/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201216-122
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 581362
Superseded Report:

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)			23446093	23446089	23446081	23446077	23446074
Customer Sample Reference			TP221	TP207	TP203	TP201	TP201
AGS Reference			B2	B4	B4	B7	B5
Depth (m)			0.40 - 0.50	1.00 - 1.10	1.60 - 1.70	4.00 - 4.10	1.50 - 1.60
Container			250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
Sample Type			S	S	S	S	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 5	X	X	X	X	X
pH	All	NDPs: 0 Tests: 5	X	X	X	X	X
Sample description	All	NDPs: 0 Tests: 5	X	X	X	X	X
Total Sulphate	All	NDPs: 0 Tests: 5	X	X	X	X	X
Total Sulphur	All	NDPs: 0 Tests: 5	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201216-122
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 581362
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23446074	TP201	1.50 - 1.60	Dark Brown	Sandy Silt Loam	None	Stones
23446077	TP201	4.00 - 4.10	Light Brown	Clay	None	None
23446081	TP203	1.60 - 1.70	Light Brown	Silty Clay	Stones	None
23446089	TP207	1.00 - 1.10	Light Brown	Clay	Stones	None
23446093	TP221	0.40 - 0.50	Dark Brown	Stone/Soil	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201216-122
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 581362
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer
TM243		Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden (Method codes TM) or ALS Life Sciences Ltd Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201216-122
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 581362
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23446074	23446077	23446081	23446089	23446093
Customer Sample Ref.	TP201	TP201	TP203	TP207	TP221
AGS Ref.	B5	B7	B4	B4	B2
Depth	1.50 - 1.60	4.00 - 4.10	1.60 - 1.70	1.00 - 1.10	0.40 - 0.50
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	22-Dec-2020	22-Dec-2020	22-Dec-2020	22-Dec-2020	23-Dec-2020
pH	18-Dec-2020	18-Dec-2020	18-Dec-2020	18-Dec-2020	18-Dec-2020
Sample description	17-Dec-2020	17-Dec-2020	17-Dec-2020	17-Dec-2020	17-Dec-2020
Total Sulphate	22-Dec-2020	21-Dec-2020	21-Dec-2020	22-Dec-2020	22-Dec-2020
Total Sulphur	21-Dec-2020	21-Dec-2020	21-Dec-2020	21-Dec-2020	21-Dec-2020



CERTIFICATE OF ANALYSIS

SDG:	201216-122	Client Reference:	2020WW102	Report Number:	581362
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

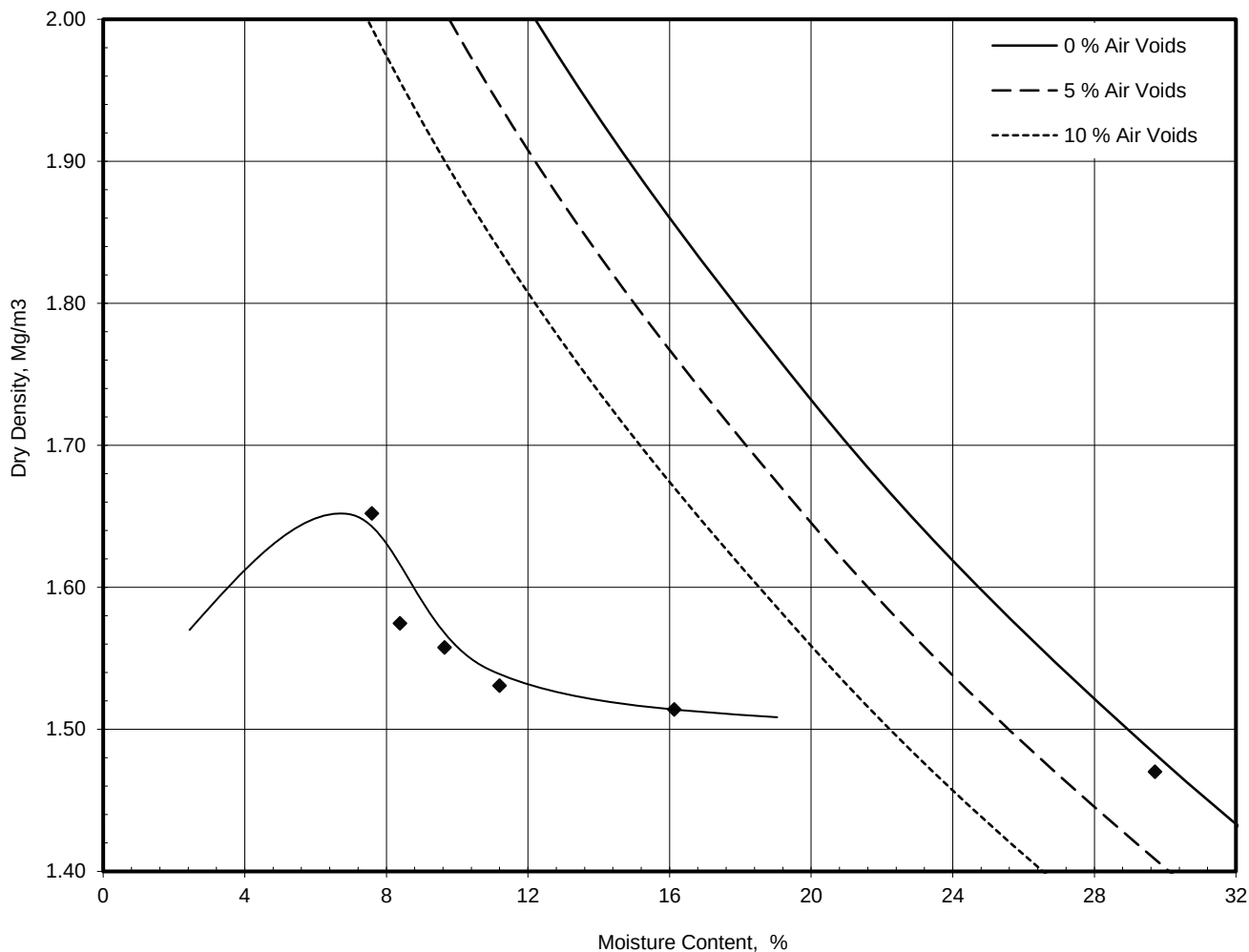
Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2020WW102
				Borehole / Pit No	TP201
Site Name	Arklow Bank			Sample No	2
Soil Description	Mottled orange-grey slightly gravelly slightly sandy SILT.			Depth	0.50 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120201028304

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	CBR	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	1.65
Optimum Moisture Content	%	7.4

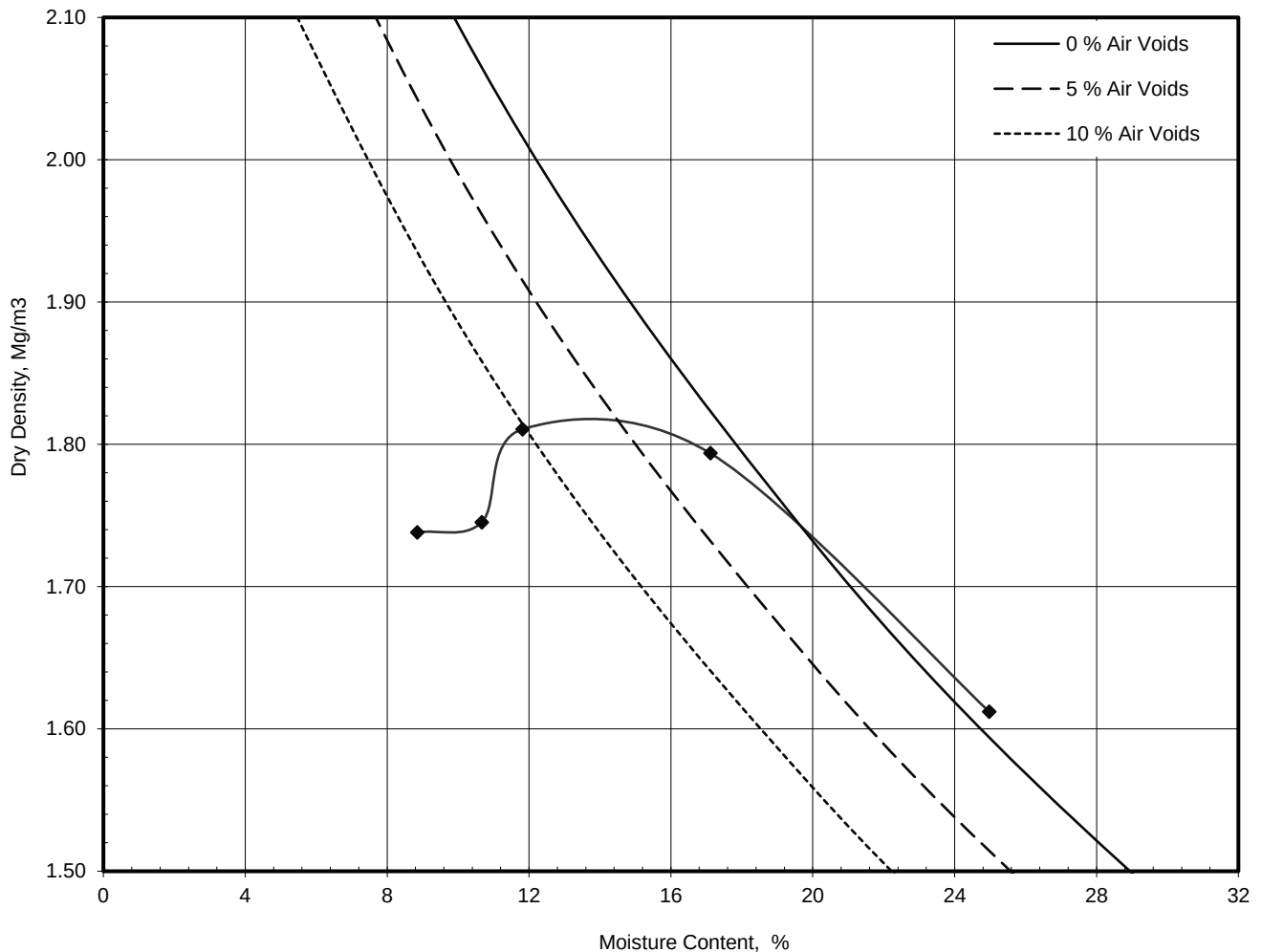
Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2020WW102
				Borehole / Pit No	TP202
Site Name	Arklow Bank			Sample No	5
Soil Description	Brown slightly sandy SILT. Sand is fine.			Depth	1.40 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	IDL120201028315

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	CBR	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Maximum Dry Density		1.82
Optimum Moisture Content		14

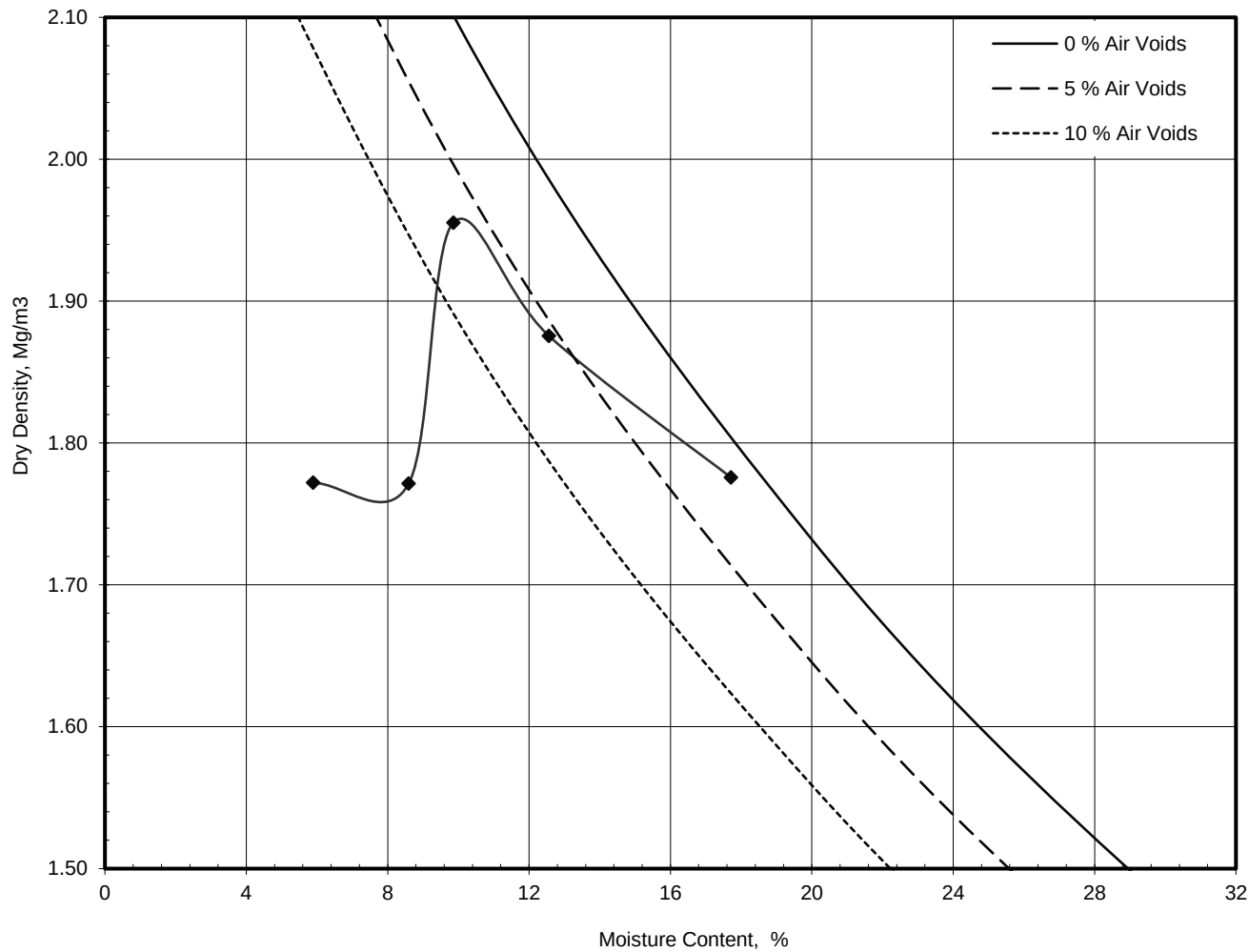
Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dymphna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Light Compaction		Job Ref	2020WW102	
			Borehole / Pit No	TP203	
Site Name	Arklow Bank		Sample No	2	
Soil Description	Dark brown slightly gravelly silty SAND.		Depth	0.50 m	
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer		Keylab ID	IDL120201028320	

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	CBR	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65

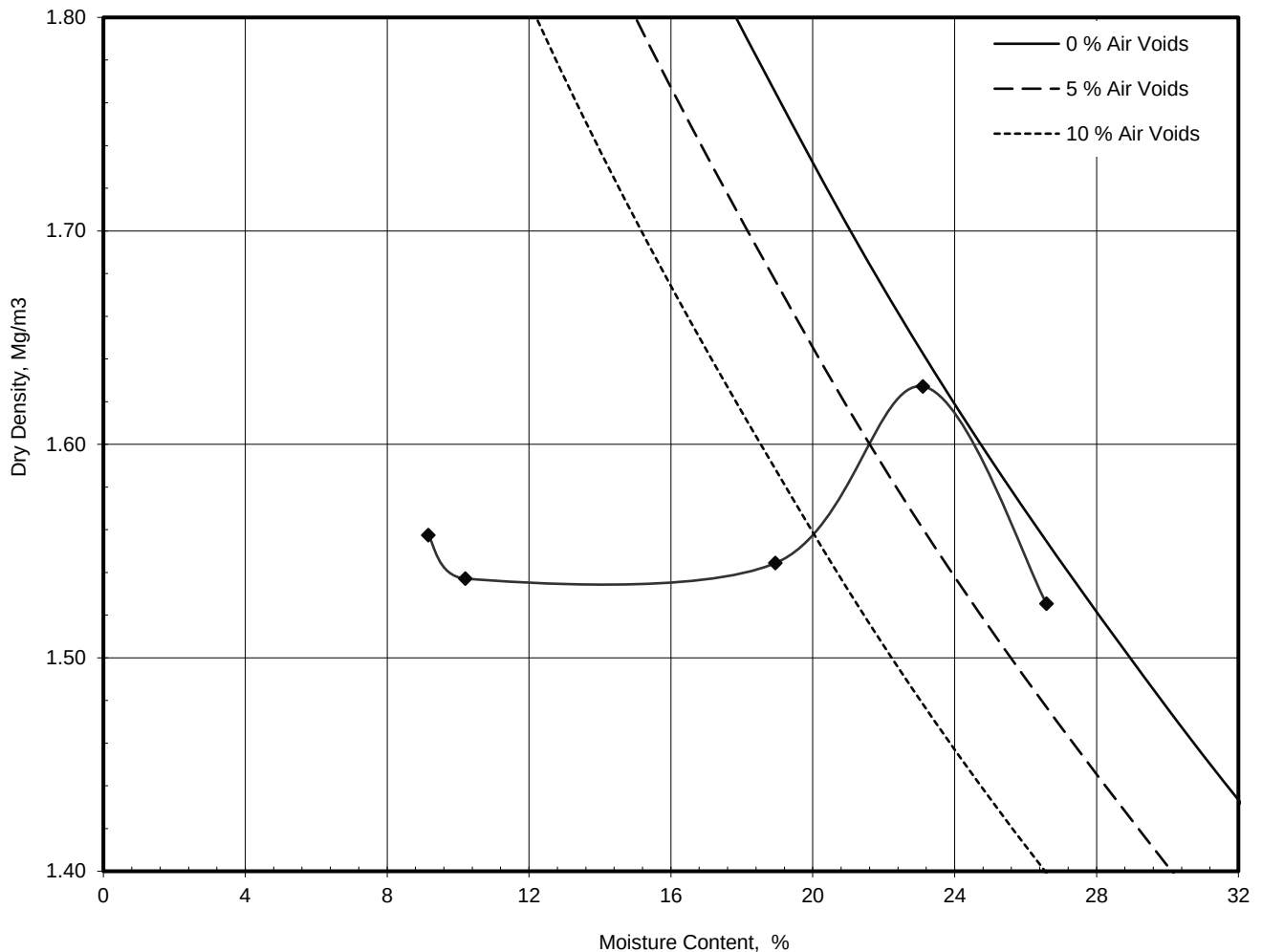
Maximum Dry Density	Mg/m³	1.96

Optimum Moisture Content	%	9.9

Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2020WW102
				Borehole / Pit No	TP207
Site Name	Arklow Bank			Sample No	6
Soil Description	Mottled grey-brown slightly sandy SILT.			Depth	1.60 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL1202011046

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	One Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Maximum Dry Density		1.63
Optimum Moisture Content		23

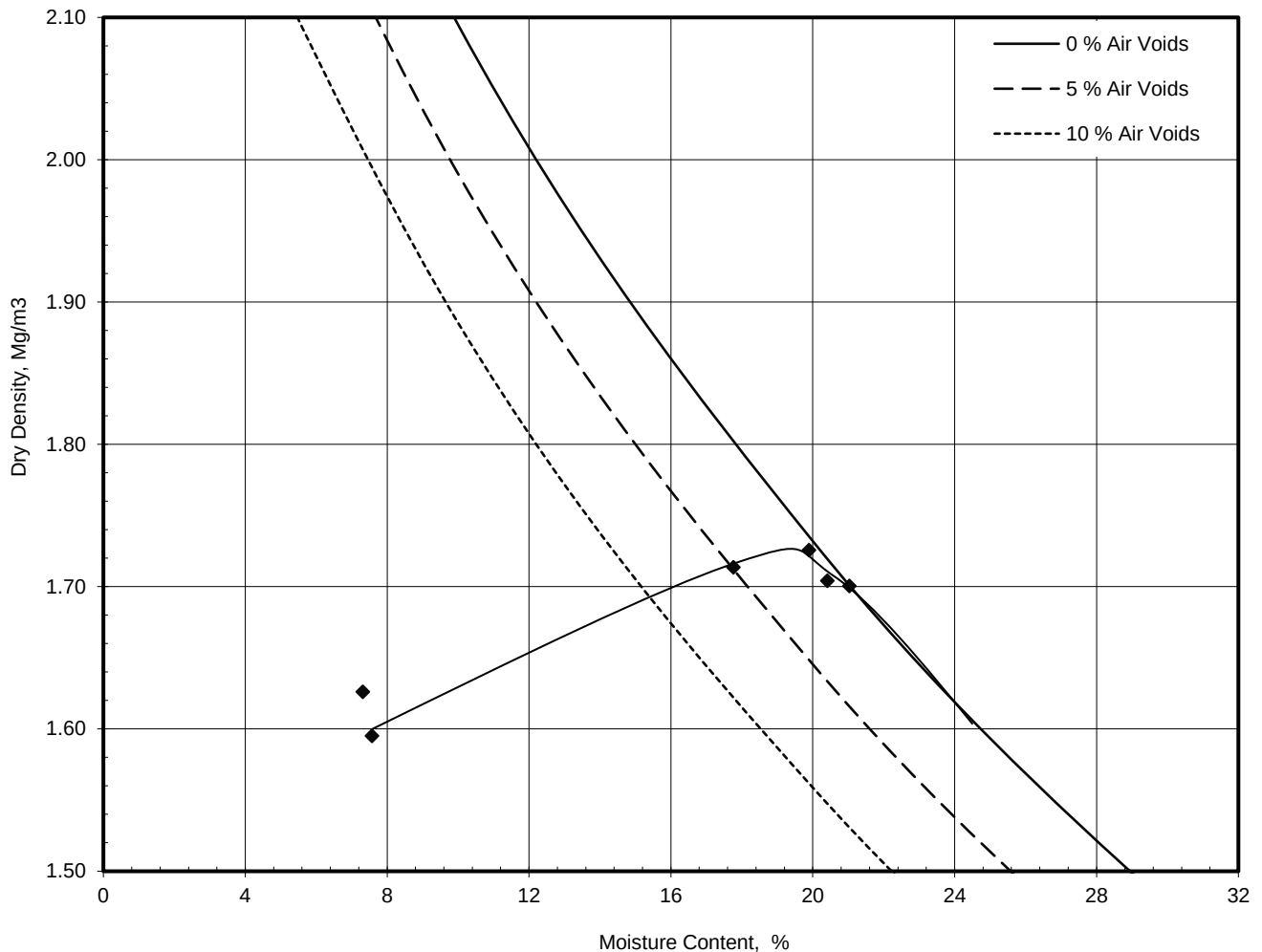
Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2020WW102
				Borehole / Pit No	TP209
Site Name	Arklow Bank			Sample No	4
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth	1.10 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL12020110411

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	One Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65

Maximum Dry Density	Mg/m³	1.73
Optimum Moisture Content	%	19

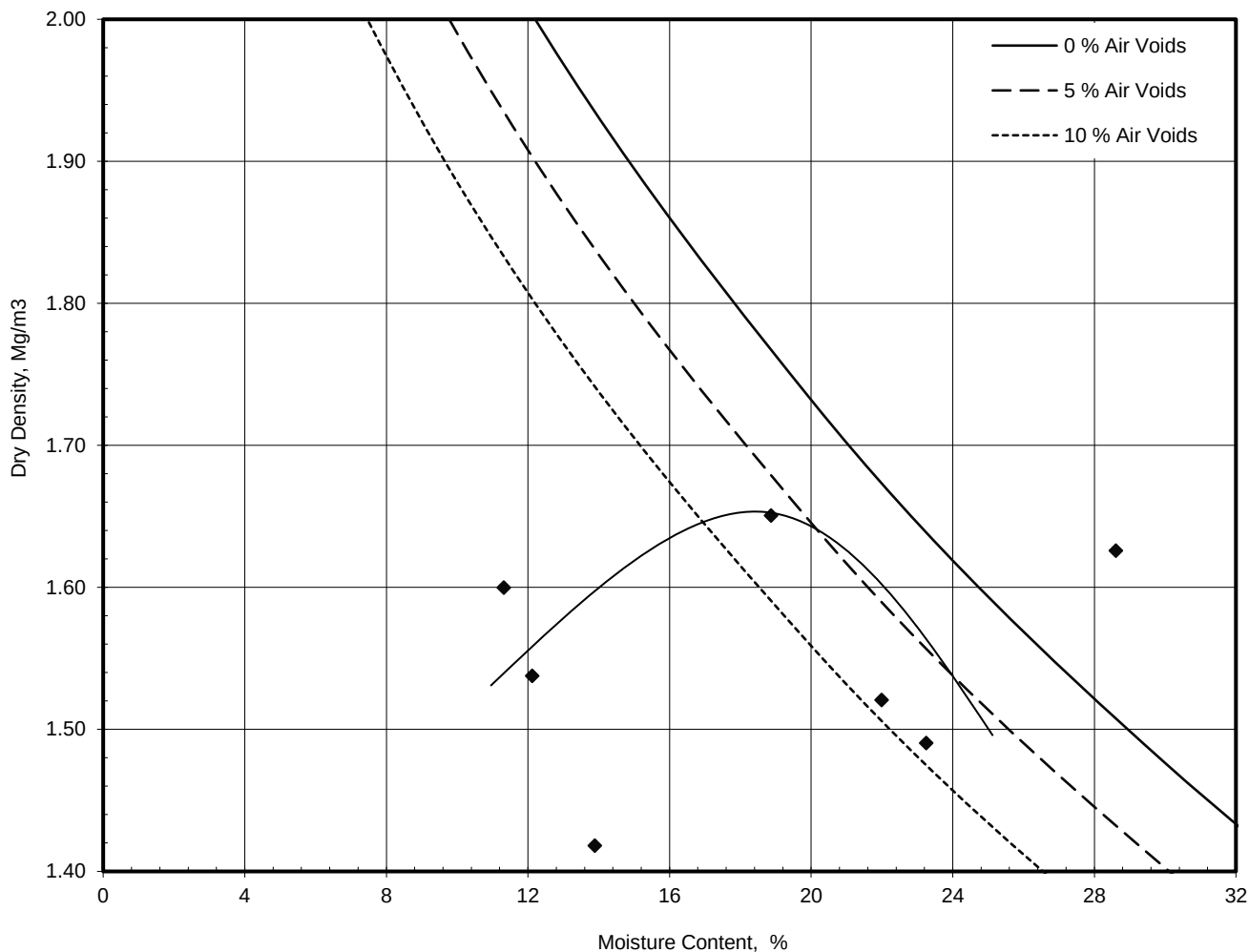
Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2020WW102
				Borehole / Pit No	TP220
Site Name	Arklow Bank			Sample No	4
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth	1.10 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL120201109225

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	One Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Maximum Dry Density	Mg/m³	1.65
Optimum Moisture Content	%	19

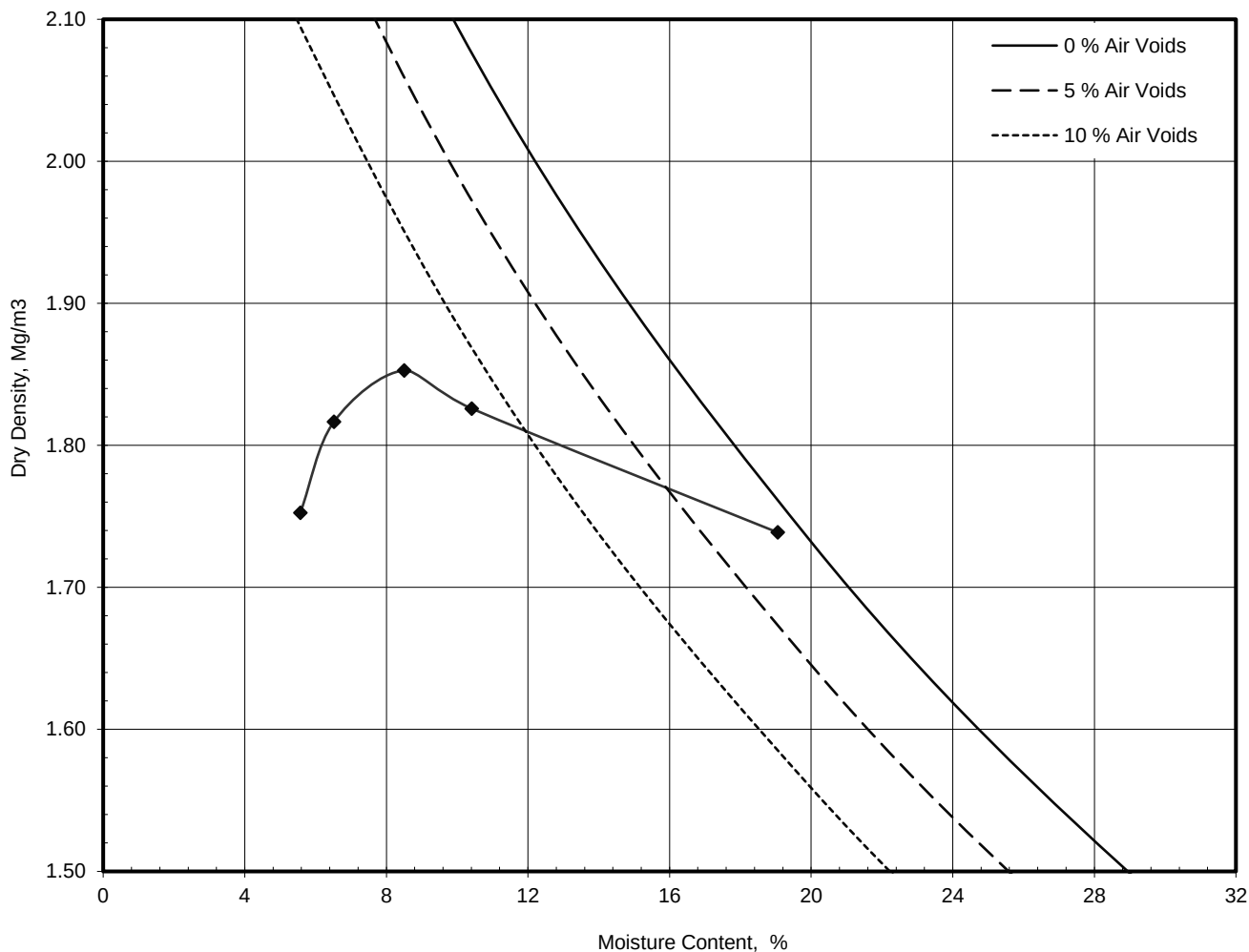
Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2020WW102
				Borehole / Pit No	TP221
Site Name	Arklow Bank			Sample No	4
Soil Description	Brown sandy SILT. Sand is fine.			Depth	1.10 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL1202011063

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	One Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Maximum Dry Density		Mg/m³
		1.85
Optimum Moisture Content		%
		8.5

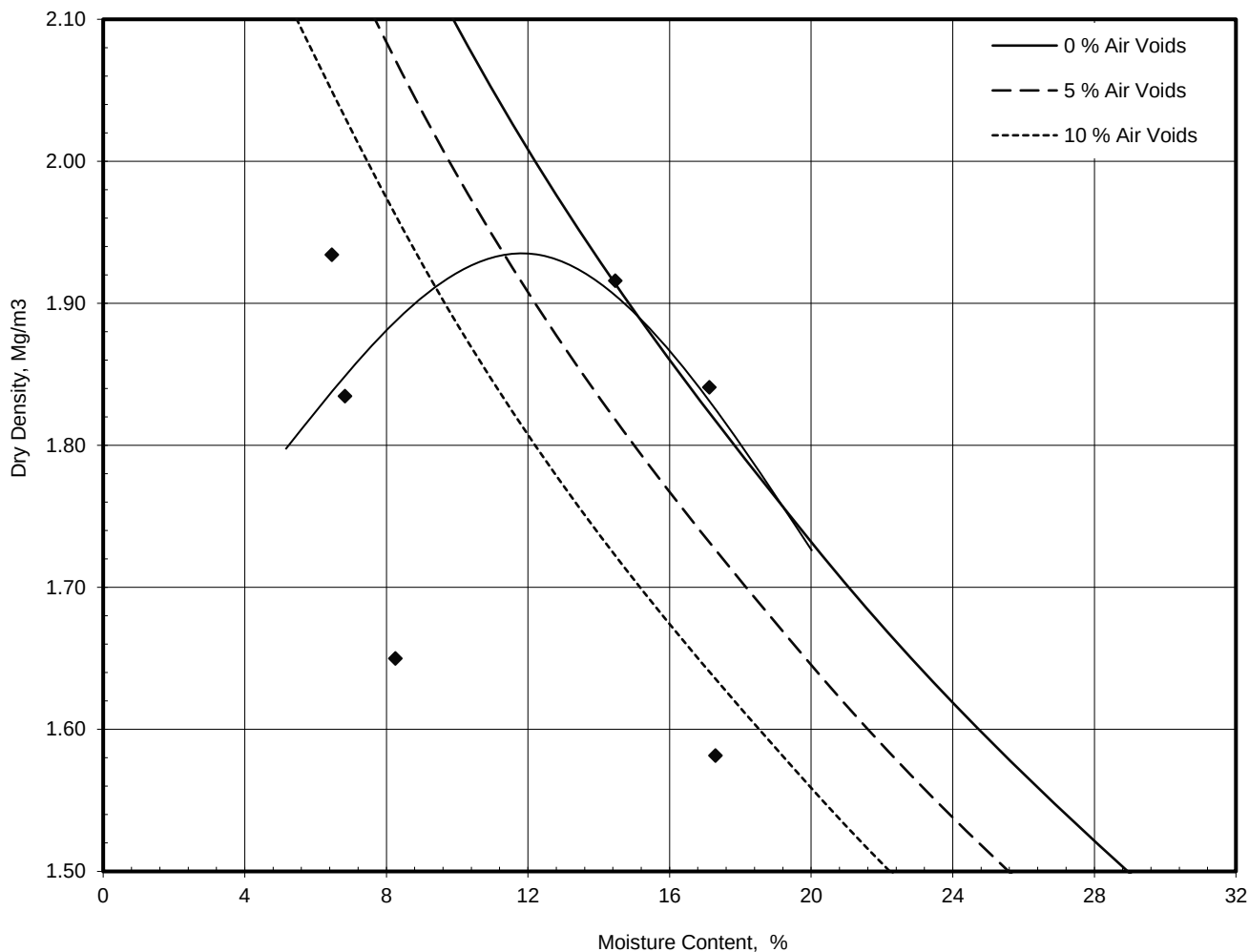
Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dympna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	2020WW102
				Borehole / Pit No	TP222
Site Name	Arklow Bank			Sample No	4
Soil Description	Mottled greyish-brown slightly gravelly sandy SILT.			Depth	1.10 m
Specimen Ref.		Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.3, 2.5kg rammer			Keylab ID	IDL120201109234

Compaction Test Reference/No.



Preparation	Material used was natural and air dried	
Mould Type	One Litre	
Samples Used	Composite specimens tested	
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	8
Particle Density - Assumed	Mg/m³	2.65
Maximum Dry Density	Mg/m³	1.93
Optimum Moisture Content	%	11

Operator	Checked	Approved	Remarks	QC Form R4 Sheet 1 of 1
RG	DCD	DCD		

Tested in: Irish Drilling Ltd.(IDL), Old Galway Road, Loughrea, Co. Galway, Ireland. H62VX39

Approved Signatures: Dymphna Darcy (DCD) Lab Manager, Declan Joyce (DJ) Chartered Geotechnical Engineer, Ronan Killeen (RK) Quality Manager.

	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP201
Site Name	Arklow Bank Windpark			Sample No.	2
Soil Description	Mottled orange-grey slightly gravelly slightly sandy SILT.			Depth	0.5
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120201028304
Test Method	BS1377:Part4:1990:clause 5.5			Date started	01/12/2020

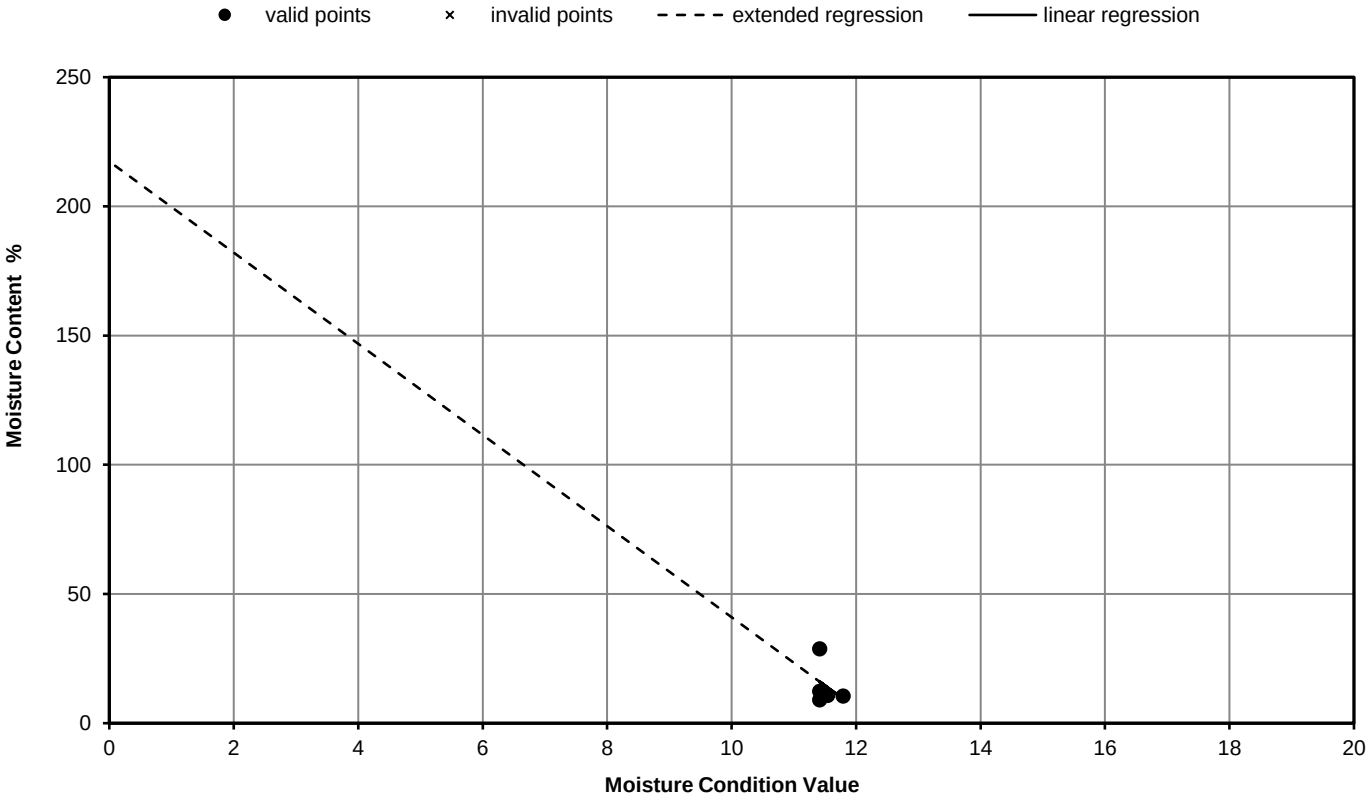
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	22	%
Initial Moisture Content of test sample below 20mm	29	%
Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	28.8	10.5	12.4	10.8	9.1
Moisture Condition Value	11.4	11.8	11.4	11.5	11.4
MCV report	11.4	11.8	11.4	11.5	11.4
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP202
Site Name	Arklow Bank Windpark			Sample No.	5
Soil Description	Brown slightly sandy SILT. Sand is fine.			Depth	1.4
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120201028315
Test Method	BS1377:Part4:1990:clause 5.5			Date started	24/11/2020

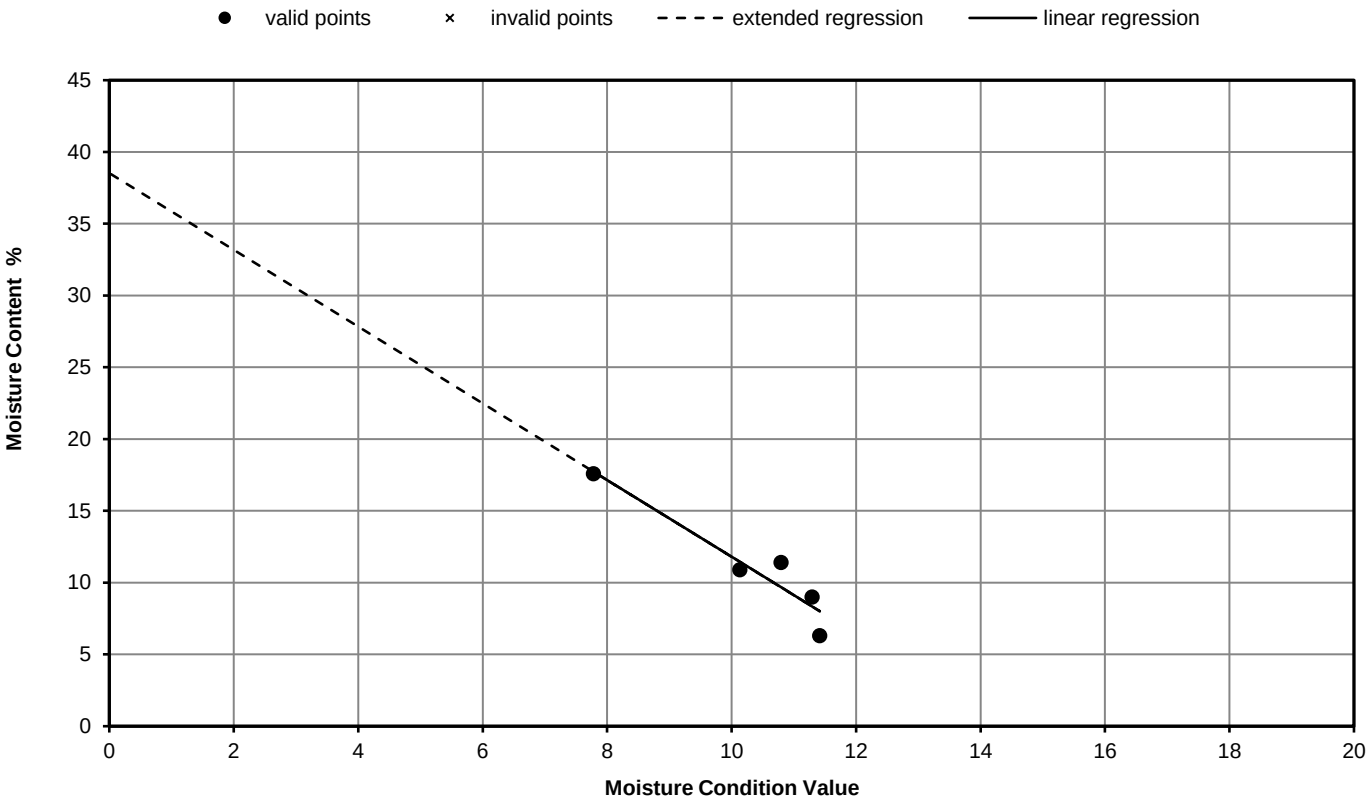
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	17	%
Initial Moisture Content of test sample below 20mm	17.6	%
Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	17.6	10.9	11.4	9.0	6.3
Moisture Condition Value	7.8	10.1	10.8	11.3	11.4
MCV report	7.8	10.1	10.8	11.3	11.4
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP203
Site Name	Arklow Bank Windpark			Sample No.	2
Soil Description	Dark brown slightly gravelly silty SAND.			Depth	0.5
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120201028320
Test Method	BS1377:Part4:1990:clause 5.5			Date started	24/11/2020

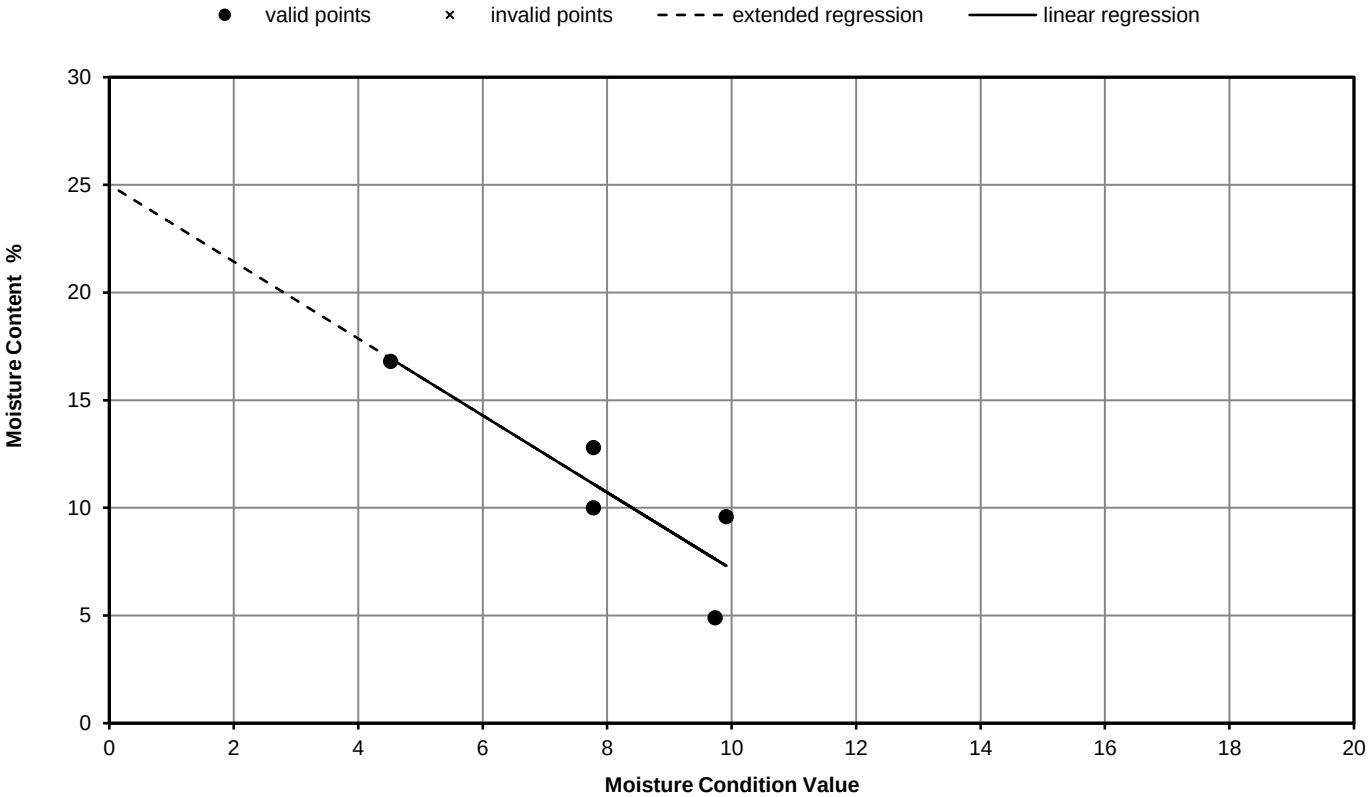
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	16	%
Initial Moisture Content of test sample below 20mm	16.8	%
Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	16.8	12.8	9.6	10.0	4.9
Moisture Condition Value	4.5	7.8	9.9	7.8	9.7
MCV report	4.5	7.8	9.9	7.8	9.7
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP207
Site Name	Arklow Bank Windpark			Sample No.	6
Soil Description	Mottled grey-brown slightly sandy SILT.			Depth	1.6
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202011046
Test Method	BS1377:Part4:1990:clause 5.5			Date started	07/01/2021

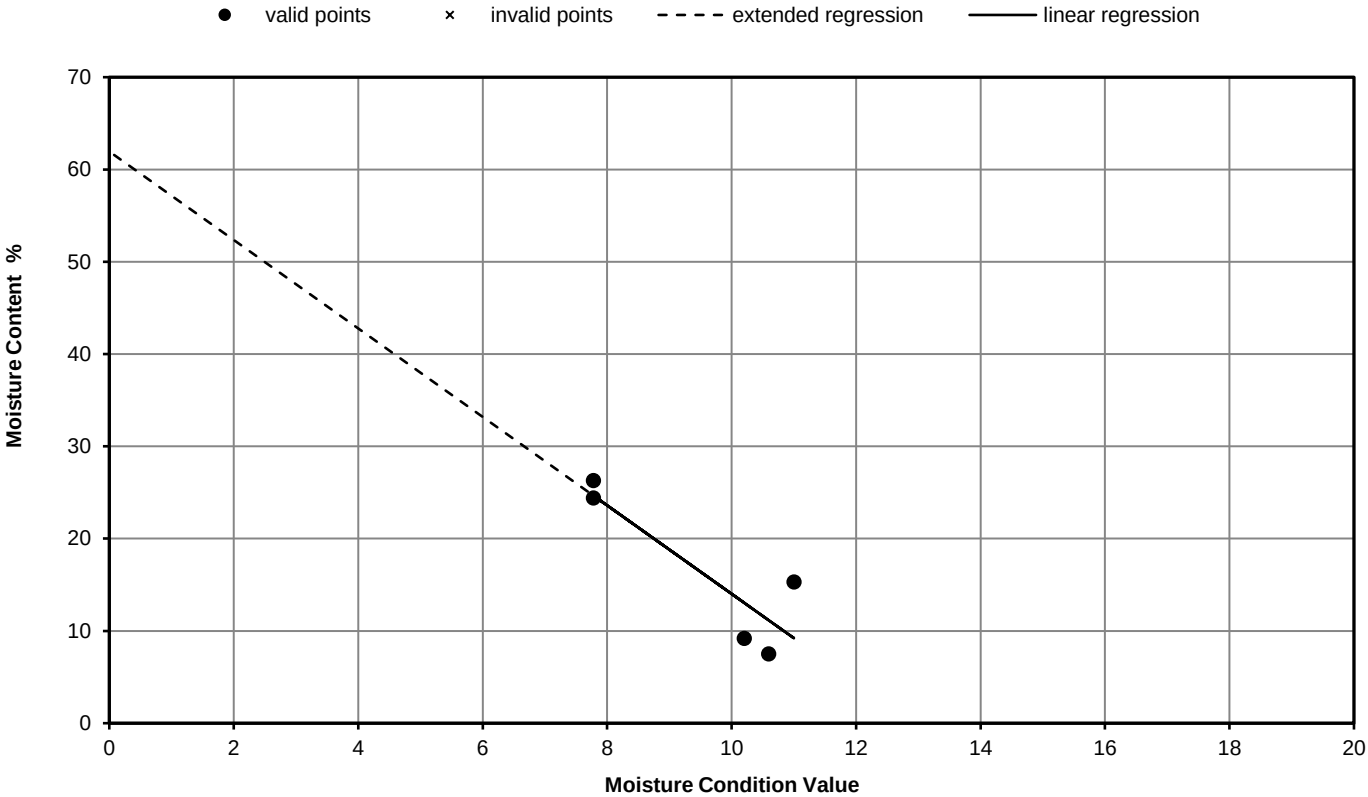
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	21.8	%
Initial Moisture Content of test sample below 20mm	26.3	%
Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	26.3	15.3	7.5	24.4	9.2
Moisture Condition Value	7.8	11.0	10.6	7.8	10.2
MCV report	7.8	11	10.6	7.8	10.2
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP209
Site Name	Arklow Bank Windpark			Sample No.	4
Soil Description	Brownish-grey slightly gravelly sandy SILT.			Depth	1.1
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL12020110411
Test Method	BS1377:Part4:1990:clause 5.5			Date started	05/01/2021

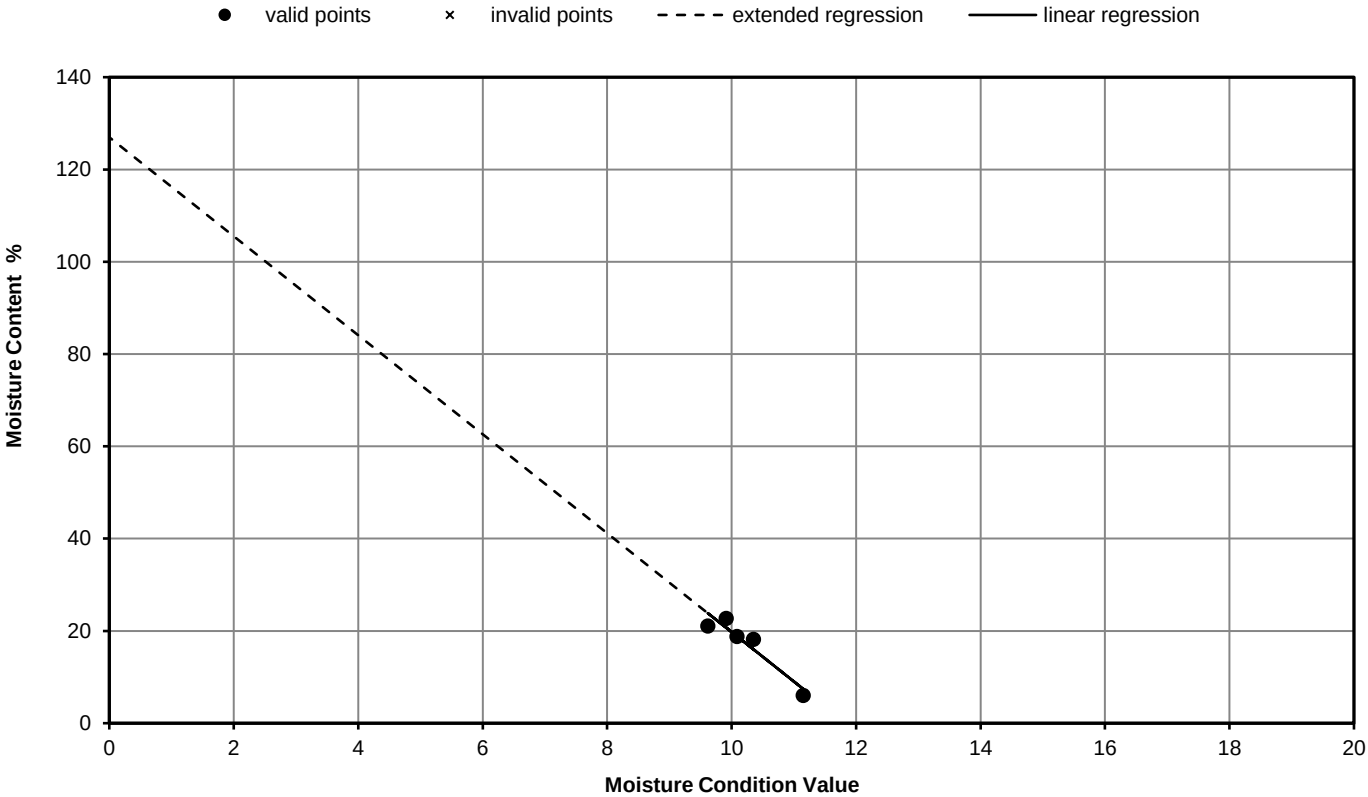
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	20	%
Initial Moisture Content of test sample below 20mm	18.2	%
Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	18.2	21.1	6.0	22.7	18.8
Moisture Condition Value	10.4	9.6	11.1	9.9	10.1
MCV report	10.4	9.6	11.1	9.9	10.1
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP220
Site Name	Arklow Bank Windpark			Sample No.	4
Soil Description	Brown slightly gravelly slightly sandy SILT.			Depth	1.1
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120201109225
Test Method	BS1377:Part4:1990:clause 5.5			Date started	10/12/2020

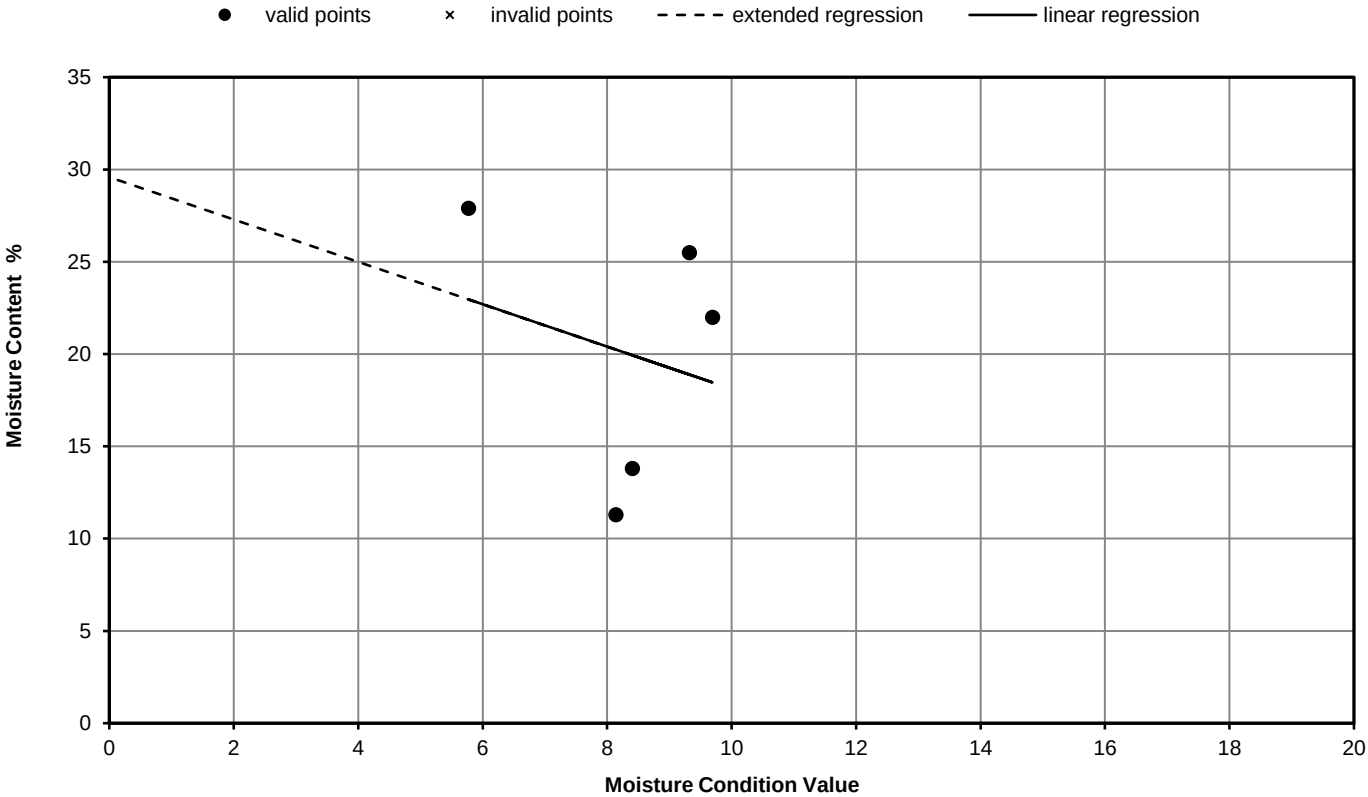
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	28	%
Initial Moisture Content of test sample below 20mm	28	%
Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	27.9	11.3	22.0	13.8	25.5
Moisture Condition Value	5.8	8.1	9.7	8.4	9.3
MCV report	5.8	8.1	9.7	8.4	9.3
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP221
Site Name	Arklow Bank Windpark			Sample No.	4
Soil Description	Brown sandy SILT. Sand is fine.			Depth	1.1
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL1202011063
Test Method	BS1377:Part4:1990:clause 5.5			Date started	04/01/2021

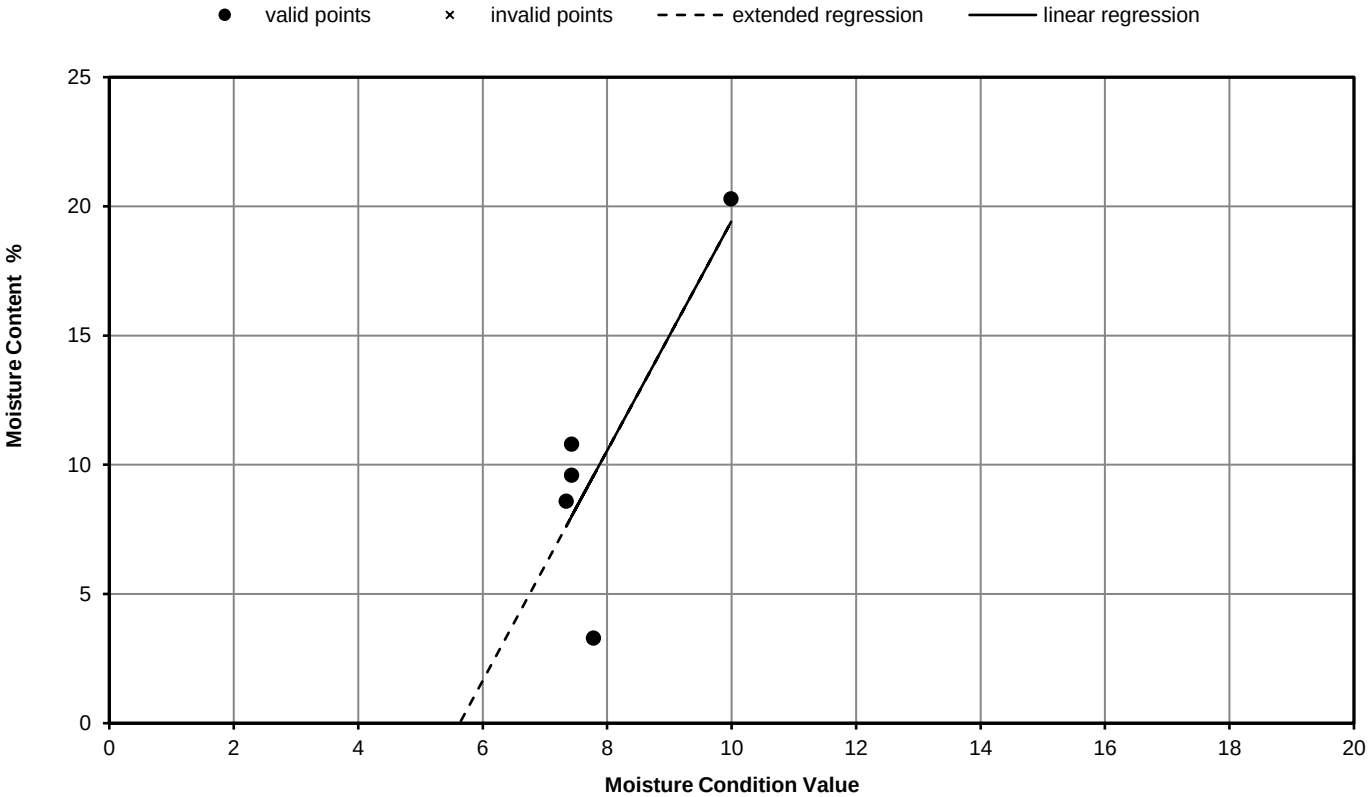
Sample preparation

Amount of material larger than 20mm sieve removed	0	%
Natural Moisture Content of sample	8.5	%
Initial Moisture Content of test sample below 20mm	8.5	%
Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	8.6	3.3	9.6	10.8	20.3
Moisture Condition Value	7.3	7.8	7.4	7.4	10.0
MCV report	7.3	7.8	7.4	7.4	10
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

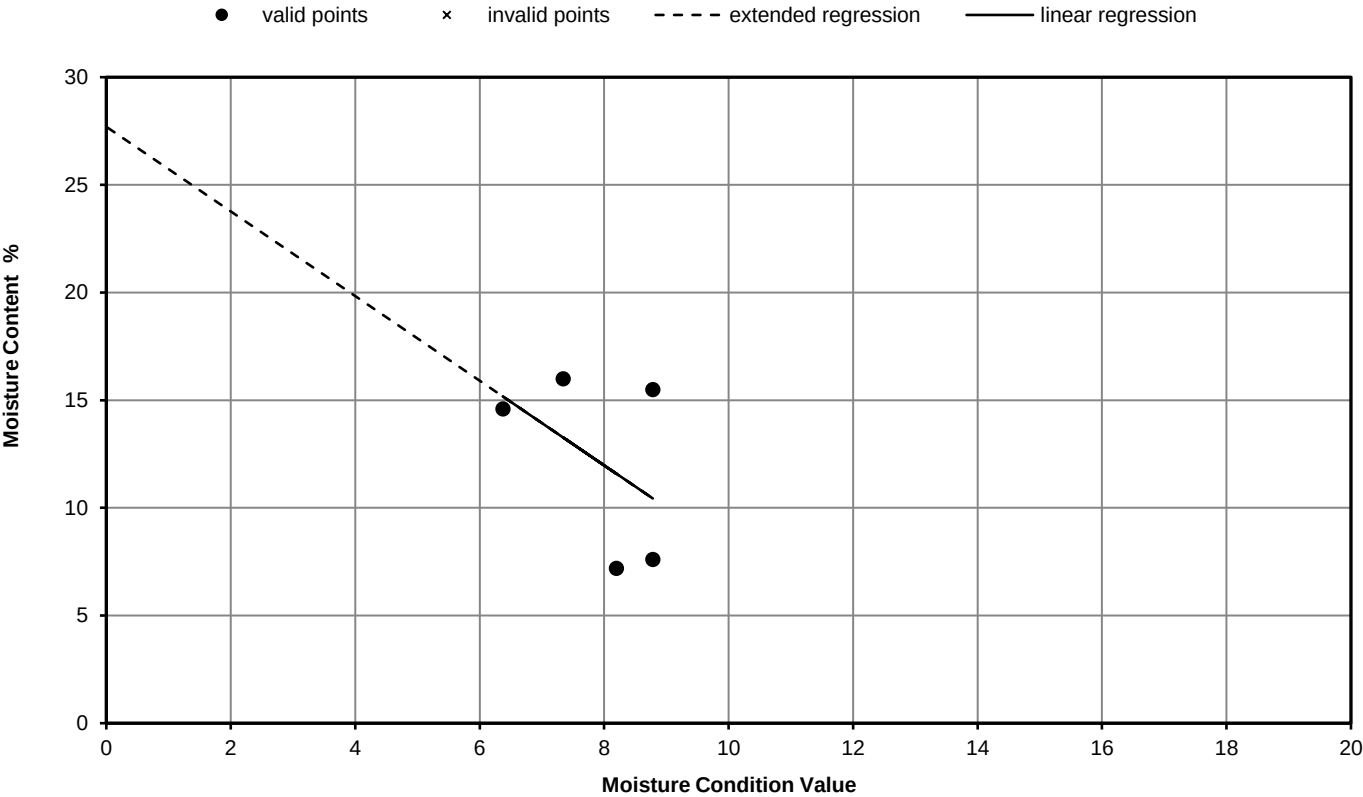
	Moisture Condition Value / Moisture Content Relationship			Job Ref	2020WW102
				Borehole/Pit No.	TP222
Site Name	Arklow Bank Windpark			Sample No.	4
Soil Description	Mottled greyish-brown slightly gravelly sandy SILT.			Depth	1.1
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description				KeyLAB ID	IDL120201109234
Test Method	BS1377:Part4:1990:clause 5.5			Date started	04/01/2021

Sample preparation	Amount of material larger than 20mm sieve removed	0	%
	Natural Moisture Content of sample	15	%
	Initial Moisture Content of test sample below 20mm	14.6	%
	Composite of fresh and reused material tested		

General remarks

Table of results

MCV Test Number	1	2	3	4	5
Moisture Content, %	14.6	7.2	16.0	7.6	15.5
Moisture Condition Value	6.4	8.2	7.3	8.8	8.8
MCV report	6.4	8.2	7.3	8.8	8.8
Effective / Valid data point	YES	YES	YES	YES	YES
Specimen remarks					



Lab Sheet Reference : QC Form R7

Tested	Checked	Approved
RG	DCD	DCD

National Materials Testing Laboratory Ltd

Unit 18C Tullow Industrial Estate

Tel.: 059 9180822

Certificate of Test

Determination of Undrained Shear Strength in Triaxial Compression

BS 1377 : Part 7 : 1990 Clause 8

Client Name: **Irish Drilling Ltd**
Address: **Loughrea**
Galway
Co. Galway

Contract: **Arklow Bank**
Site Address: **N/A**
IDL Project ID: **2020WW102**

Sample No.: **BH202 U35** Depth: **14.0-14.45m** File Reference: **NMTL 3333**

Sample Description: **Stiff dark grey silty CLAY**

Location: **Arklow Bank**

Date Sampled: **15 October 2020**

Sample Type: **U100**

Sampled by: **Irish Drilling Ltd**

Client Sample Ref.: **BH202**

Sampling Cert. Recd.: **No**

Source / Supplier: **IDL**

Date Received: **15 December 2020**

Specification: **BS 1377: Part 7: 1990 Clause 8**

Date Tested: **16 December 2020**

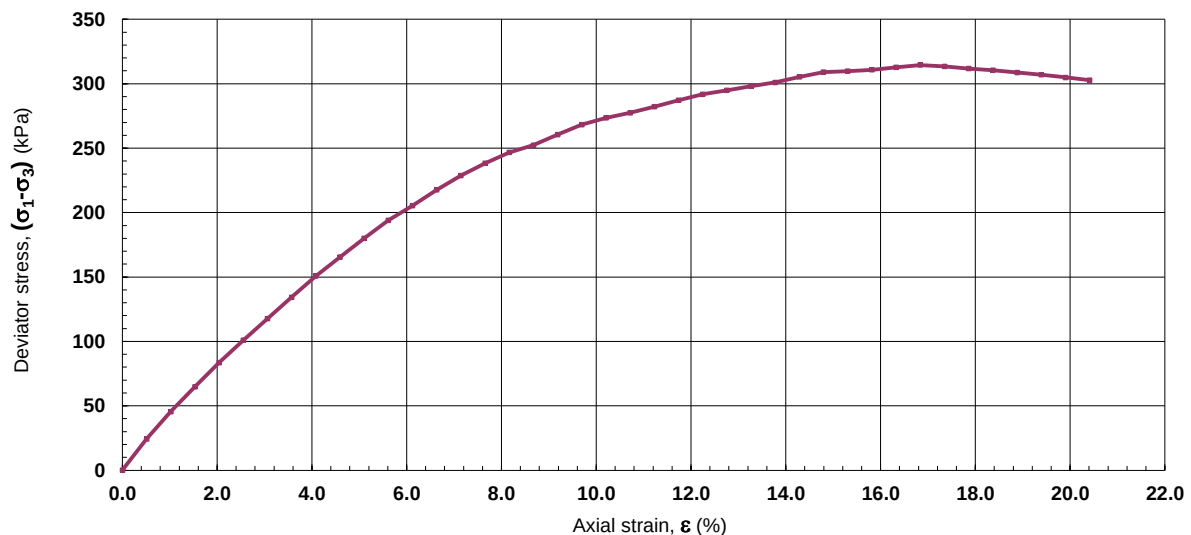
Specimen

Length: **196.0** mm Diameter: **103.8** mm
Area: **8454.1** mm² Volume: **1657.0** cm³
Mass: **3602.0** g
Moisture content: **16.9** %
Bulk density: **2.17** Mg m⁻³
Dry density: **1.86** Mg m⁻³
Preparation Method: **BS 1377: Part 1: 1990 Clause 8 .3.1**

Test

Membrane type: **Latex**
Membrane thickness: **0.3** mm
Membrane correction: **2.36**
Sample state: **Undisturbed**
Number of stages: **1**
Rate of strain: **1.0** % min⁻¹
Cell pressure: σ_3 **280** kPa

Axial Strain vs.Deviator Stress



Maximum Corrected
Deviator Stress at Failure:

$(\sigma_1 - \sigma_3)_f$

314.5 kPa

Strain at Failure:

ϵ

16.84 %

Maximum Cohesion / Shear Strength:

C_u

157.3 kPa

Type of Failure:

Plastic

Signed

Remarks: Undisturbed

Authorised Signatories

☐ N Chana

☐ B Chana

For NMTL Ltd

20 December 2020

Original to: **Client Rep.**

Copy 1 to: **File copy**

IRISH DRILLING LTD. Loughrea Co. Galway Lab@IrishDrilling.ie Tel: (091) 841274	Contract:	Arklow Bank	2020WW102
	Client:	SSE	
	Engineer:	Arup	
	Date:	13.01.2021	
	Tested by:	DCD / RG	

Thermal Conductivity / Resistivity Test

Using ThermTest TLS-100 Thermal Conductivity / Thermal Resistivity Meter

BS1377:Part 2:1990 and ASTM D5334-08

Location	Depth (m.bgl)	Date	Soil Temperature Before Test °C	Thermal Conductivity W/m.K	Thermal Resistivity K.m/W	Moisture Content Tested %	Bulk Density Mg/m3	Sample Description / preparation
TP201	0.5-0.6	01.12.20	12.322	1.523	0.657	29.7	1.907	mct from compaction point 1
TP201	0.5-0.6	02.12.20	11.116	1.286	0.777	16.1	1.758	mct from compaction point 2
TP201	0.5-0.6	03.12.20	19.577	0.695	1.439	11.2	1.702	mct from compaction point 3
TP201	0.5-0.6	04.12.20	19.911	0.767	1.304	9.7	1.8	mct from compaction point 4
TP201	0.5-0.6	07.12.20	18.022	0.818	1.222	7.6	1.708	mct from compaction point 5
TP201	1.1-1.2	30.11.20	14.096	0.944	1.059	22.2		mct from Tub
TP202	1.1-1.2	30.11.20	14.012	2.057	0.486	17		mct from Tub
TP202	1.4-1.5	24.11.20	13.805	1.951	0.512	17.1	2.101	mct from compaction point 1
TP202	1.4-1.5	25.11.20	21.02	1.217	0.822	11.8	2.025	mct from compaction point 2
TP202	1.4-1.5	26.11.20	17.831	1.489	0.671	10.7	1.931	mct from compaction point 3
TP202	1.4-1.5	27.11.20	13.101	1.46	0.685	8.8	1.892	mct from compaction point 4

Location	Depth (m.bgl)	Date	Soil Temperature Before Test °C	Thermal Conductivity W/m.K	Thermal Resistivity K.m/W	Moisture Content Tested %	Bulk Density Mg/m3	Sample Description / preparation
TP202	1.4-1.5	30.11.20	13.804	1.226	0.816	5.9	1.869	mct from compaction point 5
TP203	0.5-0.6	24.11.20	15.06	2.397	0.417	17.7	2.09	mct from compaction point 1
TP203	0.5-0.6	25.11.20	16.669	1.964	0.509	12.6	2.111	mct from compaction point 2
TP203	0.5-0.6	26.11.20	15.44	2.391	0.418	9.9	2.148	mct from compaction point 3
TP203	0.5-0.6	27.11.20	15.852	1.996	0.501	8.6	1.924	mct from compaction point 4
TP203	0.5-0.6	30.11.20	19.887	1.119	0.894	5.9	1.876	mct from compaction point 5
TP203	1.1-1.2	30.11.20	13.888	1.325	0.755	22.8		mct from Tub
TP207	1.0-1.1	16.12.20	15.515	1.428	0.7	21.5		mct from Tub
TP207	1.6-1.7	7.1.21	14.704	1.534	0.652	26.6	1.931	mct from compaction point 1
TP207	1.6-1.7	8.1.21	12.482	1.161	0.861	18.9	1.837	mct from compaction point 2
TP207	1.6-1.7	11.1.21	18.283	0.871	1.148	10.2	1.694	mct from compaction point 3
TP207	1.6-1.7	12.1.21	14.812	1.369	0.73	23.1	2.003	mct from compaction point 4
TP207	1.6-1.7	12.1.21	13.44	0.628	1.592	9.2	1.7	mct from compaction point 5
TP209	1.1-1.2	5.1.21	7.387	2.141	0.467	17.8	2.018	mct from compaction point 1
TP209	1.1-1.2	6.1.21	9.312	5.035	0.199	21	2.088	mct from compaction point 2
TP209	1.1-1.2	7.1.21	17.668	0.734	1.363	7.6	1.716	mct from compaction point 3
TP209	1.1-1.2	8.1.21	13.42	1.087	0.92	20.4	2.052	mct from compaction point 4
TP209	1.1-1.2	11.1.21	18.835	0.88	1.137	7.3	1.745	mct from compaction point 5
TP209	1.1-1.2	16.12.20	15.436	1.509	0.662	18.2		mct from Tub
TP210	1.1-1.2	16.12.20	15.402	0.75	1.334	17.1		mct from Tub
TP220	1.1-1.2	10.12.20	11.737	1.496	0.668	28.6	2.091	mct from compaction point 1
TP220	1.1-1.2	4.1.21	4.97	0.885	1.13	12.1	1.724	mct from compaction point 2
TP220	1.1-1.2	4.1.21	8.659	1.583	0.632	22	1.855	mct from compaction point 3
TP220	1.1-1.2	5.1.21	18.891	0.788	1.269	13.9	1.615	mct from compaction point 4
TP220	1.1-1.2	6.1.21	7.382	1.565	0.639	23.3	1.837	mct from compaction point 5
TP220	1.1-1.2	16.12.20	16.142	1.186	0.843	28		mct from Tub

Location	Depth (m.bgl)	Date	Soil Temperature Before Test °C	Thermal Conductivity W/m.K	Thermal Resistivity K.m/W	Moisture Content Tested %	Bulk Density Mg/m3	Sample Description / preparation
TP221	1.1-1.2	4.1.21	8.587	3.77	0.265	8.5	2.01	mct from compaction point 1
TP221	1.1-1.2	5.1.21	11.575	1.431	0.699	5.6	1.85	mct from compaction point 2
TP221	1.1-1.2	6.1.21	12.561	2.435	0.411	10.1	1.832	mct from compaction point 3
TP221	1.1-1.2	7.1.21	10.09	3.407	0.294	10.4	2.016	mct from compaction point 4
TP221	1.1-1.2	8.1.21	9.086	3.178	0.315	19.1	2.07	mct from compaction point 5
TP221	1.1-1.2	16.12.20	16.65	1.022	0.978	8.6		mct from Tub
TP222	1.1-1.2	4.1.21	6.649	3.732	0.268	14.5	2.193	mct from compaction point 1
TP222	1.1-1.2	4.1.21	16.181	1.057	0.946	6.5	2.059	mct from compaction point 2
TP222	1.1-1.2	5.1.21	11.78	1.97	0.508	17.1	2.156	mct from compaction point 3
TP222	1.1-1.2	6.1.21	19.953	1.188	0.842	6.8	1.96	mct from compaction point 4
TP222	1.1-1.2	7.1.21	10.033	2.985	0.335	17.3	1.855	mct from compaction point 5
TP222	1.1-1.2	16.12.20	16.186	1.925	0.52	14.6		mct from Tub

Appendix 7 Laboratory Tests Results (Environment)



Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

CERTIFICATE OF ANALYSIS

Date of report Generation:	14 December 2020
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	201021-100
Your Reference:	2020WW102
Location:	Arklow Bank
Report No:	579754

We received 20 samples on Wednesday October 21, 2020 and 20 of these samples were scheduled for analysis which was completed on Monday December 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23081642	TP001	ES1	0.40 - 0.50	15/10/2020
23081508	TP001	ES3	1.40 - 1.50	15/10/2020
23081514	TP002	ES1	0.50 - 0.60	15/10/2020
23081519	TP002	ES3	1.40 - 1.50	15/10/2020
23081502	TP003	ES1	0.50 - 0.60	15/10/2020
23081580	TP003	ES4	1.50 - 1.60	15/10/2020
23081629	TP004	ES1	0.40 - 0.50	15/10/2020
23081636	TP004	ES2	1.40 - 1.50	15/10/2020
23081593	TP005	ES1	0.40 - 0.50	15/10/2020
23081599	TP005	ES4	1.50 - 1.60	15/10/2020
23081526	TP006	ES1	0.40 - 0.50	14/10/2020
23081533	TP006	ES4	1.40 - 1.50	14/10/2020
23081538	TP010	ES1	0.40 - 0.50	14/10/2020
23081550	TP010	ES4	1.40 - 1.50	14/10/2020
23081573	TP011	ES1	0.40 - 0.50	14/10/2020
23081587	TP011	ES4	1.40 - 1.50	14/10/2020
23081559	TP012	ES1	0.50 - 0.60	14/10/2020
23081567	TP012	ES4	1.40 - 1.50	14/10/2020
23081608	TP201	ES1	0.50 - 0.60	15/10/2020
23081621	TP201	ES4	1.50 - 1.60	15/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100 Client Reference: 2020WW102 Report Number: 579754
Location: Arklow Bank Order Number: 9028 Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	23081629	23081580	23081502	23081519	23081514	23081508	23081642
							TP004	TP003	TP003	TP002	TP002	TP001	TP001
							ES1	ES4	ES1	ES3	ES1	ES3	ES1
							0.40 - 0.50	1.50 - 1.60	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50	0.40 - 0.50
							250g Amber Jar (ALE210)	250g Amber Jar (ALE215)	250g Amber Jar (ALE215)	250g Amber Jar (ALE210)	250g Amber Jar (ALE215)	250g Amber Jar (ALE210)	250g Amber Jar (ALE215)
							1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)
							S	S	S	S	S	S	S
Anions by Kone (w)	All	NDPs: 0 Tests: 20	X		X		X		X		X		X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 20	X		X		X		X		X		X
CEN Readings	All	NDPs: 0 Tests: 20	X		X		X		X		X		X
Chromium III	All	NDPs: 0 Tests: 20		X		X		X		X		X	
Coronene	All	NDPs: 0 Tests: 20		X		X		X		X		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 20		X		X		X		X		X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 20	X		X		X		X		X		X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 20	X		X		X		X		X		X
Easily Liberated Sulphide	All	NDPs: 0 Tests: 20		X		X		X		X		X	
EPH by GCxGC-FID	All	NDPs: 0 Tests: 20		X		X		X		X		X	
EPH CWG GC (S)	All	NDPs: 0 Tests: 20		X		X		X		X		X	
Fluoride	All	NDPs: 0 Tests: 20	X		X		X		X		X		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 20		X		X		X		X		X	
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 20		X		X		X		X		X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 20		X		X		X		X		X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100 Client Reference: 2020WW102 Report Number: 579754
Location: Arklow Bank Order Number: 9028 Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	23081629		TP004		ES1		0.40 - 0.50		250g Amber Jar (ALE210)	S		
	23081580		TP003		ES4		1.50 - 1.60		1kg TUB with Handle (ALE280)	S		
	23081502		TP003		ES1		0.50 - 0.60		60g VOC (ALE215)	S		
	23081519		TP002		ES3		1.40 - 1.50		250g Amber Jar (ALE210)	S		
	23081514		TP002		ES1		0.50 - 0.60		1kg TUB with Handle (ALE280)	S		
	23081642		TP001		ES1		0.40 - 0.50		60g VOC (ALE215)	S		
Mercury Dissolved	All	NDPs: 0 Tests: 20										
Metals in solid samples by OES	All	NDPs: 0 Tests: 20										
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 20										
PAH by GCMS	All	NDPs: 0 Tests: 20										
PCBs by GCMS	All	NDPs: 0 Tests: 20										
pH	All	NDPs: 0 Tests: 20										
Phenols by HPLC (W)	All	NDPs: 0 Tests: 20										
Sample description	All	NDPs: 0 Tests: 20										
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 20										
Total Dissolved Solids	All	NDPs: 0 Tests: 20										
Total Organic Carbon	All	NDPs: 0 Tests: 20										
TPH CWG GC (S)	All	NDPs: 0 Tests: 20										
VOC MS (S)	All	NDPs: 0 Tests: 20										



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100 Client Reference: 2020WW102 Report Number: 579754
Location: Arklow Bank Order Number: 9028 Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type
	23081621		TP201		ES4		1.50 - 1.60		60g VOC (ALE215)		S
	23081608		TP201		ES1		0.50 - 0.60		250g Amber Jar (ALE210)		S
	23081567		TP012		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S
	23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S
	23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S
	23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
23081587		TP011		ES4		1.40 - 1.50		1kg TUB with Handle (ALE260)		S	
23081550		TP010		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081573		TP011		ES1		0.40 - 0.50		1kg TUB with Handle (ALE260)		S	
23081587		TP011		ES4		1.40 - 1.50		250g Amber Jar (ALE215)		S	
23081559		TP012		ES1		0.50 - 0.60		250g Amber Jar (ALE215)		S	
2											



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100 Client Reference: 2020WW102 Report Number: 579754
Location: Arklow Bank Order Number: 9028 Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	23081621	TP201	ES4	1.50 - 1.60	60g VOC (ALE215)	S						
	23081608	TP201	ES1	0.50 - 0.60	250g Amber Jar (ALE210)	S						
	23081567	TP012	ES4	1.40 - 1.50	1kg TUB with Handle (ALE260)	S						
	23081559	TP012	ES1	0.50 - 0.60	250g Amber Jar (ALE215)	S						
	23081587	TP011	ES4	1.40 - 1.50	1kg TUB with Handle (ALE260)	S						
	23081550	TP010	ES4	1.40 - 1.50	250g Amber Jar (ALE215)	S						
Mercury Dissolved	All	NDPs: 0 Tests: 20										
Metals in solid samples by OES	All	NDPs: 0 Tests: 20										
PAH 16 & 17 Calc	All	NDPs: 0 Tests: 20										
PAH by GCMS	All	NDPs: 0 Tests: 20										
PCBs by GCMS	All	NDPs: 0 Tests: 20										
pH	All	NDPs: 0 Tests: 20										
Phenols by HPLC (W)	All	NDPs: 0 Tests: 20										
Sample description	All	NDPs: 0 Tests: 20										
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 20										
Total Dissolved Solids	All	NDPs: 0 Tests: 20										
Total Organic Carbon	All	NDPs: 0 Tests: 20										
TPH CWG GC (S)	All	NDPs: 0 Tests: 20										
VOC MS (S)	All	NDPs: 0 Tests: 20										



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23081508	TP001	1.40 - 1.50	Dark Brown	Sand	None	Stones
23081642	TP001	0.40 - 0.50	Light Brown	Silt Loam	Vegetation	Stones
23081514	TP002	0.50 - 0.60	Light Brown	Sand	None	Stones
23081519	TP002	1.40 - 1.50	Dark Brown	Sand	None	Stones
23081502	TP003	0.50 - 0.60	Light Brown	Sandy Silt Loam	None	Stones
23081580	TP003	1.50 - 1.60	Light Brown	Sand	None	Stones
23081629	TP004	0.40 - 0.50	Light Brown	Silt Loam	Stones	Vegetation
23081636	TP004	1.40 - 1.50	Light Brown	Loamy Sand	Stones	Vegetation
23081593	TP005	0.40 - 0.50	Dark Brown	Clay	Stones	Vegetation
23081599	TP005	1.50 - 1.60	Light Brown	Sandy Clay Loam	Vegetation	None
23081526	TP006	0.40 - 0.50	Light Brown	Silt Loam	Stones	Vegetation
23081533	TP006	1.40 - 1.50	Dark Brown	Silt Loam	None	None
23081538	TP010	0.40 - 0.50	Light Brown	Clay	Vegetation	None
23081550	TP010	1.40 - 1.50	Light Brown	Clay	Stones	None
23081573	TP011	0.40 - 0.50	Light Brown	Sand	None	Stones
23081587	TP011	1.40 - 1.50	Light Brown	Clay	Stones	None
23081559	TP012	0.50 - 0.60	Light Brown	Clay	Vegetation	None
23081567	TP012	1.40 - 1.50	Light Brown	Clay	Stones	None
23081608	TP201	0.50 - 0.60	Dark Brown	Sandy Clay Loam	Stones	Vegetation
23081621	TP201	1.50 - 1.60	Light Brown	Loamy Sand	Vegetation	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

Results Legend			Customer Sample Ref.	TP001	TP001	TP002	TP002	TP003	TP003
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
diss.filt	Dissolved / filtered sample.			.	.	.	.	.	.
tot.unfilt	Total / unfiltered sample.			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
*	Subcontracted - refer to subcontractor report for accreditation status.			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			23081642	23081508	23081514	23081519	23081502	23081580
(F)	Trigger breach confirmed			ES1	ES3	ES1	ES3	ES1	ES4
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	19	17	23	18	18	13	
Loss on ignition	<0.7 %	TM018	7.88 M	3.5 M	6.99 M	3.43 M	8.95 M	5.08 M	
Organic Carbon, Total	<0.2 %	TM132	0.344 M	0.273 M	0.407 M	0.312 M	0.339 M	<0.2 M	
pH	1 pH Units	TM133	7.15 M	8.41 M	7.72 M	8.44 M	7.56 M	8.72 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1	
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21	
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	
Chromium, Trivalent	<0.9 mg/kg	TM181	42.6	36.9	47.5	35.9	48.6	30.7	
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	
Arsenic	<0.6 mg/kg	TM181	17.9 M	15.4 M	19.9 M	16.4 M	17.9 M	14.1 M	
Barium	<0.6 mg/kg	TM181	86.1 #	88.7 #	114 #	83.8 #	110 #	73 #	
Cadmium	<0.02 mg/kg	TM181	<0.02 M	<0.02 M	<0.02 M	<0.02 M	<0.02 M	<0.02 M	
Chromium	<0.9 mg/kg	TM181	42.6 M	36.9 M	47.5 M	35.9 M	48.6 M	30.7 M	
Copper	<1.4 mg/kg	TM181	15.6 M	24.3 M	32.3 M	24.7 M	27.5 M	21.2 M	
Lead	<0.7 mg/kg	TM181	21.7 M	17.5 M	27.1 M	17.4 M	23.8 M	15.7 M	
Mercury	<0.14 mg/kg	TM181	0.163 M	<0.14 M	0.194 M	<0.14 M	0.153 M	<0.14 M	
Molybdenum	<0.1 mg/kg	TM181	0.373 #	0.232 #	1.72 #	0.188 #	0.232 #	0.339 #	
Nickel	<0.2 mg/kg	TM181	34.2 M	44.2 M	62.9 M	43.4 M	52.1 M	39.5 M	
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #	
Zinc	<1.9 mg/kg	TM181	64.2 M	74.7 M	103 M	75.5 M	75.6 M	67.4 M	
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318	<318	
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

Results Legend			Customer Sample Ref.	TP004	TP004	TP005	TP005	TP006	TP006
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50 Soil/Solid (S)	1.40 - 1.50 Soil/Solid (S)	0.40 - 0.50 Soil/Solid (S)	1.50 - 1.60 Soil/Solid (S)	0.40 - 0.50 Soil/Solid (S)	1.40 - 1.50 Soil/Solid (S)
M	mCERTS accredited.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	14/10/2020	14/10/2020
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	17	12	19	16	16	15	
Loss on ignition	<0.7 %	TM018	5.51 M	2.16 M	6.16 M	2.1 M	3.12 M	5.23 M	
Organic Carbon, Total	<0.2 %	TM132	0.483 M	<0.2 M	0.36 M	<0.2 M	0.226 M	0.293 M	
pH	1 pH Units	TM133	6.97 M	7.55 M	7.11 M	7.82 M	7.15 M	7.82 M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M	
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1	
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21	
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	
Chromium, Trivalent	<0.9 mg/kg	TM181	50.7	23.8	48	27.3	32.4	51.7	
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	0.909 #	<0.6 #	<0.6 #	0.654 #	
Arsenic	<0.6 mg/kg	TM181	17.8 M	10.6 M	14.9 M	10.5 M	11.4 M	19.4 M	
Barium	<0.6 mg/kg	TM181	60.9 #	46.7 #	64.3 #	55.4 #	38 #	107 #	
Cadmium	<0.02 mg/kg	TM181	<0.02 M	0.115 M	<0.02 M	0.0645 M	<0.02 M	0.129 M	
Chromium	<0.9 mg/kg	TM181	50.7 M	24 M	48 M	27.3 M	32.4 M	51.7 M	
Copper	<1.4 mg/kg	TM181	16.5 M	15.1 M	18.6 M	17.4 M	12.5 M	32.6 M	
Lead	<0.7 mg/kg	TM181	11.6 M	10.1 M	12.5 M	10.6 M	9.47 M	17.6 M	
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	
Molybdenum	<0.1 mg/kg	TM181	0.399 #	0.152 #	0.36 #	0.236 #	0.289 #	0.296 #	
Nickel	<0.2 mg/kg	TM181	33.1 M	31.6 M	28.8 M	28.2 M	21.2 M	61.1 M	
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #	
Zinc	<1.9 mg/kg	TM181	76.2 M	39.3 M	55 M	39 M	40.6 M	85.2 M	
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318	<318	
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Results Legend			Customer Sample Ref.	TP010	TP010	TP011	TP011	TP012	TP012
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.50 - 0.60 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			21/10/2020 201021-100 23081538 ES1	21/10/2020 201021-100 23081550 ES4	21/10/2020 201021-100 23081573 ES1	21/10/2020 201021-100 23081587 ES4	21/10/2020 201021-100 23081559 ES1	21/10/2020 201021-100 23081567 ES4
(F)	Trigger breach confirmed								
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		19	14	18	20	17	17
Loss on ignition	<0.7 %	TM018		7.18 M	4.52 M	7.95 M	4.51 M	5.26 M	5.75 M
Organic Carbon, Total	<0.2 %	TM132		0.333 M	<0.2 M	0.355 M	<0.2 M	0.35 M	0.202 M
pH	1 pH Units	TM133		7.4 M	8.85 M	7.93 M	8.77 M	7.42 M	8.65 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1 M	<1 M
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21 M	<21 M	<21 M	<21 M	<21 M	<21 M
Sulphide, Easily liberated	<15 mg/kg	TM180		<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M
Chromium, Trivalent	<0.9 mg/kg	TM181		43.5 M	29.3 M	44.8 M	33.6 M	28.4 M	40.8 M
Antimony	<0.6 mg/kg	TM181		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Arsenic	<0.6 mg/kg	TM181		17.7 M	12.8 M	18.8 M	14.6 M	16.2 M	15.6 M
Barium	<0.6 mg/kg	TM181		86.2 #	68.1 #	115 #	89.9 #	49.4 #	111 #
Cadmium	<0.02 mg/kg	TM181		<0.02 M	<0.02 M	<0.02 M	0.274 M	<0.02 M	<0.02 M
Chromium	<0.9 mg/kg	TM181		43.5 M	29.3 M	44.8 M	33.6 M	28.4 M	40.8 M
Copper	<1.4 mg/kg	TM181		23.9 M	19.9 M	28.6 M	23.7 M	10 M	26.4 M
Lead	<0.7 mg/kg	TM181		22.6 M	13.9 M	23.3 M	21.3 M	14.9 M	17.8 M
Mercury	<0.14 mg/kg	TM181		0.151 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M
Molybdenum	<0.1 mg/kg	TM181		0.247 #	0.25 #	0.226 #	0.235 #	0.375 #	0.365 #
Nickel	<0.2 mg/kg	TM181		42.4 M	37.3 M	70.6 M	41.3 M	25.3 M	50.3 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181		72.8 M	63.8 M	78.8 M	66.8 M	56.3 M	81.8 M
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410		<318 M	<318 M	<318 M	<318 M	<318 M	<318 M
Coronene	<200 µg/kg	TM410		<200 M	<200 M	<200 M	<200 M	<200 M	<200 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Results Legend		Customer Sample Ref.	TP201	TP201			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 - 0.60	1.50 - 1.60			
M	mCERTS accredited.		Soil/Solid (S)	Soil/Solid (S)			
aq	Aqueous / settled sample.		15/10/2020	15/10/2020			
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.		21/10/2020	21/10/2020			
*	Subcontracted - refer to subcontractor report for accreditation status.		201021-100	201021-100			
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23081608	23081621			
(F)	Trigger breach confirmed		ES1	ES4			
1-4*5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Moisture Content Ratio (% of as received sample)	%	PM024	16	16			
Loss on ignition	<0.7 %	TM018	5.21 M	4.1 M			
Organic Carbon, Total	<0.2 %	TM132	0.223 M	0.258 M			
pH	1 pH Units	TM133	7.42 M	8.6 M			
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M			
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M			
Cyanide, Complex	<1 mg/kg	TM153	<1	<1			
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M			
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M			
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M			
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M			
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M			
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M			
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M			
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21			
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 @ M	<15 @ M			
Chromium, Trivalent	<0.9 mg/kg	TM181	44.9	35.9			
Antimony	<0.6 mg/kg	TM181	0.708 #	<0.6 #			
Arsenic	<0.6 mg/kg	TM181	14.2 M	15 M			
Barium	<0.6 mg/kg	TM181	101 #	85.2 #			
Cadmium	<0.02 mg/kg	TM181	<0.02 M	0.0466 M			
Chromium	<0.9 mg/kg	TM181	44.9 M	35.9 M			
Copper	<1.4 mg/kg	TM181	24.3 M	23.1 M			
Lead	<0.7 mg/kg	TM181	15.4 M	10.7 M			
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M			
Molybdenum	<0.1 mg/kg	TM181	0.223 #	0.49 #			
Nickel	<0.2 mg/kg	TM181	42.9 M	39.7 M			
Selenium	<1 mg/kg	TM181	<1 #	<1 #			
Zinc	<1.9 mg/kg	TM181	65.3 M	62.6 M			
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318			
Coronene	<200 µg/kg	TM410	<200	<200			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP001	TP001	TP002	TP002	TP003	TP003
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.40 - 1.50 Soil/Solid (S) 15/10/2020	0.50 - 0.60 Soil/Solid (S) 15/10/2020	1.40 - 1.50 Soil/Solid (S) 15/10/2020	0.50 - 0.60 Soil/Solid (S) 15/10/2020	1.50 - 1.60 Soil/Solid (S) 15/10/2020
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<400	<100	<100	<100	<200	<200
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP001	TP001	TP002	TP002	TP003	TP003
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
(F)	Trigger breach confirmed			23081642	23081508	23081514	23081519	23081502	23081580
1-4+5@	Sample deviation (see appendix)			ES1	ES3	ES1	ES3	ES1	ES4
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Detected	Detected	Not Detected	Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		7380	2200	<1000	16400	<1000	<1000
Unknown	µg/kg	TM157		7380	2200		16400		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP004	TP004	TP005	TP005	TP006	TP006
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.40 - 1.50 Soil/Solid (S) 15/10/2020	0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.50 - 1.60 Soil/Solid (S) 15/10/2020	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<200	<200	<200	<200	<200	<200
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP004	TP004	TP005	TP005	TP006	TP006
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.40 - 1.50 Soil/Solid (S) 15/10/2020	0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.50 - 1.60 Soil/Solid (S) 15/10/2020	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020
M	mCERTS accredited.								
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
(F)	Trigger breach confirmed			23081629	23081636	23081593	23081599	23081526	23081533
1-4+5@	Sample deviation (see appendix)			ES1	ES2	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<1000	<1000	<1000	<1000	<1000	<1000



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP010	TP010	TP011	TP011	TP012	TP012
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.50 - 0.60 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<200	<200	<200	<200	<200	<200
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP010	TP010	TP011	TP011	TP012	TP012
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.50 - 0.60 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020
M	mCERTS accredited.								
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
(F)	Trigger breach confirmed			23081538	23081550	23081573	23081587	23081559	23081567
1-4+5@	Sample deviation (see appendix)			ES1	ES4	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<1000	<1000	<1000	<1000	<1000	<1000



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP201	TP201			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Phenol	<100 µg/kg	TM157	<100	<100				
Pentachlorophenol	<100 µg/kg	TM157	<100	<100				
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100	<100				
Nitrobenzene	<100 µg/kg	TM157	<100	<100				
Isophorone	<100 µg/kg	TM157	<100	<100				
Hexachloroethane	<100 µg/kg	TM157	<100	<100				
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100	<200				
Hexachlorobutadiene	<100 µg/kg	TM157	<100	<100				
Hexachlorobenzene	<100 µg/kg	TM157	<100	<100				
n-Dioctyl phthalate	<100 µg/kg	TM157	<100	<100				
Dimethyl phthalate	<100 µg/kg	TM157	<100	<100				
Diethyl phthalate	<100 µg/kg	TM157	<100	<100				
n-Dibutyl phthalate	<100 µg/kg	TM157	<100	<100				
Dibenzofuran	<100 µg/kg	TM157	<100	<100				
Carbazole	<100 µg/kg	TM157	<100	<100				
Butylbenzyl phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100	<100				
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100	<100				
Azobenzene	<100 µg/kg	TM157	<100	<100				
4-Nitrophenol	<100 µg/kg	TM157	<100	<100				
4-Nitroaniline	<100 µg/kg	TM157	<100	<100				
4-Methylphenol	<100 µg/kg	TM157	<100	<100				
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100	<100				
4-Chloroaniline	<100 µg/kg	TM157	<100	<100				
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100	<100				
4-Bromophenylphenylether	<100 µg/kg	TM157	<100	<100				
3-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Nitrophenol	<100 µg/kg	TM157	<100	<100				
2-Nitroaniline	<100 µg/kg	TM157	<100	<100				
2-Methylphenol	<100 µg/kg	TM157	<100	<100				
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100	<100				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP201	TP201			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref
2-Chlorophenol	<100 µg/kg	TM157	0.50 - 0.60	Soil/Solid (S)	15/10/2020			201021-100
2,6-Dinitrotoluene	<100 µg/kg	TM157	1.50 - 1.60	Soil/Solid (S)	15/10/2020			23081608
2,4-Dinitrotoluene	<100 µg/kg	TM157						ES1
2,4-Dimethylphenol	<100 µg/kg	TM157						
2,4-Dichlorophenol	<100 µg/kg	TM157						
2,4,6-Trichlorophenol	<100 µg/kg	TM157						
2,4,5-Trichlorophenol	<100 µg/kg	TM157						
1,4-Dichlorobenzene	<100 µg/kg	TM157						
1,3-Dichlorobenzene	<100 µg/kg	TM157						
1,2-Dichlorobenzene	<100 µg/kg	TM157						
2-Chloronaphthalene	<100 µg/kg	TM157						
2-Methylnaphthalene	<100 µg/kg	TM157						
Acenaphthylene	<100 µg/kg	TM157						
Acenaphthene	<100 µg/kg	TM157						
Anthracene	<100 µg/kg	TM157						
Benzo(a)anthracene	<100 µg/kg	TM157						
Benzo(b)fluoranthene	<100 µg/kg	TM157						
Benzo(k)fluoranthene	<100 µg/kg	TM157						
Benzo(a)pyrene	<100 µg/kg	TM157						
Benzo(g,h,i)perylene	<100 µg/kg	TM157						
Chrysene	<100 µg/kg	TM157						
Fluoranthene	<100 µg/kg	TM157						
Fluorene	<100 µg/kg	TM157						
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157						
Phenanthrene	<100 µg/kg	TM157						
Pyrene	<100 µg/kg	TM157						
Naphthalene	<100 µg/kg	TM157						
Dibenzo(a,h)anthracene	<100 µg/kg	TM157						
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157						
TIC report		TM157	Not Detected	Not Detected				
Total SVOC TIC	<100 µg/kg	TM157	<1000	<1000				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP001	TP001	TP002	TP002	TP003	TP003
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
(F)	Trigger breach confirmed			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
1-4+5@	Sample deviation (see appendix)			23081642	23081508	23081514	23081519	23081502	23081580
				ES1	ES3	ES1	ES3	ES1	ES4
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		101	93	99.6	90	101	101
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		<1000	3890	4090	5350	4020	2300
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	<5000	<5000	5420	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	<10000	10300	14300	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		1300	2370	5000	7800	1270	<1000
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	<5000	6240	8900	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	14300	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP004	TP004	TP005	TP005	TP006	TP006
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.50 - 1.60	0.40 - 0.50	1.40 - 1.50
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	14/10/2020	14/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
(F)	Trigger breach confirmed			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
1-4+5@	Sample deviation (see appendix)			23081629	23081636	23081593	23081599	23081526	23081533
				ES1	ES2	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		94.3	95.6	92.9	115	122	97.9
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		<1000	<1000	1130	<1000	<1000	<1000
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP010	TP010	TP011	TP011	TP012	TP012
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
(F)	Trigger breach confirmed			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
1-4+5@	Sample deviation (see appendix)			23081538	23081550	23081573	23081587	23081559	23081567
				ES1	ES4	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		122	102	123	104	104	105
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		2470	2110	2300	<1000	3000	2960
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		1270	<1000	1570	5250	1600	2670
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	<5000	<5000	6380	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

TPH CWG (S)

Results Legend		Customer Sample Ref.	TP201	TP201			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	95.9	115			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10			
Aliphatics >C10-C12	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C12-C16	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C16-C21	<1000 µg/kg	TM414	<1000	<1000			
Aliphatics >C21-C35	<1000 µg/kg	TM414	1920	2920			
Aliphatics >C35-C44	<1000 µg/kg	TM414	<1000	<1000			
Total Aliphatics >C10-C44	<5000 µg/kg	TM414	<5000	<5000			
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414	<10000	<10000			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10			
Aromatics > EC10-EC12	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC12-EC16	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC16-EC21	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC21-EC35	<1000 µg/kg	TM414	<1000	<1000			
Aromatics >EC35-EC44	<1000 µg/kg	TM414	<1000	<1000			
Aromatics > EC40-EC44	<1000 µg/kg	TM414	<1000	<1000			
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414	<5000	<5000			
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414	<10000	<10000			
Total Aliphatics >C5-C10	<50 µg/kg	TM089	<50	<50			
Total Aromatics >EC5-EC10	<50 µg/kg	TM089	<50	<50			
GRO >C5-C10	<20 µg/kg	TM089	<20	<20			



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.		TP001	TP001	TP002	TP002	TP003	TP003
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.40 - 1.50 Soil/Solid (S) 15/10/2020	0.50 - 0.60 Soil/Solid (S) 15/10/2020	1.40 - 1.50 Soil/Solid (S) 15/10/2020	0.50 - 0.60 Soil/Solid (S) 15/10/2020	1.50 - 1.60 Soil/Solid (S) 15/10/2020
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116	113	109	114	103	103	111		
Toluene-d8**	%	TM116	96.1	96	94.6	98	95.9	94.5		
4-Bromofluorobenzene**	%	TM116	84.7	72.9	79.7	89.1	86.3	75.2		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116	<10 #	20.7 #	<10 #	<10 #	<10 #	<10 #	22.6 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP001	TP001	TP002	TP002	TP003	TP003
#	ISO17025 accredited.		Depth (m)	0.40 - 0.50	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.		Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.		Date Sampled	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
dis.filt	Dissolved / filtered sample.		Sampled Time						
tot.unfilt	Total / unfiltered sample.		Date Received	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
+	Subcontracted - refer to subcontractor report for accreditation status.		SDG Ref	201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		Lab Sample No.(s)	23081642	23081508	23081514	23081519	23081502	23081580
(F)	Trigger breach confirmed		AGS Reference	ES1	ES3	ES1	ES3	ES1	ES4
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116	<4 M	<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116	<11	<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116	<20	<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116	<13 M	<13 M	<13 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.		TP004	TP004	TP005	TP005	TP006	TP006
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.50 - 1.60	0.40 - 0.50	1.40 - 1.50
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.				15/10/2020	15/10/2020	15/10/2020	15/10/2020	14/10/2020	14/10/2020
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.				21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
*	Subcontracted - refer to subcontractor report for accreditation status.				201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				23081629	23081636	23081593	23081599	23081526	23081533
(F)	Trigger breach confirmed				ES1	ES2	ES1	ES4	ES1	ES4
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116	108	108	108	111	111	117		
Toluene-d8**	%	TM116	97.6	99.5	98.1	98.6	95.3	98.4		
4-Bromofluorobenzene**	%	TM116	95.8	99.2	92.7	102	84.8	91.6		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<60 M		
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<70 #		
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<60 M		
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<60 M		
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<100 #		
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<70 M		
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<100 #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<80 M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<60 M		
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<80 M		
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<70 M		
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<50 M		
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<90 M		
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<90 #		
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<90 M		
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<70 M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<70 M		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<100 M		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP004	TP004	TP005	TP005	TP006	TP006
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.40 - 1.50 Soil/Solid (S) 15/10/2020	0.40 - 0.50 Soil/Solid (S) 15/10/2020	1.50 - 1.60 Soil/Solid (S) 15/10/2020	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020
M	mCERTS accredited.								
ag	Aqueous / filtered sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
(F)	Trigger breach confirmed			23081629	23081636	23081593	23081599	23081526	23081533
1-4+5@	Sample deviation (see appendix)			ES1	ES2	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<70 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<50 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<50 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<40 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<100 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<100 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<50 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<100 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<160 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<90 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<80 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<140 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<90 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<100
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<80 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<50 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<11	<110
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<100 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<140 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<100 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<200
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<200
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<130 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.		TP010	TP010	TP011	TP011	TP012	TP012
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.				14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.				21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
*	Subcontracted - refer to subcontractor report for accreditation status.				201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				23081538	23081550	23081573	23081587	23081559	23081567
(F)	Trigger breach confirmed				ES1	ES4	ES1	ES4	ES1	ES4
1-4*\$@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116	102	109	103	108	111	107		
Toluene-d8**	%	TM116	98.1	97.3	96.9	100	95.2	100		
4-Bromofluorobenzene**	%	TM116	91.1	83.5	87.5	102	87.2	103		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<120 M		
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<140 #	<7 #	<140 #		
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<120 M		
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<120 M		
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<200 #	<10 #	<200 #		
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<140 M		
Dichloromethane	<10 µg/kg	TM116	<10 #	12.3 #	<10 #	<200 #	<10 #	<200 #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<160 M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<120 M	<6 M	<120 M		
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<160 M	<8 M	<160 M		
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<140 M		
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<100 M	<5 M	<100 M		
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<180 M		
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<180 #	<9 #	<180 #		
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<180 M	<9 M	<180 M		
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<140 M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<140 M	<7 M	<140 M		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<200 M	<10 M	<200 M		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP010	TP010	TP011	TP011	TP012	TP012
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.40 - 0.50 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020	0.50 - 0.60 Soil/Solid (S) 14/10/2020	1.40 - 1.50 Soil/Solid (S) 14/10/2020
M	mCERTS accredited.								
ag	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201021-100	201021-100	201021-100	201021-100	201021-100	201021-100
(F)	Trigger breach confirmed			23081538	23081550	23081573	23081587	23081559	23081567
1-4+5@	Sample deviation (see appendix)			ES1	ES4	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<140 M	<7 M	<140 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<100 M	<5 M	<100 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<100 M	<5 M	<100 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<80 M	<4 M	<80 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<200 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<200 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<100 #	<5 #	<100 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<200 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<320 M	<16 M	<320 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<180 M	<9 M	<180 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<160 M	<8 M	<160 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<280 M	<14 M	<280 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<180 #	<9 #	<180 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<200	<10	<200
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<160 M	<8 M	<160 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<100 M	<5 M	<100 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<220	<11	<220
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<200 M	<10 M	<200 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<280 M	<14 M	<280 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<200 #	<10 #	<200 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<400	<20	<400
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<400	<20	<400
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<260 M	<13 M	<260 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP201	TP201			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*\$@	Sample deviation (see appendix)							
Component	LOD/Units	Method	Depth (m)	Sample Type	Sampled Time	Date Received	SDG Ref	Lab Sample No.(s)
Dibromofluoromethane**	%	TM116	0.50 - 0.60	Soil/Solid (S)	15/10/2020	15/10/2020	201021-100	23081608
Toluene-d8**	%	TM116	1.50 - 1.60	Soil/Solid (S)	15/10/2020	15/10/2020	201021-100	23081621
4-Bromofluorobenzene**	%	TM116	ES1					ES4
Dichlorodifluoromethane	<6 µg/kg	TM116	<6					
Chloromethane	<7 µg/kg	TM116	<7					
Vinyl Chloride	<6 µg/kg	TM116	<6					
Bromomethane	<10 µg/kg	TM116	<10					
Chloroethane	<10 µg/kg	TM116	<10					
Trichlorofluoromethane	<6 µg/kg	TM116	<6					
1,1-Dichloroethene	<10 µg/kg	TM116	<10					
Carbon Disulphide	<7 µg/kg	TM116	<7					
Dichloromethane	<10 µg/kg	TM116	<10					
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10					
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10					
1,1-Dichloroethane	<8 µg/kg	TM116	<8					
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6					
2,2-Dichloropropane	<10 µg/kg	TM116	<10					
Bromochloromethane	<10 µg/kg	TM116	<10					
Chloroform	<8 µg/kg	TM116	<8					
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7					
1,1-Dichloropropene	<10 µg/kg	TM116	<10					
Carbontetrachloride	<10 µg/kg	TM116	<10					
1,2-Dichloroethane	<5 µg/kg	TM116	<5					
Benzene	<9 µg/kg	TM116	<9					
Trichloroethene	<9 µg/kg	TM116	<9					
1,2-Dichloropropane	<10 µg/kg	TM116	<10					
Dibromomethane	<9 µg/kg	TM116	<9					
Bromodichloromethane	<7 µg/kg	TM116	<7					
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10					
Toluene	<7 µg/kg	TM116	<7					
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10					
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP201	TP201			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4+5@	Sample deviation (see appendix)							
Component	LOD/Units	Method	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref
1,3-Dichloropropane	<7 µg/kg	TM116	0.50 - 0.60	Soil/Solid (S)	15/10/2020			201021-100
								23081608
								ES1
Tetrachloroethene	<5 µg/kg	TM116	1.50 - 1.60	Soil/Solid (S)	15/10/2020			201021-100
								23081621
								ES4
Dibromochloromethane	<10 µg/kg	TM116						
1,2-Dibromoethane	<10 µg/kg	TM116						
Chlorobenzene	<5 µg/kg	TM116						
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116						
Ethylbenzene	<4 µg/kg	TM116						
p/m-Xylene	<10 µg/kg	TM116						
o-Xylene	<10 µg/kg	TM116						
Styrene	<10 µg/kg	TM116						
Bromoform	<10 µg/kg	TM116						
Isopropylbenzene	<5 µg/kg	TM116						
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116						
1,2,3-Trichloropropane	<16 µg/kg	TM116						
Bromobenzene	<10 µg/kg	TM116						
Propylbenzene	<10 µg/kg	TM116						
2-Chlorotoluene	<9 µg/kg	TM116						
1,3,5-Trimethylbenzene	<8 µg/kg	TM116						
4-Chlorotoluene	<10 µg/kg	TM116						
tert-Butylbenzene	<14 µg/kg	TM116						
1,2,4-Trimethylbenzene	<9 µg/kg	TM116						
sec-Butylbenzene	<10 µg/kg	TM116						
4-Isopropyltoluene	<10 µg/kg	TM116						
1,3-Dichlorobenzene	<8 µg/kg	TM116						
1,4-Dichlorobenzene	<5 µg/kg	TM116						
n-Butylbenzene	<11 µg/kg	TM116						
1,2-Dichlorobenzene	<10 µg/kg	TM116						
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116						
Tert-amyl methyl ether	<10 µg/kg	TM116						
1,2,4-Trichlorobenzene	<20 µg/kg	TM116						
Hexachlorobutadiene	<20 µg/kg	TM116						
Naphthalene	<13 µg/kg	TM116						



CERTIFICATE OF ANALYSIS

Validated

SDG:	201021-100	Client Reference:	2020WW102	Report Number:	579754
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP005E51 0.40 - 0.50 SOLID 15/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081593 TM048	28/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP005E54 1.50 - 1.60 SOLID 15/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081599 TM048	28/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP006E51 0.40 - 0.50 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081526 TM048	27/10/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP006E54 1.40 - 1.50 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081533 TM048	28/10/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP010E51 0.40 - 0.50 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081538 TM048	27/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP010E54 1.40 - 1.50 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081550 TM048	27/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP011E51 0.40 - 0.50 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081573 TM048	28/10/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP011E54 1.40 - 1.50 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081587 TM048	28/10/2020	Marcin Magdziarek	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP012E51 0.50 - 0.60 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081559 TM048	27/10/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100 **Client Reference:** 2020WW102 **Report Number:** 579754
Location: Arklow Bank **Order Number:** 9028 **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP012ES4 1.40 - 1.50 SOLID 14/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081567 TM048	27/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP201ES1 0.50 - 0.60 SOLID 15/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081608 TM048	28/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP201ES4 1.50 - 1.60 SOLID 15/10/2020 00:00:00 21/10/2020 09:00:00 201021-100 23081621 TM048	28/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.119
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 32.1
Dry Matter Content (%) 75.7

Case
SDG 201021-100
Lab Sample Number(s) 23081502
Sampled Date 15-Oct-2020
Customer Sample Ref. TP003 ES1
Depth (m) 0.50 - 0.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.0815	<0.0002	0.815	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000367	<0.0003	0.00367	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00263	<0.001	0.0263	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	4.4	<2	44	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	40.7	<5	407	<50	-	-	-

Leach Test Information

Date Prepared 25-Oct-2020
pH (pH Units) 7.93
Conductivity (µS/cm) 40.90
Temperature (°C) 20.30
Volume Leachant (Litres) 0.872

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.114
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	26
Dry Matter Content (%)	79.4

Case

SDG	201021-100
Lab Sample Number(s)	23081508
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP001 ES3
Depth (m)	1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.09	<3	30.9	<30	-	-	-
Fluoride	0.579	<0.5	5.79	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00678	<0.0002	0.0678	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00125	<0.0003	0.0125	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.0086	<0.003	0.086	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00148	<0.001	0.0148	<0.01	-	-	-
Chloride	2.7	<2	27	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	80.6	<5	806	<50	-	-	-

Leach Test Information

Date Prepared	24-Oct-2020
pH (pH Units)	8.70
Conductivity (µS/cm)	102.00
Temperature (°C)	18.10
Volume Leachant (Litres)	0.876

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.122	Natural Moisture Content (%)	35.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	73.6
Particle Size <4mm	>95%		

Case

SDG 201021-100
Lab Sample Number(s) 23081514
Sampled Date 15-Oct-2020
Customer Sample Ref. TP002 ES1
Depth (m) 0.50 - 0.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00134	<0.0005	0.0134	<0.005	-	-	-
Barium	0.0461	<0.0002	0.461	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00238	<0.001	0.0238	<0.01	-	-	-
Copper	0.00187	<0.0003	0.0187	<0.003	-	-	-
Lead	0.00126	<0.0002	0.0126	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00147	<0.0004	0.0147	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0185	<0.001	0.185	<0.01	-	-	-
Chloride	4.4	<2	44	<20	-	-	-
Sulphate (soluble)	4.6	<2	46	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	38.4	<5	384	<50	-	-	-

Leach Test Information

Date Prepared 23-Oct-2020
pH (pH Units) 8.36
Conductivity (µS/cm) 29.90
Temperature (°C) 20.70
Volume Leachant (Litres) 0.868

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.113	Natural Moisture Content (%)	24.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	80.1
Particle Size <4mm	>95%		

Case

SDG 201021-100
Lab Sample Number(s) 23081519
Sampled Date 15-Oct-2020
Customer Sample Ref. TP002 ES3
Depth (m) 1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	4.29	<3	42.9	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00264	<0.0002	0.0264	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	2	<2	20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	73.3	<5	733	<50	-	-	-

Leach Test Information

Date Prepared 24-Oct-2020
pH (pH Units) 8.36
Conductivity (µS/cm) 89.70
Temperature (°C) 16.70
Volume Leachant (Litres) 0.878

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.104
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	14.8
Dry Matter Content (%)	87.1

Case

SDG	201021-100
Lab Sample Number(s)	23081526
Sampled Date	14-Oct-2020
Customer Sample Ref.	TP006 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000504	<0.0005	0.00504	<0.005	-	-	-
Barium	0.000771	<0.0002	0.00771	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000769	<0.0003	0.00769	<0.003	-	-	-
Lead	0.000304	<0.0002	0.00304	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	2.5	<2	25	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	24.9	<5	249	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.56
Conductivity (µS/cm)	28.10
Temperature (°C)	20.70
Volume Leachant (Litres)	0.887

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.121
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	34.4
Dry Matter Content (%)	74.4

Case

SDG	201021-100
Lab Sample Number(s)	23081533
Sampled Date	14-Oct-2020
Customer Sample Ref.	TP006 ES4
Depth (m)	1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.54	<3	35.4	<30	-	-	-
Fluoride	0.725	<0.5	7.25	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.0389	<0.0002	0.389	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000311	<0.0003	0.00311	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	4.8	<2	48	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	73.5	<5	735	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	6.40
Conductivity (µS/cm)	99.30
Temperature (°C)	20.50
Volume Leachant (Litres)	0.868

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.116	Natural Moisture Content (%)	27.7
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	78.3
Particle Size <4mm	>95%		

Case

SDG 201021-100
Lab Sample Number(s) 23081538
Sampled Date 14-Oct-2020
Customer Sample Ref. TP010 ES1
Depth (m) 0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00111	<0.0002	0.0111	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000817	<0.0003	0.00817	<0.003	-	-	-
Lead	0.000562	<0.0002	0.00562	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0011	<0.001	0.011	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	4.8	<2	48	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	36	<5	360	<50	-	-	-

Leach Test Information

Date Prepared 23-Oct-2020
pH (pH Units) 8.22
Conductivity (µS/cm) 44.10
Temperature (°C) 20.60
Volume Leachant (Litres) 0.875

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.109
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	21.1
Dry Matter Content (%)	82.6

Case

SDG	201021-100
Lab Sample Number(s)	23081550
Sampled Date	14-Oct-2020
Customer Sample Ref.	TP010 ES4
Depth (m)	1.40 - 1.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.631	<0.5	6.31	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00304	<0.0002	0.0304	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000813	<0.0003	0.00813	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	80.9	<5	809	<50	-	-	-

Leach Test Information

Date Prepared	25-Oct-2020
pH (pH Units)	7.99
Conductivity (µS/cm)	104.00
Temperature (°C)	21.00
Volume Leachant (Litres)	0.882

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.107	Natural Moisture Content (%)	19.6
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83.6
Particle Size <4mm	>95%		

Case

SDG 201021-100
Lab Sample Number(s) 23081559
Sampled Date 14-Oct-2020
Customer Sample Ref. TP012 ES1
Depth (m) 0.50 - 0.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00166	<0.0005	0.0166	<0.005	-	-	-
Barium	0.0371	<0.0002	0.371	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00167	<0.001	0.0167	<0.01	-	-	-
Copper	0.00146	<0.0003	0.0146	<0.003	-	-	-
Lead	0.000789	<0.0002	0.00789	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000638	<0.0004	0.00638	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0175	<0.001	0.175	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	18.2	<5	182	<50	-	-	-

Leach Test Information

Date Prepared 23-Oct-2020
pH (pH Units) 8.23
Conductivity (µS/cm) 20.30
Temperature (°C) 20.70
Volume Leachant (Litres) 0.883

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.111	Natural Moisture Content (%)	22.8
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	81.4
Particle Size <4mm	>95%		

Case

SDG 201021-100
Lab Sample Number(s) 23081567
Sampled Date 14-Oct-2020
Customer Sample Ref. TP012 ES4
Depth (m) 1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.48	<3	34.8	<30	-	-	-
Fluoride	0.787	<0.5	7.87	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.23	<0.0002	2.3	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000597	<0.0003	0.00597	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.00369	<0.003	0.0369	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0071	<0.001	0.071	<0.01	-	-	-
Chloride	3.9	<2	39	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	104	<5	1040	<50	-	-	-

Leach Test Information

Date Prepared 25-Oct-2020
pH (pH Units) 7.85
Conductivity (µS/cm) 134.00
Temperature (°C) 20.10
Volume Leachant (Litres) 0.879

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.115
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	28.7
Dry Matter Content (%)	77.7

Case

SDG	201021-100
Lab Sample Number(s)	23081573
Sampled Date	14-Oct-2020
Customer Sample Ref.	TP011 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.142	<0.0002	1.42	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000347	<0.0003	0.00347	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00141	<0.001	0.0141	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	3.1	<2	31	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	41.9	<5	419	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	8.95
Conductivity (µS/cm)	49.30
Temperature (°C)	20.70
Volume Leachant (Litres)	0.875

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.106
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	17
Dry Matter Content (%)	85.5

Case

SDG	201021-100
Lab Sample Number(s)	23081580
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP003 ES4
Depth (m)	1.50 - 1.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.517	<0.5	5.17	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.226	<0.0002	2.26	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00052	<0.0003	0.0052	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00312	<0.001	0.0312	<0.01	-	-	-
Chloride	2.9	<2	29	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	75.4	<5	754	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	8.21
Conductivity (µS/cm)	94.80
Temperature (°C)	20.80
Volume Leachant (Litres)	0.884

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.108
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	20.6
Dry Matter Content (%)	82.9

Case

SDG	201021-100
Lab Sample Number(s)	23081587
Sampled Date	14-Oct-2020
Customer Sample Ref.	TP011 ES4
Depth (m)	1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.574	<0.5	5.74	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00425	<0.0002	0.0425	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.0007	<0.0003	0.007	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00139	<0.001	0.0139	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	76	<5	760	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	6.82
Conductivity (µS/cm)	94.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.882

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.115
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	28.3
Dry Matter Content (%)	78

Case

SDG	201021-100
Lab Sample Number(s)	23081593
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP005 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000978	<0.0005	0.00978	<0.005	-	-	-
Barium	0.0275	<0.0002	0.275	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00149	<0.001	0.0149	<0.01	-	-	-
Copper	0.00105	<0.0003	0.0105	<0.003	-	-	-
Lead	0.000858	<0.0002	0.00858	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00052	<0.0004	0.0052	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0209	<0.001	0.209	<0.01	-	-	-
Chloride	2.7	<2	27	<20	-	-	-
Sulphate (soluble)	3.9	<2	39	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	28.6	<5	286	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	8.60
Conductivity (µS/cm)	55.20
Temperature (°C)	20.70
Volume Leachant (Litres)	0.875

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.117
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	29.9
Dry Matter Content (%)	77

Case

SDG	201021-100
Lab Sample Number(s)	23081599
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP005 ES4
Depth (m)	1.50 - 1.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.794	<0.5	7.94	<5	-	-	-
Mercury Dissolved (CVAf)	0.000011	<0.00001	0.00011	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00124	<0.0005	0.0124	<0.005	-	-	-
Barium	0.0314	<0.0002	0.314	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00218	<0.001	0.0218	<0.01	-	-	-
Copper	0.00166	<0.0003	0.0166	<0.003	-	-	-
Lead	0.000889	<0.0002	0.00889	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00118	<0.0004	0.0118	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0112	<0.001	0.112	<0.01	-	-	-
Chloride	4.6	<2	46	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	33.4	<5	334	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	8.32
Conductivity (µS/cm)	41.60
Temperature (°C)	20.90
Volume Leachant (Litres)	0.873

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.110	Natural Moisture Content (%)	22.5
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	81.6
Particle Size <4mm	>95%		

Case

SDG 201021-100
Lab Sample Number(s) 23081608
Sampled Date 15-Oct-2020
Customer Sample Ref. TP201 ES1
Depth (m) 0.50 - 0.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.105	<0.0002	1.05	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00034	<0.0003	0.0034	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0031	<0.001	0.031	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	2.5	<2	25	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	23.5	<5	235	<50	-	-	-

Leach Test Information

Date Prepared 23-Oct-2020
pH (pH Units) 7.81
Conductivity (µS/cm) 26.10
Temperature (°C) 20.50
Volume Leachant (Litres) 0.880

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.106
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	17.9
Dry Matter Content (%)	84.8

Case

SDG	201021-100
Lab Sample Number(s)	23081621
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP201 ES4
Depth (m)	1.50 - 1.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.957	<0.5	9.57	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.24	<0.0002	2.4	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000559	<0.0003	0.00559	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00364	<0.001	0.0364	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	76.5	<5	765	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	7.09
Conductivity (µS/cm)	97.60
Temperature (°C)	20.60
Volume Leachant (Litres)	0.884

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.113
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	24.3
Dry Matter Content (%)	80.5

Case

SDG	201021-100
Lab Sample Number(s)	23081629
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP004 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.06	<3	30.6	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00155	<0.0005	0.0155	<0.005	-	-	-
Barium	0.0543	<0.0002	0.543	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00254	<0.001	0.0254	<0.01	-	-	-
Copper	0.00157	<0.0003	0.0157	<0.003	-	-	-
Lead	0.00121	<0.0002	0.0121	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000672	<0.0004	0.00672	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0189	<0.001	0.189	<0.01	-	-	-
Chloride	2.9	<2	29	<20	-	-	-
Sulphate (soluble)	3.4	<2	34	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	26.6	<5	266	<50	-	-	-

Leach Test Information

Date Prepared	24-Oct-2020
pH (pH Units)	7.68
Conductivity (µS/cm)	30.80
Temperature (°C)	20.50
Volume Leachant (Litres)	0.878

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.104
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	14.4
Dry Matter Content (%)	87.4

Case

SDG	201021-100
Lab Sample Number(s)	23081636
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP004 ES2
Depth (m)	1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.532	<0.5	5.32	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00203	<0.0005	0.0203	<0.005	-	-	-
Barium	0.0413	<0.0002	0.413	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00291	<0.001	0.0291	<0.01	-	-	-
Copper	0.00236	<0.0003	0.0236	<0.003	-	-	-
Lead	0.0012	<0.0002	0.012	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00128	<0.0004	0.0128	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0135	<0.001	0.135	<0.01	-	-	-
Chloride	4.8	<2	48	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	30.3	<5	303	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	6.65
Conductivity (µS/cm)	34.30
Temperature (°C)	20.70
Volume Leachant (Litres)	0.887

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.116
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	28.6
Dry Matter Content (%)	77.8

Case

SDG	201021-100
Lab Sample Number(s)	23081642
Sampled Date	15-Oct-2020
Customer Sample Ref.	TP001 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00118	<0.0002	0.0118	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	4.4	<2	44	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	35.5	<5	355	<50	-	-	-

Leach Test Information

Date Prepared	24-Oct-2020
pH (pH Units)	8.08
Conductivity (µS/cm)	38.10
Temperature (°C)	20.60
Volume Leachant (Litres)	0.875

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100 **Client Reference:** 2020WW102 **Report Number:** 579754
Location: Arklow Bank **Order Number:** 9028 **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579754
Superseded Report:

Test Completion Dates

Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	23081508	23081642	23081514	23081519	23081502	23081580	23081629	23081636	23081593	23081599
	TP001	TP001	TP002	TP002	TP003	TP003	TP004	TP004	TP005	TP005
	ES3	ES1	ES1	ES3	ES1	ES4	ES1	ES2	ES1	ES4
	1.40 - 1.50	0.40 - 0.50	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.50 - 1.60	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.50 - 1.60
Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
	Anions by Kone (w)	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
	Asbestos ID in Solid Samples	27-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
	CEN 10:1 Leachate (1 Stage)	25-Oct-2020	25-Oct-2020	24-Oct-2020	25-Oct-2020	25-Oct-2020	24-Oct-2020	25-Oct-2020	24-Oct-2020	24-Oct-2020
CEN Readings	26-Oct-2020	28-Oct-2020	28-Oct-2020	26-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
Chromium III	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020
Coronene	25-Oct-2020	28-Oct-2020	25-Oct-2020	25-Oct-2020	24-Oct-2020	24-Oct-2020	27-Oct-2020	27-Oct-2020	25-Oct-2020	24-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	26-Oct-2020	28-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020
Dissolved Metals by ICP-MS	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020
Dissolved Organic/Inorganic Carbon	29-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020
Easily Liberated Sulphide	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020
Fluoride	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
GRO by GC-FID (S)	26-Oct-2020	27-Oct-2020	23-Oct-2020	23-Oct-2020	25-Oct-2020	25-Oct-2020	26-Oct-2020	26-Oct-2020	25-Oct-2020	25-Oct-2020
Hexavalent Chromium (s)	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020
Loss on Ignition in soils	26-Oct-2020	28-Oct-2020	26-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
Mercury Dissolved	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
Metals in solid samples by OES	26-Oct-2020	29-Oct-2020	26-Oct-2020	26-Oct-2020	29-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
Moisture at 105C	24-Oct-2020	24-Oct-2020	23-Oct-2020	24-Oct-2020	25-Oct-2020	23-Oct-2020	24-Oct-2020	22-Oct-2020	23-Oct-2020	23-Oct-2020
PAH 16 & 17 Calc	24-Oct-2020	28-Oct-2020	24-Oct-2020	24-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020
PAH by GCMS	24-Oct-2020	27-Oct-2020	24-Oct-2020	24-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020
PCBs by GCMS	26-Oct-2020	28-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	26-Oct-2020
pH	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020
Phenols by HPLC (W)	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
Sample description	22-Oct-2020	24-Oct-2020	22-Oct-2020	22-Oct-2020	23-Oct-2020	23-Oct-2020	24-Oct-2020	24-Oct-2020	23-Oct-2020	23-Oct-2020
Semi Volatile Organic Compounds	26-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020
Total Dissolved Solids	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020
Total Organic Carbon	28-Oct-2020	29-Oct-2020	28-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	28-Oct-2020
TPH CWG GC (S)	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020
VOC MS (S)	24-Oct-2020	27-Oct-2020	24-Oct-2020	24-Oct-2020	25-Oct-2020	24-Oct-2020	26-Oct-2020	26-Oct-2020	25-Oct-2020	25-Oct-2020
Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	23081526	23081533	23081538	23081550	23081573	23081587	23081559	23081567	23081608	23081621
	TP006	TP006	TP010	TP010	TP011	TP011	TP012	TP012	TP201	TP201
	ES1	ES4	ES1	ES4	ES1	ES4	ES1	ES4	ES1	ES4
	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.40 - 0.50	1.40 - 1.50	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.50 - 1.60
Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
	Anions by Kone (w)	27-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020
	Asbestos ID in Solid Samples	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	28-Oct-2020
	CEN 10:1 Leachate (1 Stage)	24-Oct-2020	24-Oct-2020	24-Oct-2020	25-Oct-2020	24-Oct-2020	24-Oct-2020	25-Oct-2020	24-Oct-2020	24-Oct-2020
CEN Readings	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
Chromium III	28-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020
Coronene	27-Oct-2020	27-Oct-2020	24-Oct-2020	24-Oct-2020	24-Oct-2020	28-Oct-2020	24-Oct-2020	24-Oct-2020	24-Oct-2020	24-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
Dissolved Metals by ICP-MS	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020
Dissolved Organic/Inorganic Carbon	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020
Easily Liberated Sulphide	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
Fluoride	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
GRO by GC-FID (S)	26-Oct-2020	26-Oct-2020	25-Oct-2020	24-Oct-2020	25-Oct-2020	26-Oct-2020	24-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
Hexavalent Chromium (s)	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
Loss on Ignition in soils	27-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	27-Oct-2020	27-Oct-2020
Mercury Dissolved	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020
Metals in solid samples by OES	27-Oct-2020	27-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020	27-Oct-2020	27-Oct-2020
Moisture at 105C	22-Oct-2020	23-Oct-2020	23-Oct-2020	25-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	25-Oct-2020	23-Oct-2020	23-Oct-2020
PAH 16 & 17 Calc	27-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	28-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
PAH by GCMS	27-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
PCBs by GCMS	28-Oct-2020	28-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	28-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
pH	28-Oct-2020	28-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020
Phenols by HPLC (W)	28-Oct-2020	29-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020
Sample description	24-Oct-2020	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Semi Volatile Organic Compounds	27-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Total Dissolved Solids	29-Oct-2020	29-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020
Total Organic Carbon	28-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	29-Oct-2020	29-Oct-2020	28-Oct-2020	29-Oct-2020	28-Oct-2020	28-Oct-2020
TPH CWG GC (S)	27-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
VOC MS (S)	26-Oct-2020	26-Oct-2020	25-Oct-2020	24-Oct-2020	25-Oct-2020	26-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

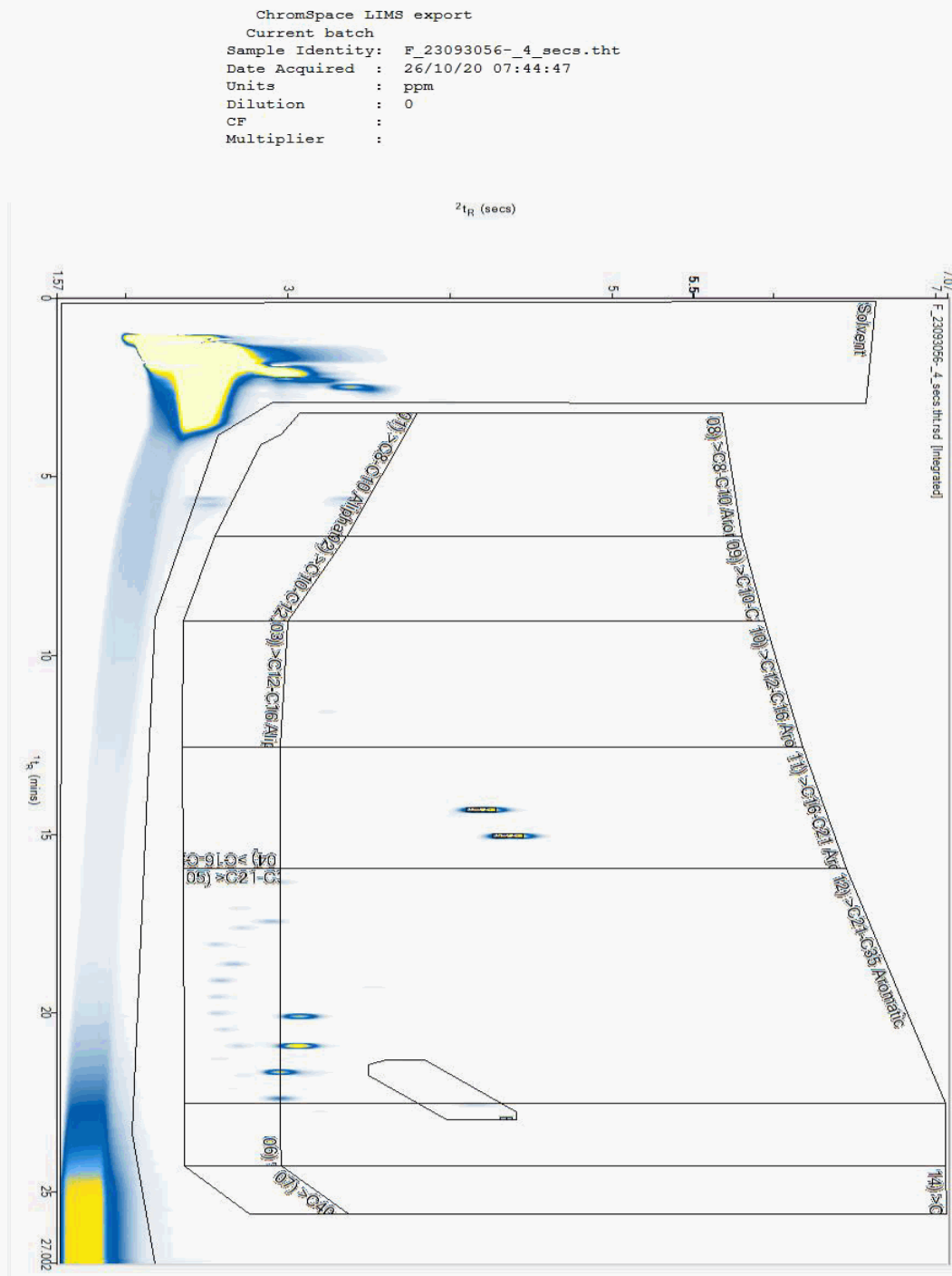
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23093056
Sample ID : TP002

Depth : 1.40 - 1.50



SDG:	201021-100
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

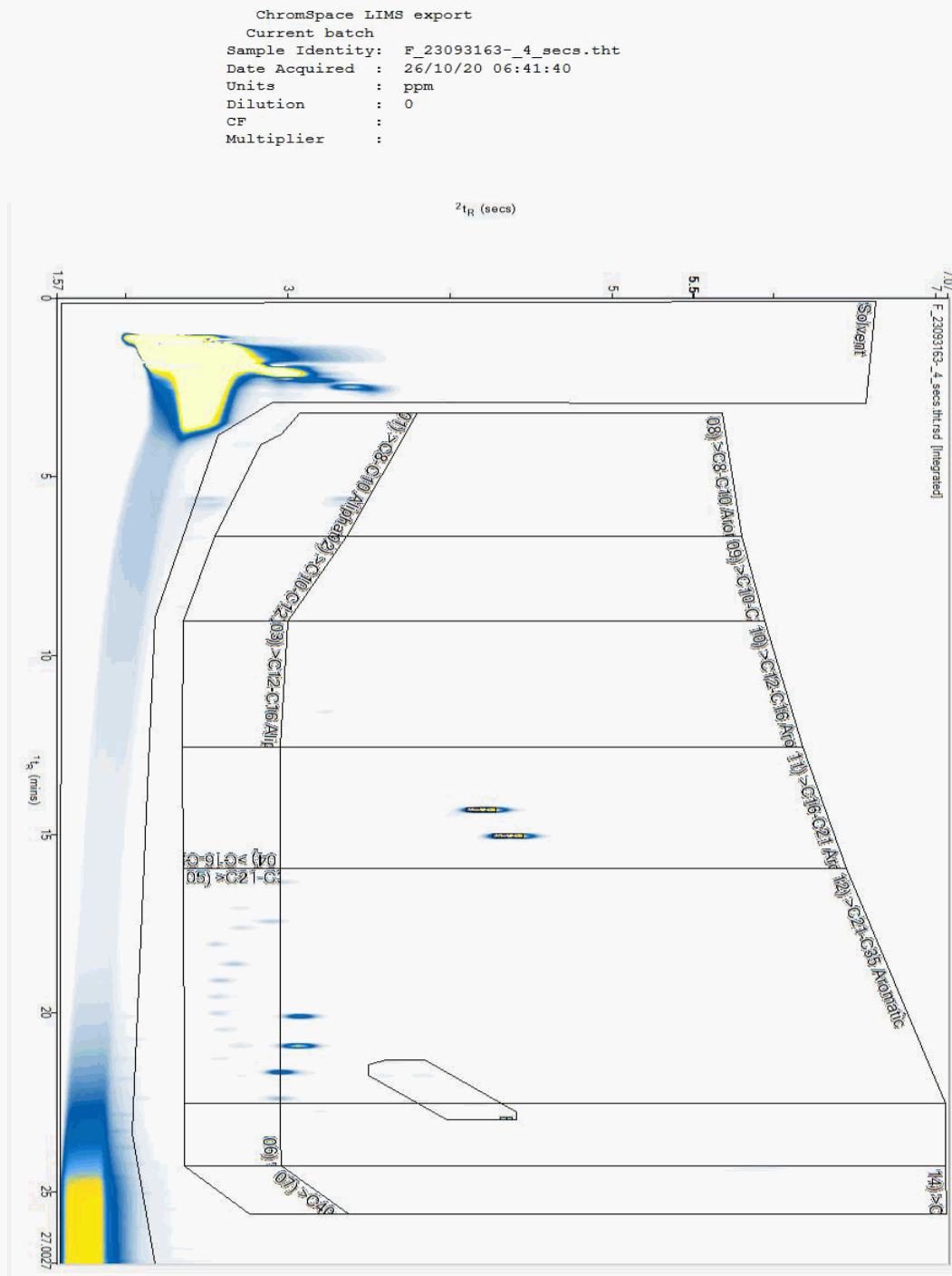
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23093163
Sample ID : TP002

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

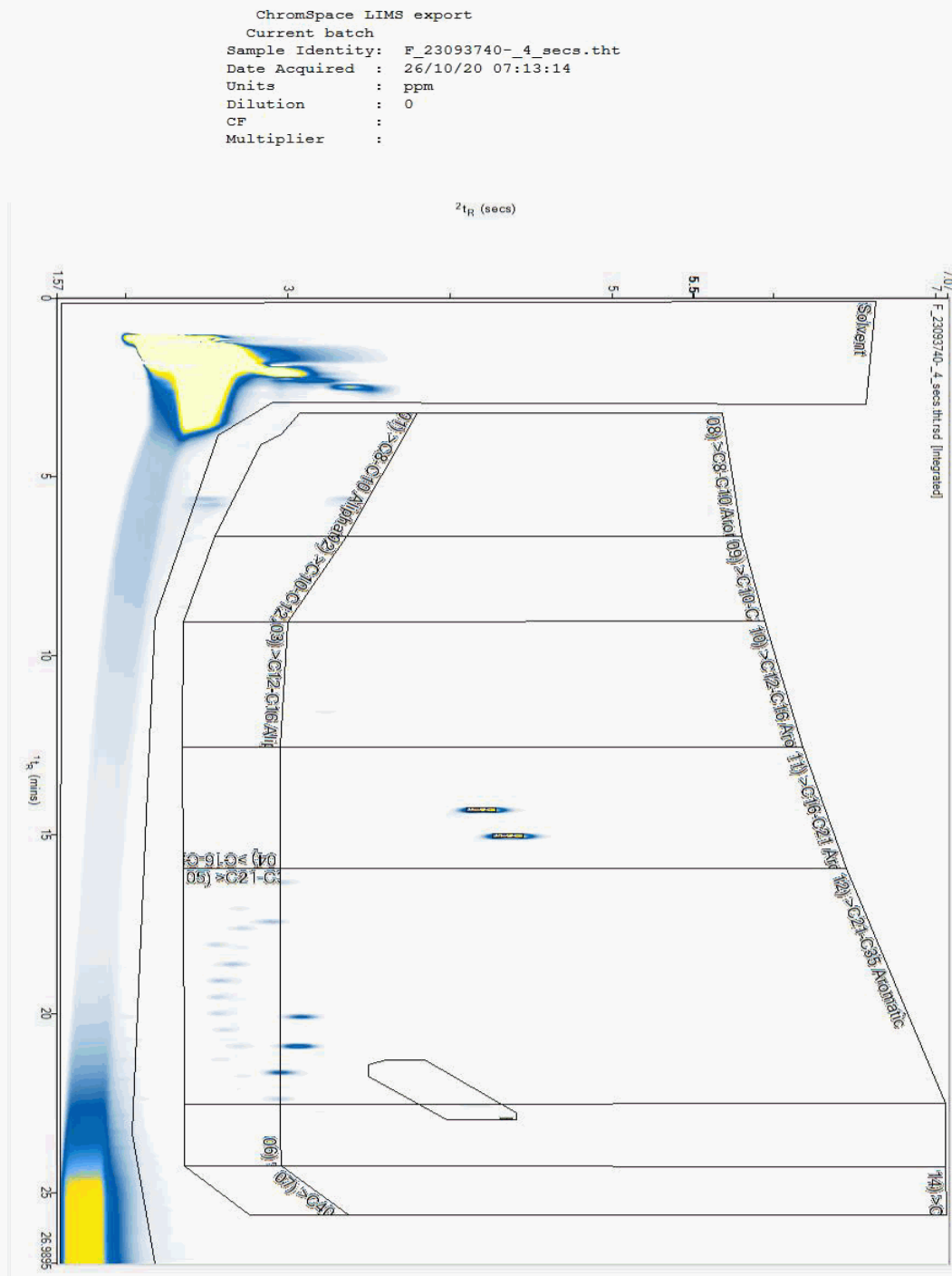
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23093740
Sample ID : TP001

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

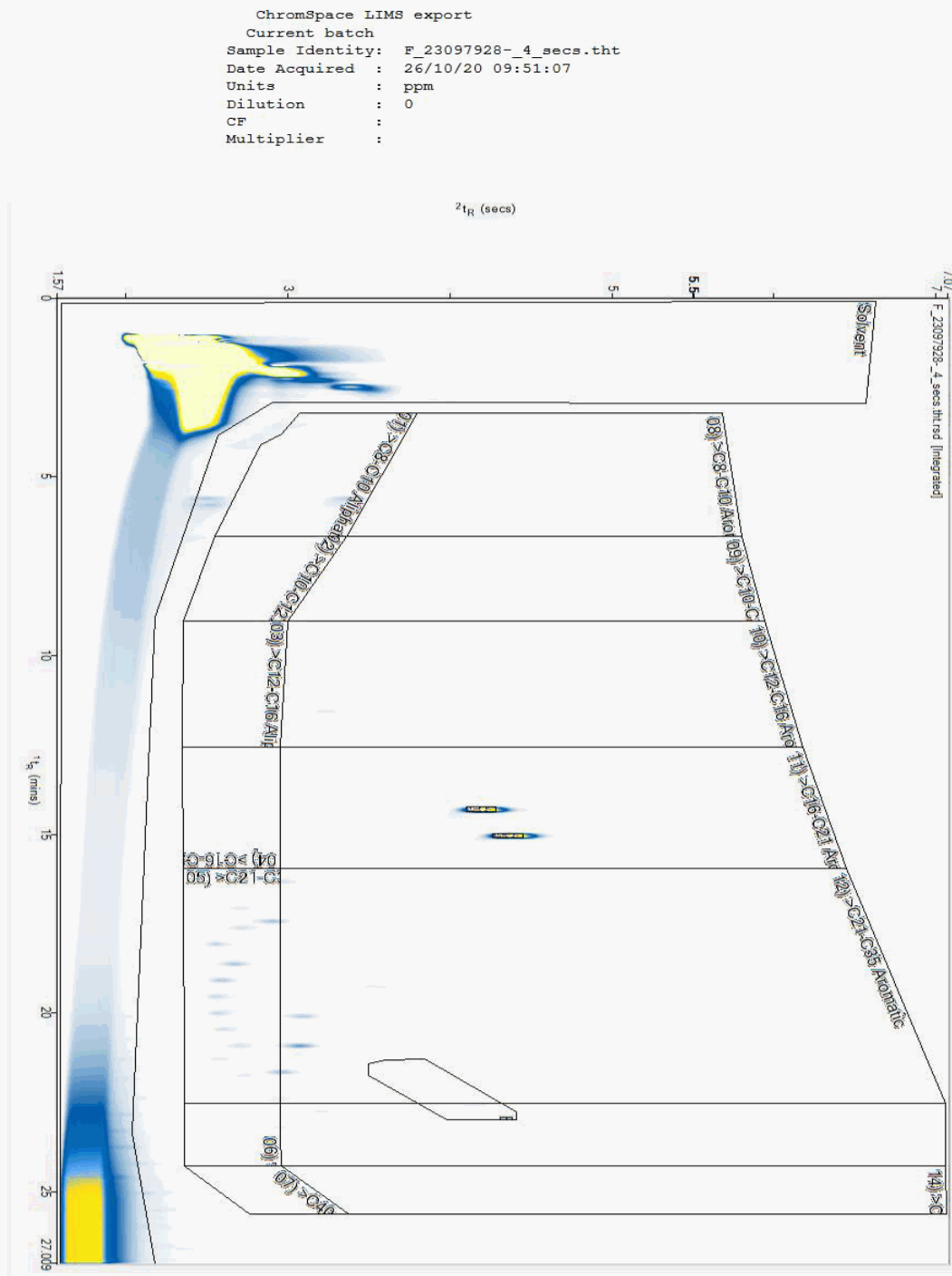
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23097928
Sample ID : TP010

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

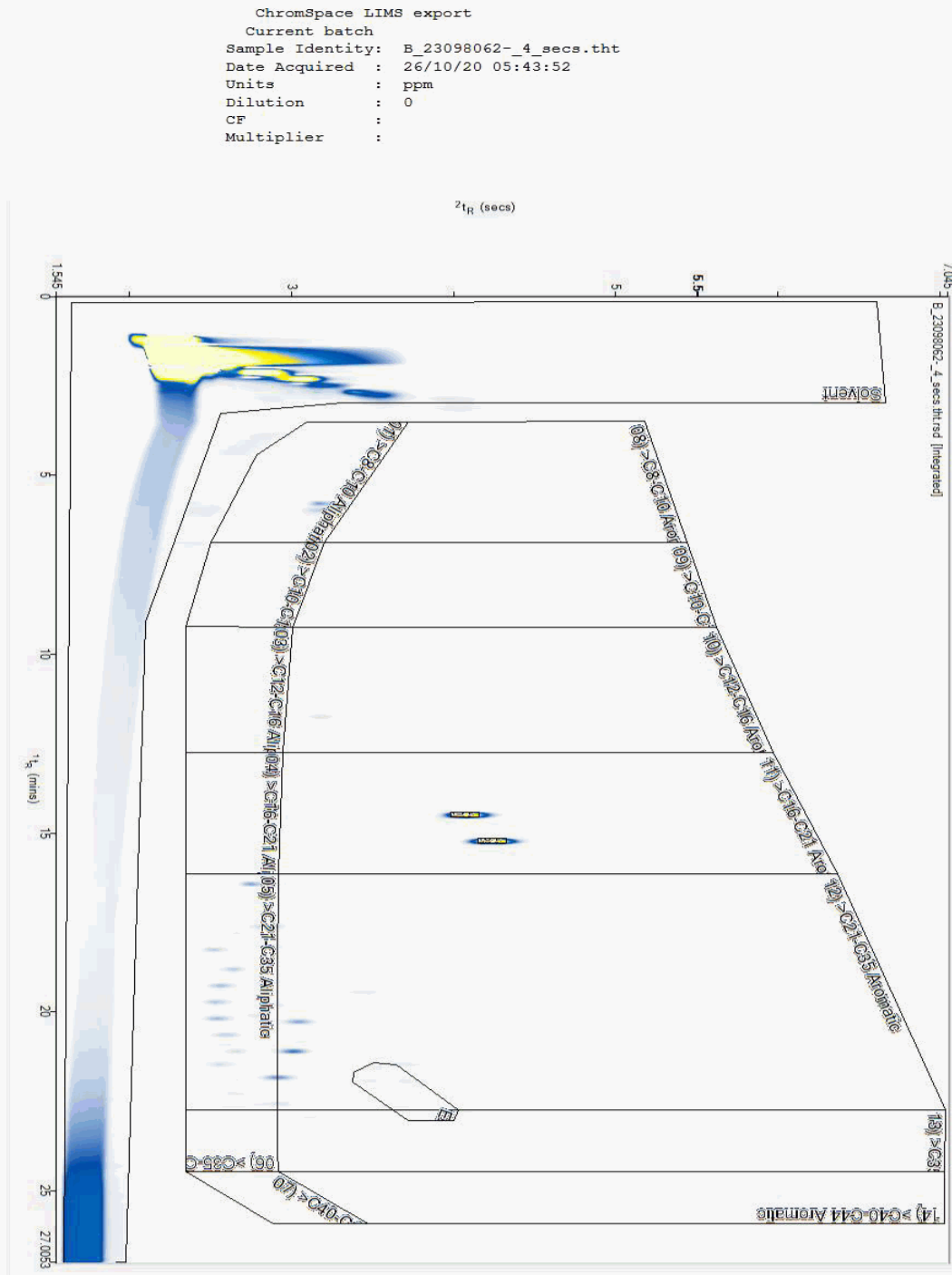
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098062
Sample ID : TP003

Depth : 0.50 - 0.60





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Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

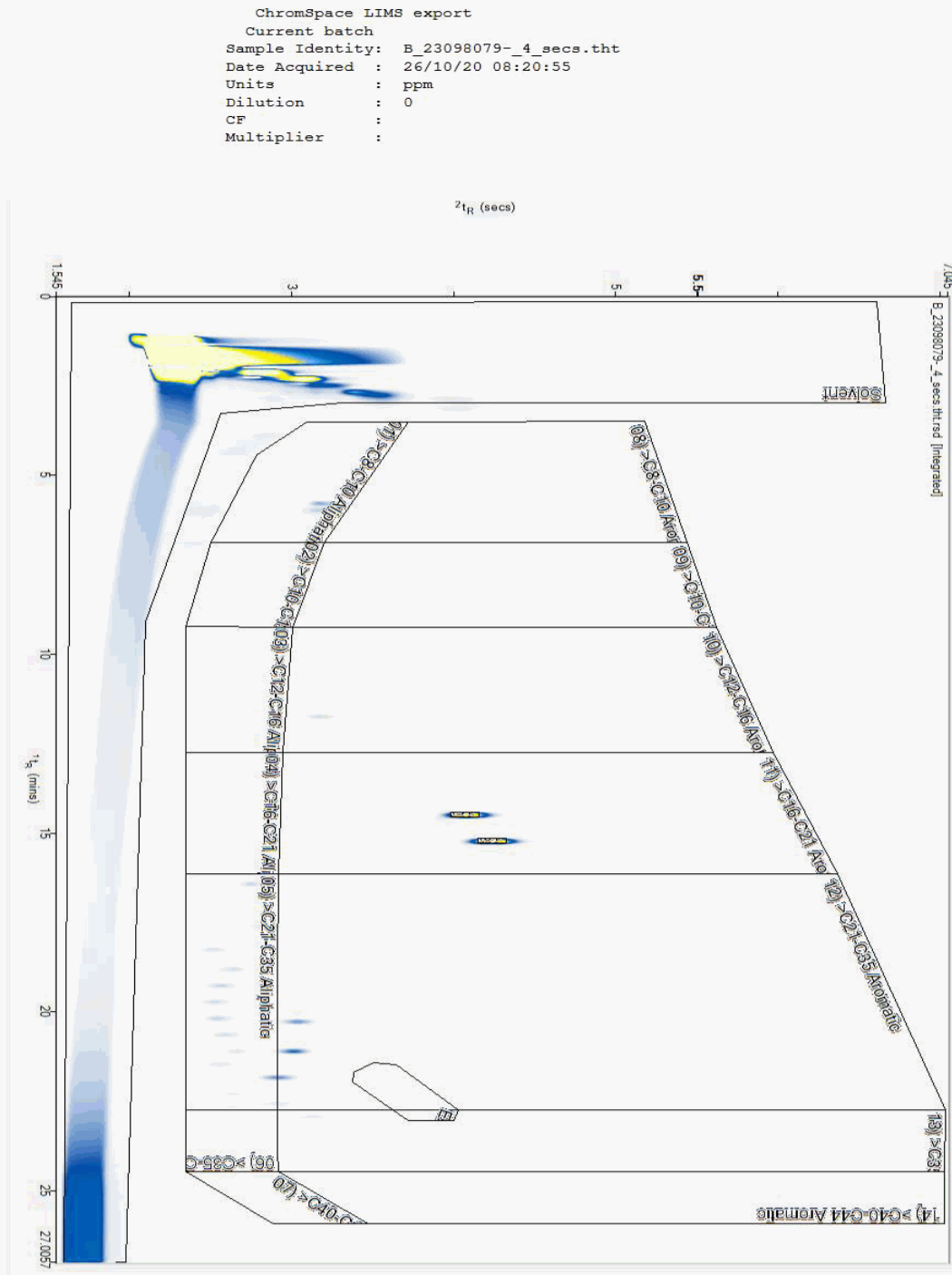
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098079
Sample ID : TP010

Depth : 0.40 - 0.50



SDG:	201021-100
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

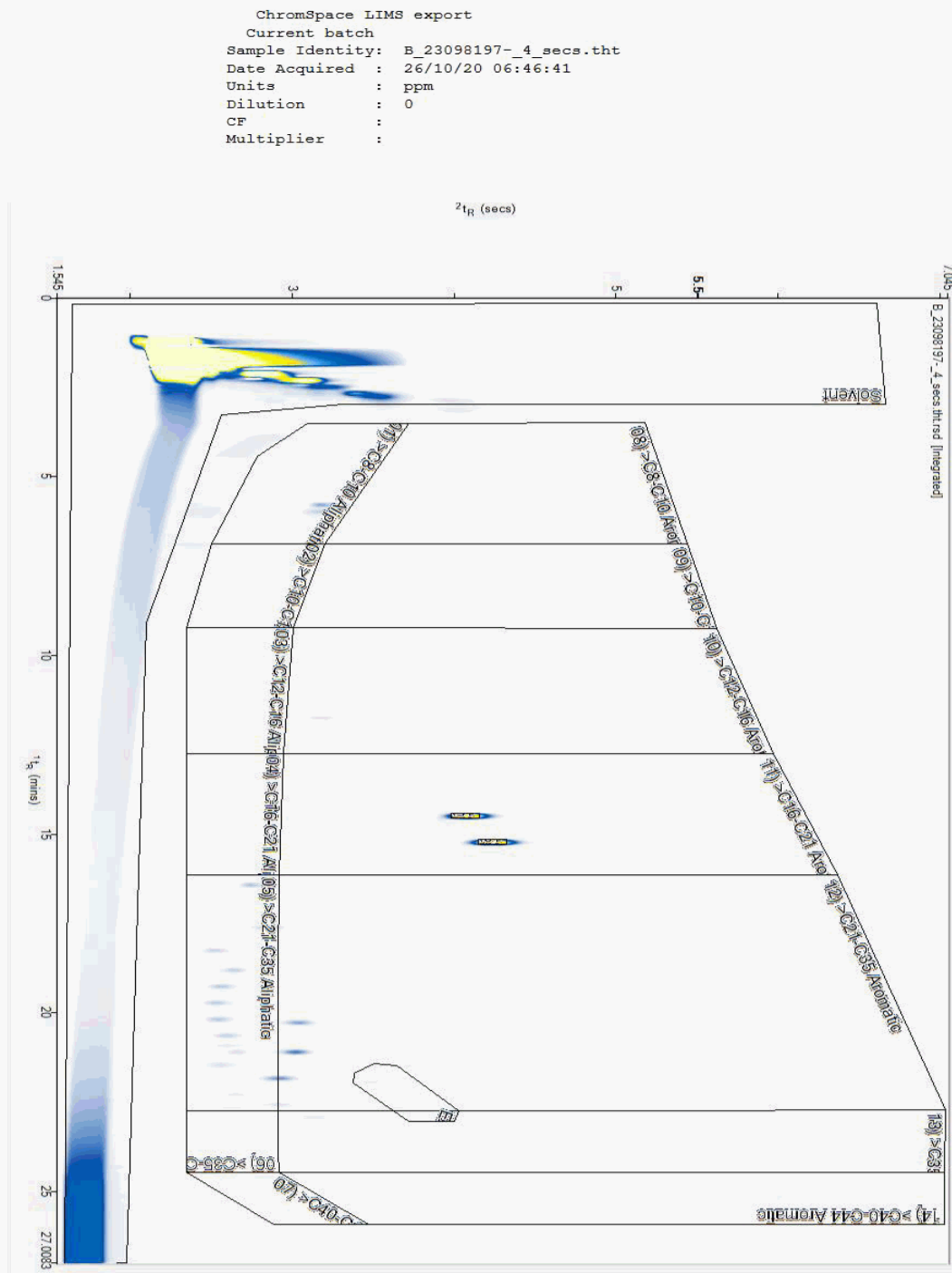
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098197
Sample ID : TP012

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

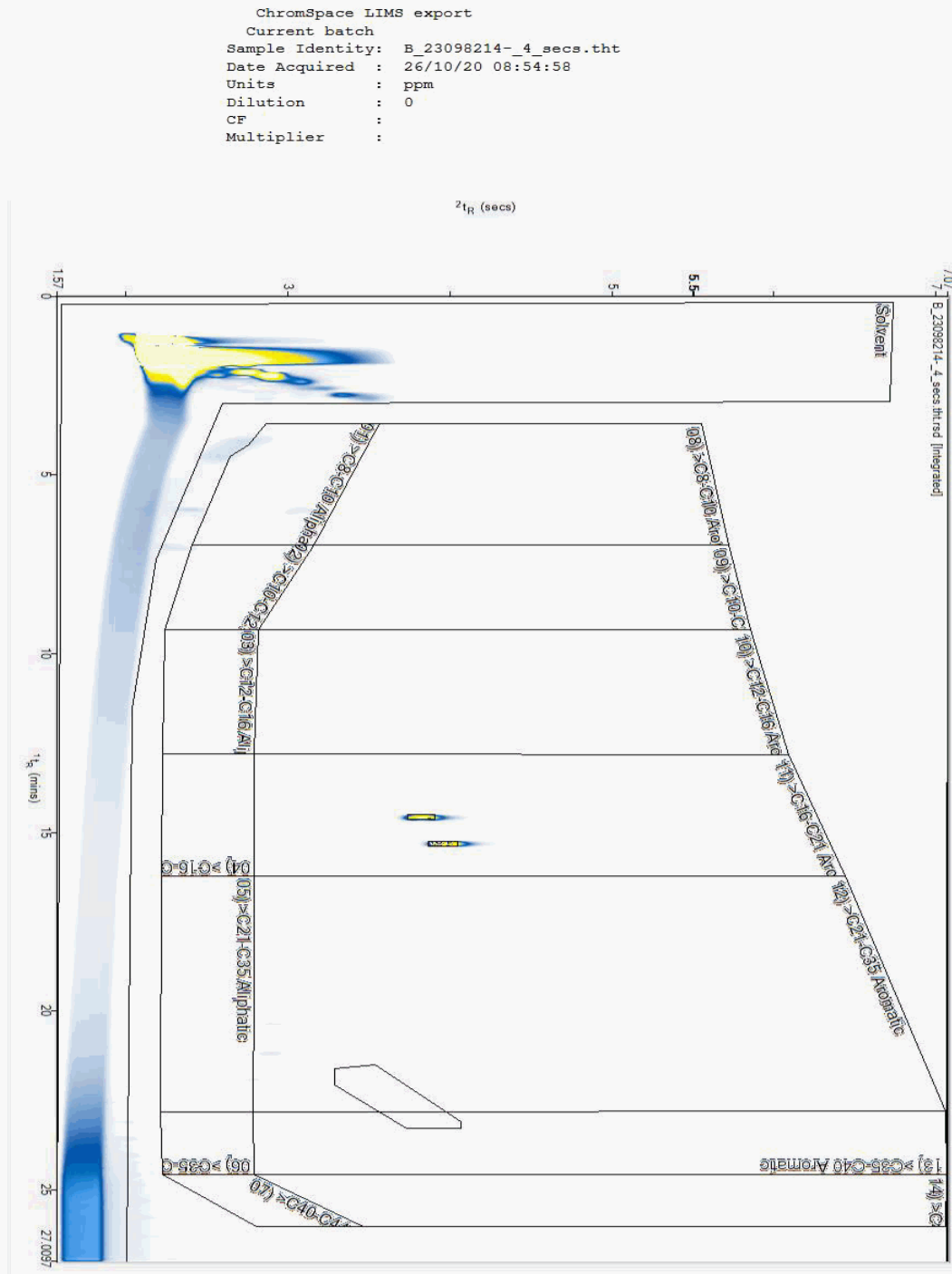
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098214
Sample ID : TP005

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

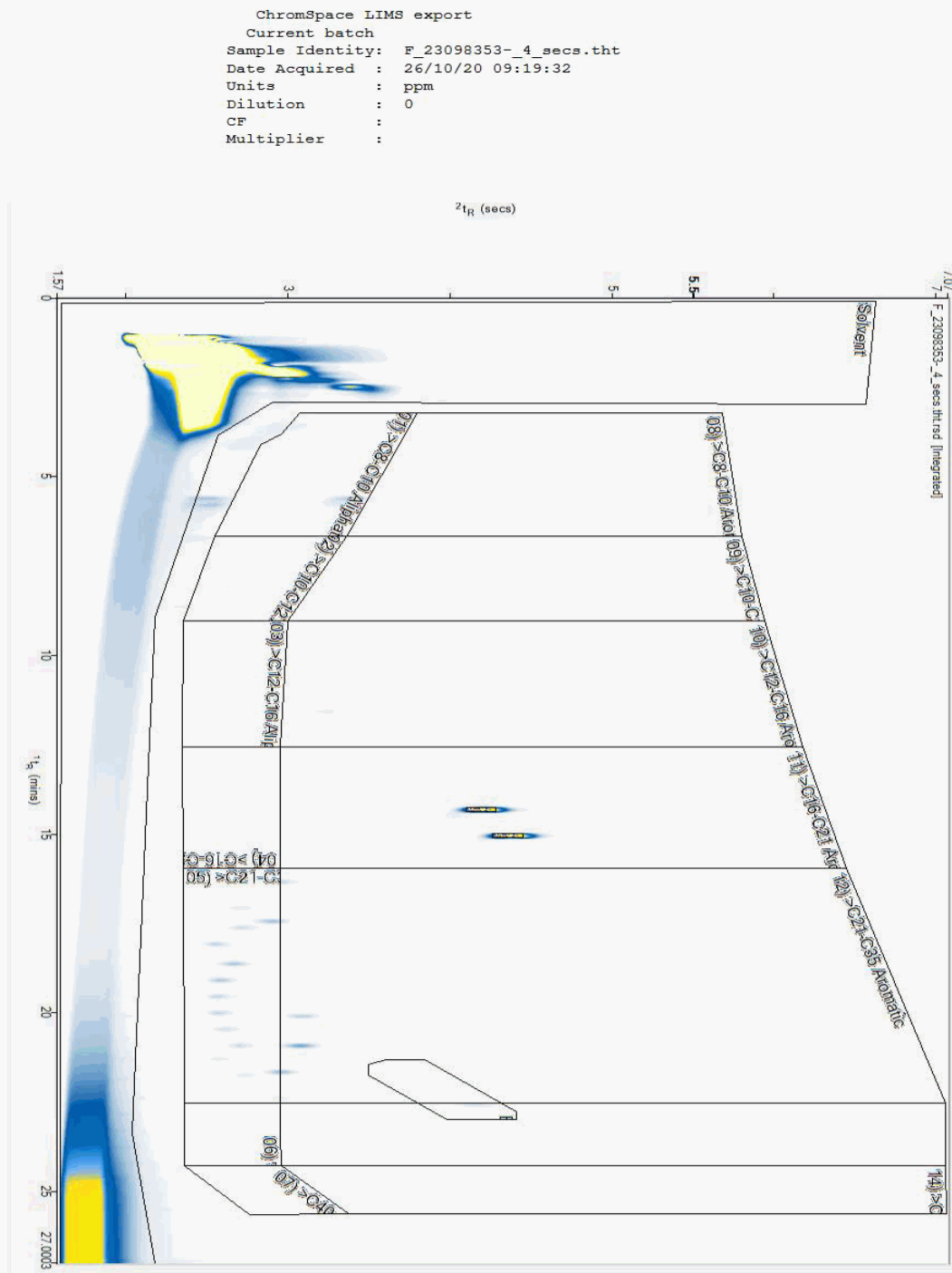
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098353
Sample ID : TP003

Depth : 1.50 - 1.60



SDG:	201021-100
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

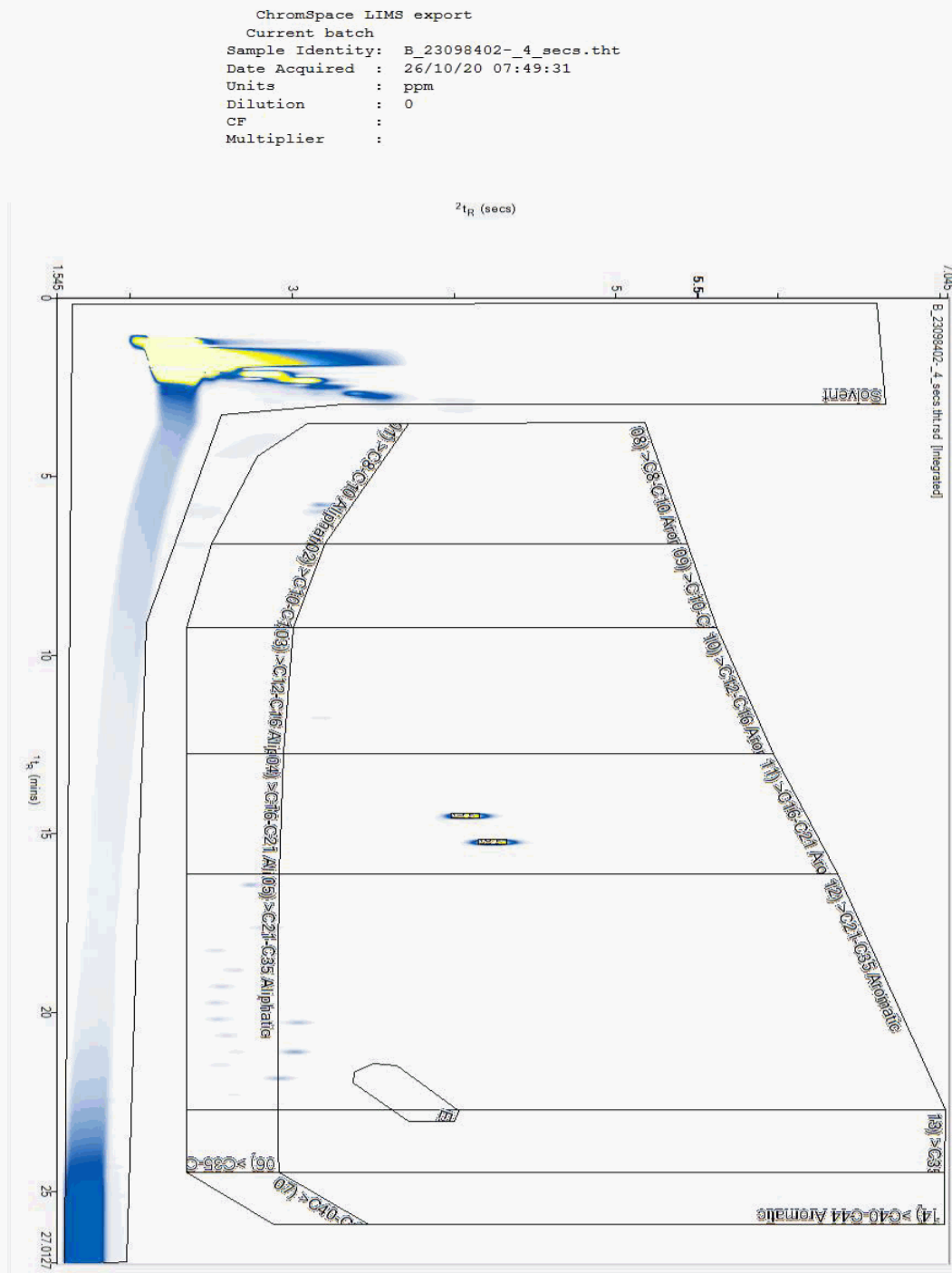
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098402
Sample ID : TP201

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

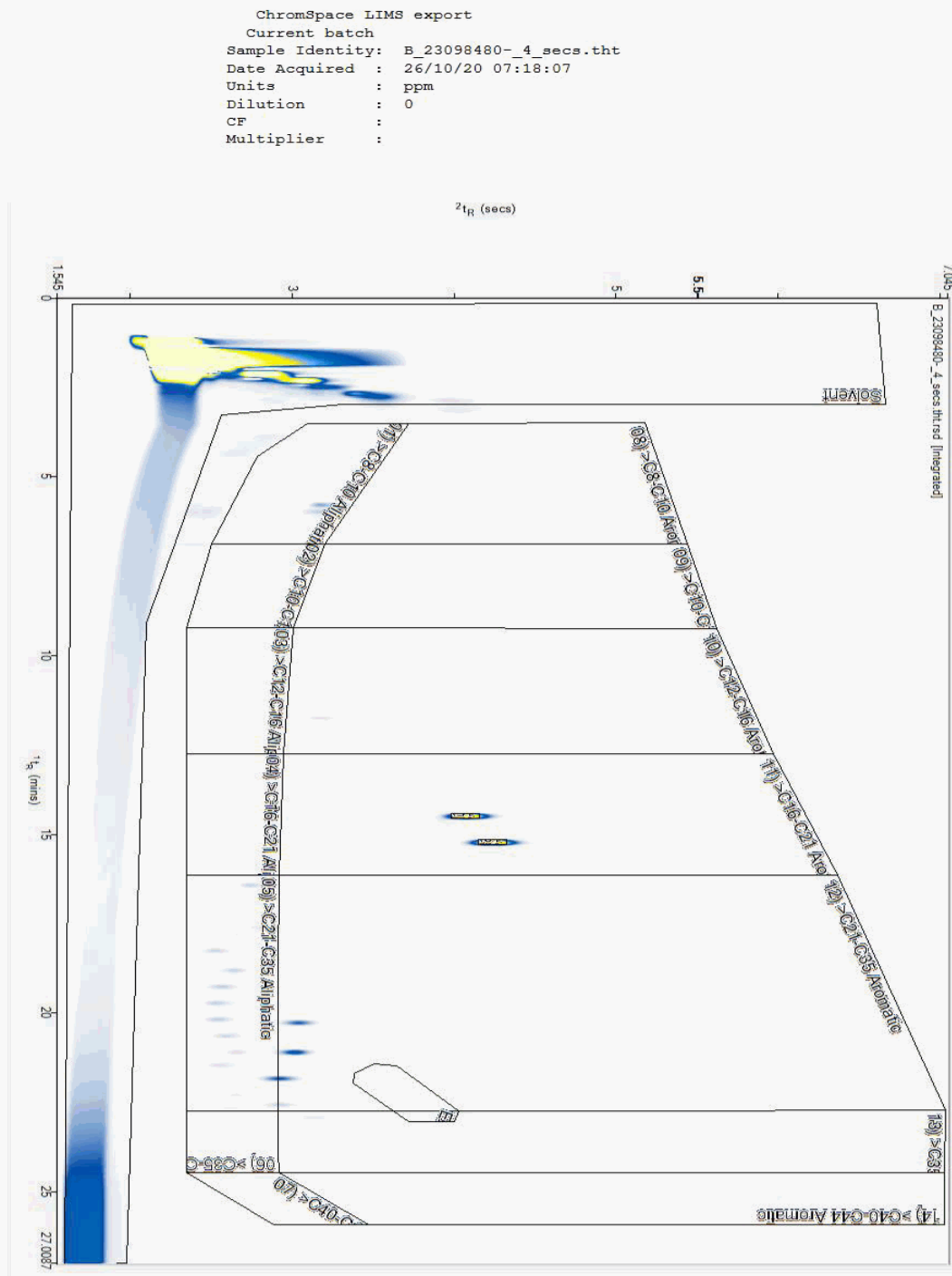
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098480
Sample ID : TP012

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

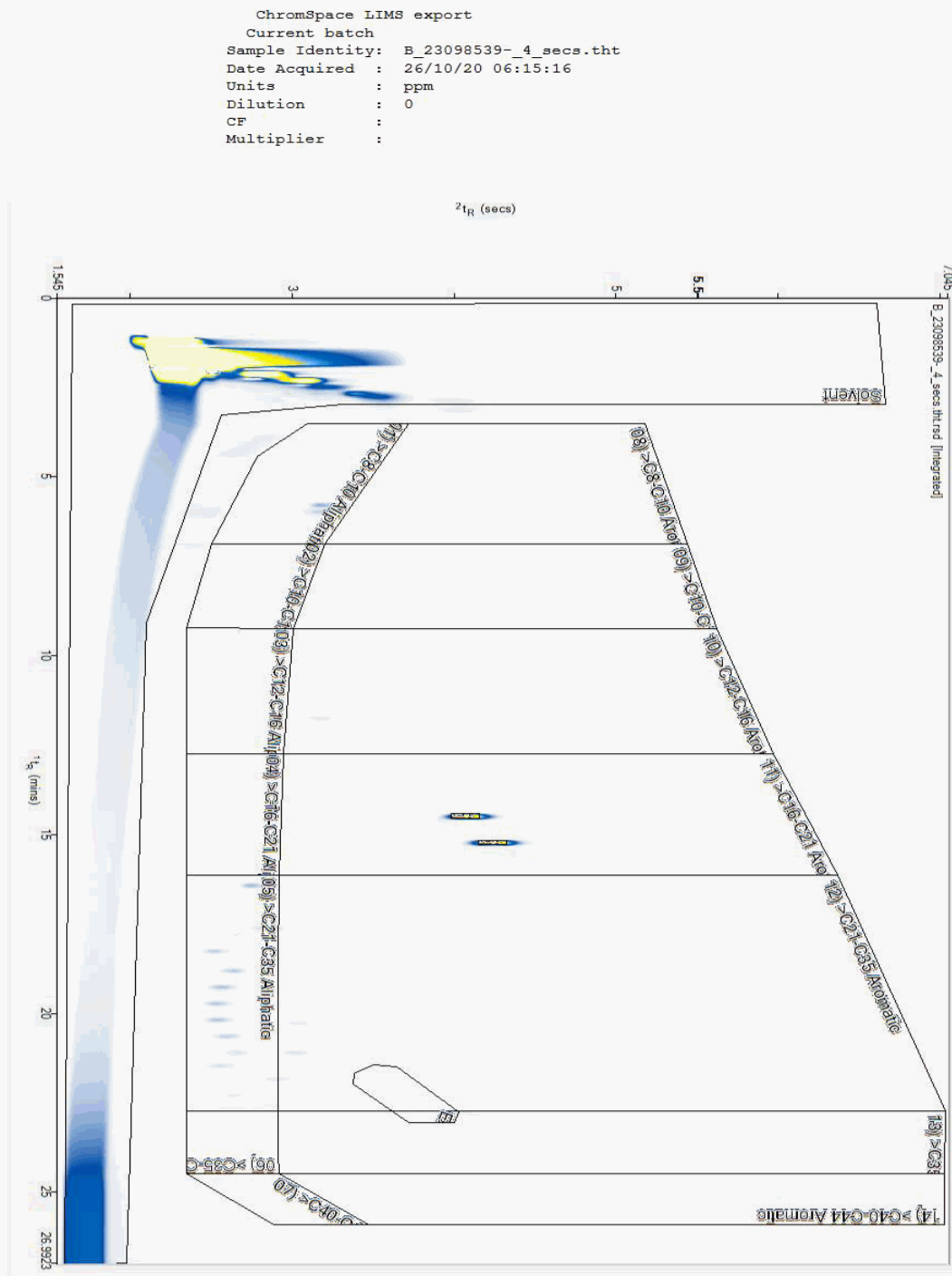
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098539
Sample ID : TP201

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

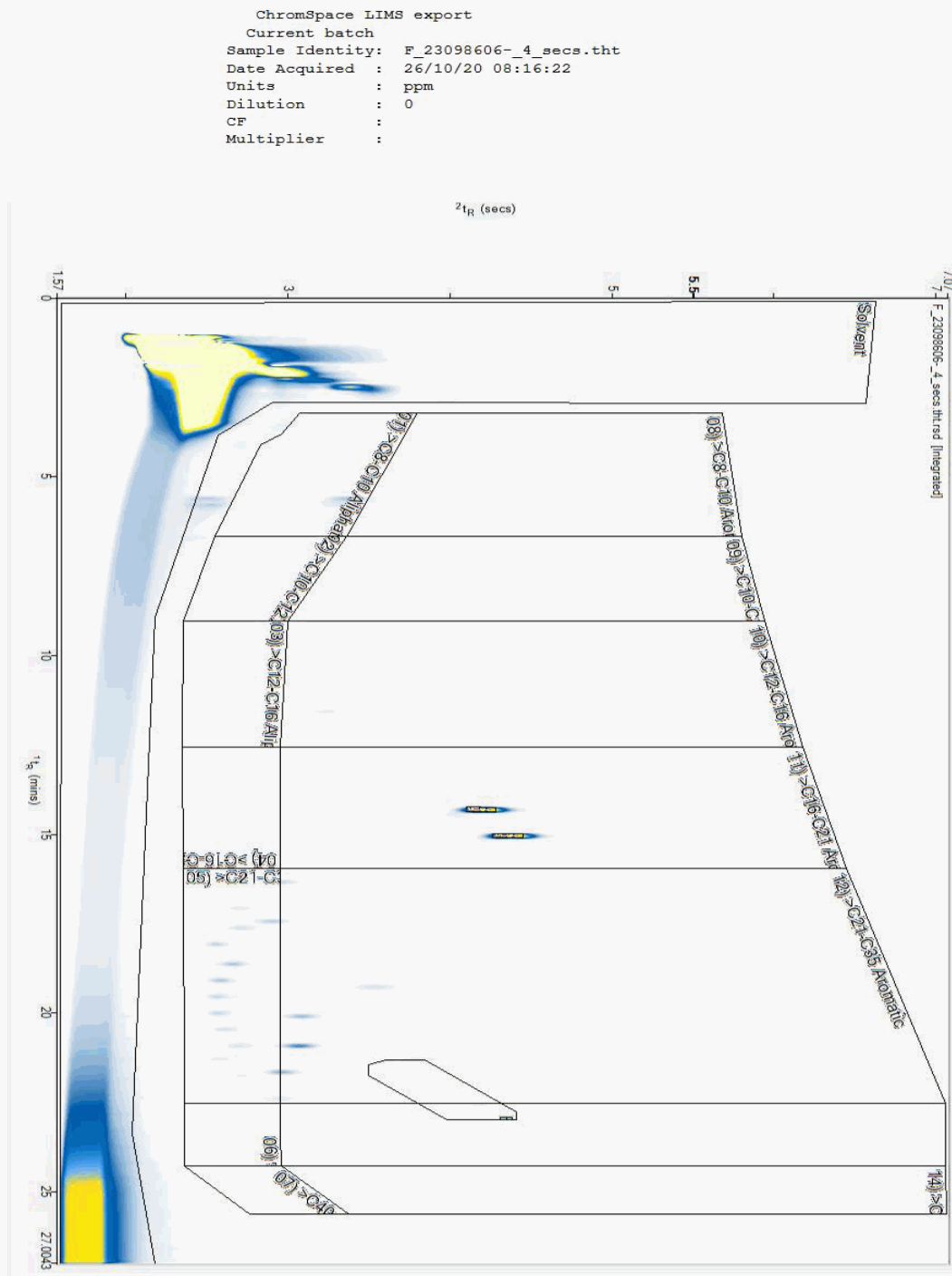
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23098606
Sample ID : TP011

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

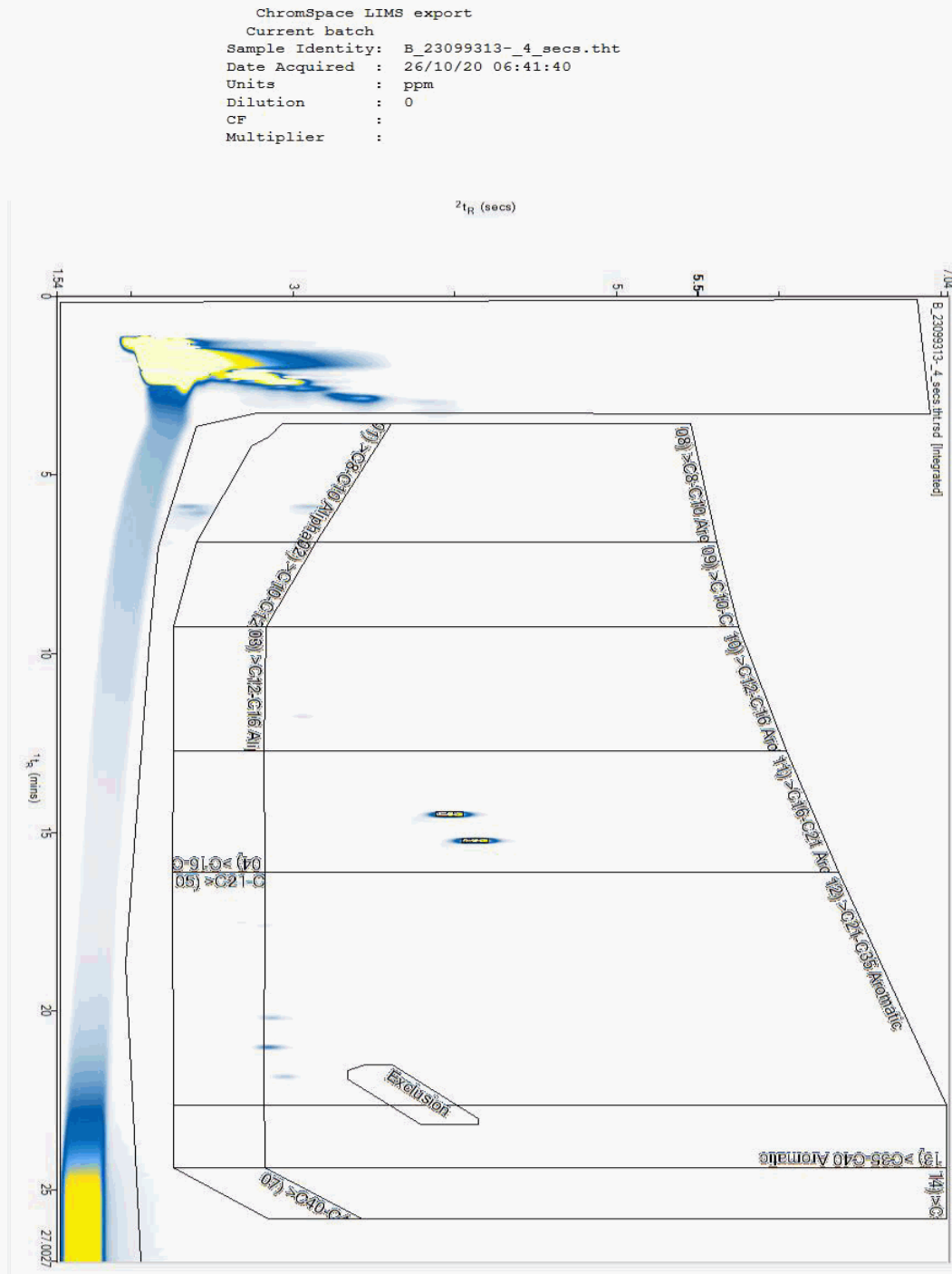
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23099313
Sample ID : TP005

Depth : 0.40 - 0.50



SDG:	201021-100
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

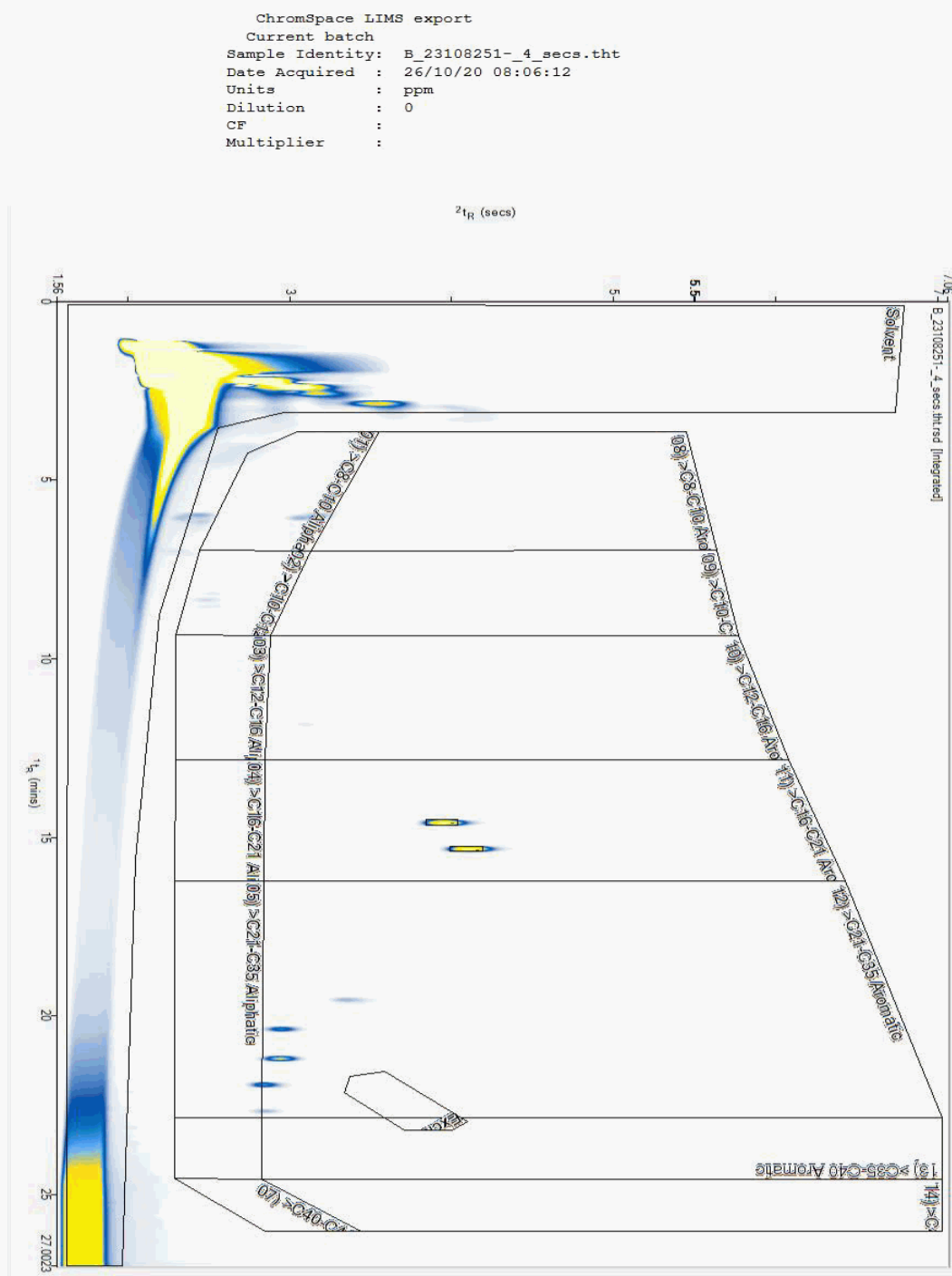
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23108251
Sample ID : TP011

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

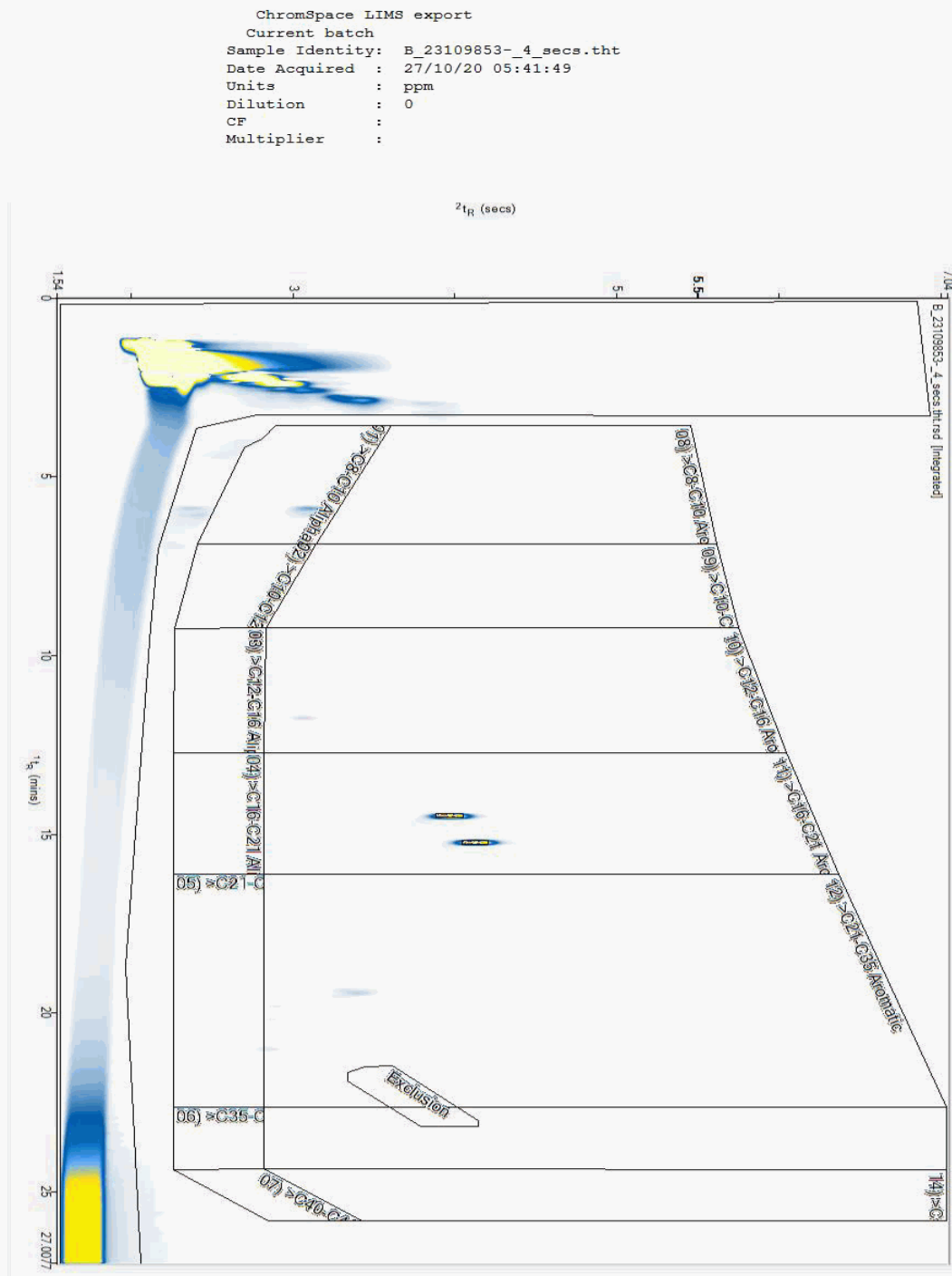
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23109853
Sample ID : TP006

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

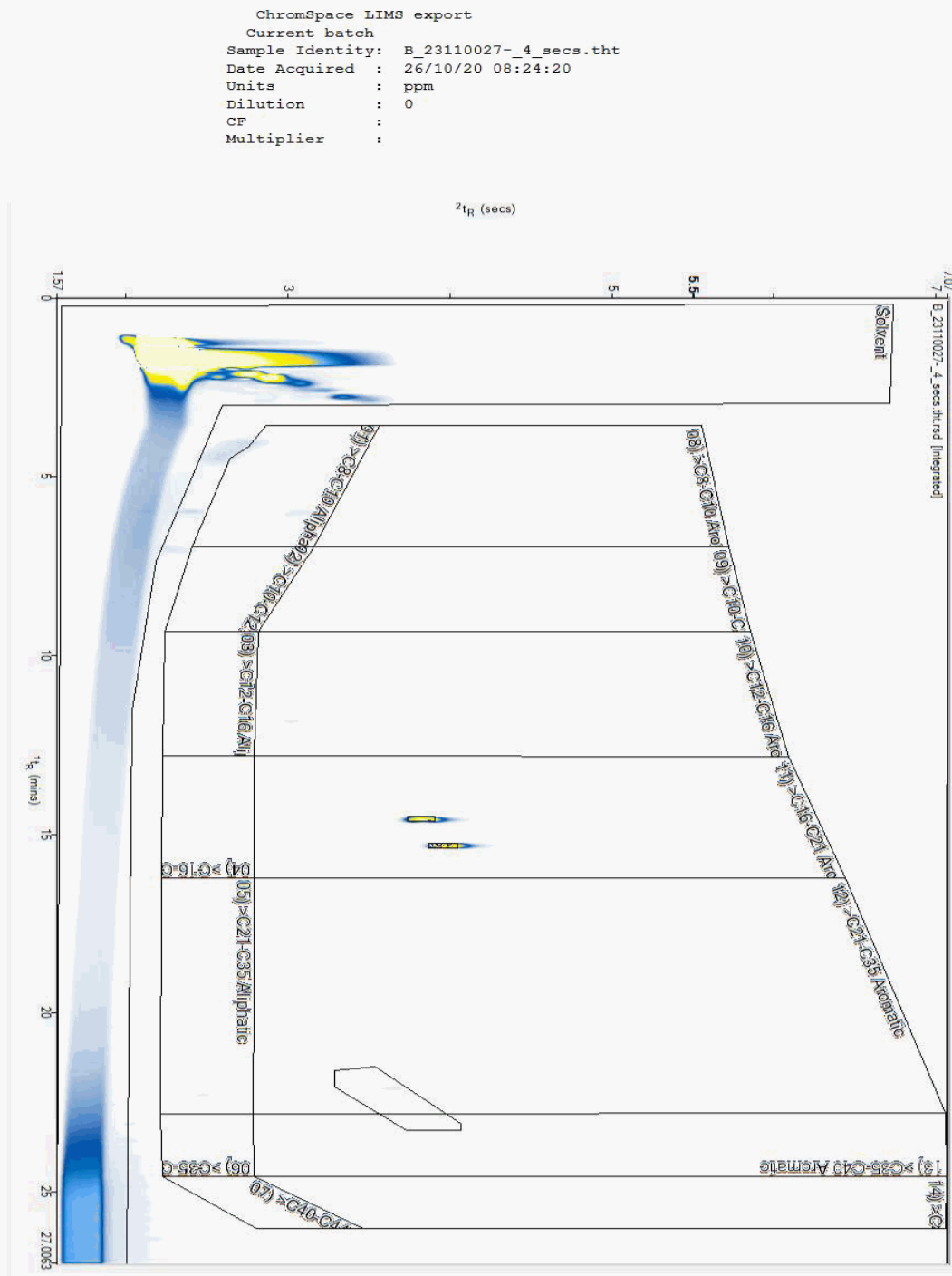
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23110027
Sample ID : TP006

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

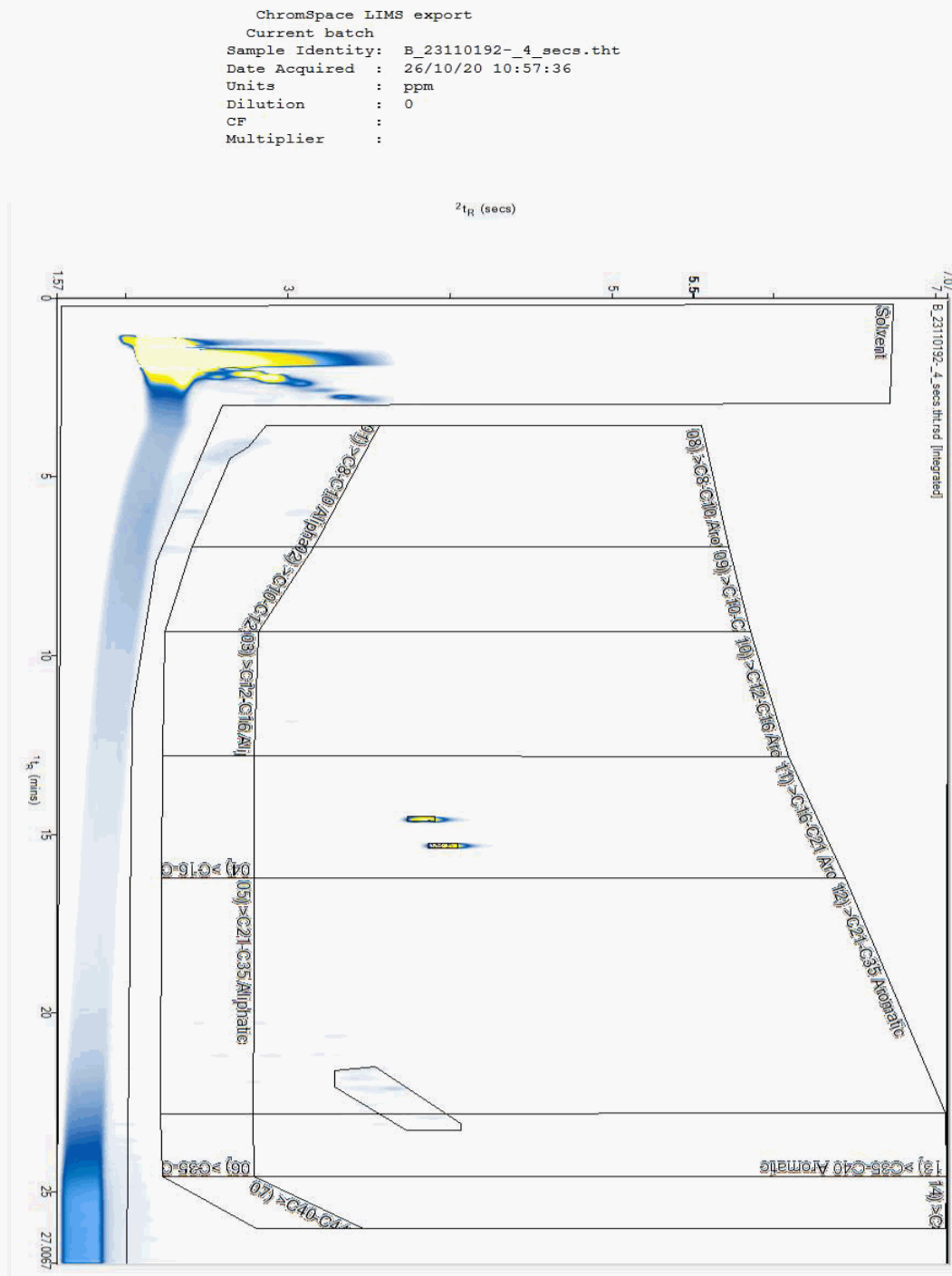
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23110192
Sample ID : TP004

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

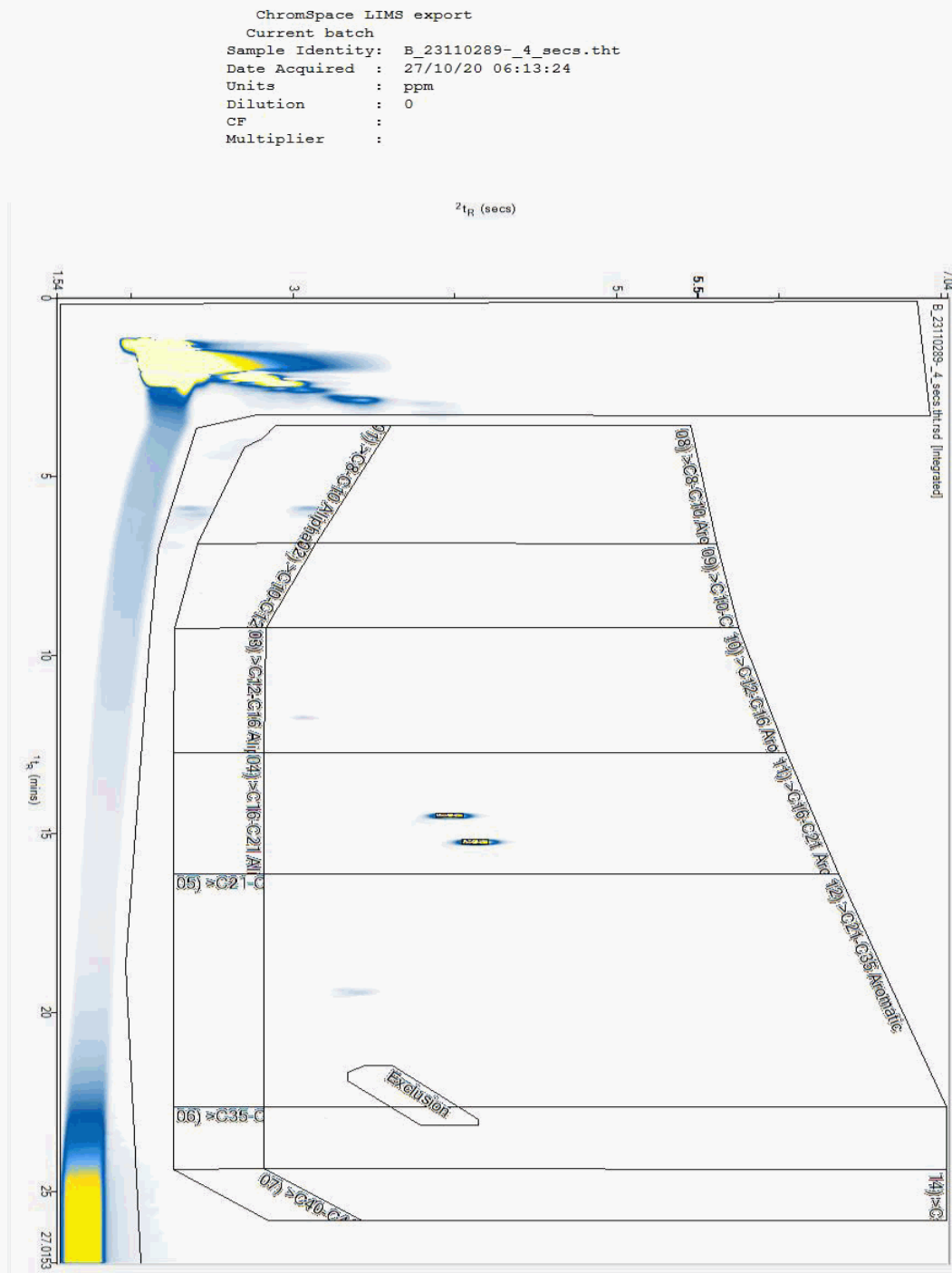
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23110289
Sample ID : TP004

Depth : 1.40 - 1.50



SDG:	201021-100
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

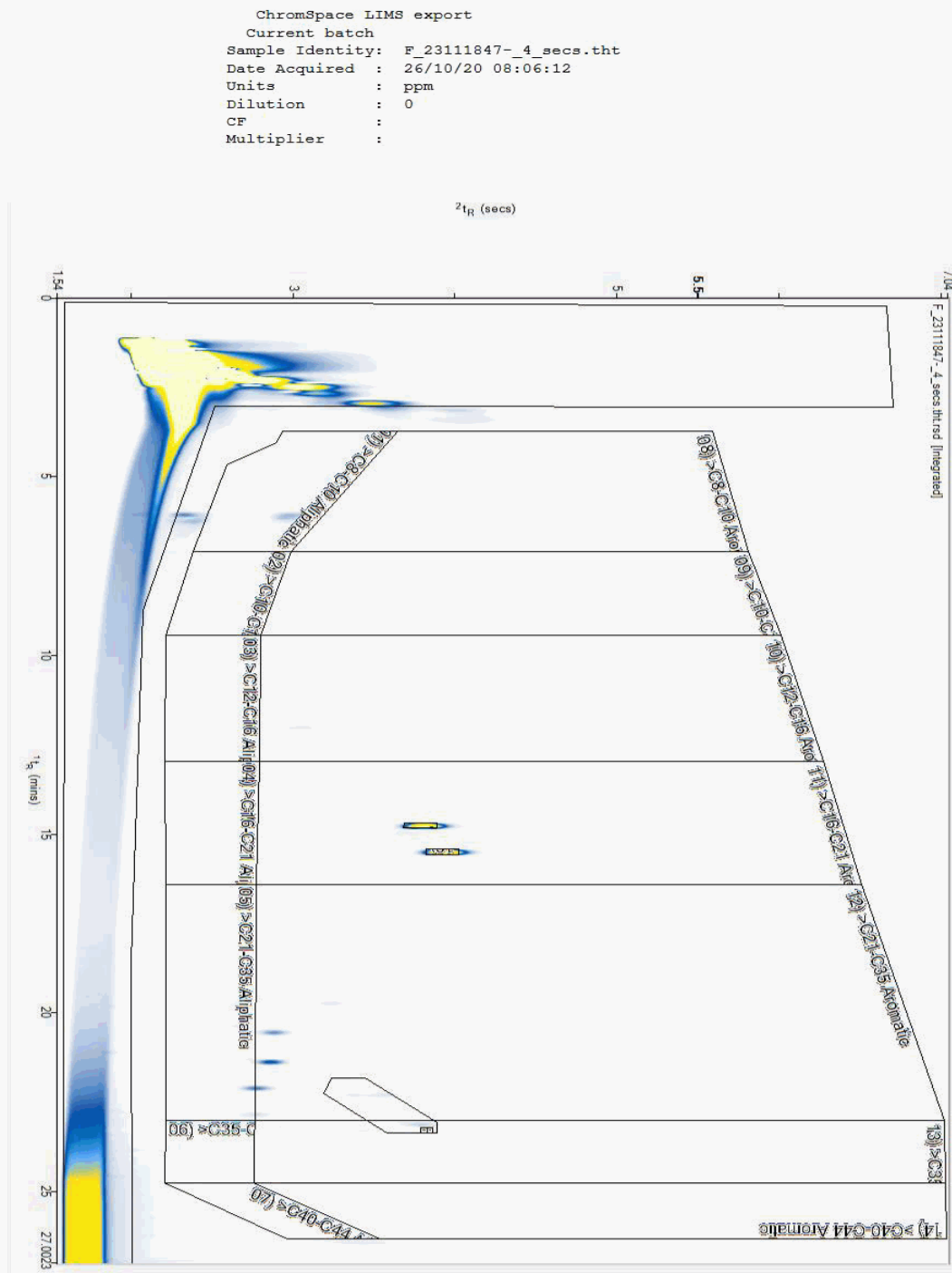
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23111847
Sample ID : TP001

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

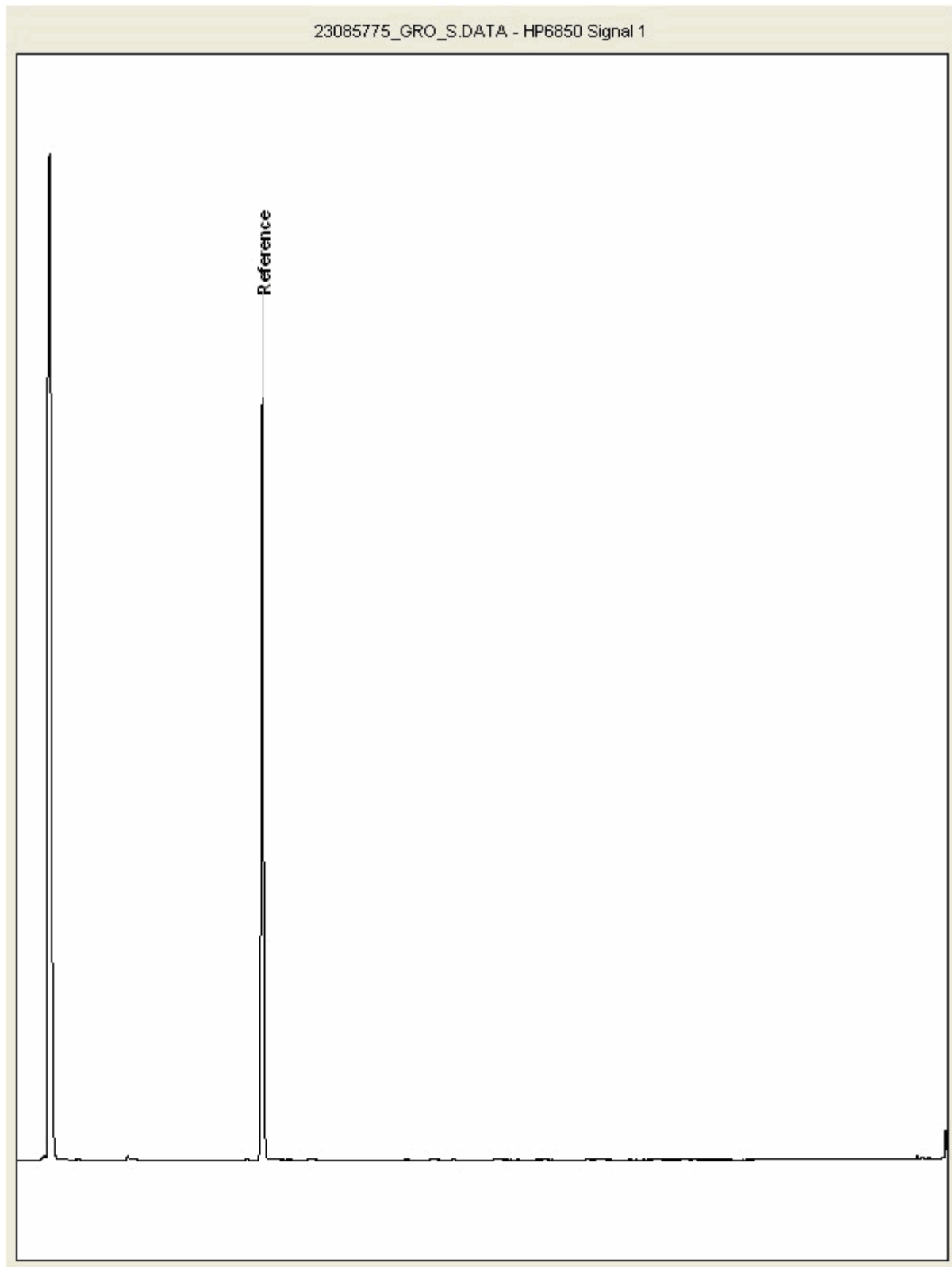
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23085775
Sample ID : TP201

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

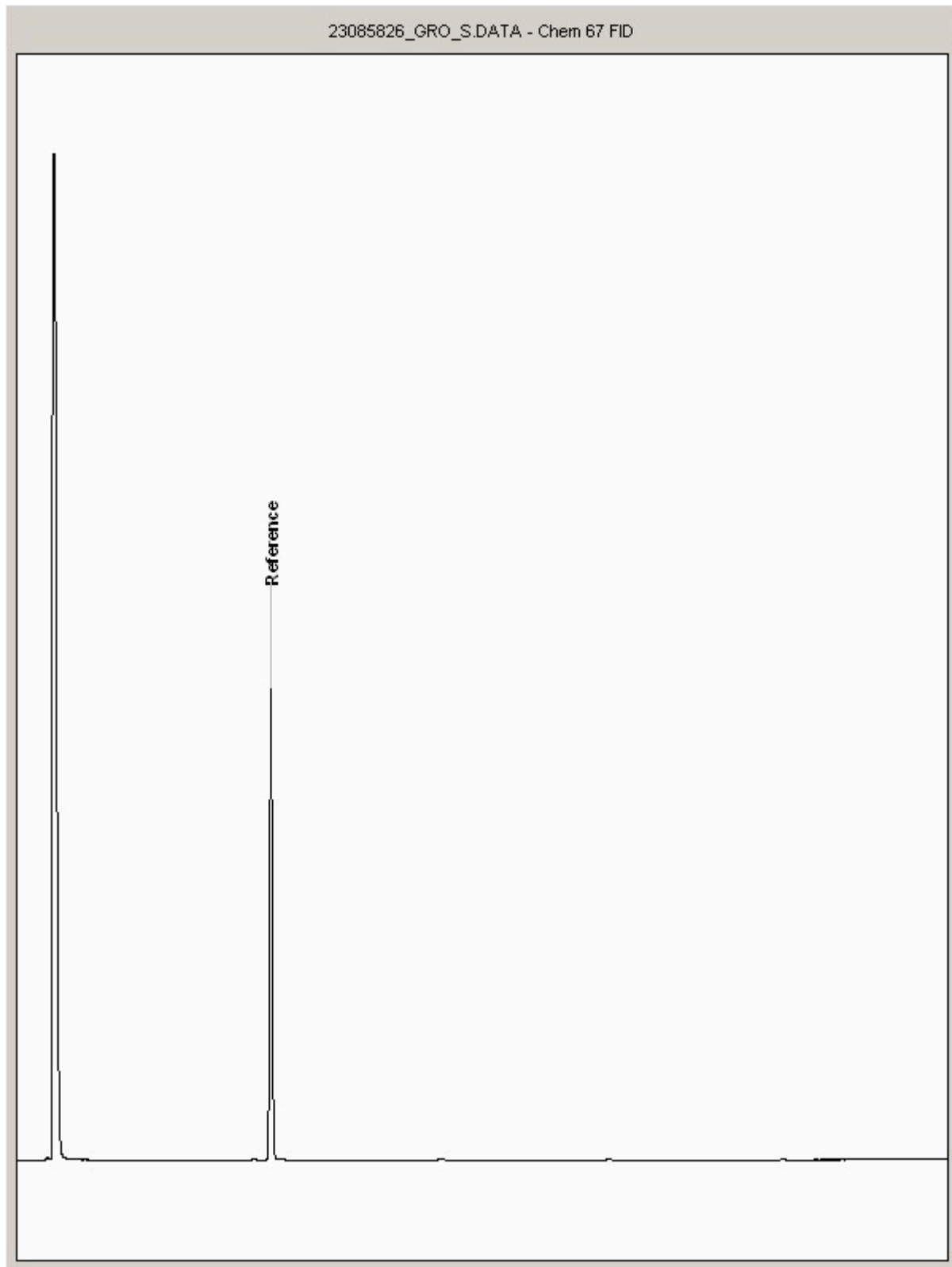
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23085826
Sample ID : TP201

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

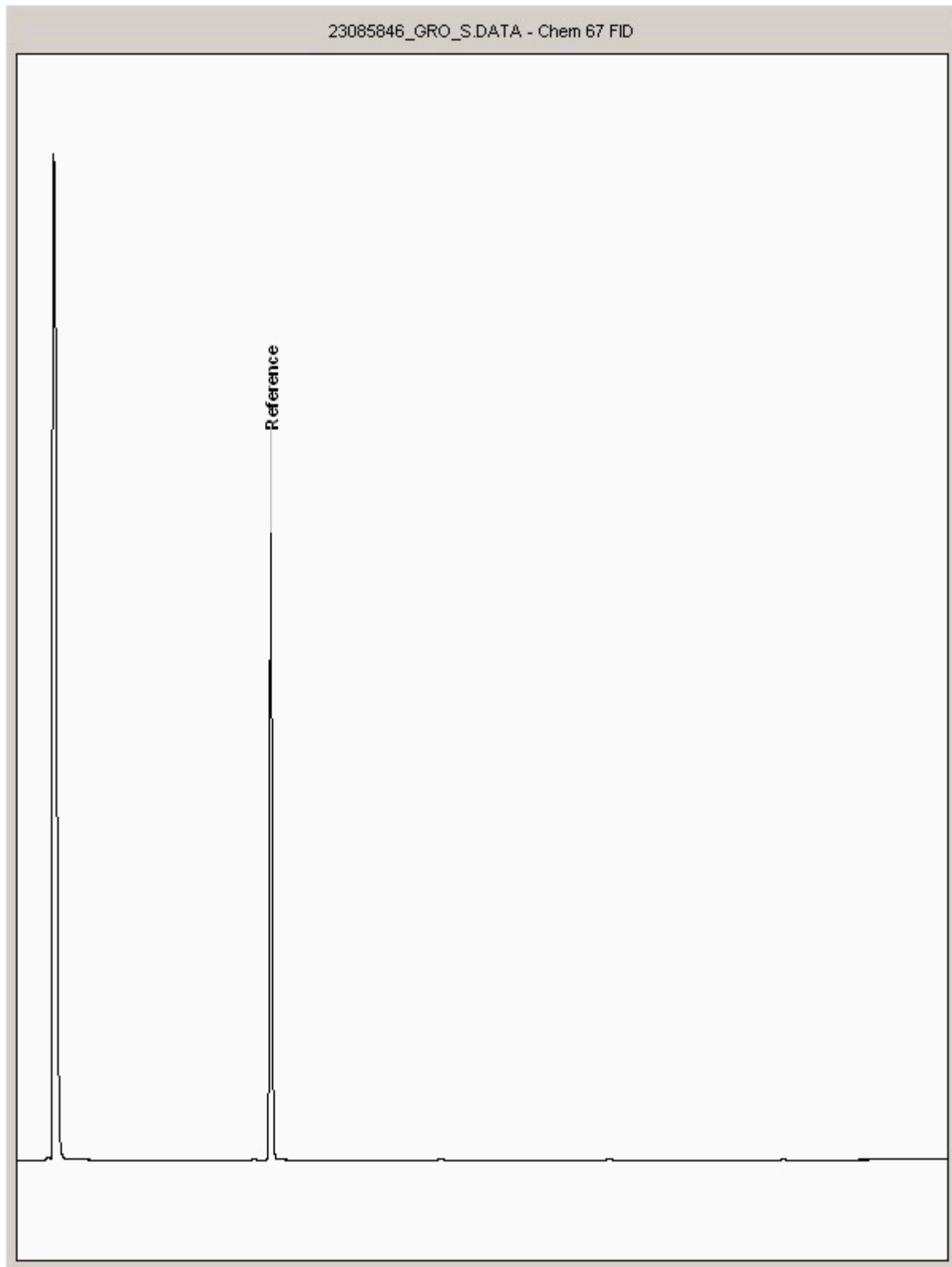
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23085846
Sample ID : TP005

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

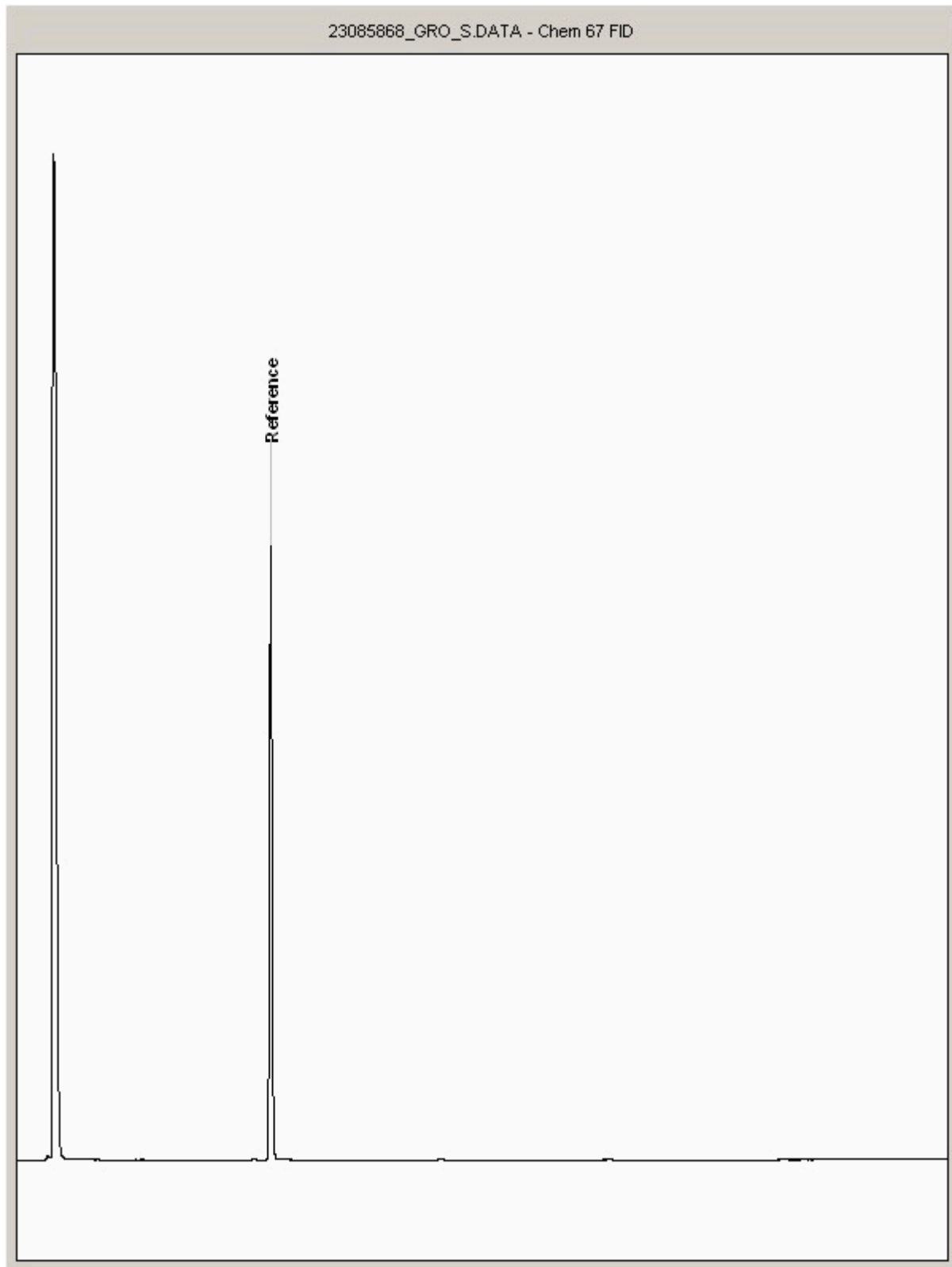
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23085868
Sample ID : TP002

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

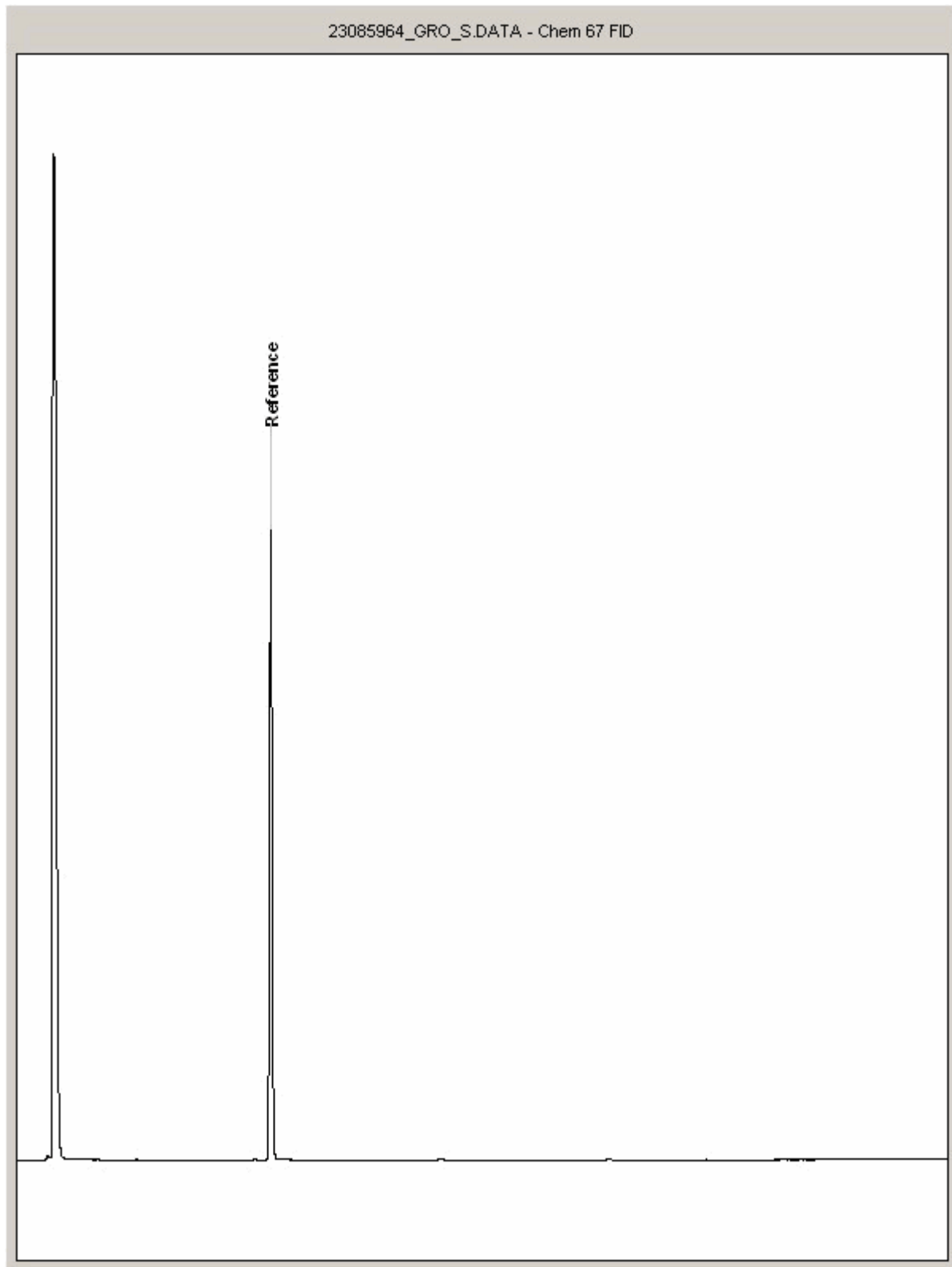
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23085964
Sample ID : TP005

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

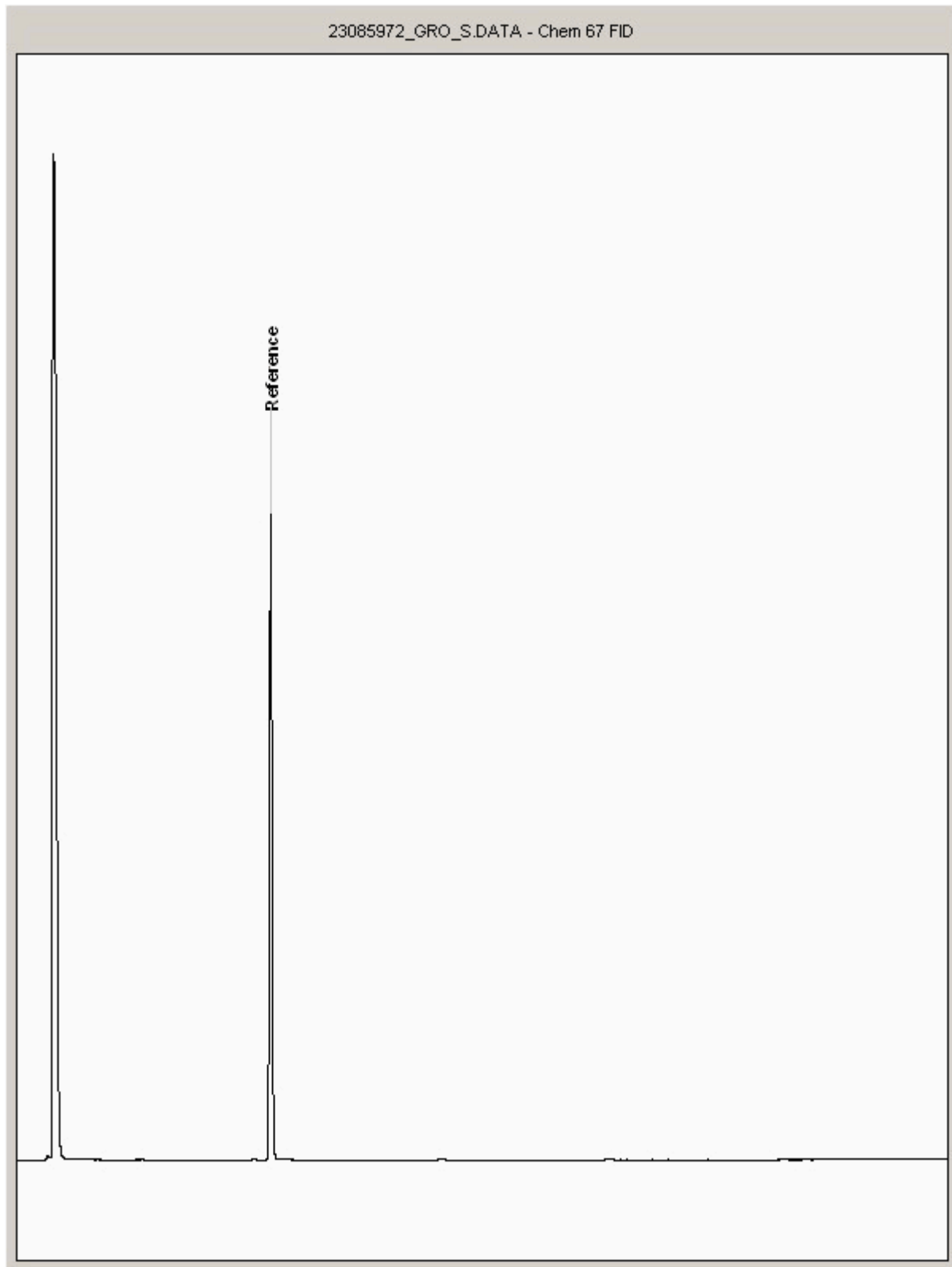
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23085972
Sample ID : TP004

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

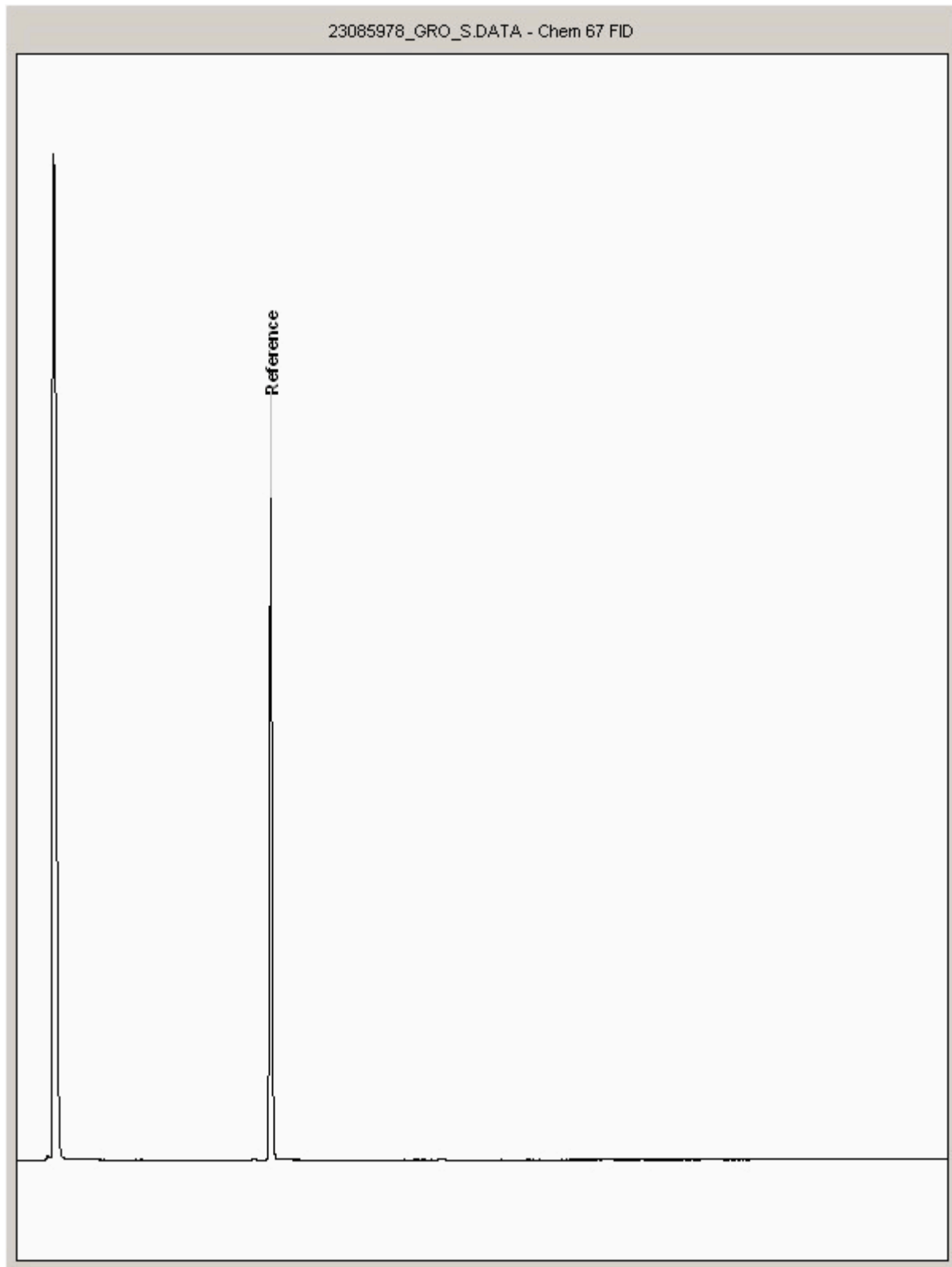
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23085978
Sample ID : TP004

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

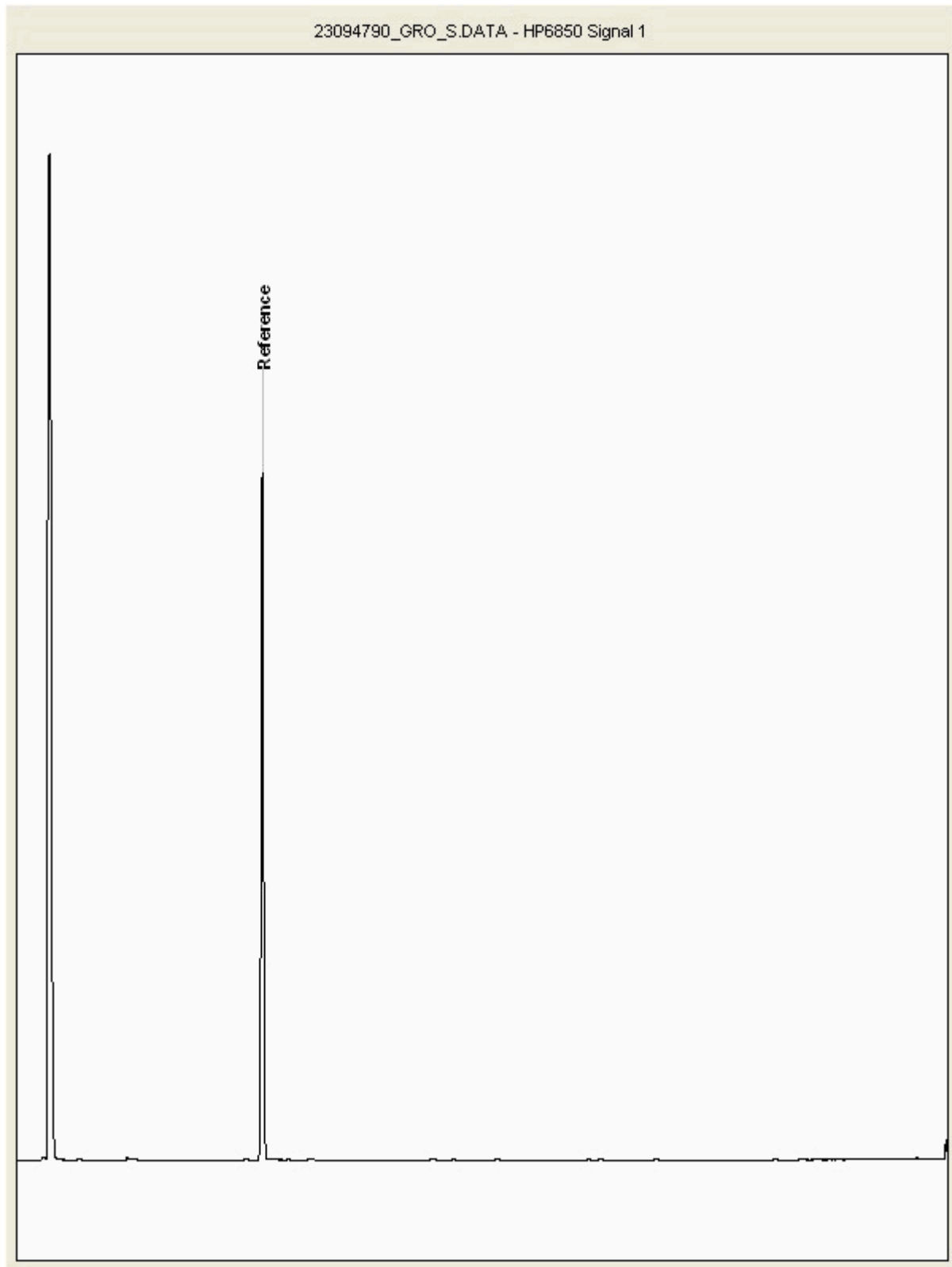
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23094790
Sample ID : TP011

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

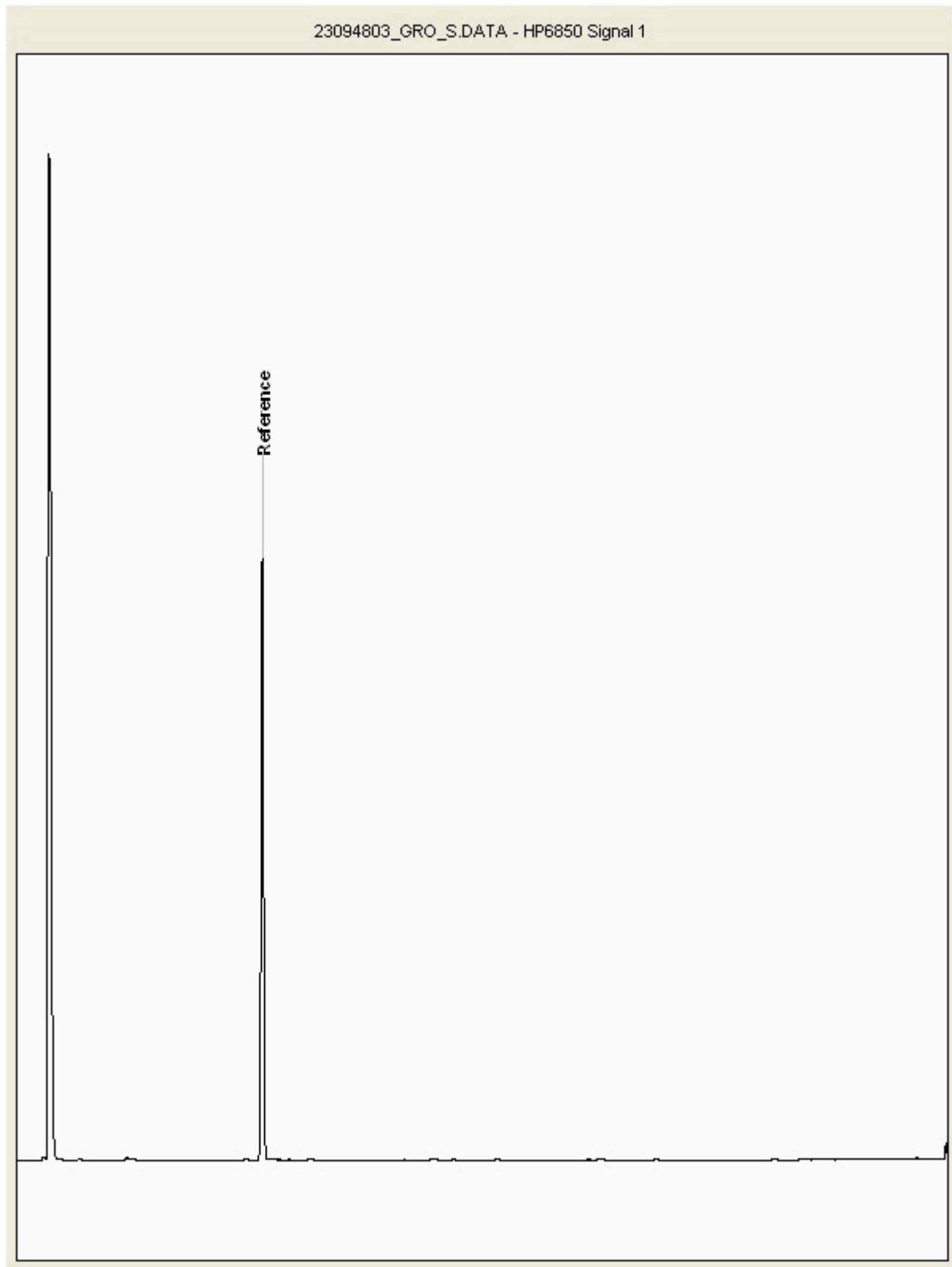
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23094803
Sample ID : TP010

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

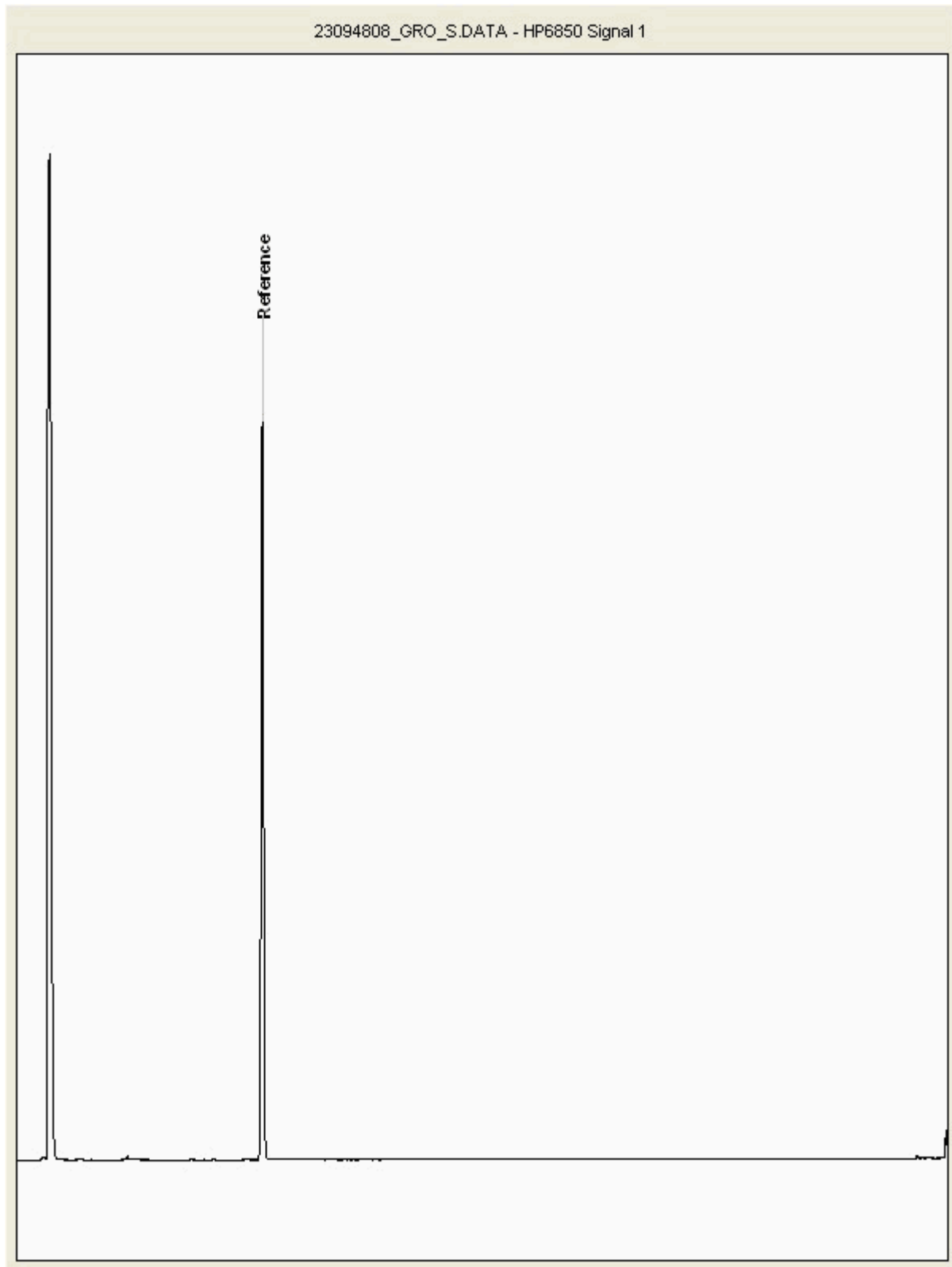
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23094808
Sample ID : TP003

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

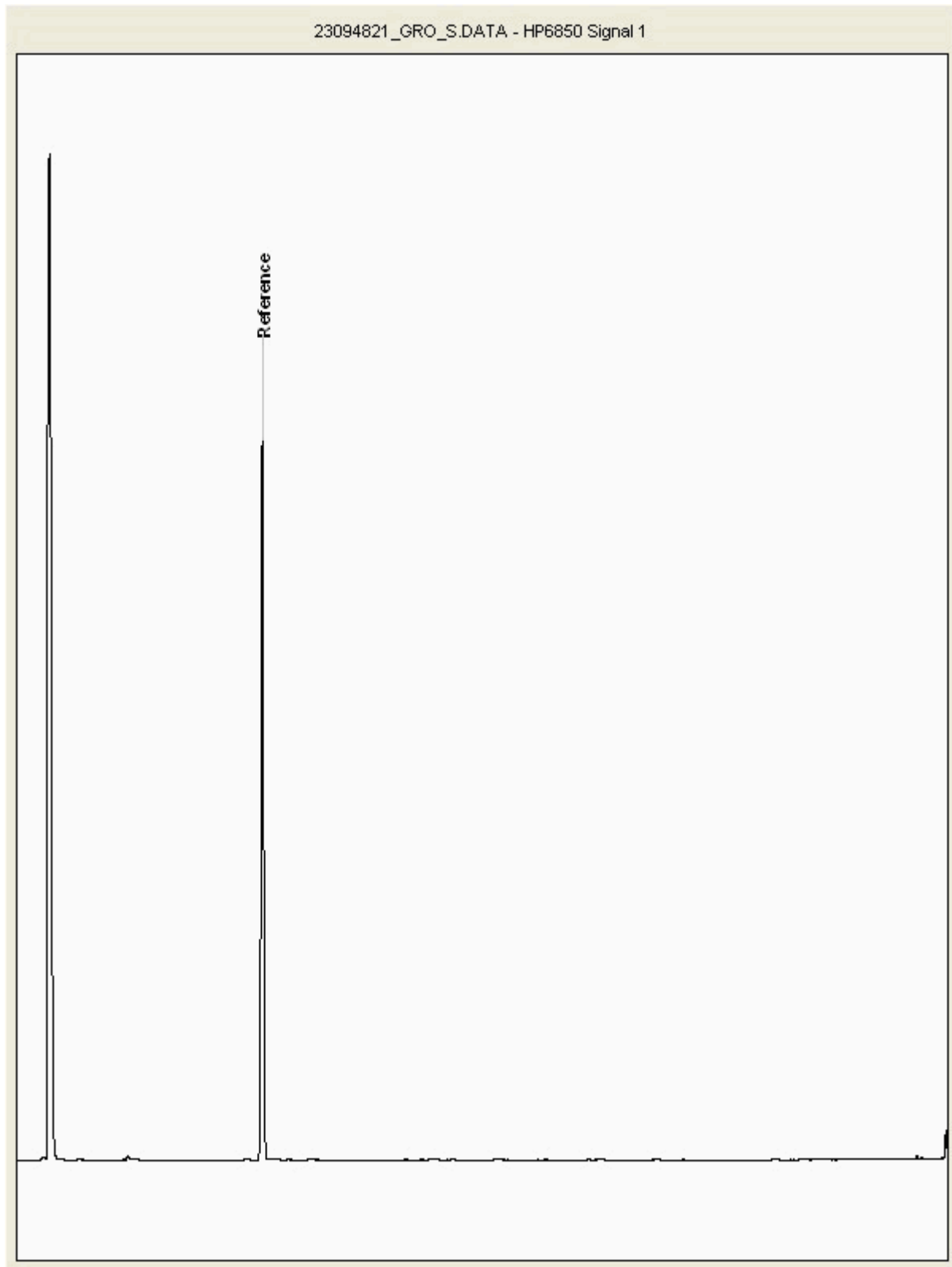
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23094821
Sample ID : TP011

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

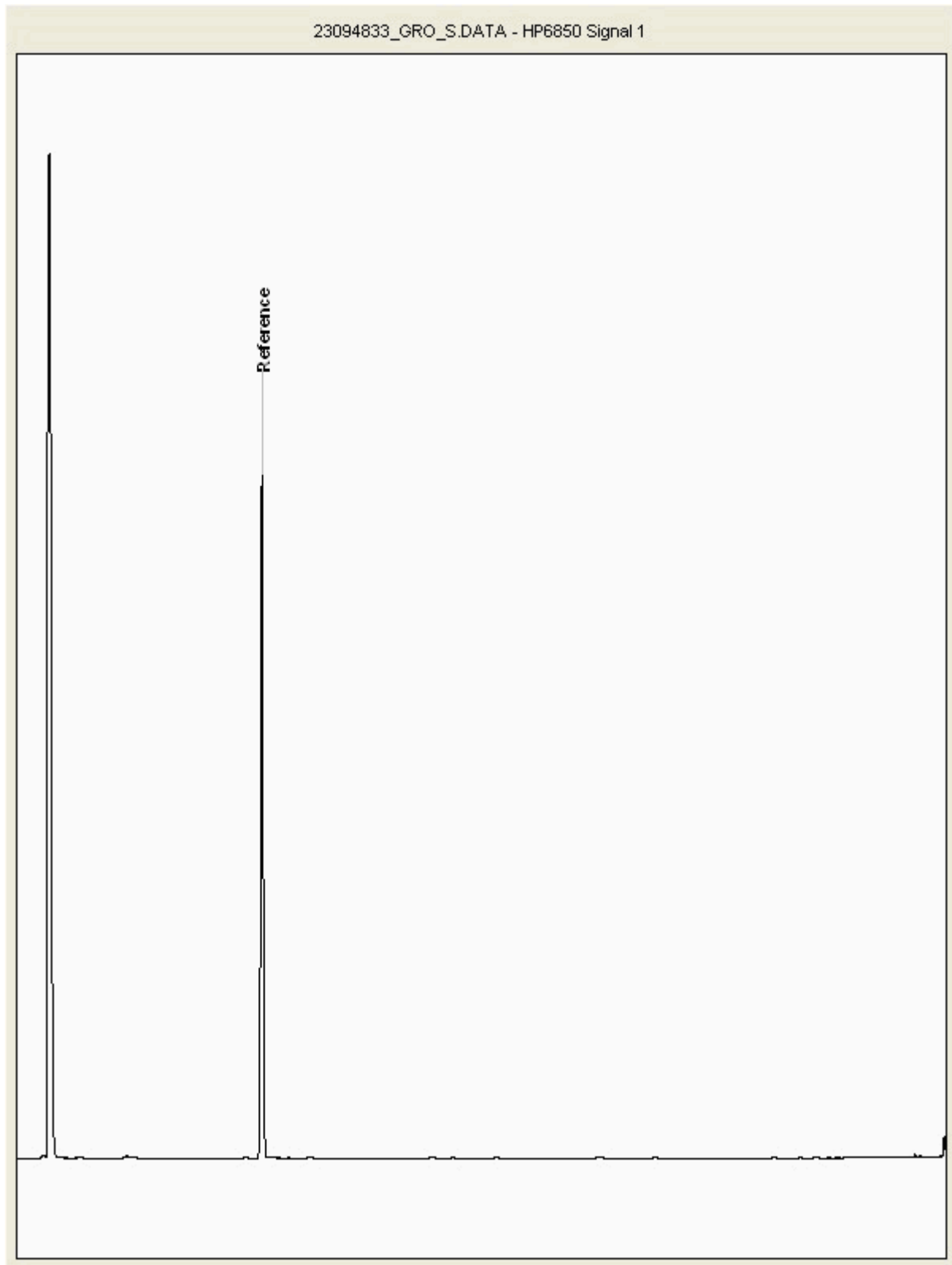
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23094833
Sample ID : TP012

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

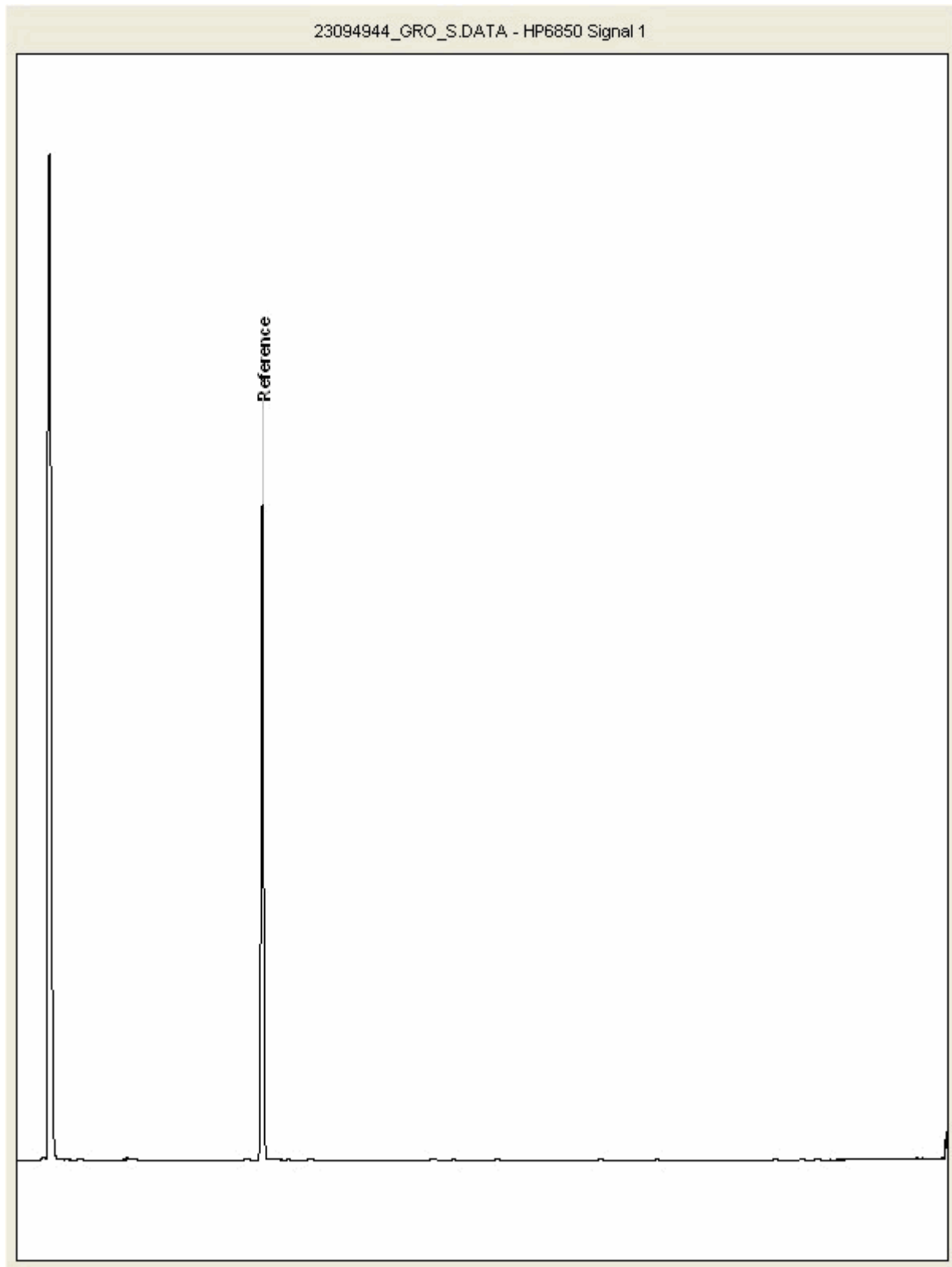
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23094944
Sample ID : TP003

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

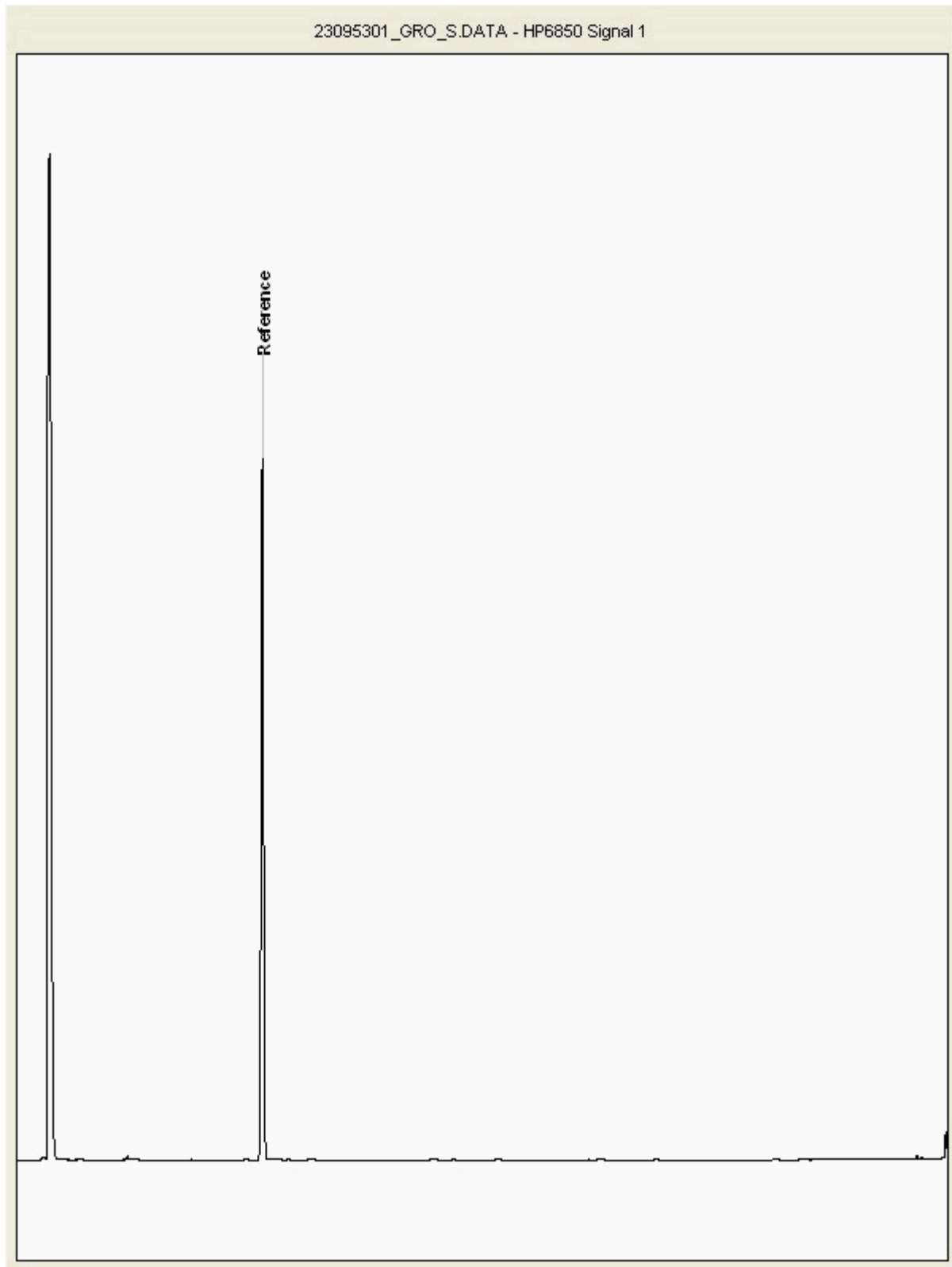
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23095301
Sample ID : TP010

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

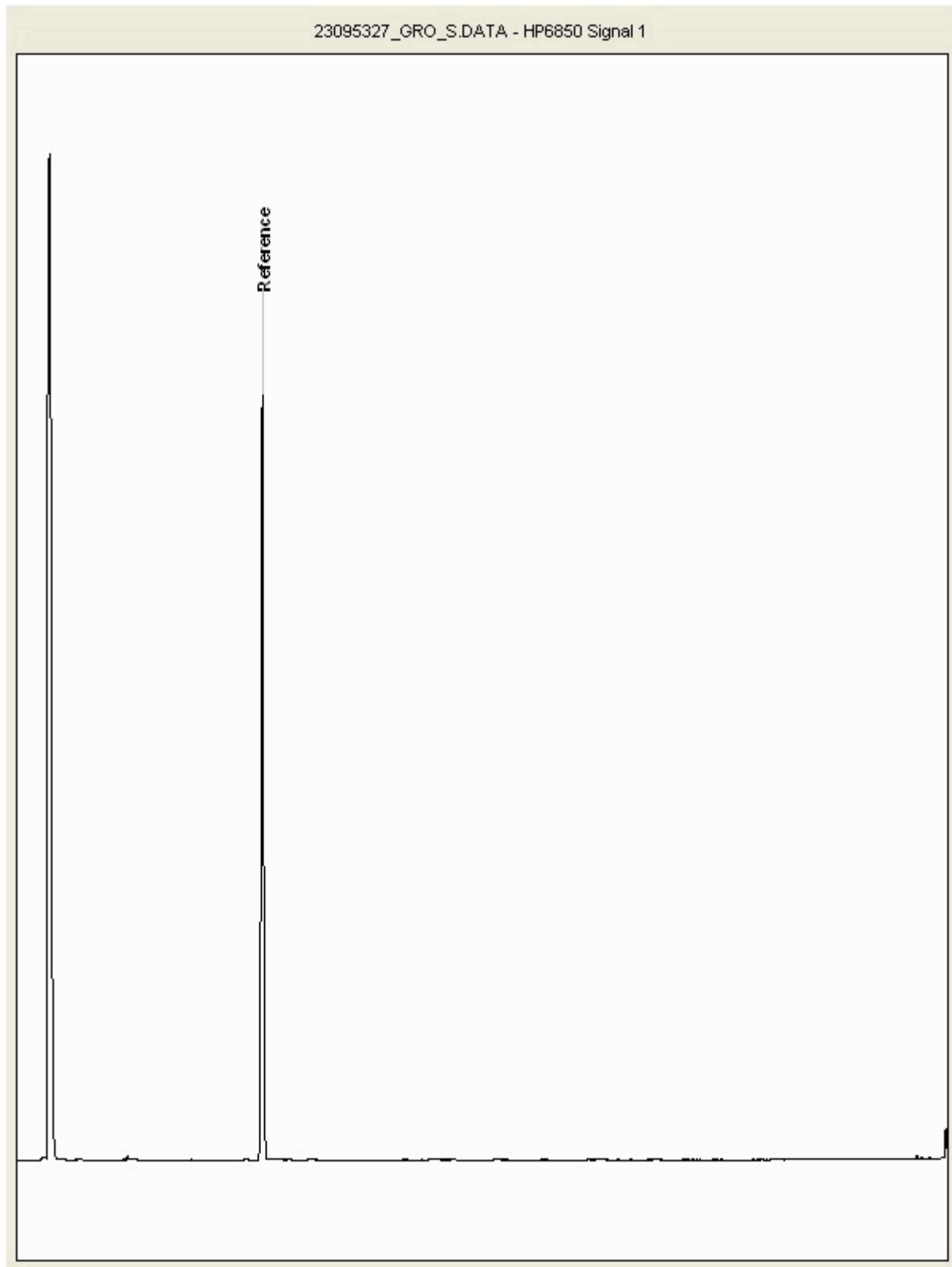
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23095327
Sample ID : TP012

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

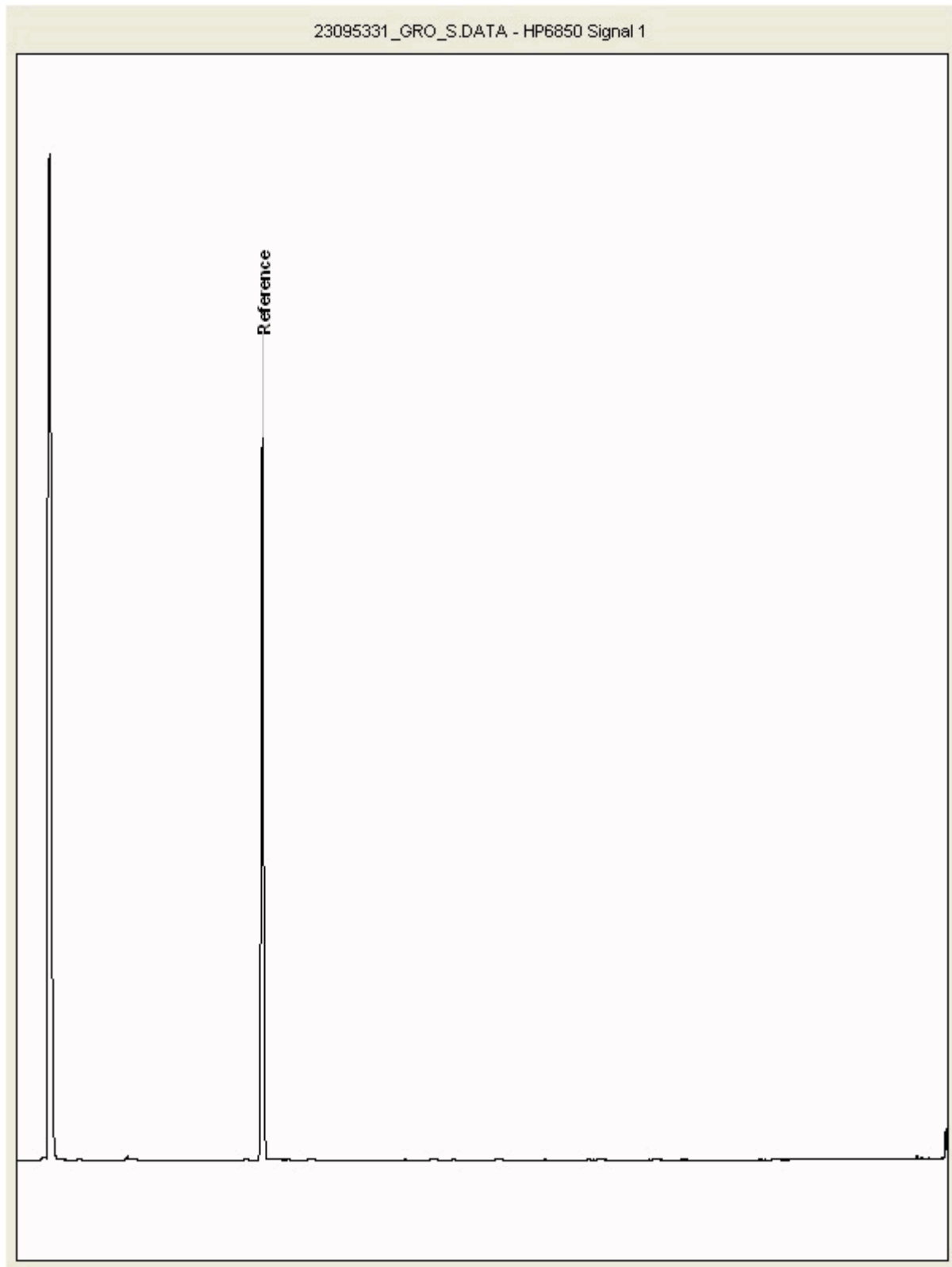
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23095331
Sample ID : TP002

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

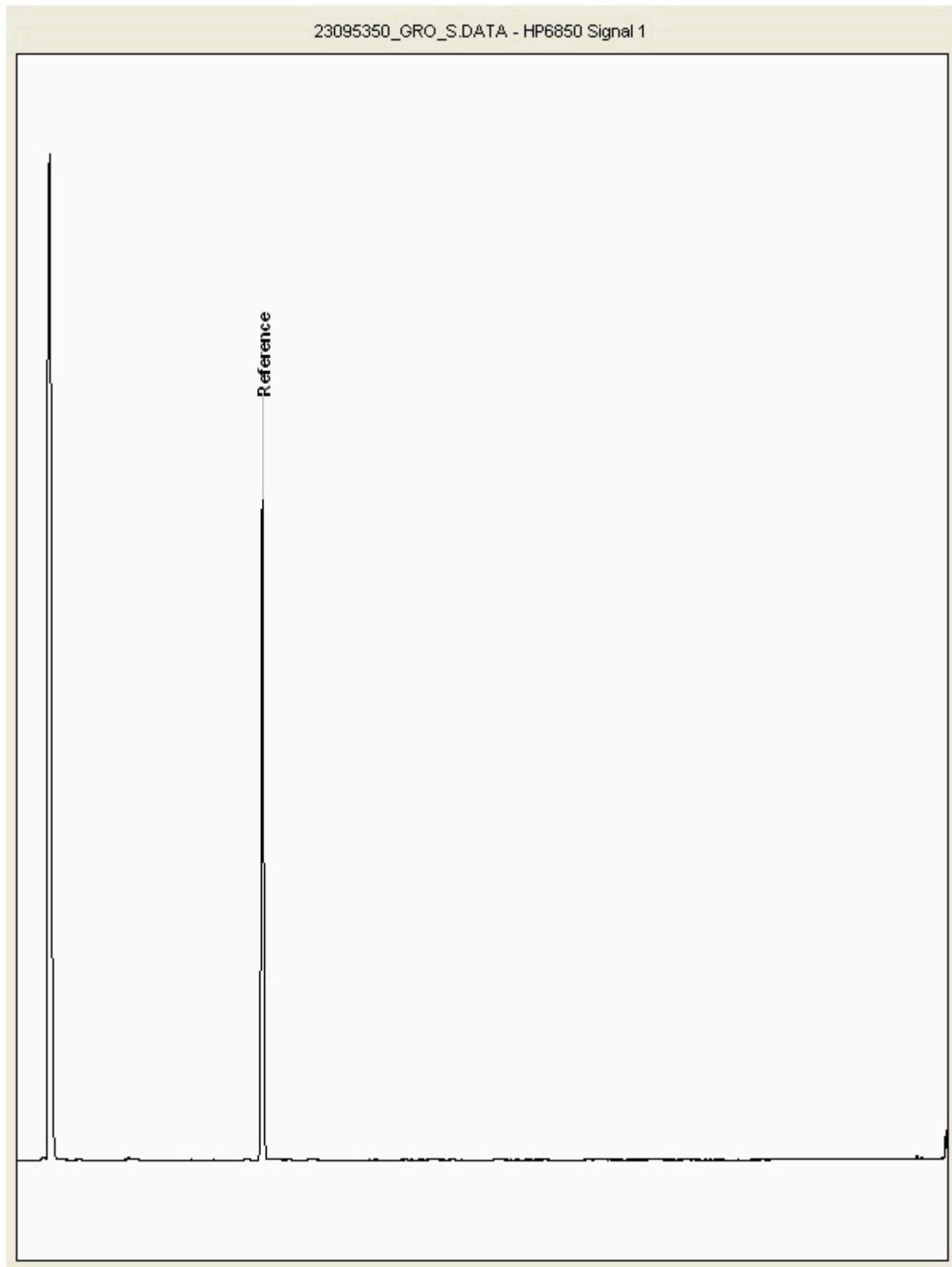
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23095350
Sample ID : TP006

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

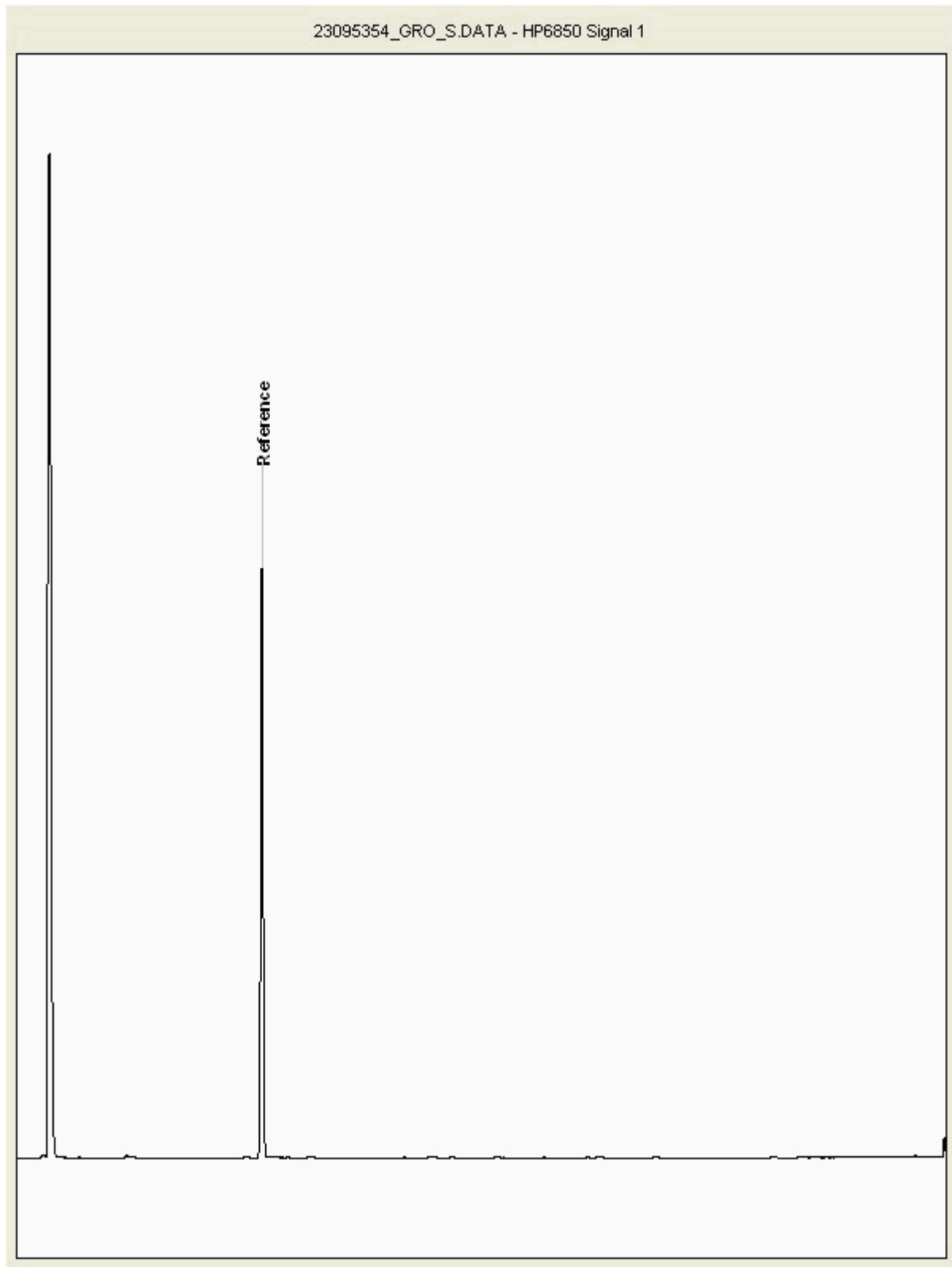
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23095354
Sample ID : TP006

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

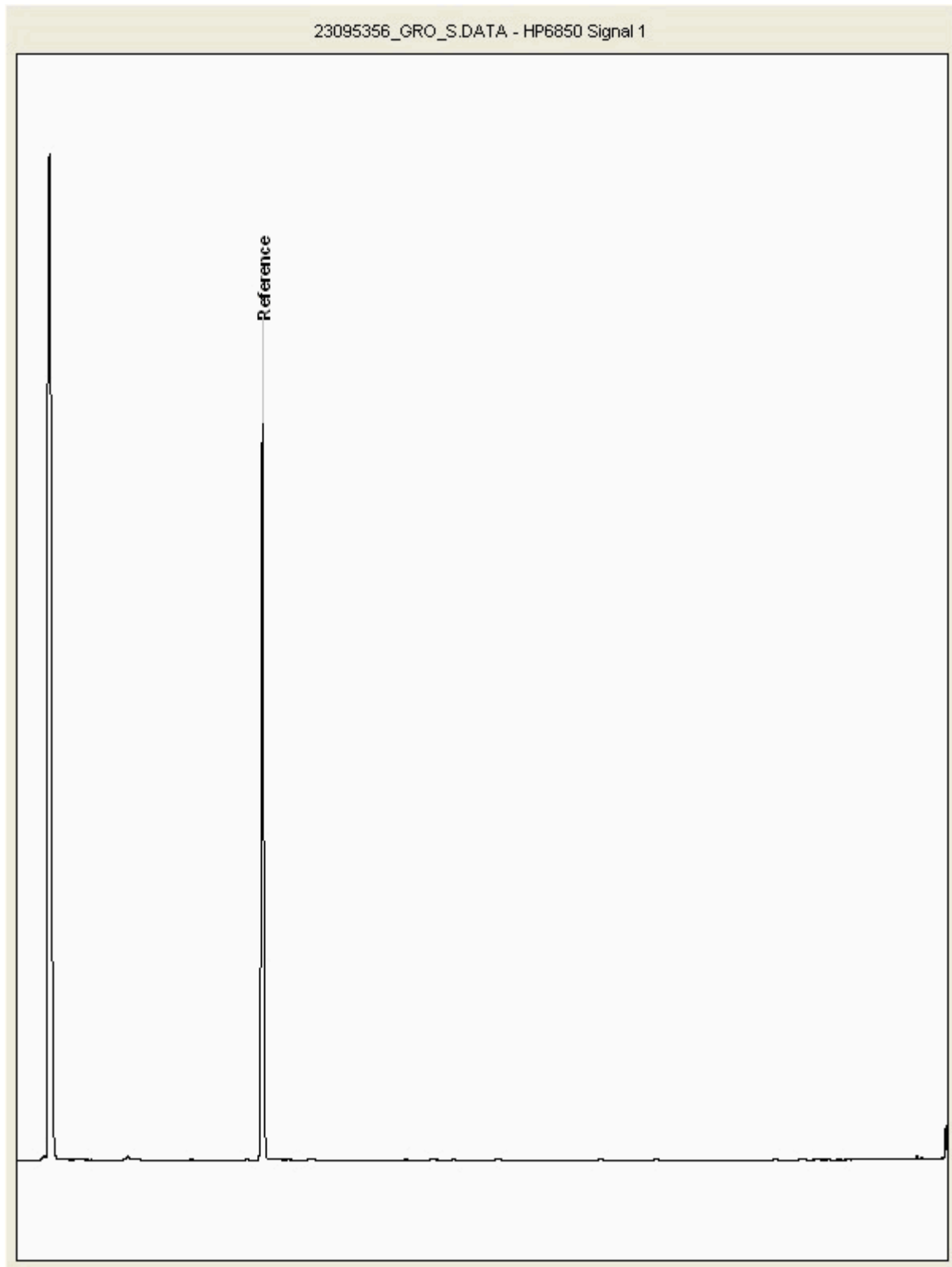
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23095356
Sample ID : TP001

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201021-100
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

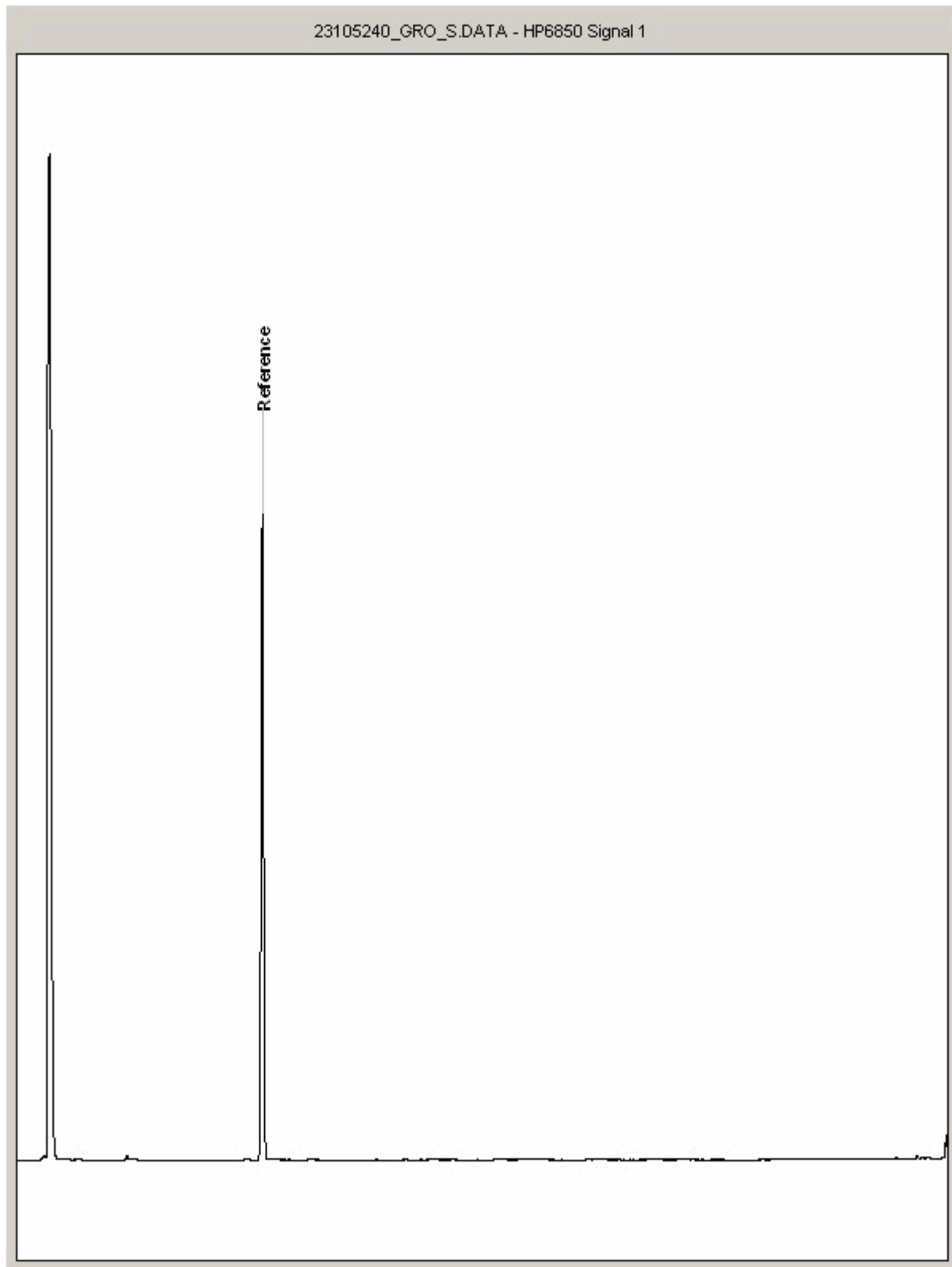
Report Number: 579754
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23105240
Sample ID : TP001

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

SDG:	201021-100	Client Reference:	2020WW102	Report Number:	579754
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

CERTIFICATE OF ANALYSIS

Date of report Generation:	14 December 2020
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	201015-115
Your Reference:	2020WW102
Location:	Arklow Bank
Report No:	579794

We received 18 samples on Thursday October 15, 2020 and 18 of these samples were scheduled for analysis which was completed on Monday December 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23039439	TP007	ES1	0.40 - 0.50	13/10/2020
23039335	TP007	ES4	1.50 - 1.60	13/10/2020
23039368	TP008	ES1	0.40 - 0.50	13/10/2020
23039374	TP008	ES4	1.50 - 1.60	13/10/2020
23039379	TP009	ES1	0.50 - 0.60	13/10/2020
23039387	TP009	ES4	1.50 - 1.60	13/10/2020
23039330	TP202	ES1	0.50 - 0.60	12/10/2020
23039392	TP202	ES4	1.40 - 1.50	12/10/2020
23039401	TP203	ES1	0.50 - 0.60	12/10/2020
23039408	TP203	ES4	1.60 - 1.70	12/10/2020
23039414	TP311	ES1	0.40 - 0.50	12/10/2020
23039421	TP311	ES2	1.10 - 1.20	12/10/2020
23039427	TP311	ES4	2.10 - 2.20	12/10/2020
23039434	TP311	ES4	3.10 - 3.20	12/10/2020
23039342	TP319	ES1	0.40 - 0.50	12/10/2020
23039350	TP319	ES2	1.20 - 1.30	12/10/2020
23039356	TP319	ES3	2.30 - 2.40	12/10/2020
23039363	TP319	ES5	3.50 - 3.60	12/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115 Client Reference: 2020WW102 Report Number: 579794
Location: Arklow Bank Order Number: 9028 Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	23039330	23039335	23039368	23039374	23039379	23039387	23039390
							TP202	TP007	TP008	TP008	TP009	TP009	TP009
							ES1	ES4	ES1	ES4	ES1	ES4	ES1
							0.50 - 0.60	1.50 - 1.60	0.40 - 0.50	1.50 - 1.60	0.50 - 0.60	1.50 - 1.60	0.50 - 0.60
							250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)	250g Amber Jar (ALE210)
							1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)	1kg TUB with Handle (ALE260)
							S	S	S	S	S	S	S
Anions by Kone (w)	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
CEN Readings	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Chromium III	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Coronene	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Easily Liberated Sulphide	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
EPH by GCxGC-FID	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
EPH CWG GC (S)	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Fluoride	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X
Loss on Ignition in soils	All	NDPs: 0 Tests: 18	X	X	X	X	X	X	X	X	X	X	X



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115 Client Reference: 2020WW102 Report Number: 579794
Location: Arklow Bank Order Number: 9028 Superseded Report:

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	
	23039330	TP002	ES1	0.50 - 0.60	250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
	23039387	TP009	ES4	1.50 - 1.60	250g Amber Jar (ALE215) 1kg TUB with Handle (ALE210)	S	
	23039379	TP009	ES1	0.50 - 0.60	250g Amber Jar (ALE215) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
	23039374	TP008	ES4	1.50 - 1.60	250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
	23039368	TP008	ES1	0.40 - 0.50	250g Amber Jar (ALE215) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
	23039439	TP007	ES1	0.40 - 0.50	250g Amber Jar (ALE215) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
					250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
					250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
					250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
					250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
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					250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280) 60g VOC (ALE215)	S	
					250g Amber Jar (ALE210) 1kg TUB with Handle (ALE280)<		



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	230393434		TP311		ES4		3.10 - 3.20		23039342		TP319	
					ES1		0.40 - 0.50					
					ES2		1.20 - 1.30					
					ES3		2.30 - 2.40					
					ES5		3.50 - 3.60					
Anions by Kone (w)	All	NDPs: 0 Tests: 18										
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 18										
CEN Readings	All	NDPs: 0 Tests: 18										
Chromium III	All	NDPs: 0 Tests: 18										
Coronene	All	NDPs: 0 Tests: 18										
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 18										
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 18										
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 18										
Easily Liberated Sulphide	All	NDPs: 0 Tests: 18										
EPH by GCxGC-FID	All	NDPs: 0 Tests: 18										
EPH CWG GC (S)	All	NDPs: 0 Tests: 18										
Fluoride	All	NDPs: 0 Tests: 18										
GRO by GC-FID (S)	All	NDPs: 0 Tests: 18										
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 18										
Loss on Ignition in soils	All	NDPs: 0 Tests: 18										



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
 UNS - Unspecified Solid
 GW - Ground Water
 SW - Surface Water
 LE - Land Leachate
 PL - Prepared Leachate
 PR - Process Water
 SA - Saline Water
 TE - Trade Effluent
 TS - Treated Sewage
 US - Untreated Sewage
 RE - Recreational Water
 DW - Drinking Water Non-regulatory
 UNL - Unspecified Liquid
 SL - Sludge
 G - Gas
 OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Mercury Dissolved

Metals in solid samples by OES

PAH 16 & 17 Calc

PAH by GCMS

PCBs by GCMS

pH

Phenols by HPLC (W)

Sample description

Semi Volatile Organic Compounds

Total Dissolved Solids

Total Organic Carbon

TPH CWG GC (S)

VOC MS (S)

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
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NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

NDPs: 0
Tests: 18

23039434

TP311

ES4

3.10 - 3.20

250g Amber Jar
(ALE210)
60g VOC
(ALE215)

S

23039342

TP319

ES1

0.40 - 0.50

250g Amber Jar
(ALE210)
60g VOC
(ALE215)

S

23039350

TP319

ES2

1.20 - 1.30

250g Amber Jar
(ALE210)
60g VOC
(ALE215)

S

23039356

TP319

ES3

2.30 - 2.40

250g Amber Jar
(ALE210)
60g VOC
(ALE215)

S

23039363

TP319

ES5

3.50 - 3.60

250g Amber Jar
(ALE210)
60g VOC
(ALE215)

S

X

X

X

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23039335	TP007	1.50 - 1.60	Dark Brown	Sandy Clay	Stones	Vegetation
23039439	TP007	0.40 - 0.50	Dark Brown	Clay Loam	Stones	None
23039368	TP008	0.40 - 0.50	Dark Brown	Clay Loam	Stones	None
23039374	TP008	1.50 - 1.60	Dark Brown	Clay Loam	Stones	None
23039379	TP009	0.50 - 0.60	Dark Brown	Clay Loam	Stones	None
23039387	TP009	1.50 - 1.60	Dark Brown	Sandy Loam	Stones	Vegetation
23039330	TP202	0.50 - 0.60	Dark Brown	Loamy Sand	Stones	None
23039392	TP202	1.40 - 1.50	Light Brown	Silty Clay	None	None
23039401	TP203	0.50 - 0.60	Light Brown	Sand	Stones	None
23039408	TP203	1.60 - 1.70	Dark Brown	Sandy Loam	Stones	None
23039414	TP311	0.40 - 0.50	Dark Brown	Sandy Loam	Vegetation	Stones
23039421	TP311	1.10 - 1.20	Dark Brown	Loamy Sand	Stones	Vegetation
23039427	TP311	2.10 - 2.20	Light Brown	Silty Clay	None	None
23039434	TP311	3.10 - 3.20	Grey	Silty Clay	None	None
23039342	TP319	0.40 - 0.50	Red	Loamy Sand	None	None
23039350	TP319	1.20 - 1.30	Cream	Silt Loam	Vegetation	Stones
23039356	TP319	2.30 - 2.40	Dark Brown	Silt Loam	Stones	None
23039363	TP319	3.50 - 3.60	Grey	Silt Loam	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Results Legend			Customer Sample Ref.		TP007	TP007	TP008	TP008	TP009	TP009
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50	1.50 - 1.60	0.40 - 0.50	1.50 - 1.60	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.				13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.				15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
*	Subcontracted - refer to subcontractor report for accreditation status.				201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				23039439	23039335	23039368	23039374	23039379	23039387
(F)	Trigger breach confirmed				ES1	ES4	ES1	ES4	ES1	ES4
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Moisture Content Ratio (% of as received sample)	%	PM024	20	14	23	17	17	14		
Loss on ignition	<0.7 %	TM018	4.84	3.06	6.13	4.16	3.92	4.61		
Organic Carbon, Total	<0.2 %	TM132	0.309	<0.2	0.396	0.233	<0.2	<0.2		
pH	1 pH Units	TM133	7.29	8.46	7.43	8.48	7.41	8.25		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6		
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1		
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1		
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1		
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21		
Sulphide, Easily liberated	<15 mg/kg	TM180	<15	<15	<15	<15	<15	<15		
Chromium, Trivalent	<0.9 mg/kg	TM181	37.2	26.9	43.3	30	36.5	27		
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6		
Arsenic	<0.6 mg/kg	TM181	18.5	10.6	19.9	14.7	17.1	13		
Barium	<0.6 mg/kg	TM181	58.3	63.7	74.9	76	51.6	76.7		
Cadmium	<0.02 mg/kg	TM181	<0.02	0.0955	0.0347	0.126	<0.02	0.0545		
Chromium	<0.9 mg/kg	TM181	37.2	26.9	43.3	30	36.5	27		
Copper	<1.4 mg/kg	TM181	17.9	18.3	15.7	23.2	25.8	19.9		
Lead	<0.7 mg/kg	TM181	18.8	13.8	22.3	18.4	17.1	15.2		
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	0.15	<0.14		
Molybdenum	<0.1 mg/kg	TM181	0.489	0.337	0.451	0.43	0.511	0.364		
Nickel	<0.2 mg/kg	TM181	28.8	33	29.7	40.2	28.5	36.3		
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1		
Zinc	<1.9 mg/kg	TM181	62.4	56.6	57.1	69.9	70	56		
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318	<318		
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Results Legend			Customer Sample Ref.		TP202	TP202	TP203	TP203	TP311	TP311
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.40 - 1.50 Soil/Solid (S) 12/10/2020	0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.60 - 1.70 Soil/Solid (S) 12/10/2020	0.40 - 0.50 Soil/Solid (S) 12/10/2020	1.10 - 1.20 Soil/Solid (S) 12/10/2020
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Moisture Content Ratio (% of as received sample)	%	PM024	9	14	12	16	6.2	12		
Loss on ignition	<0.7 %	TM018	1.99 M	2.29 M	1.48 M	2.87 M	1.62 M	4.57 M		
Organic Carbon, Total	<0.2 %	TM132	0.248 M	<0.2 M	0.303 M	<0.2 M	0.397 M	0.355 M		
pH	1 pH Units	TM133	7.45 M	7.32 M	7.05 M	6.7 M	8.4 M	6.84 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<3 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M		
Cyanide, Free	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M		
Cyanide, Complex	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M	<1 M	<1 M		
PCB congener 28	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<15 M	<3 M		
PCB congener 52	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<15 M	<3 M		
PCB congener 101	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<15 M	<3 M		
PCB congener 118	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<15 M	<3 M		
PCB congener 138	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<15 M	<3 M		
PCB congener 153	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<15 M	<3 M		
PCB congener 180	<3 µg/kg	TM168	<3 M	<3 M	<3 M	<3 M	<15 M	<3 M		
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21 M	<21 M	<21 M	<21 M	<105 M	<21 M		
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 @ M	<15 @ M	<15 @ M	<15 @ M	<15 @ M	55.7 @ M		
Chromium, Trivalent	<0.9 mg/kg	TM181	20.2 M	23 M	10.2 M	26.3 M	3.96 M	12.2 M		
Antimony	<0.6 mg/kg	TM181	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Arsenic	<0.6 mg/kg	TM181	12.6 M	11.1 M	5.06 M	9.19 M	23.8 M	30.6 M		
Barium	<0.6 mg/kg	TM181	29.6 #	43.3 #	17 #	64.5 #	43.4 #	42.1 #		
Cadmium	<0.02 mg/kg	TM181	0.141 M	0.0676 M	0.0496 M	0.071 M	0.426 M	0.246 M		
Chromium	<0.9 mg/kg	TM181	20.2 M	23 M	10.2 M	26.3 M	3.96 M	12.2 M		
Copper	<1.4 mg/kg	TM181	12.9 M	16.3 M	3.11 M	16 M	72.1 M	58 M		
Lead	<0.7 mg/kg	TM181	12 M	12.5 M	8.12 M	19.3 M	31.8 M	37.5 M		
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M	<0.14 M		
Molybdenum	<0.1 mg/kg	TM181	0.439 #	0.315 #	0.177 #	0.489 #	1.77 #	0.345 #		
Nickel	<0.2 mg/kg	TM181	27.8 M	24.6 M	6.52 M	21.6 M	19.4 M	39.4 M		
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #		
Zinc	<1.9 mg/kg	TM181	66.9 M	44.8 M	16.5 M	34.7 M	263 M	128 M		
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318 M	<318 M	<318 M	<318 M	<318 M	<318 M		
Coronene	<200 µg/kg	TM410	<200 M	<200 M	<200 M	<200 M	<200 M	<200 M		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Results Legend			Customer Sample Ref.	TP311	TP311	TP319	TP319	TP319	TP319
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		2.10 - 2.20	3.10 - 3.20	0.40 - 0.50	1.20 - 1.30	2.30 - 2.40	3.50 - 3.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024	32	37	28	31	31	26	
Loss on ignition	<0.7 %	TM018	3.7	11.1	<0.7	5.56	7.55	14.3	
			M	M	M	M	M	M	
Organic Carbon, Total	<0.2 %	TM132	0.361	1.6	<0.2	0.493	0.376	0.608	
			M	M	M	M	M	M	
pH	1 pH Units	TM133	6.83	6.3	6.84	6.37	5.16	5.33	
			M	M	M	M	M	M	
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<3	<3	<0.6	
			#	#	#	#	#	#	
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1	
			M	M	M	M	M	M	
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1	
			M	M	M	M	M	M	
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1	
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3	
			M	M	M	M	M	M	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21	
Sulphide, Easily liberated	<15 mg/kg	TM180	<15	<15	<15	<15	<15	63.5	
			@ M	@ M	@ M	@ M	@ M	@ M	
Chromium, Trivalent	<0.9 mg/kg	TM181	12.7	30.4	<0.9	9.45	7.57	<0.9	
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	36.5	<0.6	<0.6	<0.6	
			#	#	#	#	#	#	
Arsenic	<0.6 mg/kg	TM181	50.4	30.5	2910	85.1	74	97.3	
			M	M	M	M	M	M	
Barium	<0.6 mg/kg	TM181	50.5	86.4	20.7	42.6	87.6	40.1	
			#	#	#	#	#	#	
Cadmium	<0.02 mg/kg	TM181	0.133	0.0858	13.7	2.25	1.67	<0.02	
			M	M	M	M	M	M	
Chromium	<0.9 mg/kg	TM181	12.7	30.4	<0.9	9.45	7.57	<0.9	
			M	M	M	M	M	M	
Copper	<1.4 mg/kg	TM181	25.9	28.8	6240	803	648	22.9	
			M	M	M	M	M	M	
Lead	<0.7 mg/kg	TM181	43.8	55.9	4760	100	56.2	62.7	
			M	M	M	M	M	M	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	2.51	<0.14	0.283	<0.14	
			M	M	M	M	M	M	
Molybdenum	<0.1 mg/kg	TM181	1.04	0.261	99.1	1.68	0.946	1.55	
			#	#	#	#	#	#	
Nickel	<0.2 mg/kg	TM181	20.9	32.2	<0.2	19.8	23.8	18.2	
			M	M	M	M	M	M	
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1	
			#	#	#	#	#	#	
Zinc	<1.9 mg/kg	TM181	95.7	128	5890	1500	1290	87	
			M	M	M	M	M	M	
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318	<318	
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP007	TP007	TP008	TP008	TP009	TP009
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 13/10/2020	1.50 - 1.60 Soil/Solid (S) 13/10/2020	0.40 - 0.50 Soil/Solid (S) 13/10/2020	1.50 - 1.60 Soil/Solid (S) 13/10/2020	0.50 - 0.60 Soil/Solid (S) 13/10/2020	1.50 - 1.60 Soil/Solid (S) 13/10/2020
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<500	<100	<500	<500	<500	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579794
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP007	TP007	TP008	TP008	TP009	TP009
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.50 - 1.60	0.40 - 0.50	1.50 - 1.60	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
(F)	Trigger breach confirmed			23039439	23039335	23039368	23039374	23039379	23039387
1-4+5@	Sample deviation (see appendix)			ES1	ES4	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<1000	<1000	<1000	<1000	<1000	<1000



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP202	TP202	TP203	TP203	TP311	TP311
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.40 - 1.50 Soil/Solid (S) 12/10/2020	0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.60 - 1.70 Soil/Solid (S) 12/10/2020	0.40 - 0.50 Soil/Solid (S) 12/10/2020	1.10 - 1.20 Soil/Solid (S) 12/10/2020
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
4-Nitrophenol	<100 µg/kg	TM157		<500	<100	<100	<500	<200	<500
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<200	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP202	TP202	TP203	TP203	TP311	TP311
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m)	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.60 - 1.70	0.40 - 0.50	1.10 - 1.20
2-Chlorophenol	<100 µg/kg	TM157	Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
2,6-Dinitrotoluene	<100 µg/kg	TM157	Date Sampled	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
2,4-Dinitrotoluene	<100 µg/kg	TM157	Sampled Time						
2,4-Dimethylphenol	<100 µg/kg	TM157	Date Received	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
2,4-Dichlorophenol	<100 µg/kg	TM157	SDG Ref	201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
2,4,6-Trichlorophenol	<100 µg/kg	TM157	Lab Sample No.(s)	23039330	23039392	23039401	23039408	23039414	23039421
2,4,5-Trichlorophenol	<100 µg/kg	TM157	AGS Reference	ES1	ES4	ES1	ES4	ES1	ES2
1,4-Dichlorobenzene	<100 µg/kg	TM157							
1,3-Dichlorobenzene	<100 µg/kg	TM157							
1,2-Dichlorobenzene	<100 µg/kg	TM157							
2-Chloronaphthalene	<100 µg/kg	TM157							
2-Methylnaphthalene	<100 µg/kg	TM157							
Acenaphthylene	<100 µg/kg	TM157							
Acenaphthene	<100 µg/kg	TM157							
Anthracene	<100 µg/kg	TM157							
Benzo(a)anthracene	<100 µg/kg	TM157							
Benzo(b)fluoranthene	<100 µg/kg	TM157							
Benzo(k)fluoranthene	<100 µg/kg	TM157							
Benzo(a)pyrene	<100 µg/kg	TM157							
Benzo(g,h,i)perylene	<100 µg/kg	TM157							
Chrysene	<100 µg/kg	TM157							
Fluoranthene	<100 µg/kg	TM157			123				
Fluorene	<100 µg/kg	TM157							
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157							
Phenanthrene	<100 µg/kg	TM157			185				
Pyrene	<100 µg/kg	TM157							
Naphthalene	<100 µg/kg	TM157							
Dibenzo(a,h)anthracene	<100 µg/kg	TM157							
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157							
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<1000	<1000	<1000	<1000	<2000	<1000



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP311	TP311	TP319	TP319	TP319	TP319
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.10 - 2.20 Soil/Solid (S) 12/10/2020	3.10 - 3.20 Soil/Solid (S) 12/10/2020	0.40 - 0.50 Soil/Solid (S) 12/10/2020	1.20 - 1.30 Soil/Solid (S) 12/10/2020	2.30 - 2.40 Soil/Solid (S) 12/10/2020	3.50 - 3.60 Soil/Solid (S) 12/10/2020
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<500	<500	<500	<500
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579794
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP311	TP311	TP319	TP319	TP319	TP319
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.10 - 2.20	3.10 - 3.20	0.40 - 0.50	1.20 - 1.30	2.30 - 2.40	3.50 - 3.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
dis.filt	Dissolved / filtered sample.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
tot.unfilt	Total / unfiltered sample.			201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
+	Subcontracted - refer to subcontractor report for accreditation status.			23039427	23039434	23039342	23039350	23039356	23039363
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			ES4	ES4	ES1	ES2	ES3	ES5
(F)	Trigger breach confirmed								
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<1000	<1000	<1000	<1000	<1000	<1000



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP007	TP007	TP008	TP008	TP009	TP009
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.50 - 1.60	0.40 - 0.50	1.50 - 1.60	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
*	Subcontracted - refer to subcontractor report for accreditation status.			201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			23039439	23039335	23039368	23039374	23039379	23039387
(F)	Trigger breach confirmed			ES1	ES4	ES1	ES4	ES1	ES4
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		89.3	92.1	104	98.1	104	91.8
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		<1000	1280	<1000	<1000	<1000	3390
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP202	TP202	TP203	TP203	TP311	TP311
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 - 0.60 Soil/Solid (S)	1.40 - 1.50 Soil/Solid (S)	0.50 - 0.60 Soil/Solid (S)	1.60 - 1.70 Soil/Solid (S)	0.40 - 0.50 Soil/Solid (S)	1.10 - 1.20 Soil/Solid (S)
M	mCERTS accredited.			12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			15/10/2020 201015-115 23039330 ES1	15/10/2020 201015-115 23039392 ES4	15/10/2020 201015-115 23039401 ES1	15/10/2020 201015-115 23039408 ES4	15/10/2020 201015-115 23039414 ES1	15/10/2020 201015-115 23039421 ES2
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		93.6	93.2	90	105	91.1	105
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	2270	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	26800	1840
Aliphatics >C21-C35	<1000 µg/kg	TM414		<1000	<1000	2340	<1000	101000	2540
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	26500	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	156000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	211000	13900
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		<1000	<1000	5230	<1000	50200	8240
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	3700	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	2270	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	<5000	6570	<5000	54100	9400
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	211000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP311	TP311	TP319	TP319	TP319	TP319
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.10 - 2.20 Soil/Solid (S) 12/10/2020 15/10/2020 201015-115 23039427 ES4	3.10 - 3.20 Soil/Solid (S) 12/10/2020 15/10/2020 201015-115 23039434 ES4	0.40 - 0.50 Soil/Solid (S) 12/10/2020 15/10/2020 201015-115 23039342 ES1	1.20 - 1.30 Soil/Solid (S) 12/10/2020 15/10/2020 201015-115 23039350 ES2	2.30 - 2.40 Soil/Solid (S) 12/10/2020 15/10/2020 201015-115 23039356 ES3	3.50 - 3.60 Soil/Solid (S) 12/10/2020 15/10/2020 201015-115 23039363 ES5
GRO Surrogate % recovery**	%	TM089		95.4	80.6	80.4	90.2	74.2	91.8
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	13.9	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	26.4	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	1020	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		<1000	34000	<1000	<1000	<1000	5530
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	3580	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	39200	<5000	<5000	<5000	6070
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	68400	<10000	<10000	<10000	15000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	16.7	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	1380	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		<1000	17400	<1000	2560	<1000	7670
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	9850	<1000	<1000	<1000	1110
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	29200	<5000	<5000	<5000	8890
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	68400	<10000	<10000	<10000	15000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.		TP007	TP007	TP008	TP008	TP009	TP009
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50	1.50 - 1.60	0.40 - 0.50	1.50 - 1.60	0.50 - 0.60	1.50 - 1.60
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.				13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
diss.filt	Dissolved / filtered sample.				15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
tot.unfilt	Total / unfiltered sample.				201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
*	Subcontracted - refer to subcontractor report for accreditation status.				23039439	23039335	23039368	23039374	23039379	23039387
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				ES1	ES4	ES1	ES4	ES1	ES4
(F)	Trigger breach confirmed									
1-4	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116	109	111	106	102	116	107		
Toluene-d8**	%	TM116	98.9	101	100	97	98.7	99.6		
4-Bromofluorobenzene**	%	TM116	86.6	86	93.1	82.3	97.6	86.4		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP007	TP007	TP008	TP008	TP009	TP009
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 13/10/2020	1.50 - 1.60 Soil/Solid (S) 13/10/2020	0.40 - 0.50 Soil/Solid (S) 13/10/2020	1.50 - 1.60 Soil/Solid (S) 13/10/2020	0.50 - 0.60 Soil/Solid (S) 13/10/2020	1.50 - 1.60 Soil/Solid (S) 13/10/2020
M	mCERTS accredited.								
ag	Aqueous / filtered sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
(F)	Trigger breach confirmed			23039439	23039335	23039368	23039374	23039379	23039387
1-4+5@	Sample deviation (see appendix)			ES1	ES4	ES1	ES4	ES1	ES4
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.		TP202	TP202	TP203	TP203	TP311	TP311
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.40 - 1.50 Soil/Solid (S) 12/10/2020	0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.60 - 1.70 Soil/Solid (S) 12/10/2020	0.40 - 0.50 Soil/Solid (S) 12/10/2020	1.10 - 1.20 Soil/Solid (S) 12/10/2020
M	mCERTS accredited.									
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery									
(F)	Trigger breach confirmed									
1-4	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116			106	117	101	112	106	125
Toluene-d8**	%	TM116			99.8	101	97.4	99.4	94	100
4-Bromofluorobenzene**	%	TM116			93.6	95.2	80.2	90.6	76.9	89.1
Dichlorodifluoromethane	<6 µg/kg	TM116			<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116			<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116			<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116			<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116			<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116			<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116			<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116			<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116			<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Bromochloromethane	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116			<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116			<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116			<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116			<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116			<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116			<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116			<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116			<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1,2-Trichloroethane	<10 µg/kg	TM116			<10 M	<10 M	<10 M	<10 M	<10 M	<10 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP202	TP202	TP203	TP203	TP311	TP311
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.40 - 1.50 Soil/Solid (S) 12/10/2020	0.50 - 0.60 Soil/Solid (S) 12/10/2020	1.60 - 1.70 Soil/Solid (S) 12/10/2020	0.40 - 0.50 Soil/Solid (S) 12/10/2020	1.10 - 1.20 Soil/Solid (S) 12/10/2020
M	mCERTS accredited.								
ag	Aqueous / filtered sample.								
dis.flit	Dissolved / filtered sample.								
tot.unflit	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
(F)	Trigger breach confirmed			23039330	23039392	23039401	23039408	23039414	23039421
1.4+5@	Sample deviation (see appendix)			ES1	ES4	ES1	ES4	ES1	ES2
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP311	TP311	TP319	TP319	TP319	TP319
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		2.10 - 2.20	3.10 - 3.20	0.40 - 0.50	1.20 - 1.30	2.30 - 2.40	3.50 - 3.60
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
diss.filt	Dissolved / filtered sample.			.	.	.	.	.	.
tot.unfilt	Total / unfiltered sample.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
*	Subcontracted - refer to subcontractor report for accreditation status.			201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			23039427	23039434	23039342	23039350	23039356	23039363
(F)	Trigger breach confirmed			ES4	ES4	ES1	ES2	ES3	ES5
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116	117	115	108	113	105	109	
Toluene-d8**	%	TM116	102	101	101	101	99.9	97.6	
4-Bromofluorobenzene**	%	TM116	97.6	92.6	91.9	90.2	90.6	80.4	
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<60 M	<6 M	<6 M	<6 M	<6 M	
Chloromethane	<7 µg/kg	TM116	<7 #	<70 #	<7 #	<7 #	<7 #	<7 #	
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<60 M	<6 M	<6 M	<6 M	<6 M	
Bromomethane	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
Chloroethane	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<60 M	<6 M	<6 M	<6 M	<6 M	
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<100 #	<10 #	<10 #	<10 #	<10 #	
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<70 M	<7 M	<7 M	<7 M	<7 M	
Dichloromethane	<10 µg/kg	TM116	<10 #	<100 #	<10 #	<10 #	<10 #	<10 #	
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<80 M	<8 M	<8 M	<8 M	<8 M	
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<60 M	<6 M	<6 M	<6 M	<6 M	
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
Bromochloromethane	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
Chloroform	<8 µg/kg	TM116	<8 M	<80 M	<8 M	<8 M	<8 M	<8 M	
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<70 M	<7 M	<7 M	<7 M	<7 M	
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<50 M	<5 M	<5 M	<5 M	<5 M	
Benzene	<9 µg/kg	TM116	<9 M	<90 M	<9 M	<9 M	<9 M	<9 M	
Trichloroethene	<9 µg/kg	TM116	<9 #	<90 #	<9 #	<9 #	<9 #	<9 #	
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
Dibromomethane	<9 µg/kg	TM116	<9 M	<90 M	<9 M	<9 M	<9 M	<9 M	
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<70 M	<7 M	<7 M	<7 M	<7 M	
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
Toluene	<7 µg/kg	TM116	<7 M	<70 M	<7 M	<7 M	<7 M	<7 M	
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<100 M	<10 M	<10 M	<10 M	<10 M	



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP311	TP311	TP319	TP319	TP319	TP319
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	2.10 - 2.20 Soil/Solid (S) 12/10/2020	3.10 - 3.20 Soil/Solid (S) 12/10/2020	0.40 - 0.50 Soil/Solid (S) 12/10/2020	1.20 - 1.30 Soil/Solid (S) 12/10/2020	2.30 - 2.40 Soil/Solid (S) 12/10/2020	3.50 - 3.60 Soil/Solid (S) 12/10/2020
M	mCERTS accredited.								
ag	Aqueous / filtered sample.								
dis.flit	Dissolved / filtered sample.								
tot.unflit	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020	15/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201015-115	201015-115	201015-115	201015-115	201015-115	201015-115
(F)	Trigger breach confirmed			23039427	23039434	23039342	23039350	23039356	23039363
1-4+5@	Sample deviation (see appendix)			ES4	ES4	ES1	ES2	ES3	ES5
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<70 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<50 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<50 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<40 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<50 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<160 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<90 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<80 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<140 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<90 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<80 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<50 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11 M	<110 M	<11 M	<11 M	<11 M	<11 M
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<140 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20 M	<200 M	<20 M	<20 M	<20 M	<20 M
Hexachlorobutadiene	<20 µg/kg	TM116		<20 M	<200 M	<20 M	<20 M	<20 M	<20 M
Naphthalene	<13 µg/kg	TM116		<13 M	<130 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&5@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP007ES1 0.40 - 0.50 SOLID 13/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039439 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP007ES4 1.50 - 1.60 SOLID 13/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039335 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP008ES1 0.40 - 0.50 SOLID 13/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039368 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP008ES4 1.50 - 1.60 SOLID 13/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039374 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP009ES1 0.50 - 0.60 SOLID 13/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039379 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP009ES4 1.50 - 1.60 SOLID 13/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039387 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP202ES1 0.50 - 0.60 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039330 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP202ES4 1.40 - 1.50 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039392 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115 **Client Reference:** 2020WW102 **Report Number:** 579794
Location: Arklow Bank **Order Number:** 9028 **Superseded Report:**

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP203ES1 0.50 - 0.60 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039401 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP203ES4 1.60 - 1.70 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039408 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP311ES1 0.40 - 0.50 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039414 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP311ES2 1.10 - 1.20 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039421 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP311ES4 2.10 - 2.20 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039427 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP311ES4 3.10 - 3.20 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039434 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP319ES1 0.40 - 0.50 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039342 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP319ES2 1.20 - 1.30 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039350 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP319ES3 2.30 - 2.40 SOLID 12/10/2020 00:00:00 15/10/2020 09:00:00 201015-115 23039356 TM048	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref.	TP319E55	25/10/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Depth (m)	3.50 - 3.60										
Sample Type	SOLID										
Date Sampled	12/10/2020 00:00:00										
Date Received	15/10/2020 09:00:00										
SDG	201015-115										
Original Sample	23039363										
Method Number	TM048										



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.101	Natural Moisture Content (%)	11.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	89.3
Particle Size <4mm	>95%		

Case

SDG	201015-115
Lab Sample Number(s)	23039330
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP202 ES1
Depth (m)	0.50 - 0.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	4.43	<3	44.3	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	0.0000491	<0.00001	0.000491	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00432	<0.0005	0.0432	<0.005	-	-	-
Barium	0.0132	<0.0002	0.132	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00786	<0.001	0.0786	<0.01	-	-	-
Copper	0.0071	<0.0003	0.071	<0.003	-	-	-
Lead	0.00463	<0.0002	0.0463	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00434	<0.0004	0.0434	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0158	<0.001	0.158	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	18.2	<5	182	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.65
Conductivity (µS/cm)	18.90
Temperature (°C)	19.20
Volume Leachant (Litres)	0.889

Mcerts Certification does not apply to leachates

14/12/2020 15:31:58

15:30:11 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.105
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	16.3
Dry Matter Content (%)	86

Case

SDG	201015-115
Lab Sample Number(s)	23039335
Sampled Date	13-Oct-2020
Customer Sample Ref.	TP007 ES4
Depth (m)	1.50 - 1.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.724	<0.5	7.24	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000516	<0.0005	0.00516	<0.005	-	-	-
Barium	0.368	<0.0002	3.68	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00163	<0.001	0.0163	<0.01	-	-	-
Copper	0.00159	<0.0003	0.0159	<0.003	-	-	-
Lead	0.000248	<0.0002	0.00248	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000542	<0.0004	0.00542	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0191	<0.001	0.191	<0.01	-	-	-
Chloride	3.4	<2	34	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	87.9	<5	879	<50	-	-	-

Leach Test Information

Date Prepared	24-Oct-2020
pH (pH Units)	8.70
Conductivity (µS/cm)	109.00
Temperature (°C)	15.10
Volume Leachant (Litres)	0.885

Mcerts Certification does not apply to leachates

14/12/2020 15:31:58

15:30:11 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.122
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	35.8
Dry Matter Content (%)	73.6

Case

SDG	201015-115
Lab Sample Number(s)	23039342
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP319 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	0.0000322	<0.00001	0.000322	<0.0001	-	-	-
Antimony	0.00214	<0.001	0.0214	<0.01	-	-	-
Arsenic	0.323	<0.00253	3.23	<0.0253	-	-	-
Barium	0.00215	<0.0002	0.0215	<0.002	-	-	-
Cadmium	0.000922	<0.00008	0.00922	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00509	<0.0003	0.0509	<0.003	-	-	-
Lead	0.000977	<0.0002	0.00977	<0.002	-	-	-
Molybdenum	0.18	<0.003	1.8	<0.03	-	-	-
Nickel	0.000948	<0.0004	0.00948	<0.004	-	-	-
Selenium	0.00198	<0.001	0.0198	<0.01	-	-	-
Zinc	0.168	<0.001	1.68	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	39	<2	390	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	82.9	<5	829	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.53
Conductivity (µS/cm)	104.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.868

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.125	Natural Moisture Content (%)	39.2
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	71.8
Particle Size <4mm	>95%		

Case

SDG 201015-115
Lab Sample Number(s) 23039350
Sampled Date 12-Oct-2020
Customer Sample Ref. TP319 ES2
Depth (m) 1.20 - 1.30

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	7.04	<3	70.4	<30	-	-	-
Fluoride	0.733	<0.5	7.33	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00498	<0.0005	0.0498	<0.005	-	-	-
Barium	0.0264	<0.0002	0.264	<0.002	-	-	-
Cadmium	0.0021	<0.00008	0.021	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.0181	<0.0003	0.181	<0.003	-	-	-
Lead	0.000269	<0.0002	0.00269	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000997	<0.0004	0.00997	<0.004	-	-	-
Selenium	0.00278	<0.001	0.0278	<0.01	-	-	-
Zinc	0.43	<0.001	4.3	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	66.5	<2	665	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	137	<5	1370	<50	-	-	-

Leach Test Information

Date Prepared 22-Oct-2020
pH (pH Units) 7.75
Conductivity (µS/cm) 178.00
Temperature (°C) 19.30
Volume Leachant (Litres) 0.865

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.137
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	50.8
Dry Matter Content (%)	66.3

Case

SDG	201015-115
Lab Sample Number(s)	23039356
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP319 ES3
Depth (m)	2.30 - 2.40

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	2.3	<0.5	23	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.0246	<0.0002	0.246	<0.002	-	-	-
Cadmium	0.0327	<0.00008	0.327	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.284	<0.0003	2.84	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.0137	<0.0004	0.137	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	12.6	<0.00394	126	<0.0394	-	-	-
Chloride	2.2	<2	22	<20	-	-	-
Sulphate (soluble)	150	<2	1500	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	247	<5	2470	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	7.42
Conductivity (µS/cm)	307.00
Temperature (°C)	17.80
Volume Leachant (Litres)	0.854

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.131	Natural Moisture Content (%)	45.5
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	68.7
Particle Size <4mm	>95%		

Case

SDG	201015-115
Lab Sample Number(s)	23039363
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP319 ES5
Depth (m)	3.50 - 3.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	7.11	<3	71.1	<30	-	-	-
Fluoride	8.47	<2.5	84.7	<25	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.133	<0.00154	1.33	<0.0154	-	-	-
Barium	0.383	<0.0002	3.83	<0.002	-	-	-
Cadmium	0.0000856	<0.00008	0.000856	<0.0008	-	-	-
Chromium	0.00457	<0.001	0.0457	<0.01	-	-	-
Copper	0.00708	<0.0003	0.0708	<0.003	-	-	-
Lead	0.0112	<0.0002	0.112	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00244	<0.0004	0.0244	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.306	<0.001	3.06	<0.01	-	-	-
Chloride	4.5	<2	45	<20	-	-	-
Sulphate (soluble)	95.8	<2	958	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	164	<5	1640	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	5.61
Conductivity (µS/cm)	223.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.860

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.122
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	35.7
Dry Matter Content (%)	73.7

Case

SDG	201015-115
Lab Sample Number(s)	23039368
Sampled Date	13-Oct-2020
Customer Sample Ref.	TP008 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.1	<3	31	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	0.000012	<0.00001	0.00012	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000967	<0.0005	0.00967	<0.005	-	-	-
Barium	0.367	<0.0002	3.67	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00429	<0.001	0.0429	<0.01	-	-	-
Copper	0.00194	<0.0003	0.0194	<0.003	-	-	-
Lead	0.00407	<0.0002	0.0407	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000564	<0.0004	0.00564	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.135	<0.001	1.35	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	2.9	<2	29	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	27.9	<5	279	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	7.84
Conductivity (µS/cm)	34.10
Temperature (°C)	16.70
Volume Leachant (Litres)	0.868

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.111
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	23.7
Dry Matter Content (%)	80.8

Case

SDG	201015-115
Lab Sample Number(s)	23039374
Sampled Date	13-Oct-2020
Customer Sample Ref.	TP008 ES4
Depth (m)	1.50 - 1.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.608	<0.5	6.08	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00377	<0.0002	0.0377	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00087	<0.0003	0.0087	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00297	<0.001	0.0297	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	80.9	<5	809	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.52
Conductivity (µS/cm)	99.50
Temperature (°C)	18.30
Volume Leachant (Litres)	0.879

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.110
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	21.3
Dry Matter Content (%)	82.5

Case

SDG	201015-115
Lab Sample Number(s)	23039379
Sampled Date	13-Oct-2020
Customer Sample Ref.	TP009 ES1
Depth (m)	0.50 - 0.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00104	<0.0005	0.0104	<0.005	-	-	-
Barium	0.379	<0.0002	3.79	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00339	<0.001	0.0339	<0.01	-	-	-
Copper	0.00196	<0.0003	0.0196	<0.003	-	-	-
Lead	0.00351	<0.0002	0.0351	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000712	<0.0004	0.00712	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.114	<0.001	1.14	<0.01	-	-	-
Chloride	2.6	<2	26	<20	-	-	-
Sulphate (soluble)	2.6	<2	26	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	49.7	<5	497	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.21
Conductivity (µS/cm)	33.10
Temperature (°C)	2.80
Volume Leachant (Litres)	0.880

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.108	Natural Moisture Content (%)	20.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	82.7
Particle Size <4mm	>95%		

Case

SDG 201015-115
Lab Sample Number(s) 23039387
Sampled Date 13-Oct-2020
Customer Sample Ref. TP009 ES4
Depth (m) 1.50 - 1.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.678	<0.5	6.78	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00618	<0.0002	0.0618	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000907	<0.0003	0.00907	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00678	<0.001	0.0678	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	75.6	<5	756	<50	-	-	-

Leach Test Information

Date Prepared 22-Oct-2020
pH (pH Units) 8.59
Conductivity (µS/cm) 94.20
Temperature (°C) 17.70
Volume Leachant (Litres) 0.882

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.106
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	17.3
Dry Matter Content (%)	85.2

Case

SDG	201015-115
Lab Sample Number(s)	23039392
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP202 ES4
Depth (m)	1.40 - 1.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000909	<0.0005	0.00909	<0.005	-	-	-
Barium	0.063	<0.0002	0.63	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000395	<0.0003	0.00395	<0.003	-	-	-
Lead	0.000395	<0.0002	0.00395	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00043	<0.0004	0.0043	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00564	<0.001	0.0564	<0.01	-	-	-
Chloride	2.4	<2	24	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	20	<5	200	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	9.13
Conductivity (µS/cm)	19.00
Temperature (°C)	19.50
Volume Leachant (Litres)	0.884

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.102
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	14
Dry Matter Content (%)	87.7

Case

SDG	201015-115
Lab Sample Number(s)	23039401
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP203 ES1
Depth (m)	0.50 - 0.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	4.31	<3	43.1	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	0.0000125	<0.00001	0.000125	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00158	<0.0005	0.0158	<0.005	-	-	-
Barium	0.00375	<0.0002	0.0375	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00144	<0.001	0.0144	<0.01	-	-	-
Copper	0.0023	<0.0003	0.023	<0.003	-	-	-
Lead	0.00105	<0.0002	0.0105	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000959	<0.0004	0.00959	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00398	<0.001	0.0398	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	14.5	<5	145	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	7.65
Conductivity (µS/cm)	13.60
Temperature (°C)	20.30
Volume Leachant (Litres)	0.888

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.110
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	21.3
Dry Matter Content (%)	82.5

Case

SDG	201015-115
Lab Sample Number(s)	23039408
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP203 ES4
Depth (m)	1.60 - 1.70

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.003	<0.0005	0.03	<0.005	-	-	-
Barium	0.018	<0.0002	0.18	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000606	<0.0003	0.00606	<0.003	-	-	-
Lead	0.00335	<0.0002	0.0335	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0116	<0.001	0.116	<0.01	-	-	-
Chloride	2.2	<2	22	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	20.5	<5	205	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.41
Conductivity (µS/cm)	12.50
Temperature (°C)	19.90
Volume Leachant (Litres)	0.880

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.109	Natural Moisture Content (%)	21.1
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	82.5
Particle Size <4mm	>95%		

Case

SDG	201015-115
Lab Sample Number(s)	23039414
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP311 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.69	<3	36.9	<30	-	-	-
Fluoride	0.657	<0.5	6.57	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00691	<0.0005	0.0691	<0.005	-	-	-
Barium	0.00827	<0.0002	0.0827	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00571	<0.0003	0.0571	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.0101	<0.003	0.101	<0.03	-	-	-
Nickel	0.000433	<0.0004	0.00433	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	139	<2	1390	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	266	<5	2660	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	8.50
Conductivity (µS/cm)	348.00
Temperature (°C)	19.10
Volume Leachant (Litres)	0.882

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.103	Natural Moisture Content (%)	15.4
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	86.6
Particle Size <4mm	>95%		

Case

SDG	201015-115
Lab Sample Number(s)	23039421
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP311 ES2
Depth (m)	1.10 - 1.20

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.02	<3	30.2	<30	-	-	-
Fluoride	1.09	<0.5	10.9	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00112	<0.001	0.0112	<0.01	-	-	-
Arsenic	0.00135	<0.0005	0.0135	<0.005	-	-	-
Barium	0.0407	<0.0002	0.407	<0.002	-	-	-
Cadmium	0.000402	<0.00008	0.00402	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00227	<0.0003	0.0227	<0.003	-	-	-
Lead	0.000519	<0.0002	0.00519	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.0215	<0.0004	0.215	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0178	<0.001	0.178	<0.01	-	-	-
Chloride	2	<2	20	<20	-	-	-
Sulphate (soluble)	1490	<10	14900	<100	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	1550	<5	15500	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	6.37
Conductivity (µS/cm)	2,060.00
Temperature (°C)	18.60
Volume Leachant (Litres)	0.887

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.133	Natural Moisture Content (%)	47.7
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	67.7
Particle Size <4mm	>95%		

Case

SDG	201015-115
Lab Sample Number(s)	23039427
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP311 ES4
Depth (m)	2.10 - 2.20

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.38	<3	33.8	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00874	<0.0002	0.0874	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00144	<0.0003	0.0144	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00285	<0.001	0.0285	<0.01	-	-	-
Chloride	2.4	<2	24	<20	-	-	-
Sulphate (soluble)	49.7	<2	497	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	131	<5	1310	<50	-	-	-

Leach Test Information

Date Prepared	23-Oct-2020
pH (pH Units)	7.97
Conductivity (µS/cm)	170.00
Temperature (°C)	18.10
Volume Leachant (Litres)	0.858

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.164
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	81.7
Dry Matter Content (%)	55

Case

SDG	201015-115
Lab Sample Number(s)	23039434
Sampled Date	12-Oct-2020
Customer Sample Ref.	TP311 ES4
Depth (m)	3.10 - 3.20

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	4.22	<3	42.2	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00109	<0.001	0.0109	<0.01	-	-	-
Arsenic	0.0807	<0.0005	0.807	<0.005	-	-	-
Barium	0.228	<0.0002	2.28	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00135	<0.001	0.0135	<0.01	-	-	-
Copper	0.00323	<0.0003	0.0323	<0.003	-	-	-
Lead	0.00282	<0.0002	0.0282	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00158	<0.0004	0.0158	<0.004	-	-	-
Selenium	0.00105	<0.001	0.0105	<0.01	-	-	-
Zinc	0.138	<0.001	1.38	<0.01	-	-	-
Chloride	5.9	<2	59	<20	-	-	-
Sulphate (soluble)	9	<2	90	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	48.2	<5	482	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.72
Conductivity (µS/cm)	42.70
Temperature (°C)	18.30
Volume Leachant (Litres)	0.826

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.117
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	29.1
Dry Matter Content (%)	77.5

Case

SDG	201015-115
Lab Sample Number(s)	23039439
Sampled Date	13-Oct-2020
Customer Sample Ref.	TP007 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	4.38	<3	43.8	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00129	<0.0005	0.0129	<0.005	-	-	-
Barium	0.0223	<0.0002	0.223	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.0037	<0.001	0.037	<0.01	-	-	-
Copper	0.00322	<0.0003	0.0322	<0.003	-	-	-
Lead	0.00296	<0.0002	0.0296	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00159	<0.0004	0.0159	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00561	<0.001	0.0561	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	5.3	<2	53	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	41.3	<5	413	<50	-	-	-

Leach Test Information

Date Prepared	22-Oct-2020
pH (pH Units)	8.53
Conductivity (µS/cm)	58.60
Temperature (°C)	19.80
Volume Leachant (Litres)	0.873

Mcerts Certification does not apply to leachates

14/12/2020 15:31:58

15:30:11 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579794
Superseded Report:

Test Completion Dates

Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	23039335	23039439	23039368	23039374	23039379	23039387	23039330	23039392	23039401	23039408
	TP007	TP007	TP008	TP008	TP009	TP009	TP202	TP202	TP203	TP203
	ES4	ES1	ES1	ES4	ES1	ES4	ES1	ES4	ES1	ES4
	1.50 - 1.60	0.40 - 0.50	0.40 - 0.50	1.50 - 1.60	0.50 - 0.60	1.50 - 1.60	0.50 - 0.60	1.40 - 1.50	0.50 - 0.60	1.60 - 1.70
Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
Asbestos ID in Solid Samples	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
CEN 10:1 Leachate (1 Stage)	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020
CEN Readings	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
Chromium III	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	24-Oct-2020	26-Oct-2020
Coronene	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	27-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	26-Oct-2020	23-Oct-2020	26-Oct-2020	26-Oct-2020	23-Oct-2020
Dissolved Metals by ICP-MS	27-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	27-Oct-2020	27-Oct-2020
Dissolved Organic/Inorganic Carbon	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Easily Liberated Sulphide	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	26-Oct-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	27-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	27-Oct-2020	23-Oct-2020	27-Oct-2020	27-Oct-2020	23-Oct-2020
Fluoride	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
GRO by GC-FID (S)	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Hexavalent Chromium (s)	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	23-Oct-2020	26-Oct-2020
Loss on Ignition in soils	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Mercury Dissolved	26-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Metals in solid samples by OES	26-Oct-2020	26-Oct-2020	24-Oct-2020	24-Oct-2020	26-Oct-2020	24-Oct-2020	24-Oct-2020	24-Oct-2020	24-Oct-2020	24-Oct-2020
Moisture at 105C	24-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020
PAH 16 & 17 Calc	26-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	24-Oct-2020	23-Oct-2020	24-Oct-2020	23-Oct-2020	23-Oct-2020
PAH by GCMS	26-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	24-Oct-2020	23-Oct-2020	24-Oct-2020	23-Oct-2020	23-Oct-2020
PCBs by GCMS	26-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
pH	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Phenols by HPLC (W)	26-Oct-2020	27-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
Sample description	23-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	22-Oct-2020	21-Oct-2020	22-Oct-2020	22-Oct-2020	21-Oct-2020
Semi Volatile Organic Compounds	26-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	26-Oct-2020	23-Oct-2020	26-Oct-2020	26-Oct-2020	23-Oct-2020
Total Dissolved Solids	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Total Organic Carbon	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
TPH CWG GC (S)	27-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	27-Oct-2020	23-Oct-2020	27-Oct-2020	27-Oct-2020	23-Oct-2020
VOC MS (S)	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020

Lab Sample No(s) Customer Sample Ref. AGS Ref. Depth Type	23039414	23039421	23039427	23039434	23039342	23039350	23039356	23039363
	TP311	TP311	TP311	TP311	TP319	TP319	TP319	TP319
	ES1	ES2	ES4	ES4	ES1	ES2	ES3	ES5
	0.40 - 0.50	1.10 - 1.20	2.10 - 2.20	3.10 - 3.20	0.40 - 0.50	1.20 - 1.30	2.30 - 2.40	3.50 - 3.60
Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
Asbestos ID in Solid Samples	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
CEN 10:1 Leachate (1 Stage)	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
CEN Readings	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020	25-Oct-2020
Chromium III	26-Oct-2020	26-Oct-2020	26-Oct-2020	24-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Coronene	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Cyanide Comp/Free/Total/Thiocyanate	26-Oct-2020	23-Oct-2020	26-Oct-2020	26-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Dissolved Metals by ICP-MS	27-Oct-2020	28-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020	28-Oct-2020	28-Oct-2020	27-Oct-2020
Dissolved Organic/Inorganic Carbon	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Easily Liberated Sulphide	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020	26-Oct-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	27-Oct-2020	23-Oct-2020	27-Oct-2020	27-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Fluoride	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
GRO by GC-FID (S)	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Hexavalent Chromium (s)	26-Oct-2020	26-Oct-2020	26-Oct-2020	23-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Loss on Ignition in soils	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Mercury Dissolved	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Metals in solid samples by OES	24-Oct-2020	24-Oct-2020	24-Oct-2020	24-Oct-2020	27-Oct-2020	27-Oct-2020	26-Oct-2020	24-Oct-2020
Moisture at 105C	23-Oct-2020	22-Oct-2020	26-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020	22-Oct-2020
PAH 16 & 17 Calc	24-Oct-2020	23-Oct-2020	24-Oct-2020	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
PAH by GCMS	24-Oct-2020	23-Oct-2020	24-Oct-2020	24-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
PCBs by GCMS	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
pH	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Phenols by HPLC (W)	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	27-Oct-2020
Sample description	22-Oct-2020	21-Oct-2020	22-Oct-2020	22-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020	21-Oct-2020
Semi Volatile Organic Compounds	26-Oct-2020	23-Oct-2020	22-Oct-2020	22-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
Total Dissolved Solids	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
Total Organic Carbon	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020	26-Oct-2020
TPH CWG GC (S)	27-Oct-2020	23-Oct-2020	27-Oct-2020	27-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020
VOC MS (S)	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020	23-Oct-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

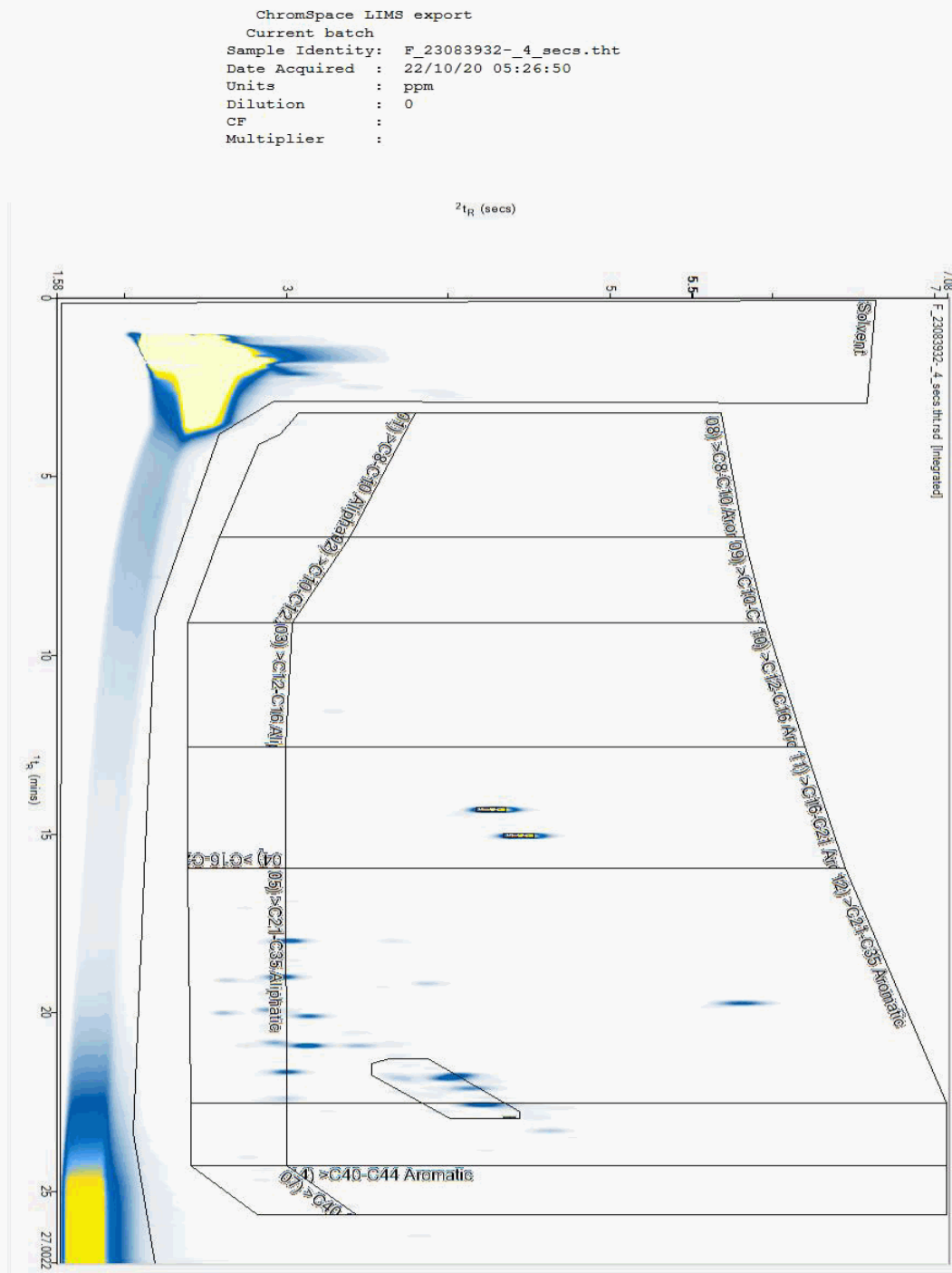
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23083932
Sample ID : TP319

Depth : 3.50 - 3.60





CERTIFICATE OF ANALYSIS

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Client Reference: 2020WW102
Order Number: 9028

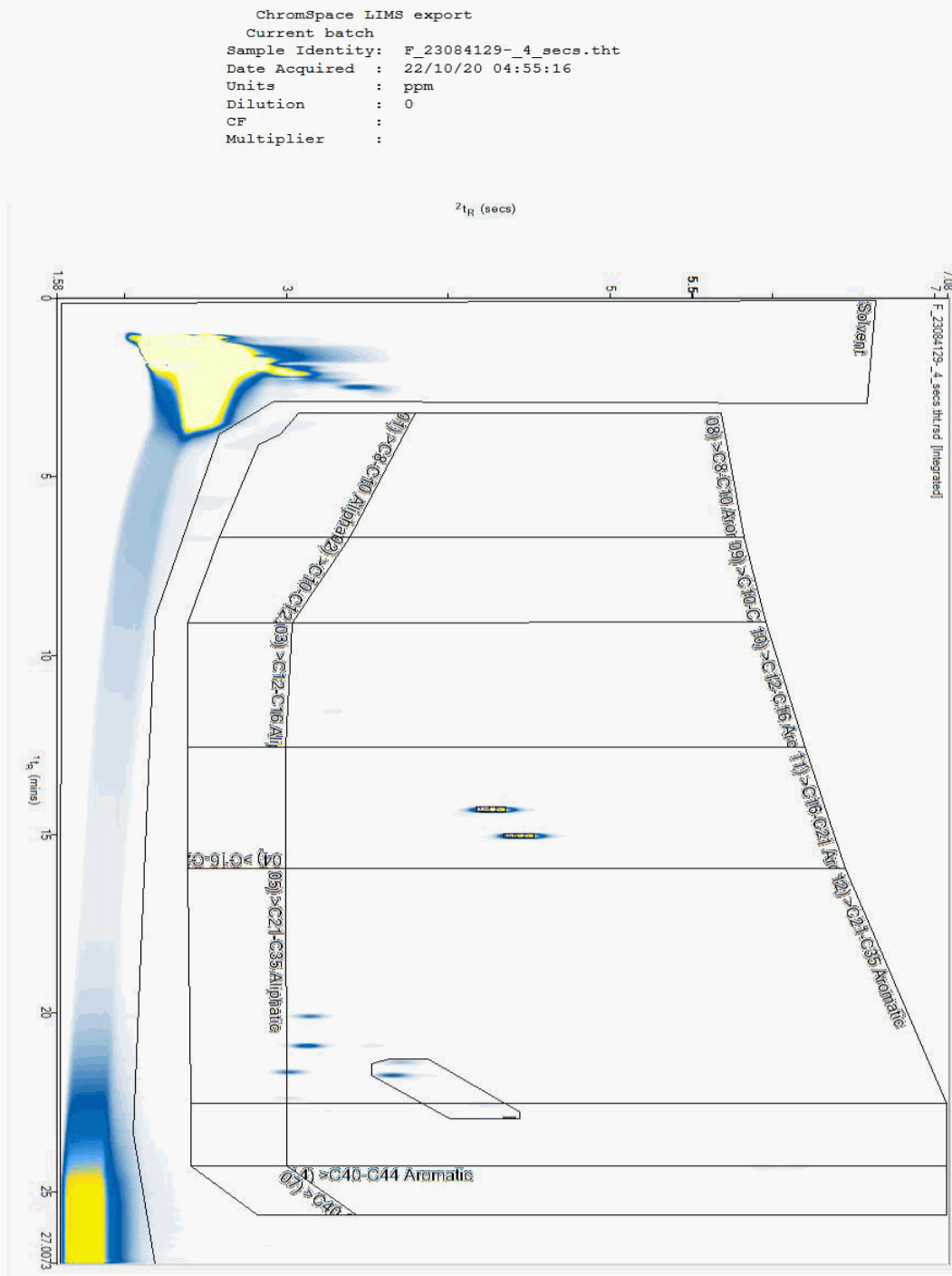
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23084129
Sample ID : TP319

Depth : 1.20 - 1.30





CERTIFICATE OF ANALYSIS

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SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

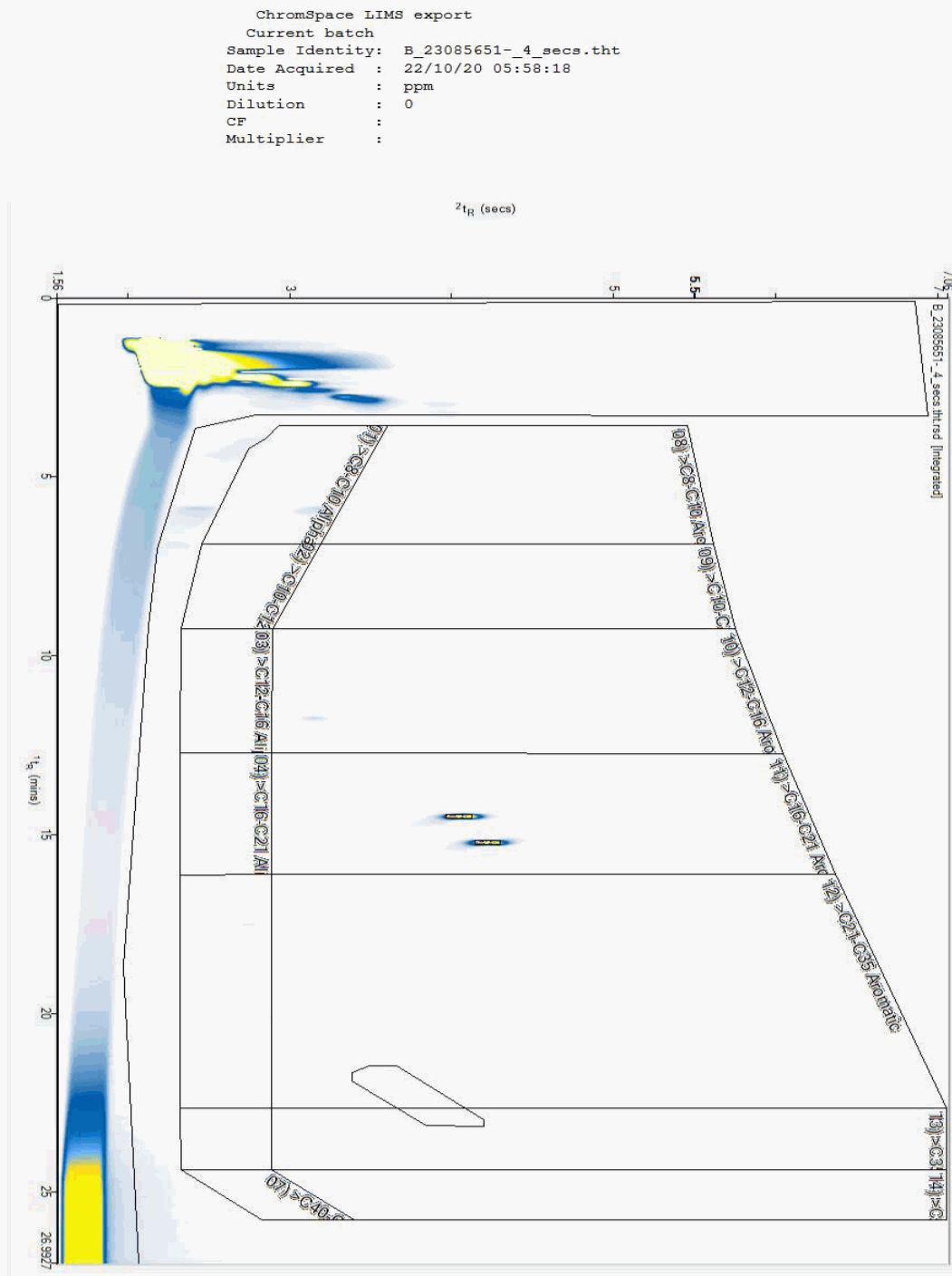
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085651
Sample ID : TP008

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

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SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

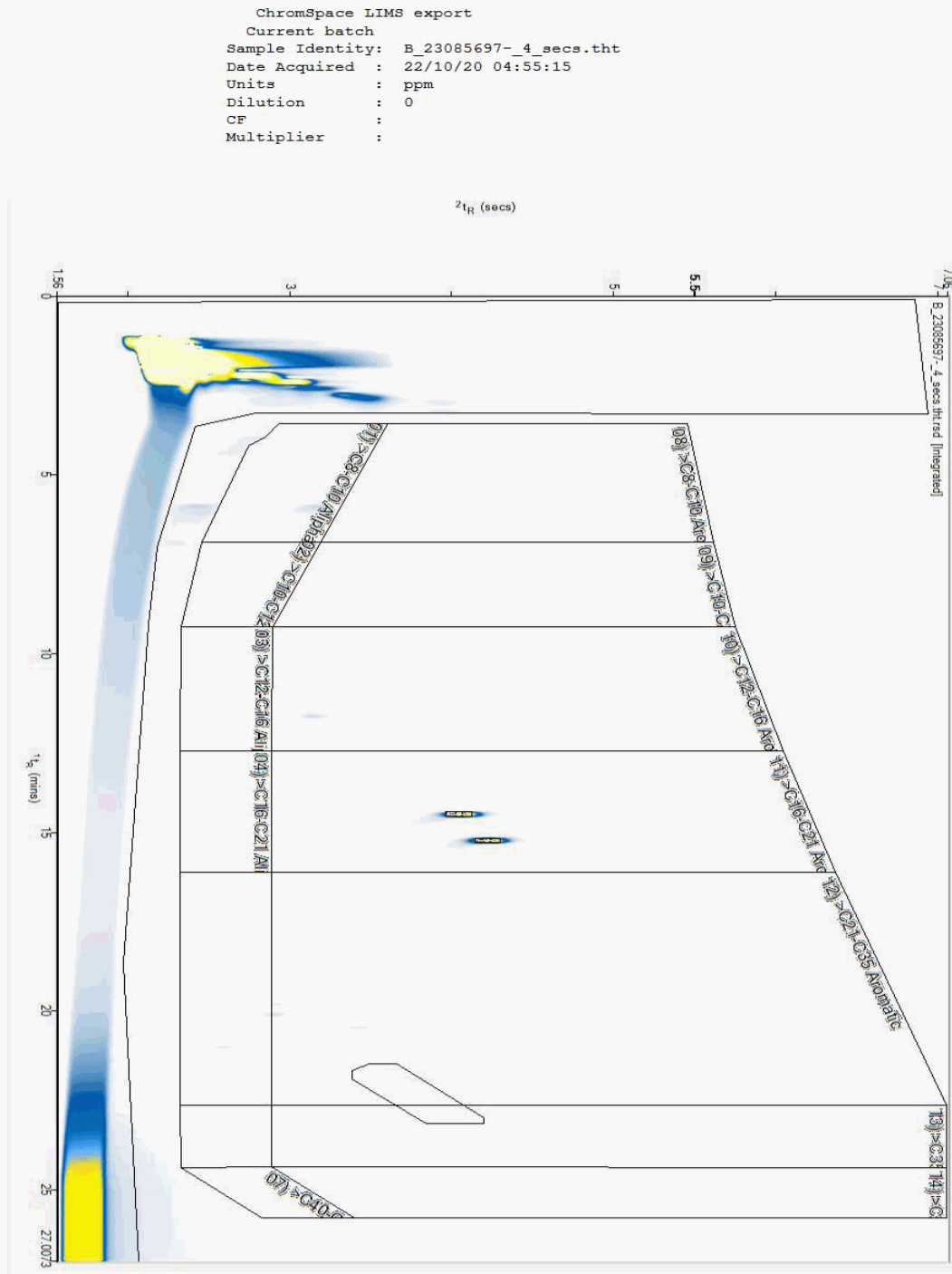
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085697
Sample ID : TP007

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

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Order Number: 9028

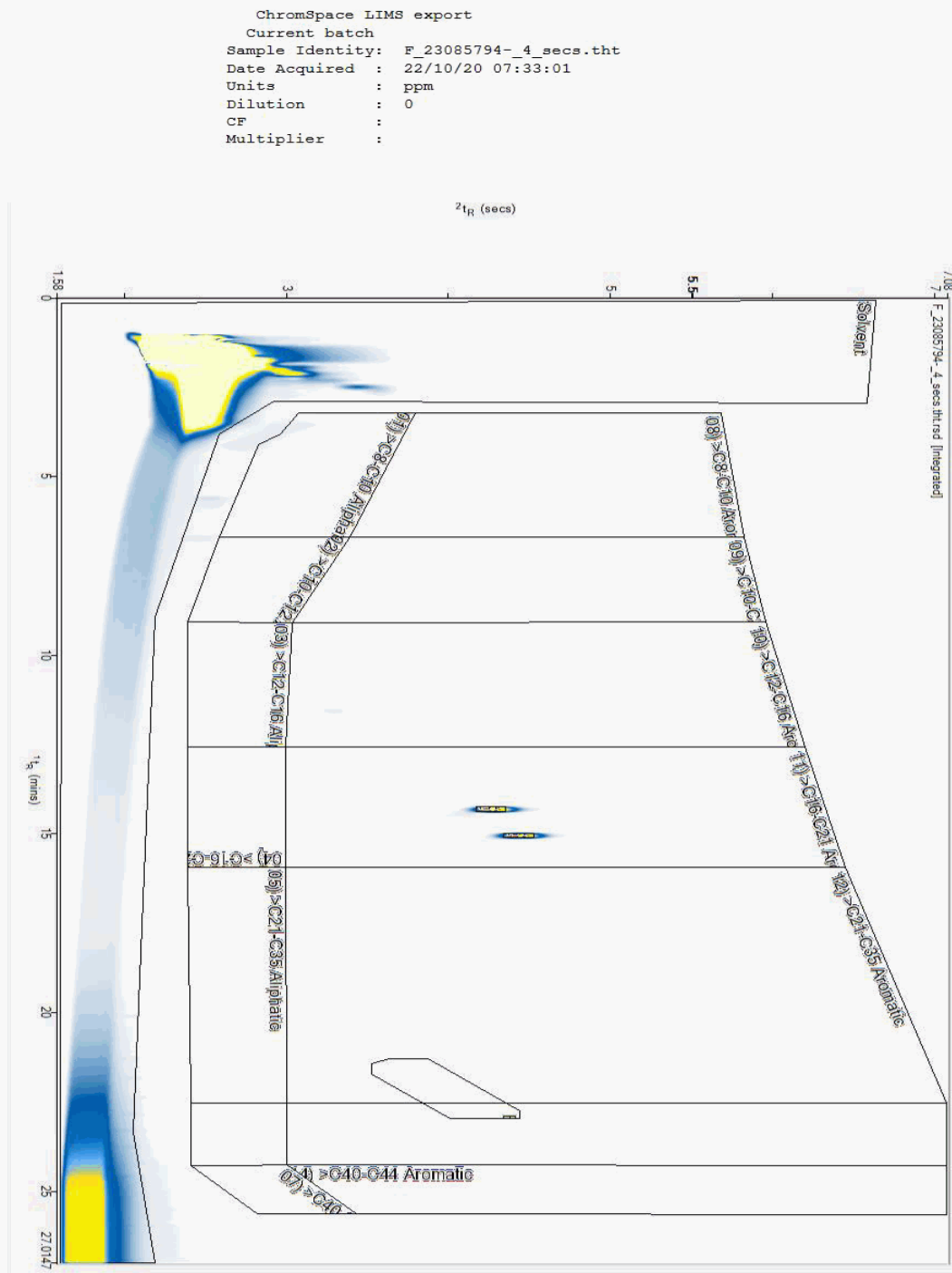
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085794
Sample ID : TP319

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

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SDG: 201015-115
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Client Reference: 2020WW102
Order Number: 9028

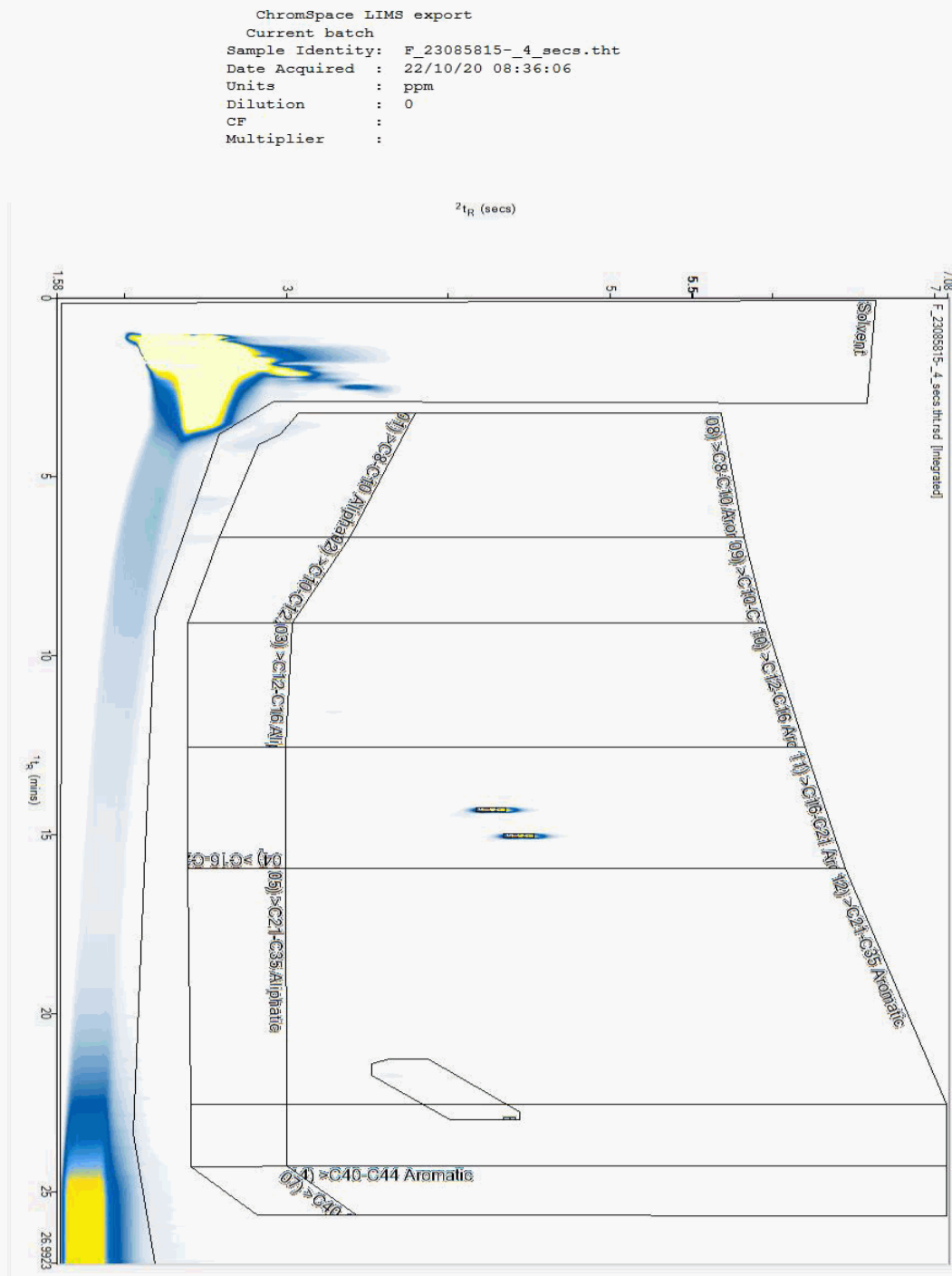
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085815
Sample ID : TP319

Depth : 2.30 - 2.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

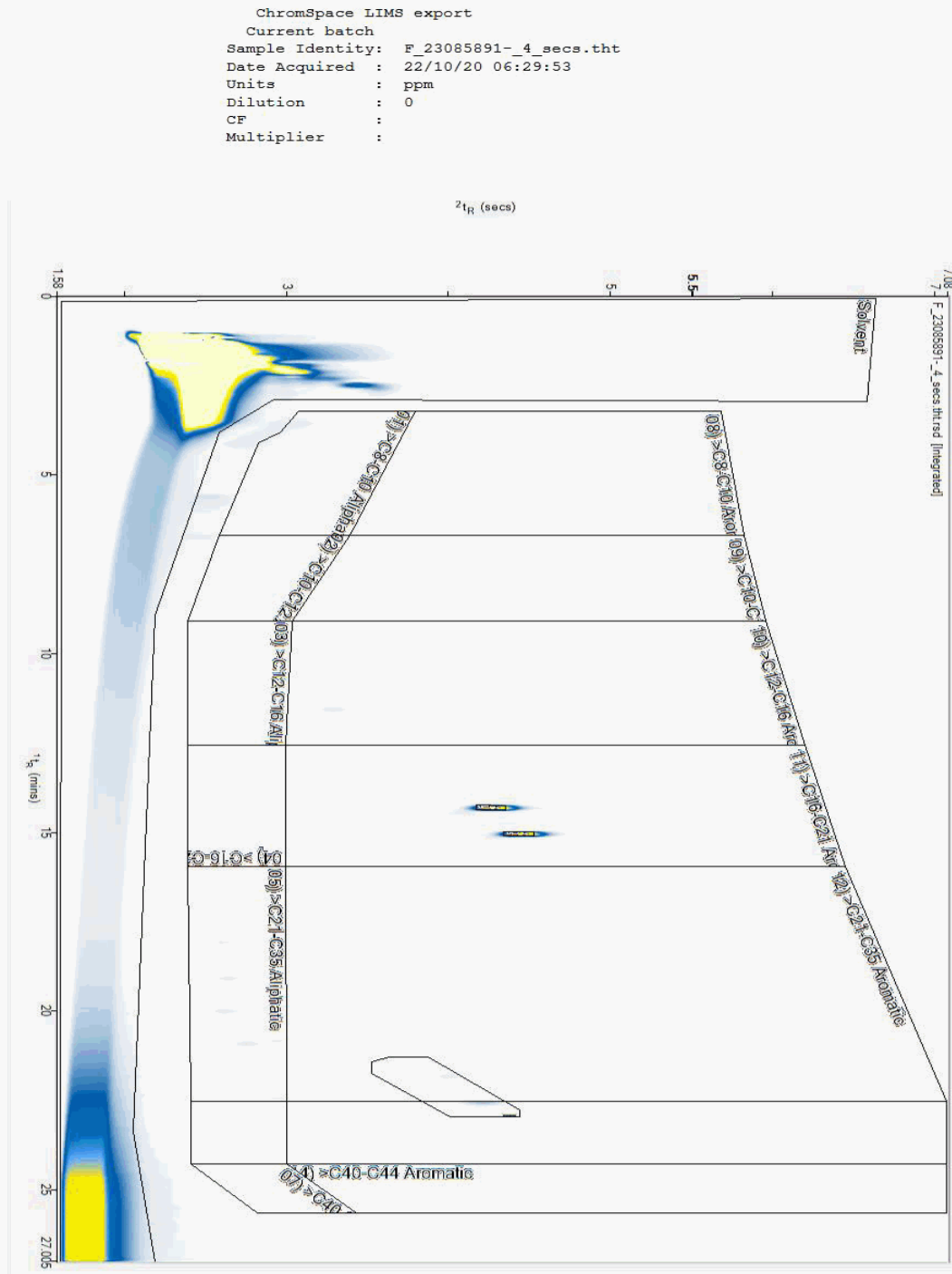
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085891
Sample ID : TP008

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

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SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

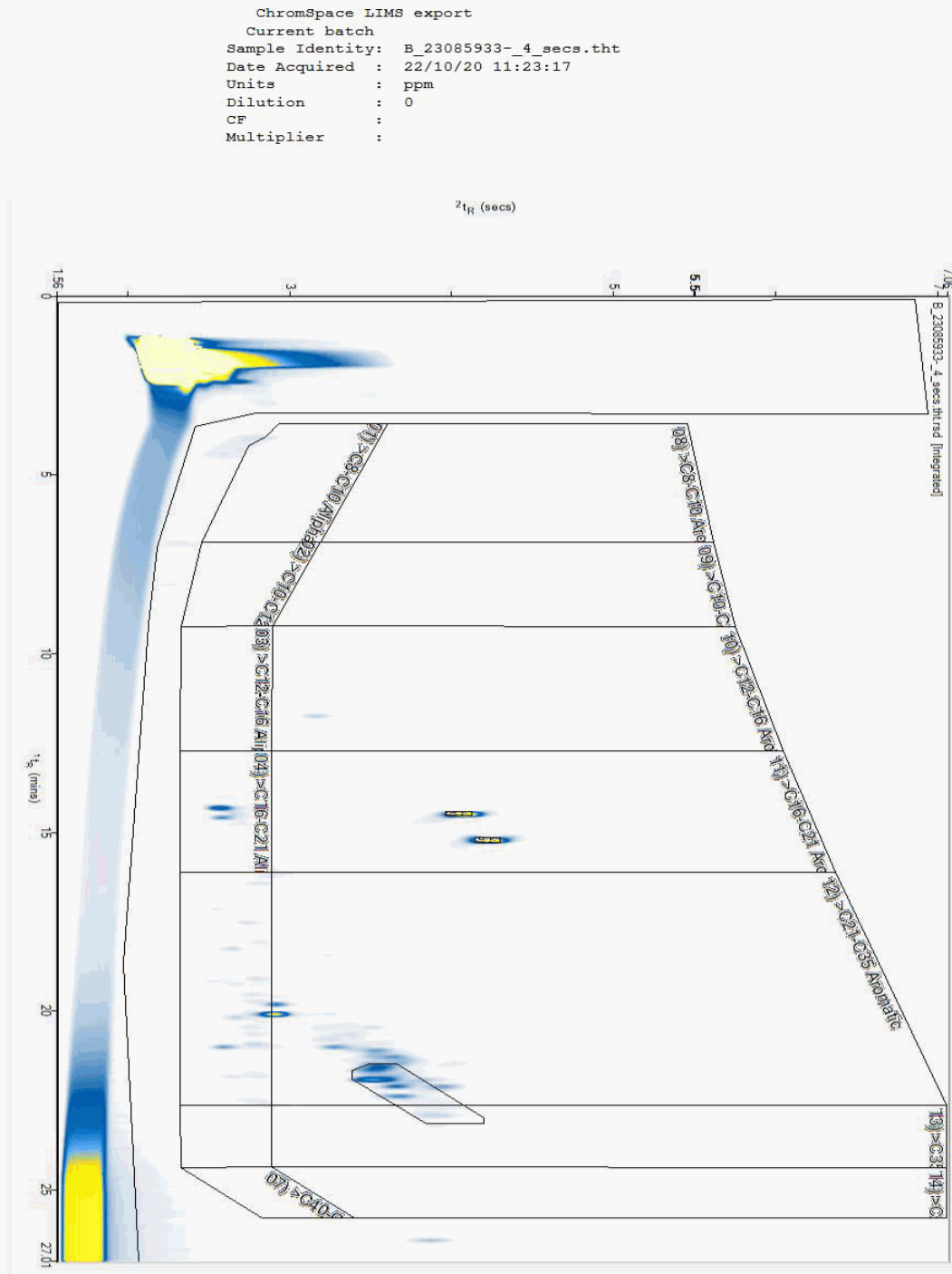
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085933
Sample ID : TP311

Depth : 1.10 - 1.20





CERTIFICATE OF ANALYSIS

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SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

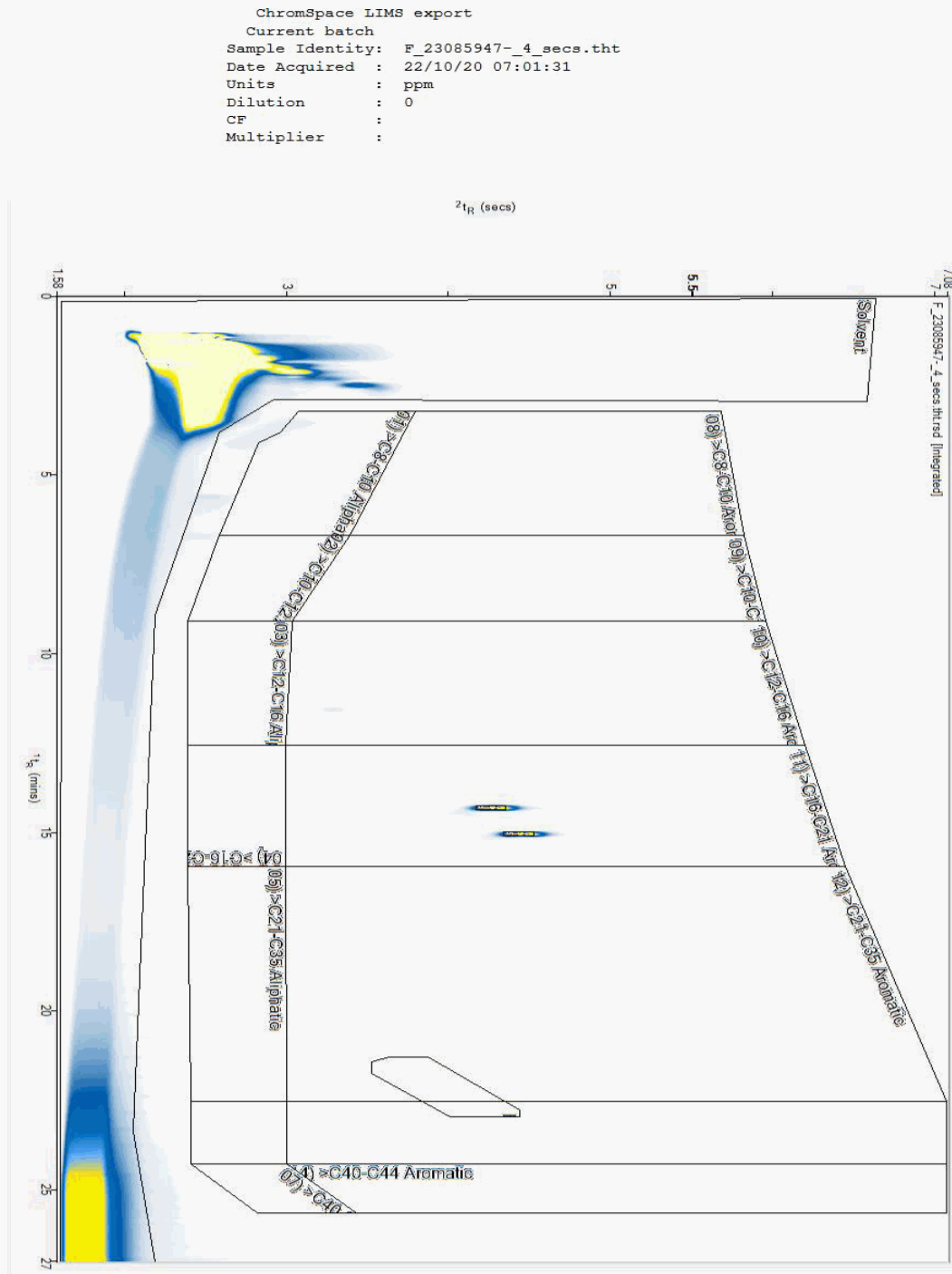
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085947
Sample ID : TP009

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

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SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

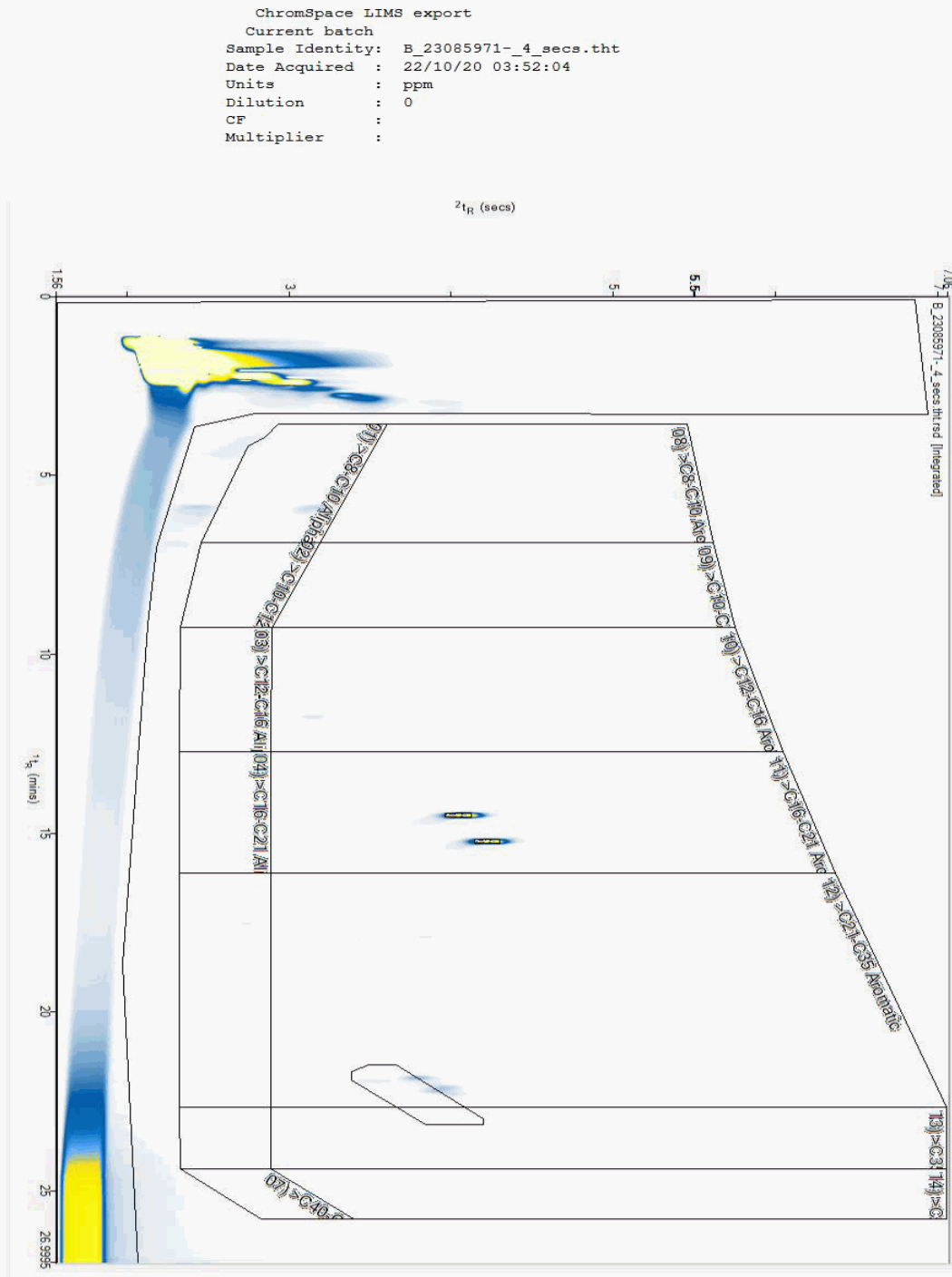
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085971
Sample ID : TP203

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

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SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

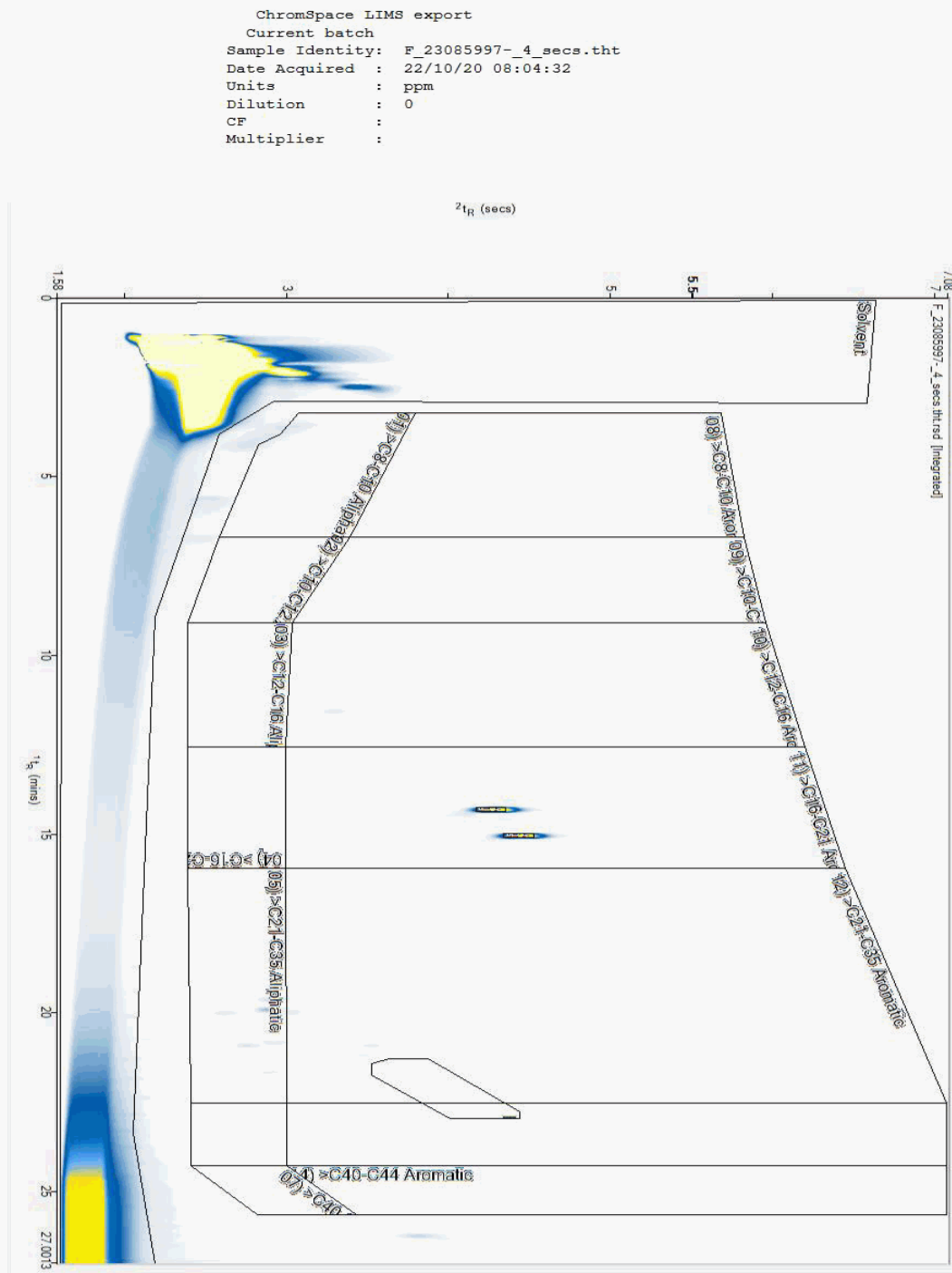
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23085997
Sample ID : TP202

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

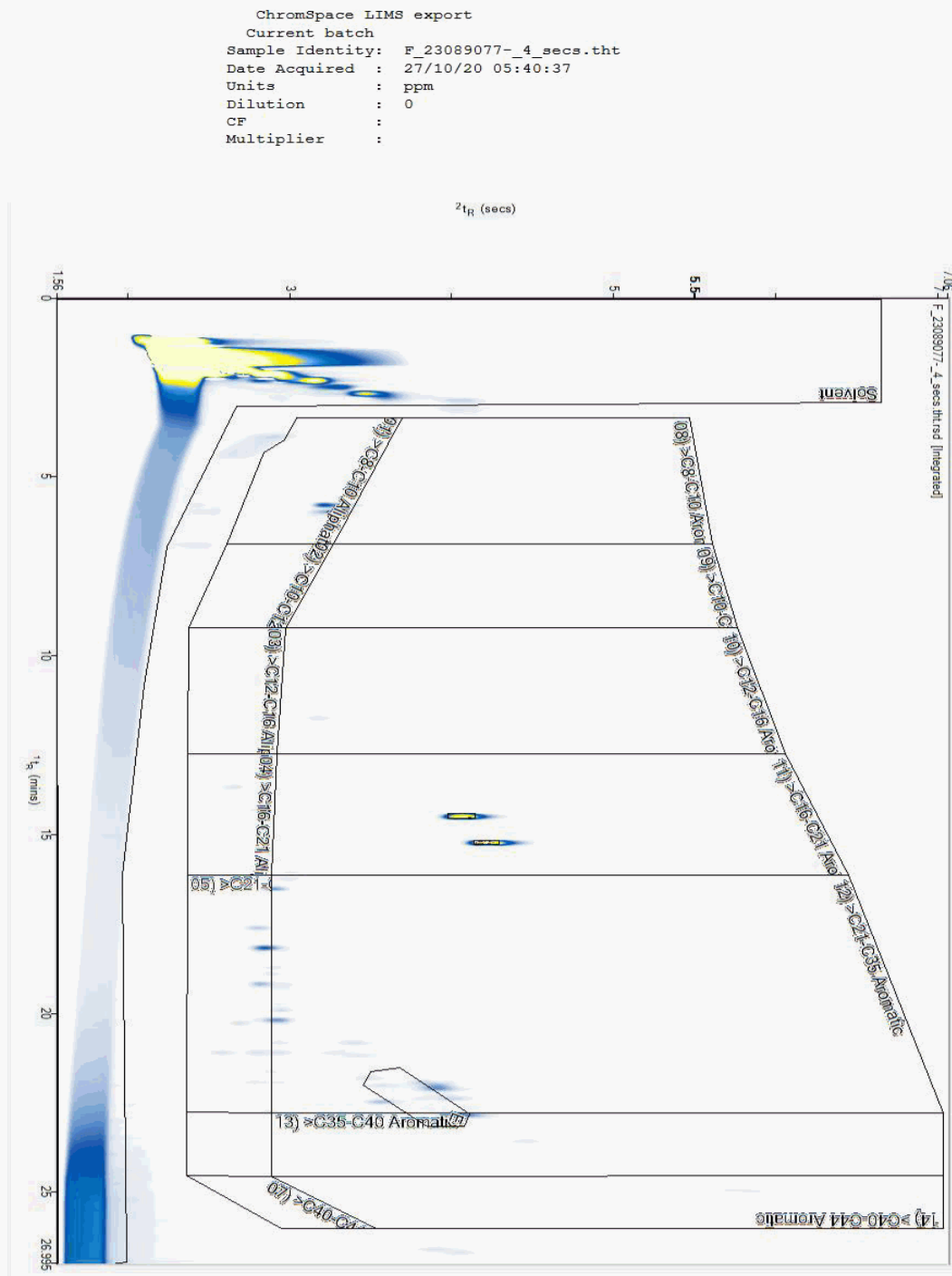
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23089077
Sample ID : TP203

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

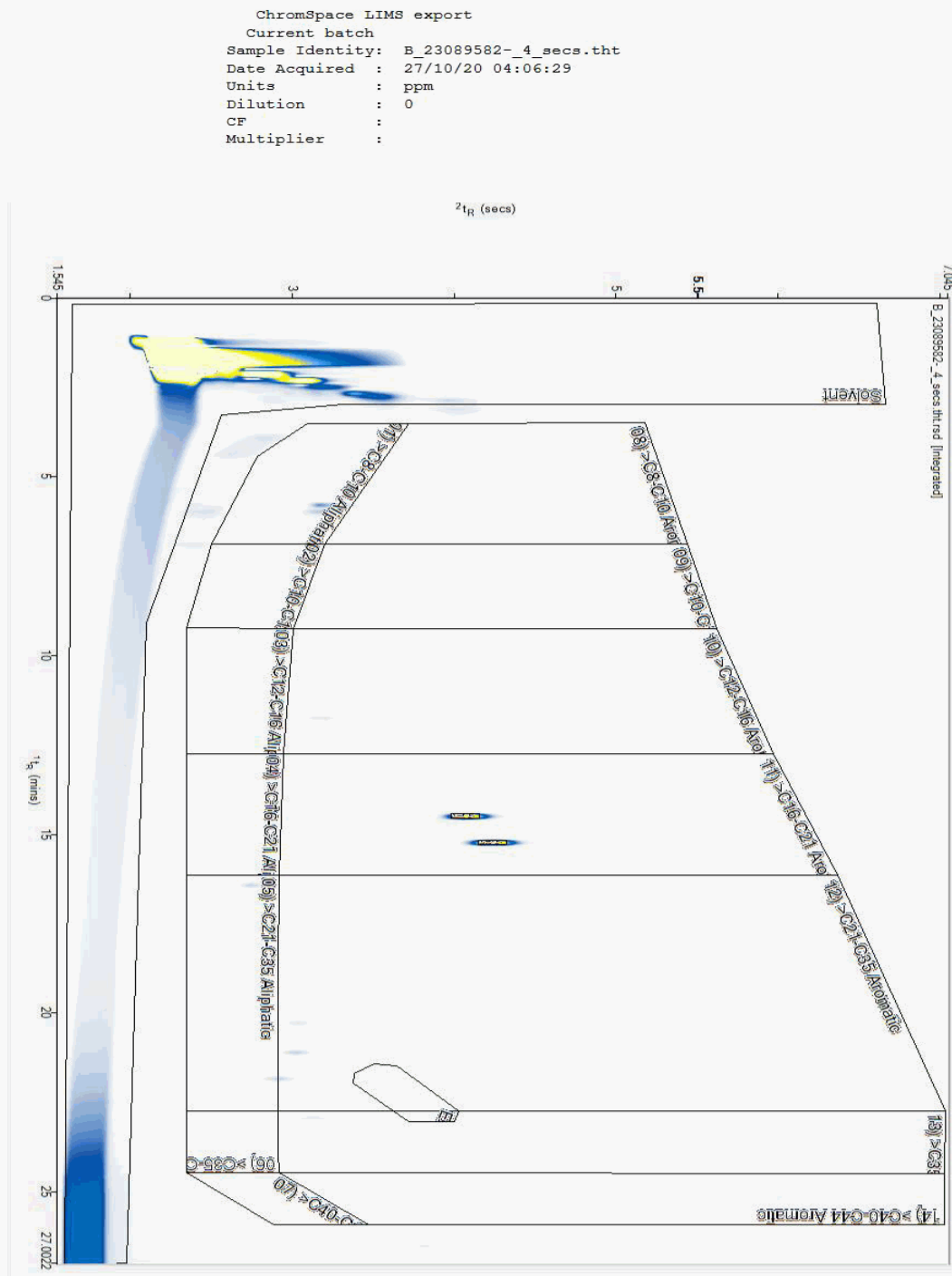
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23089582
Sample ID : TP311

Depth : 2.10 - 2.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

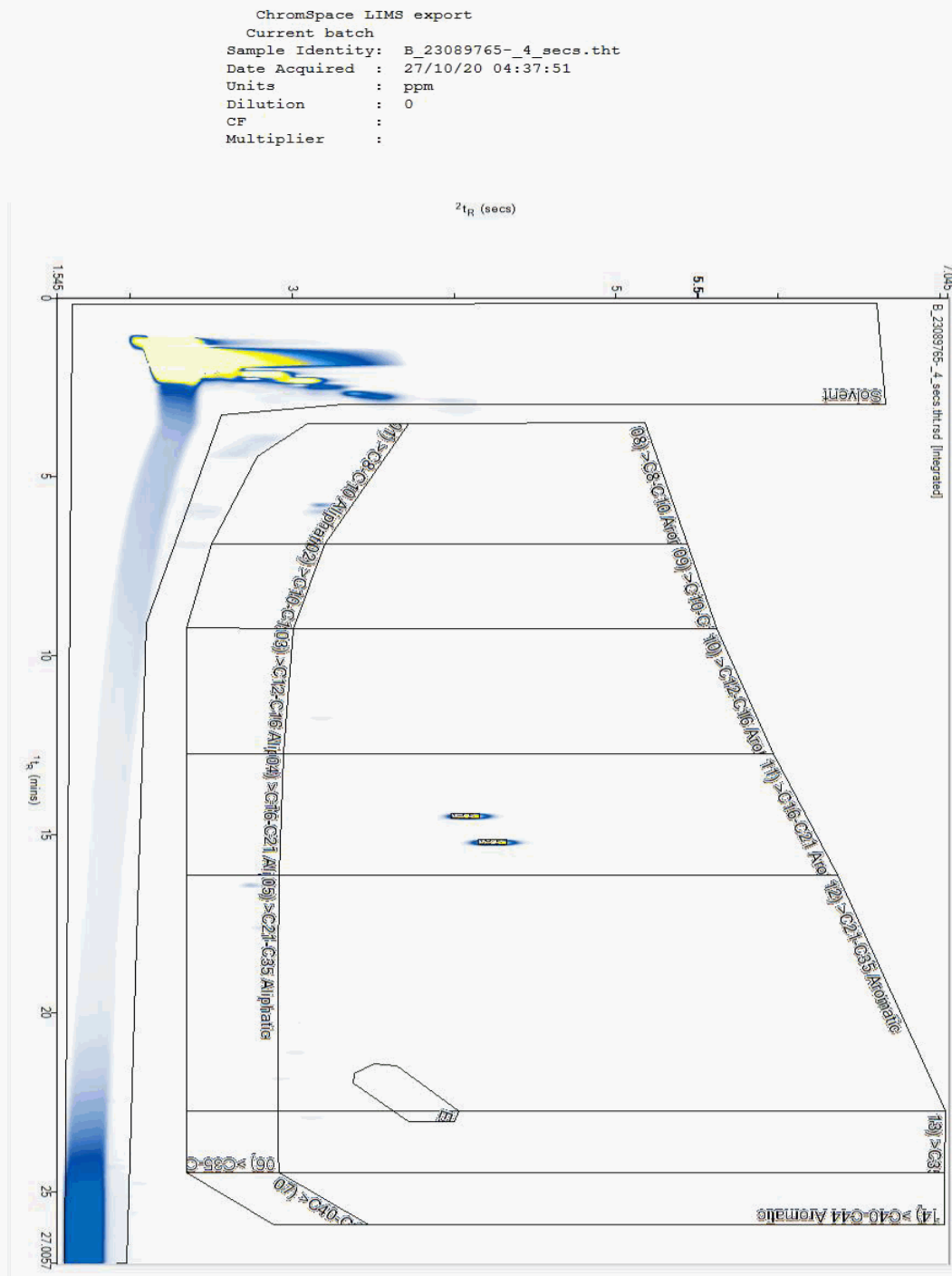
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23089765
Sample ID : TP202

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

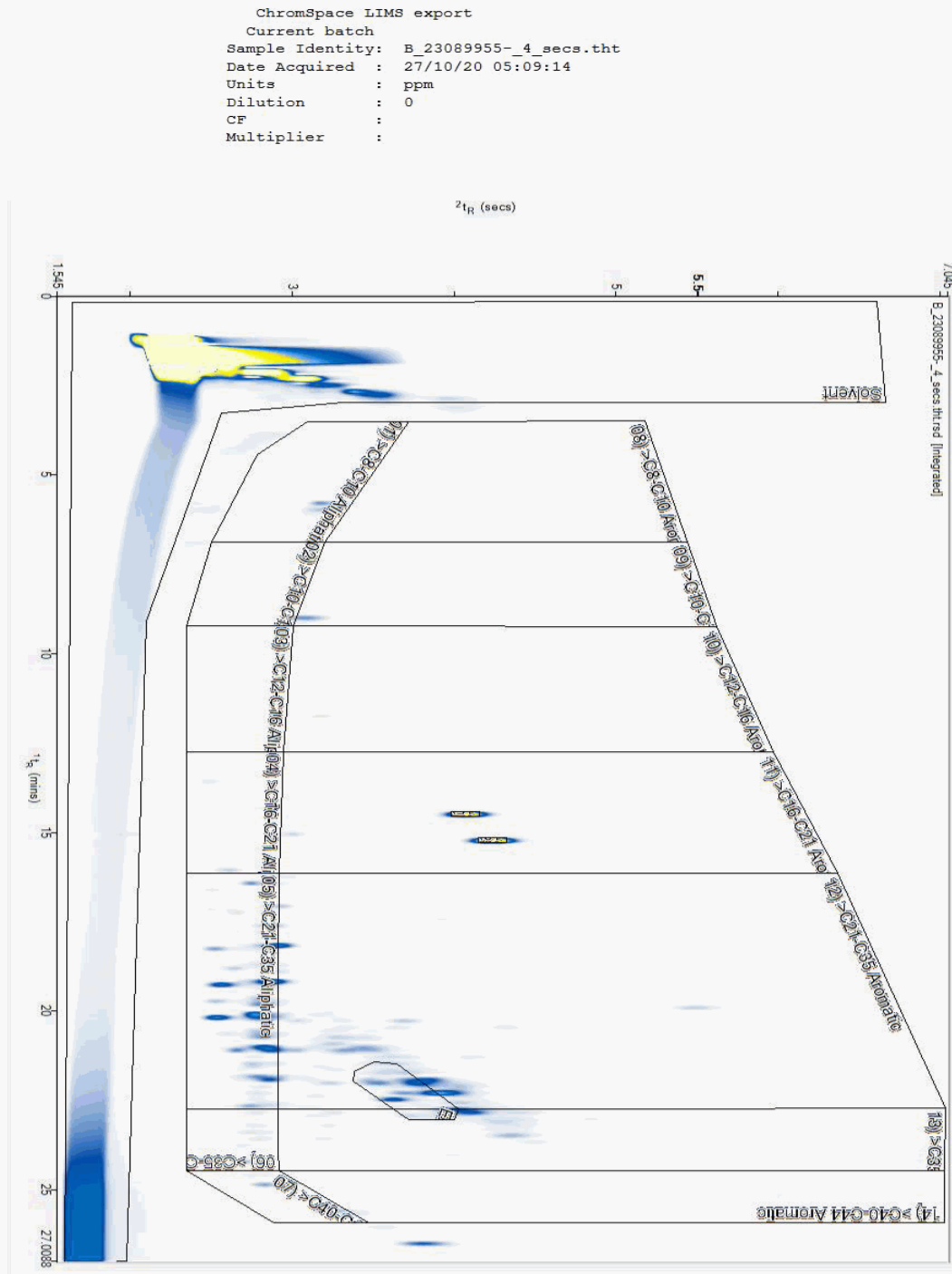
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23089955
Sample ID : TP311

Depth : 3.10 - 3.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

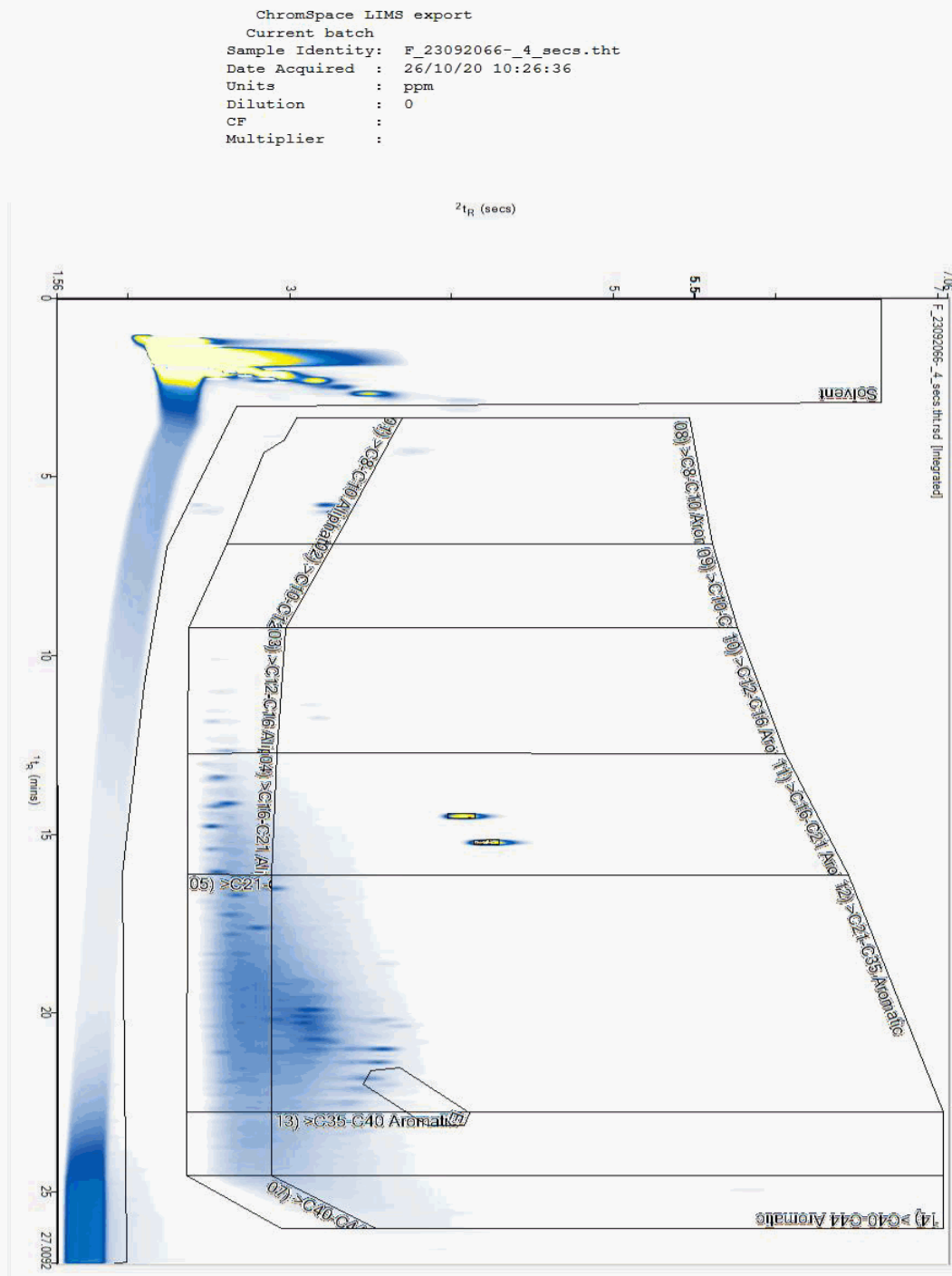
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23092066
Sample ID : TP311

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

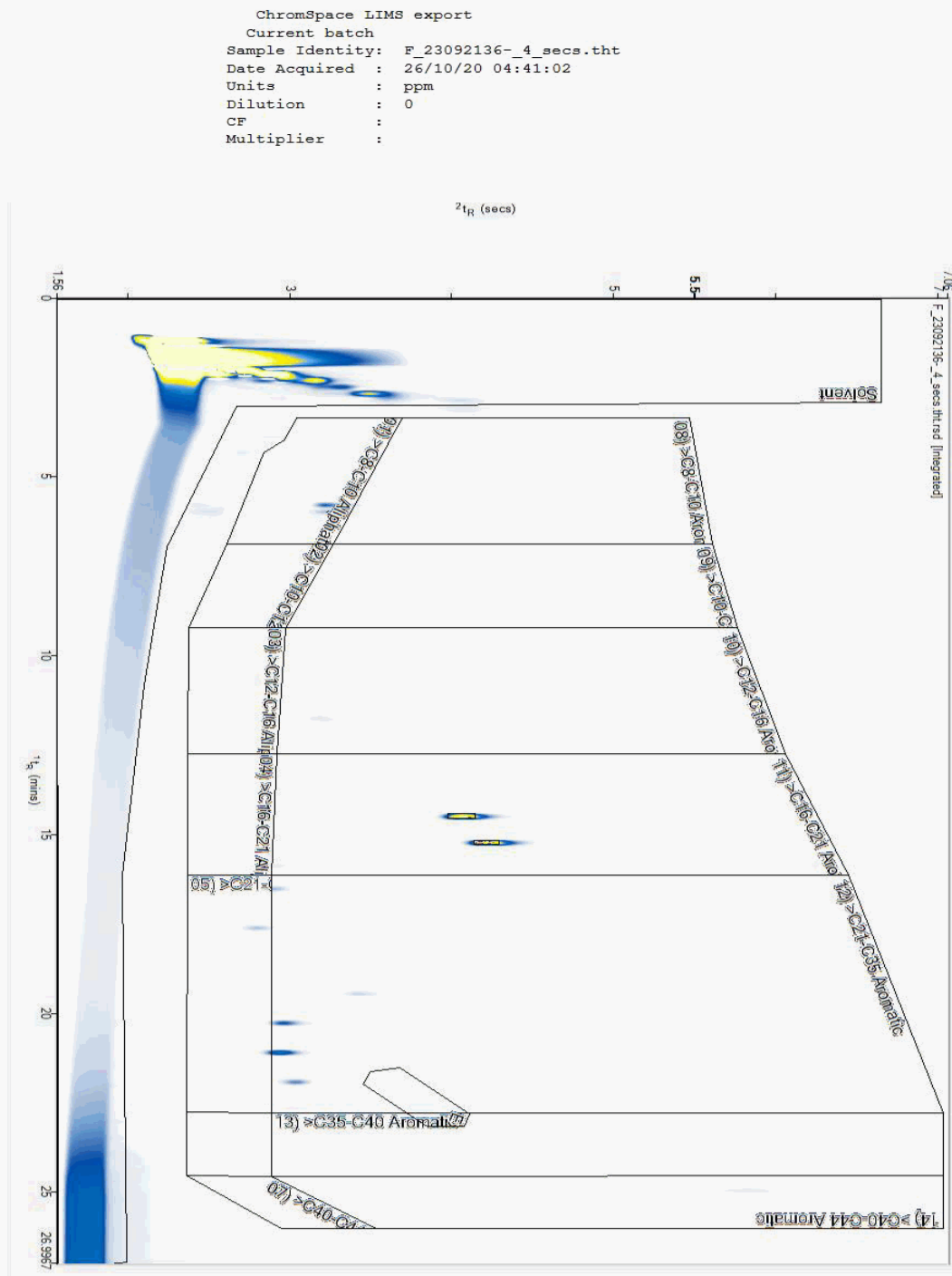
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23092136
Sample ID : TP009

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

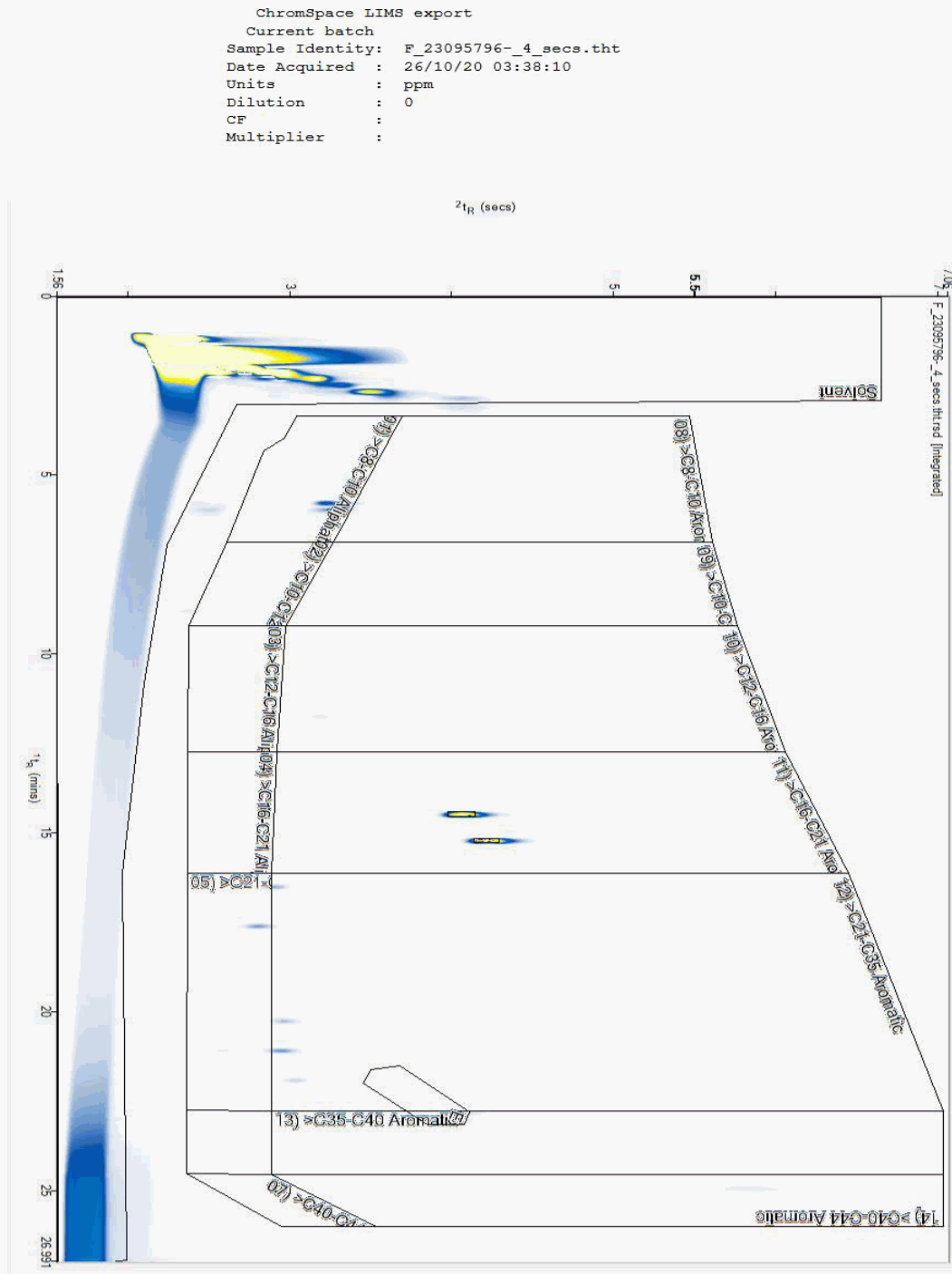
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23095796
Sample ID : TP007

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

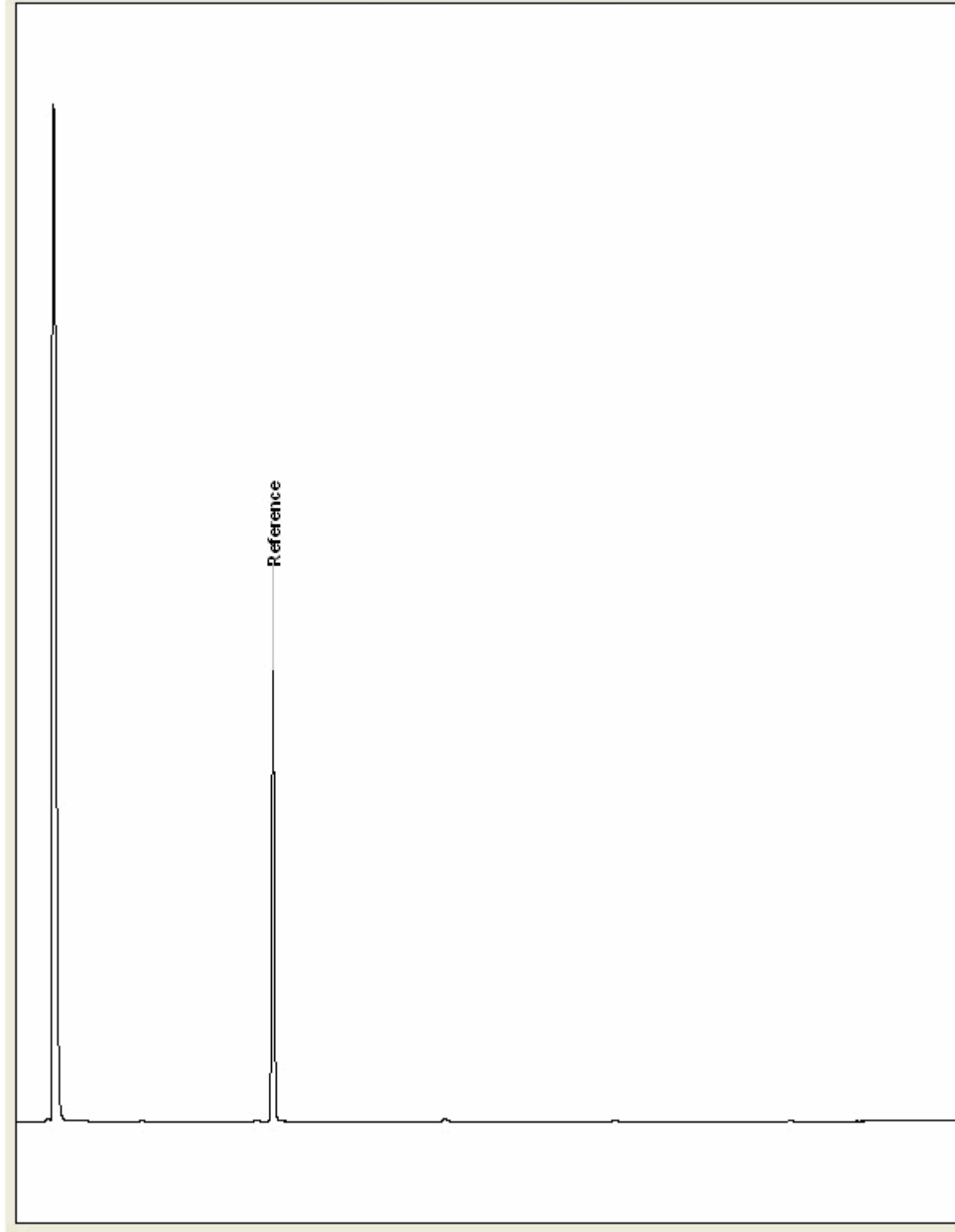
Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075051
Sample ID : TP311

Depth : 2.10 - 2.20

23075051_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

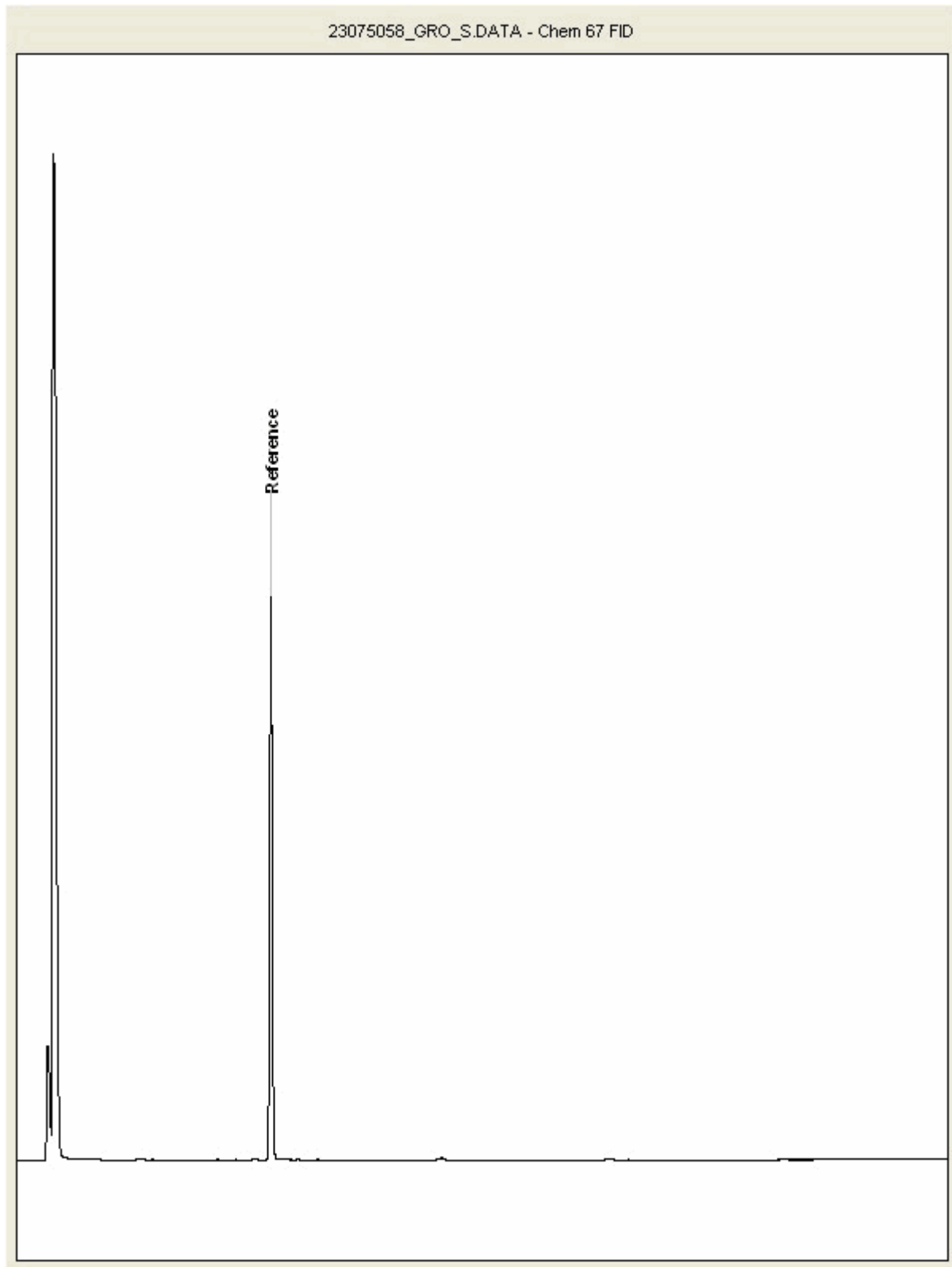
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075058
Sample ID : TP311

Depth : 3.10 - 3.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

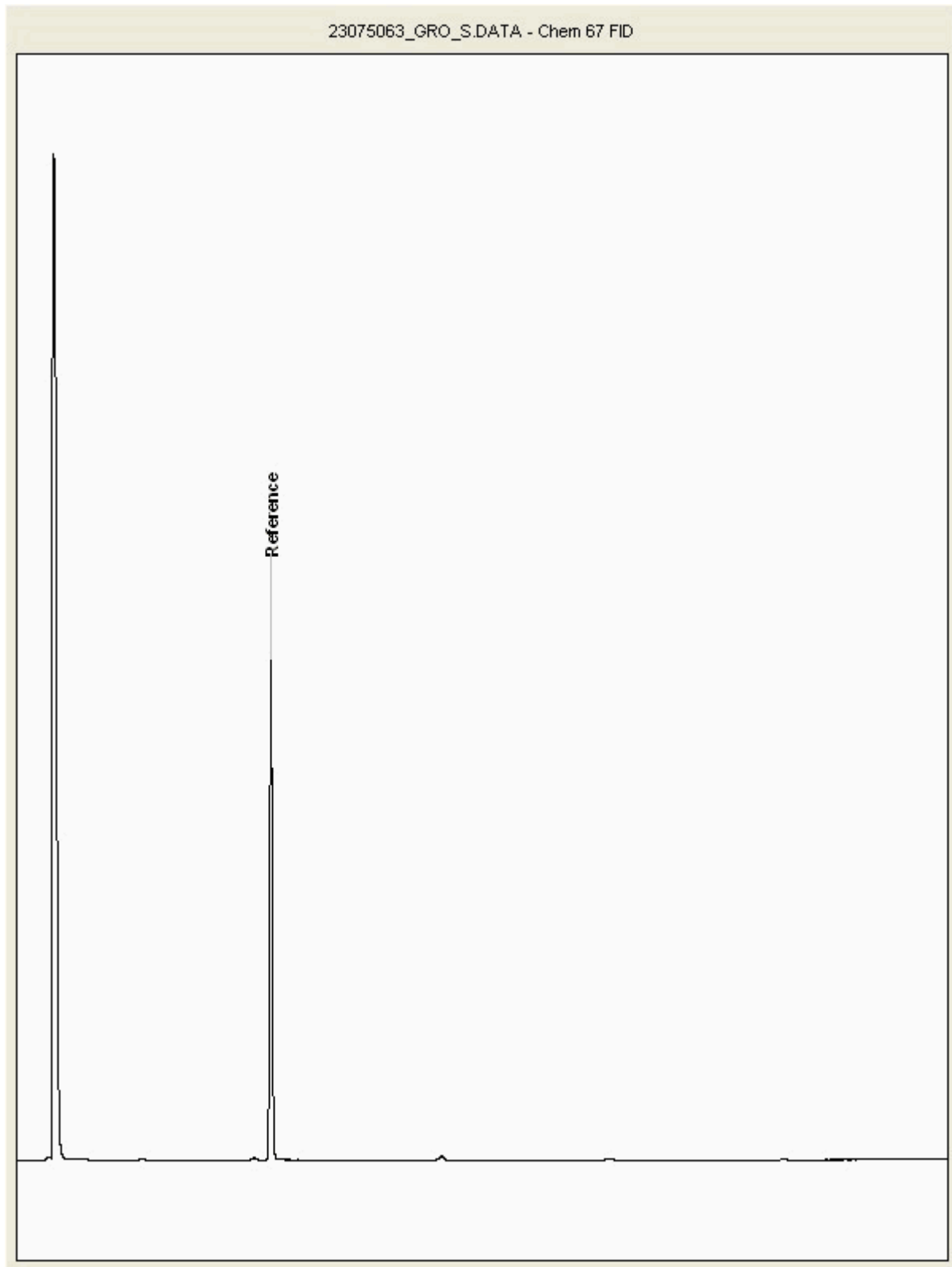
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075063
Sample ID : TP009

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

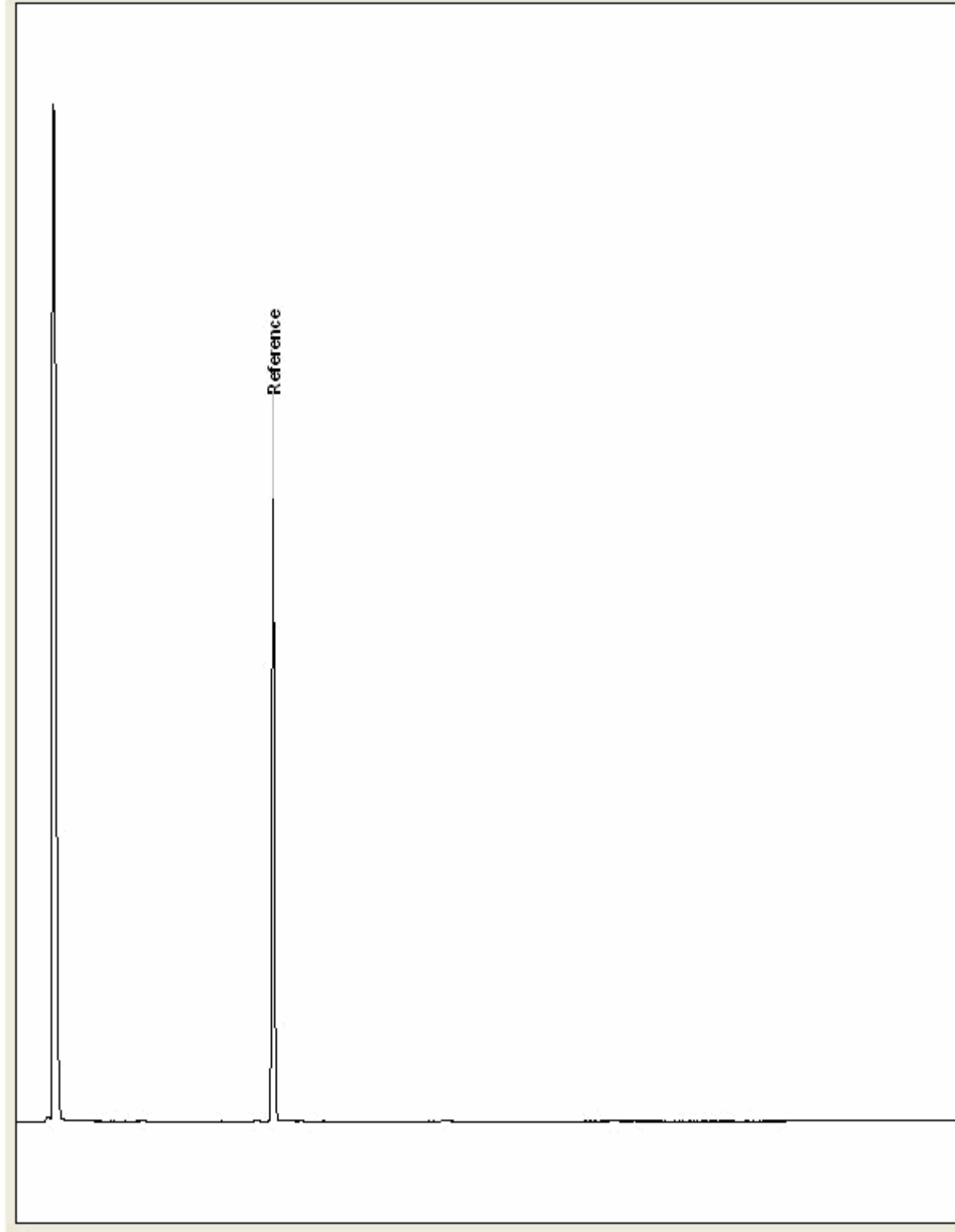
Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075072
Sample ID : TP202

Depth : 0.50 - 0.60

23075072_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

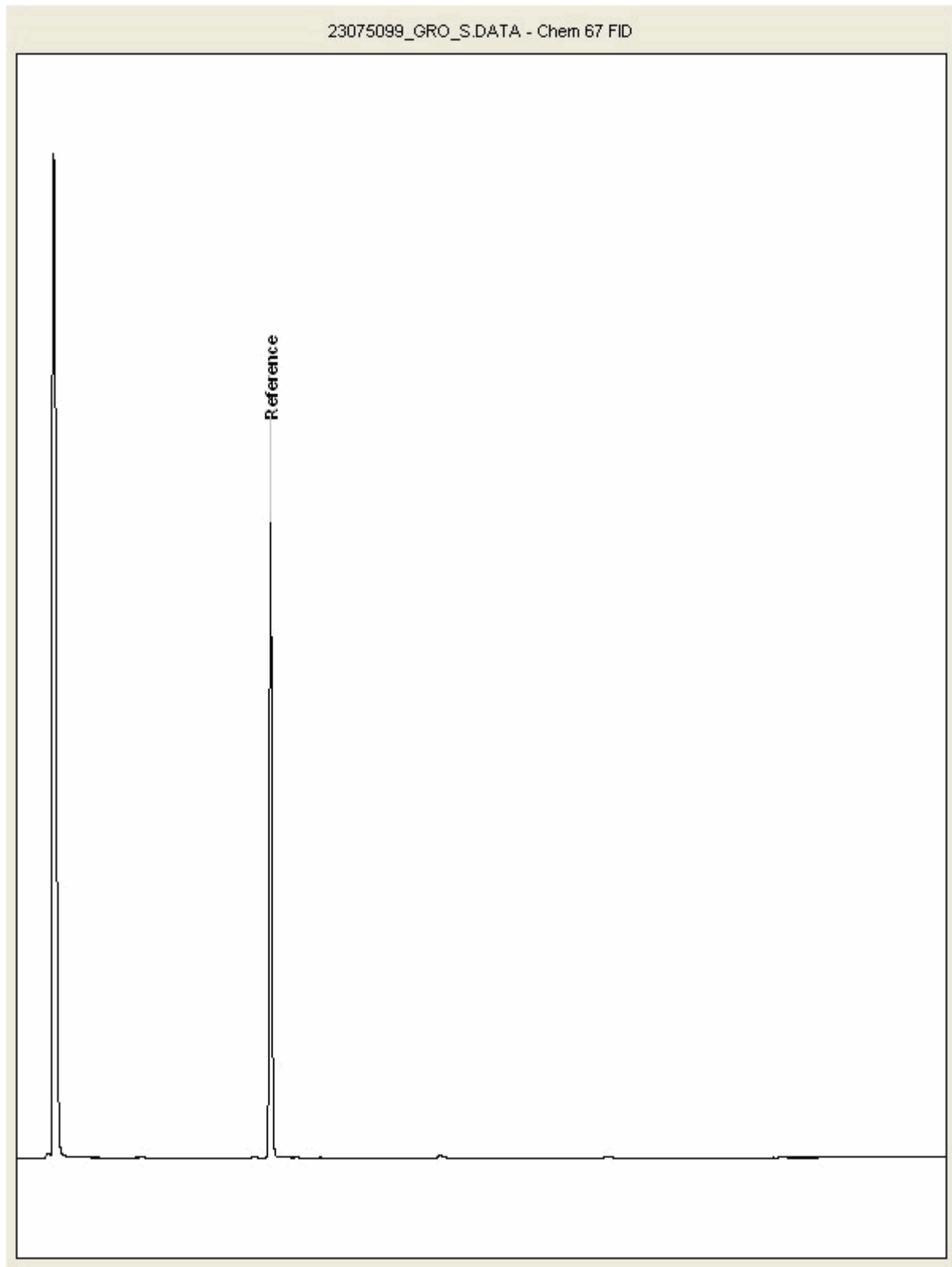
Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075099
Sample ID : TP202

Depth : 1.40 - 1.50

23075099_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

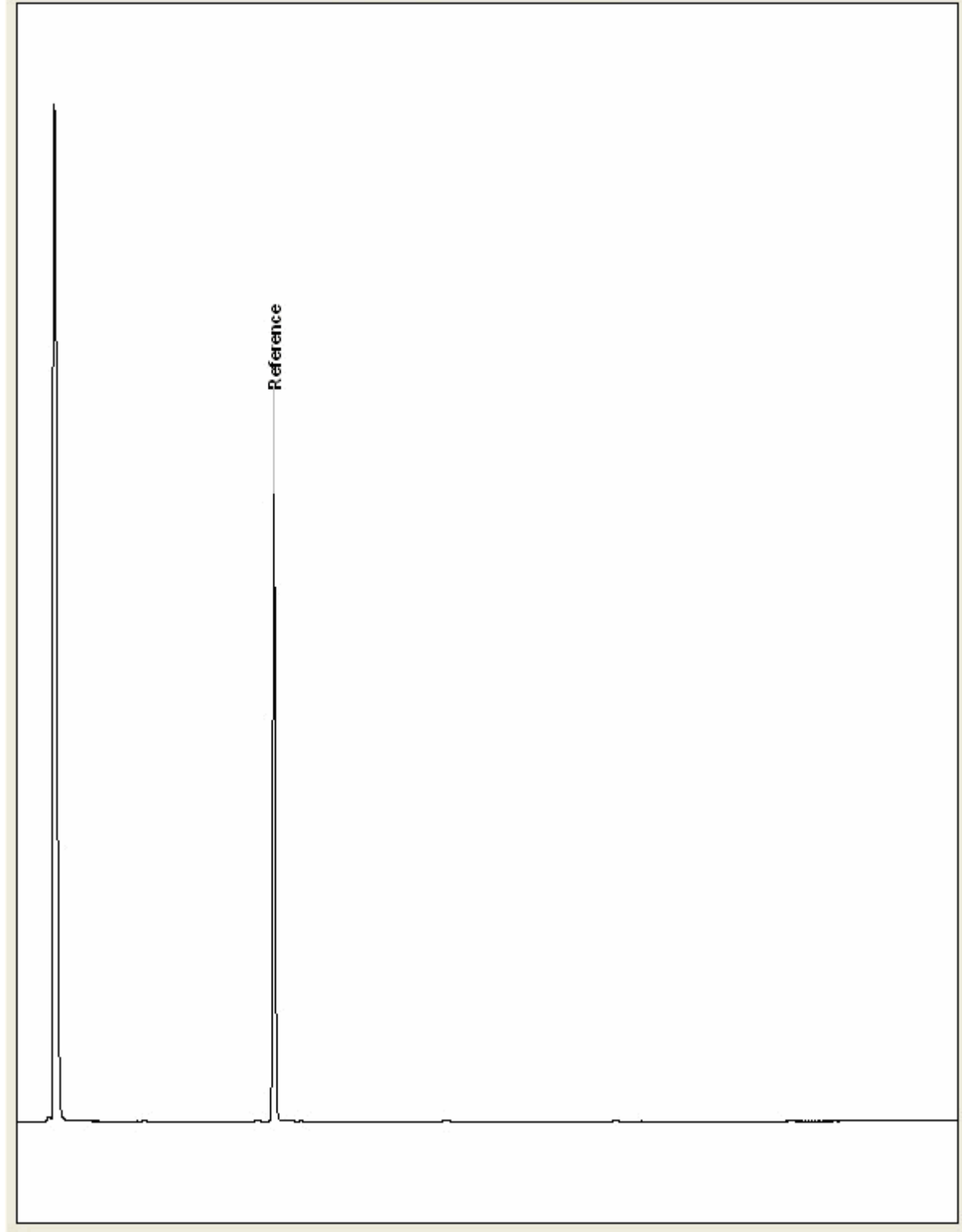
Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075105
Sample ID : TP203

Depth : 0.50 - 0.60

23075105_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

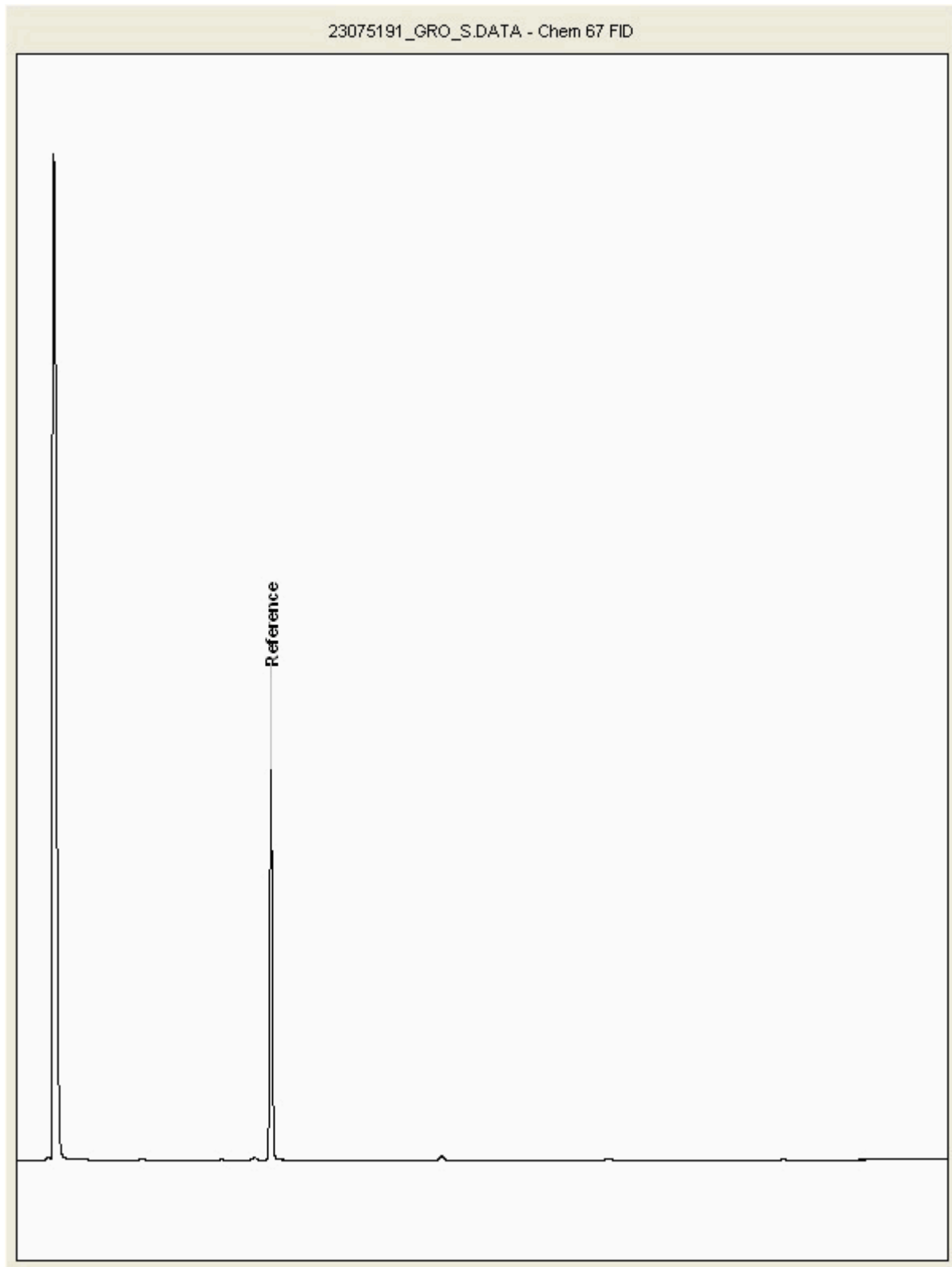
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075191
Sample ID : TP009

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

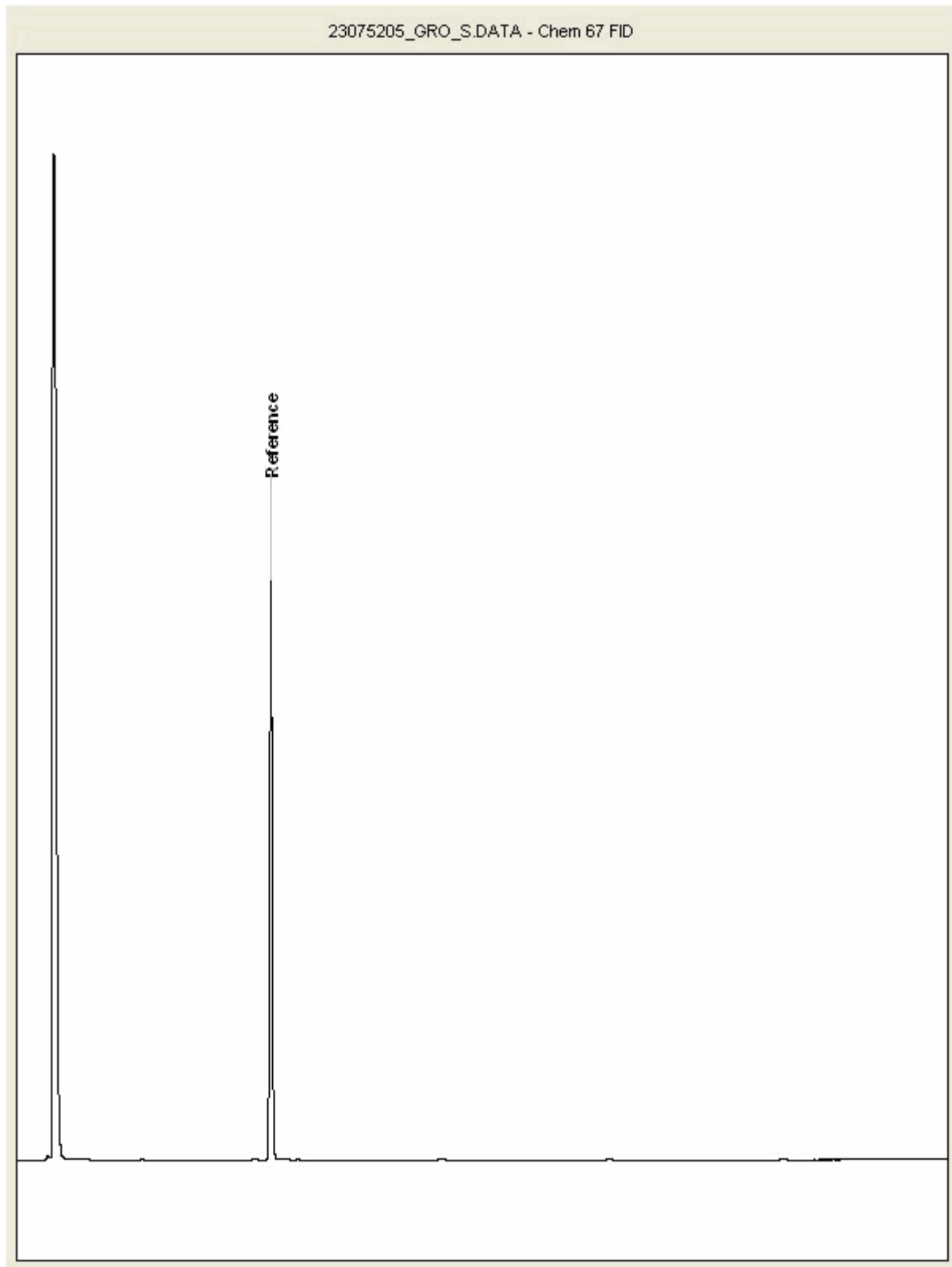
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075205
Sample ID : TP203

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

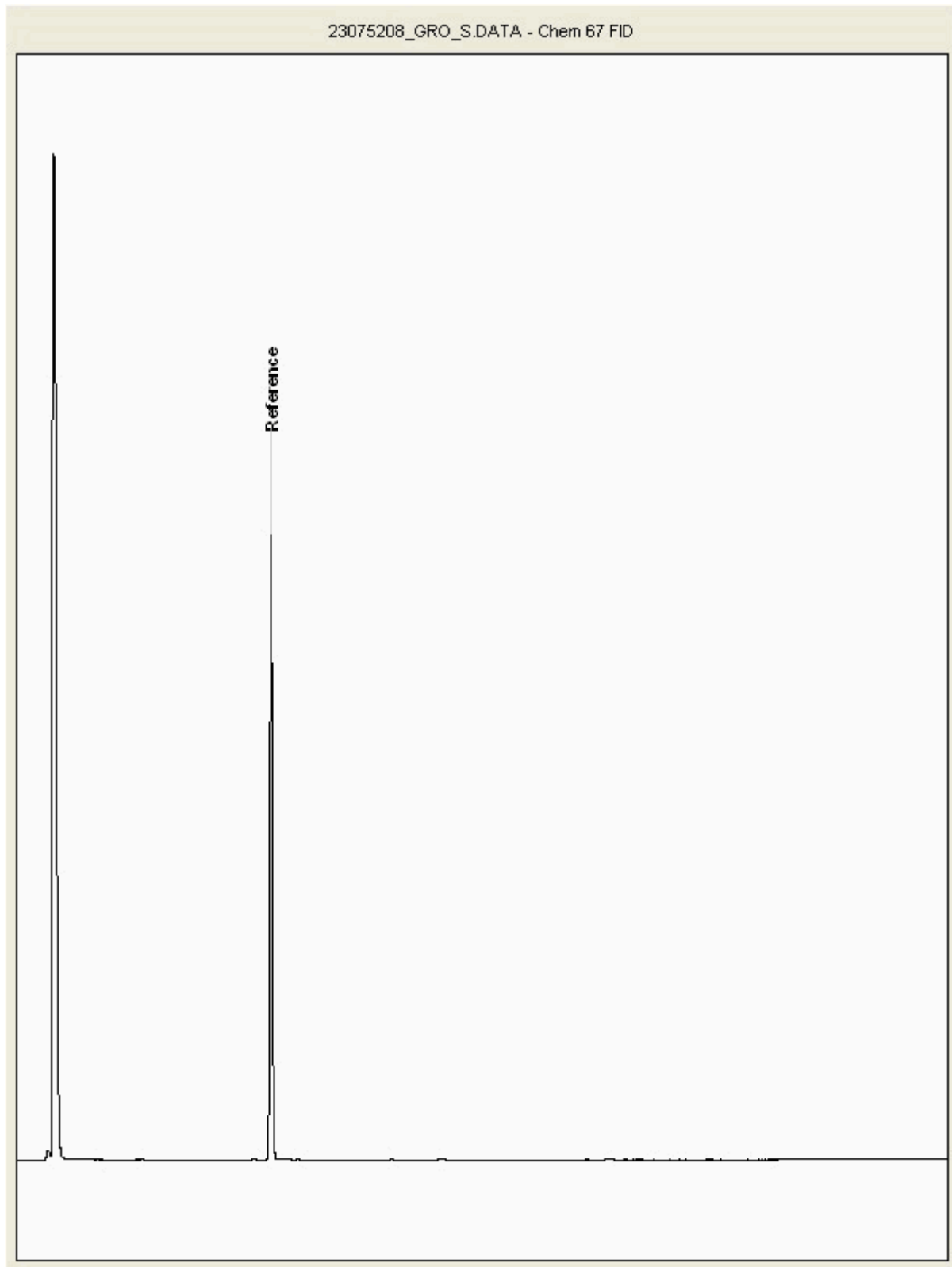
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075208
Sample ID : TP311

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

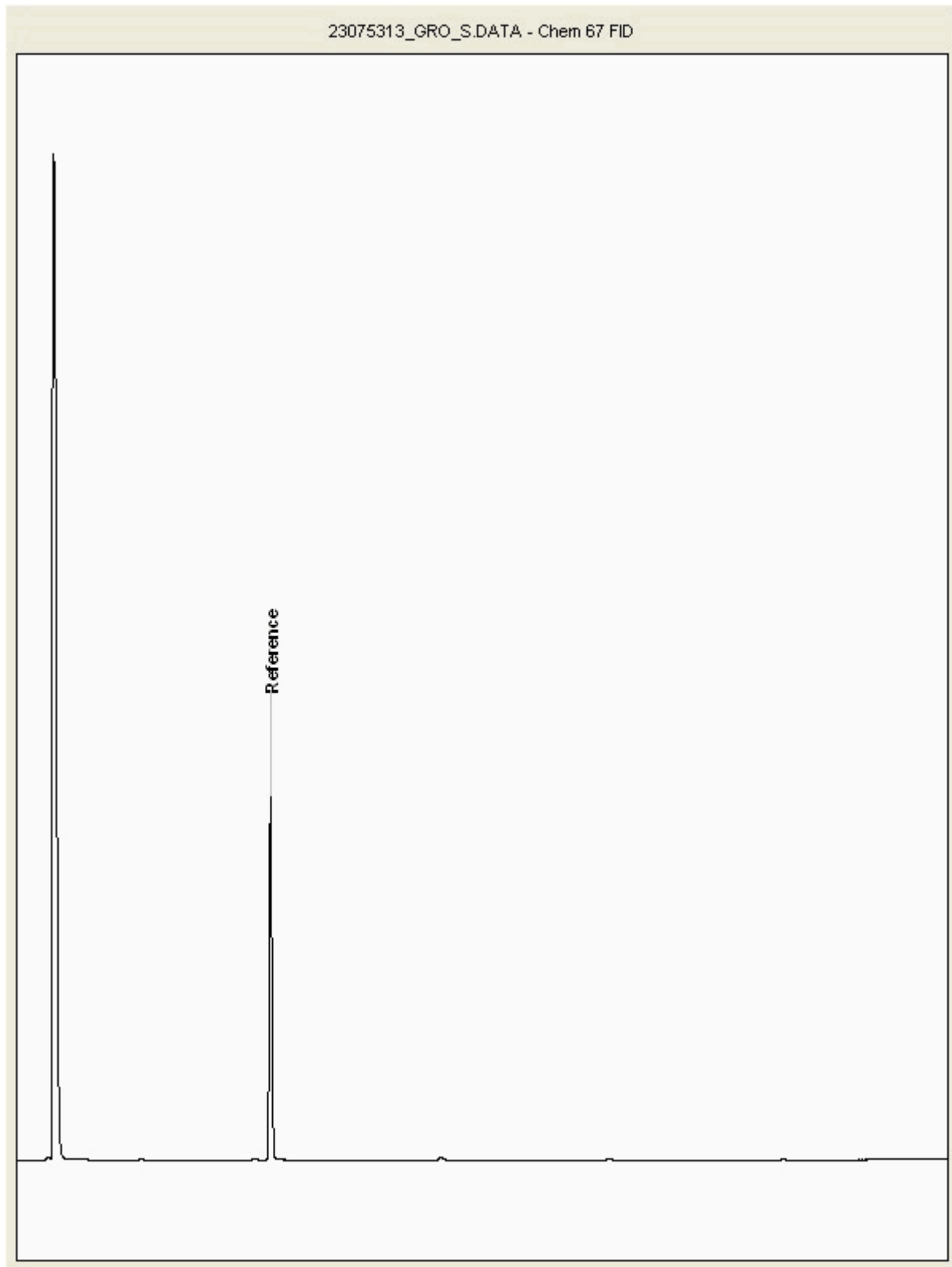
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075313
Sample ID : TP007

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

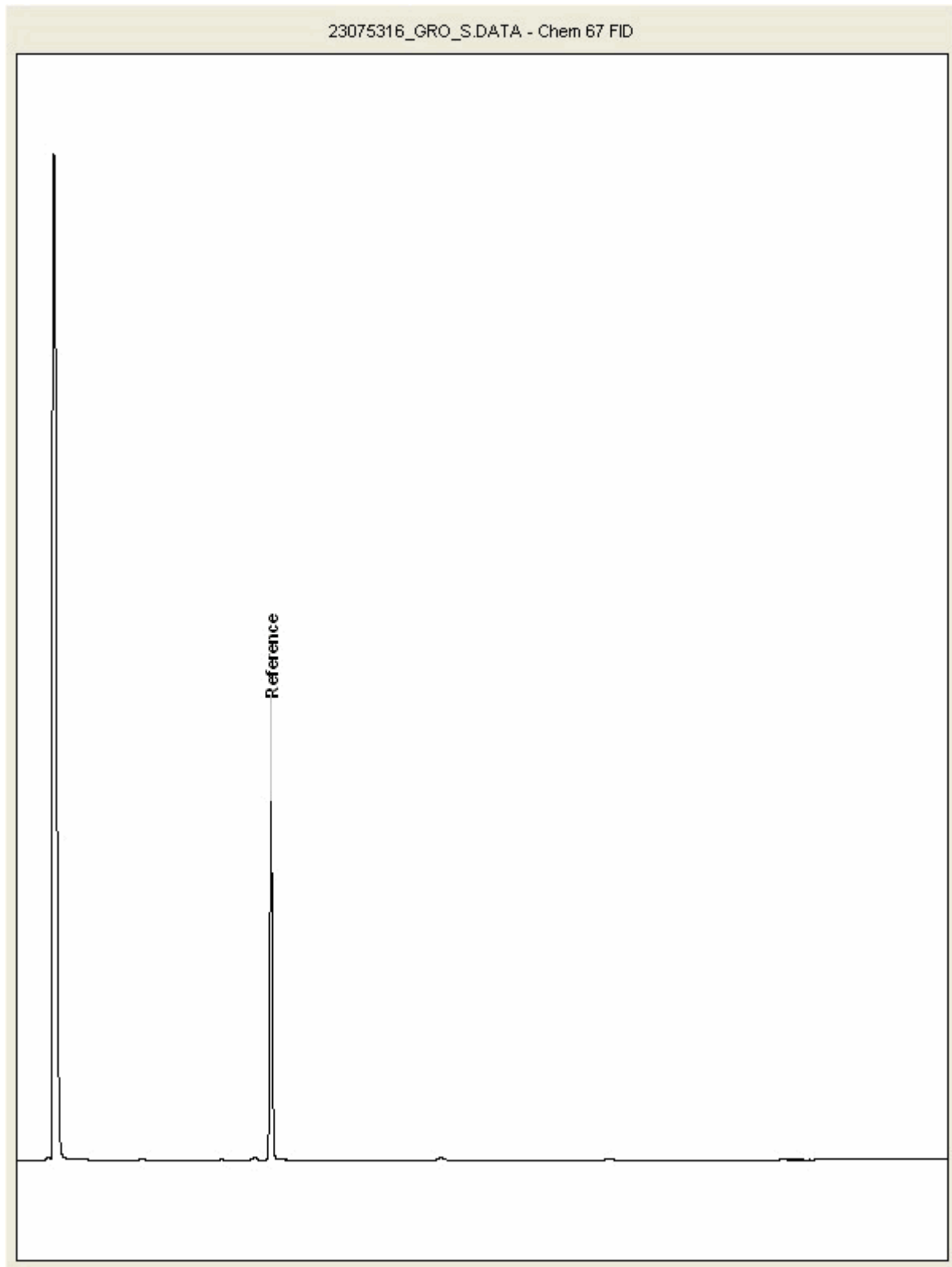
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075316
Sample ID : TP319

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

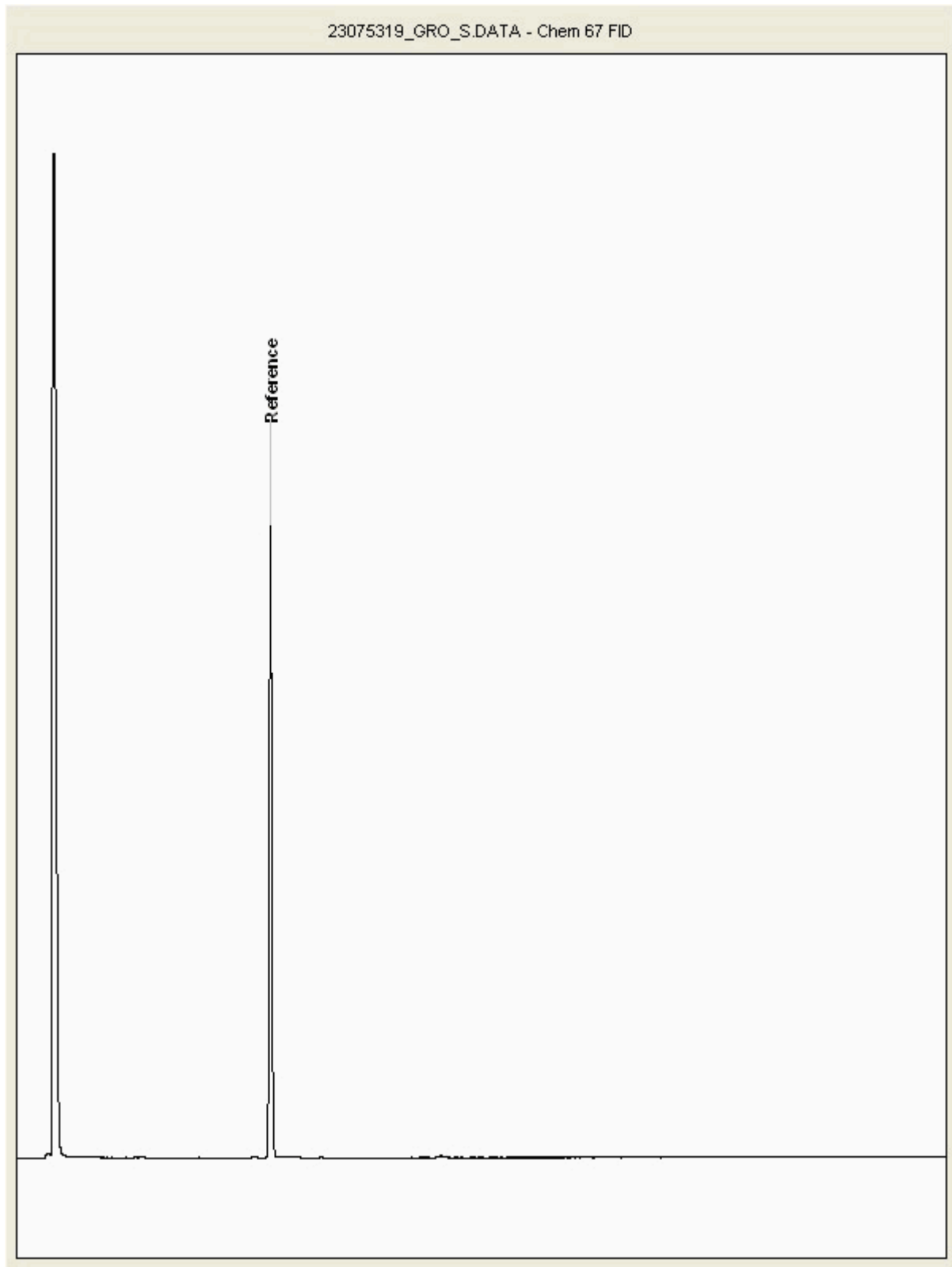
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075319
Sample ID : TP007

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579794
Superseded Report:

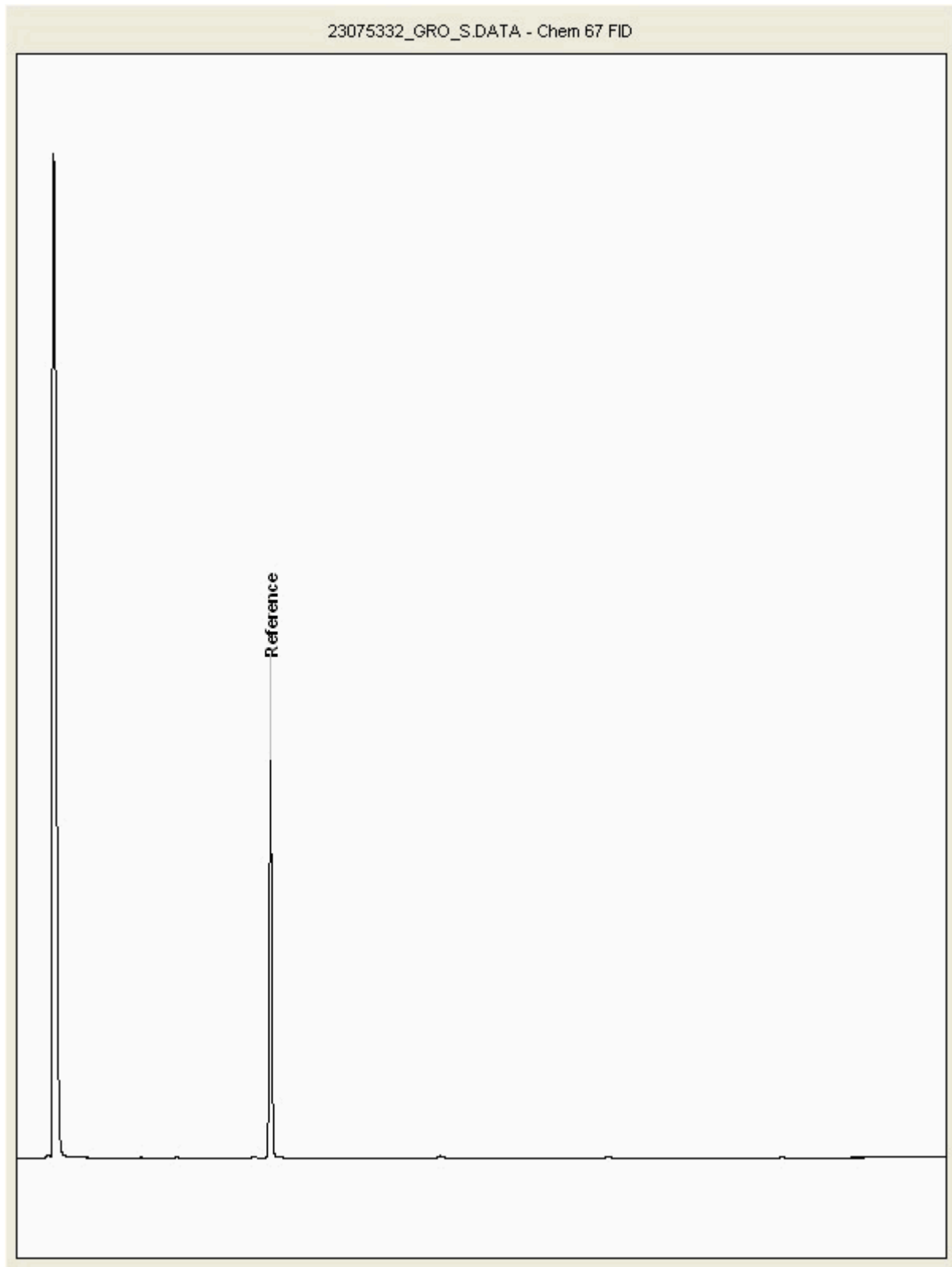
Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075332
Sample ID : TP319

Depth : 1.20 - 1.30

23075332_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

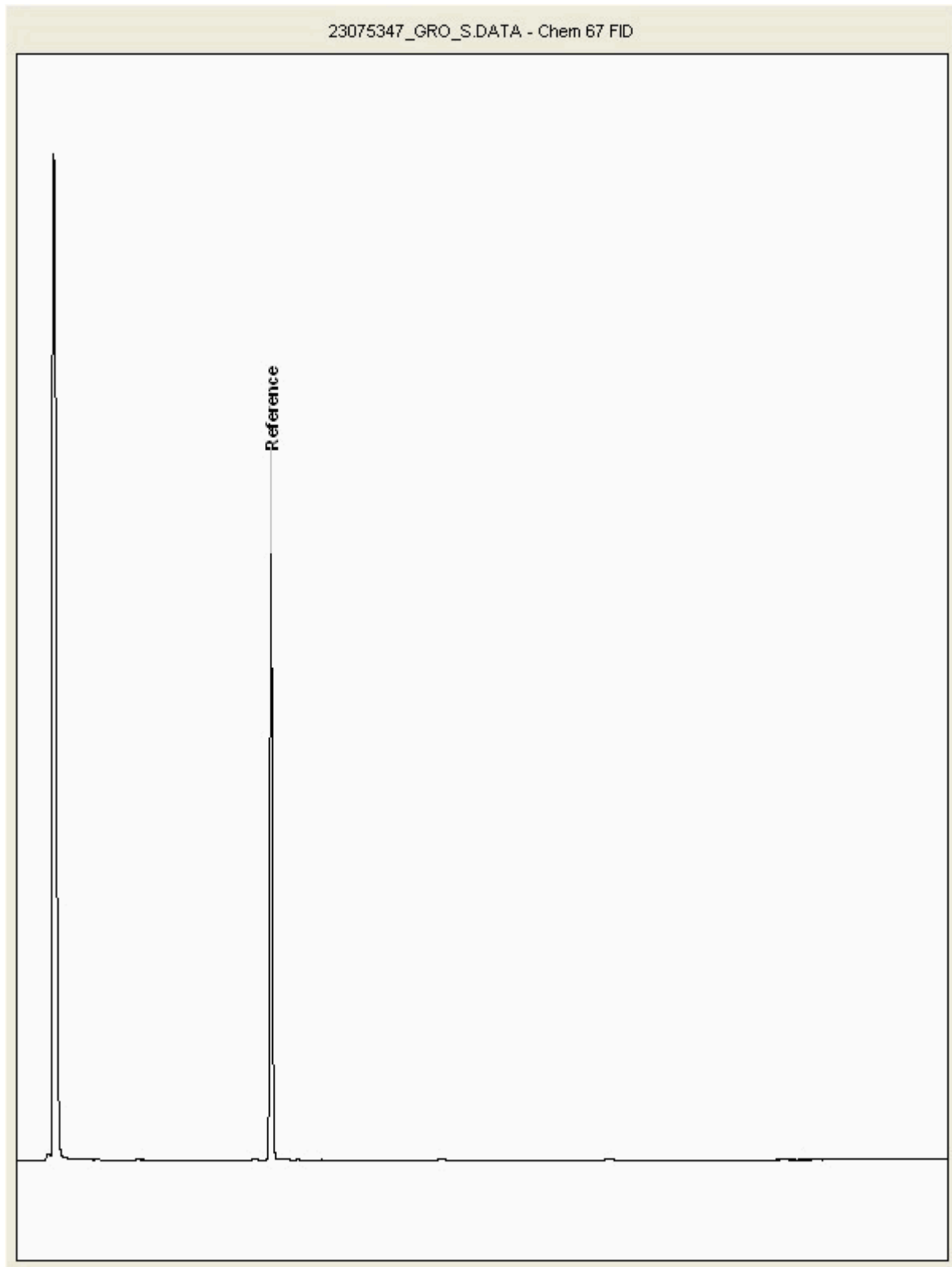
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075347
Sample ID : TP319

Depth : 3.50 - 3.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

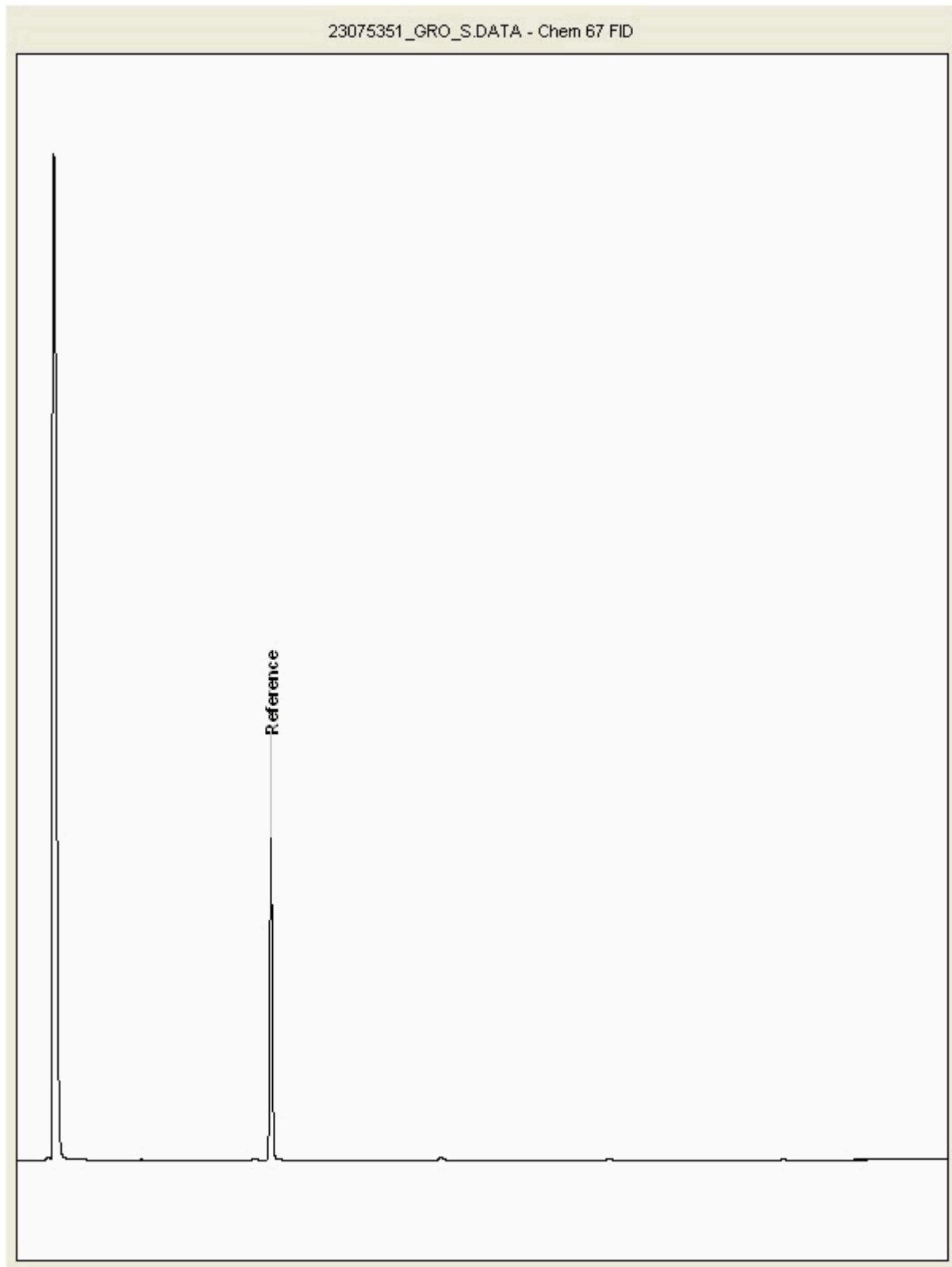
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075351
Sample ID : TP319

Depth : 2.30 - 2.40





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

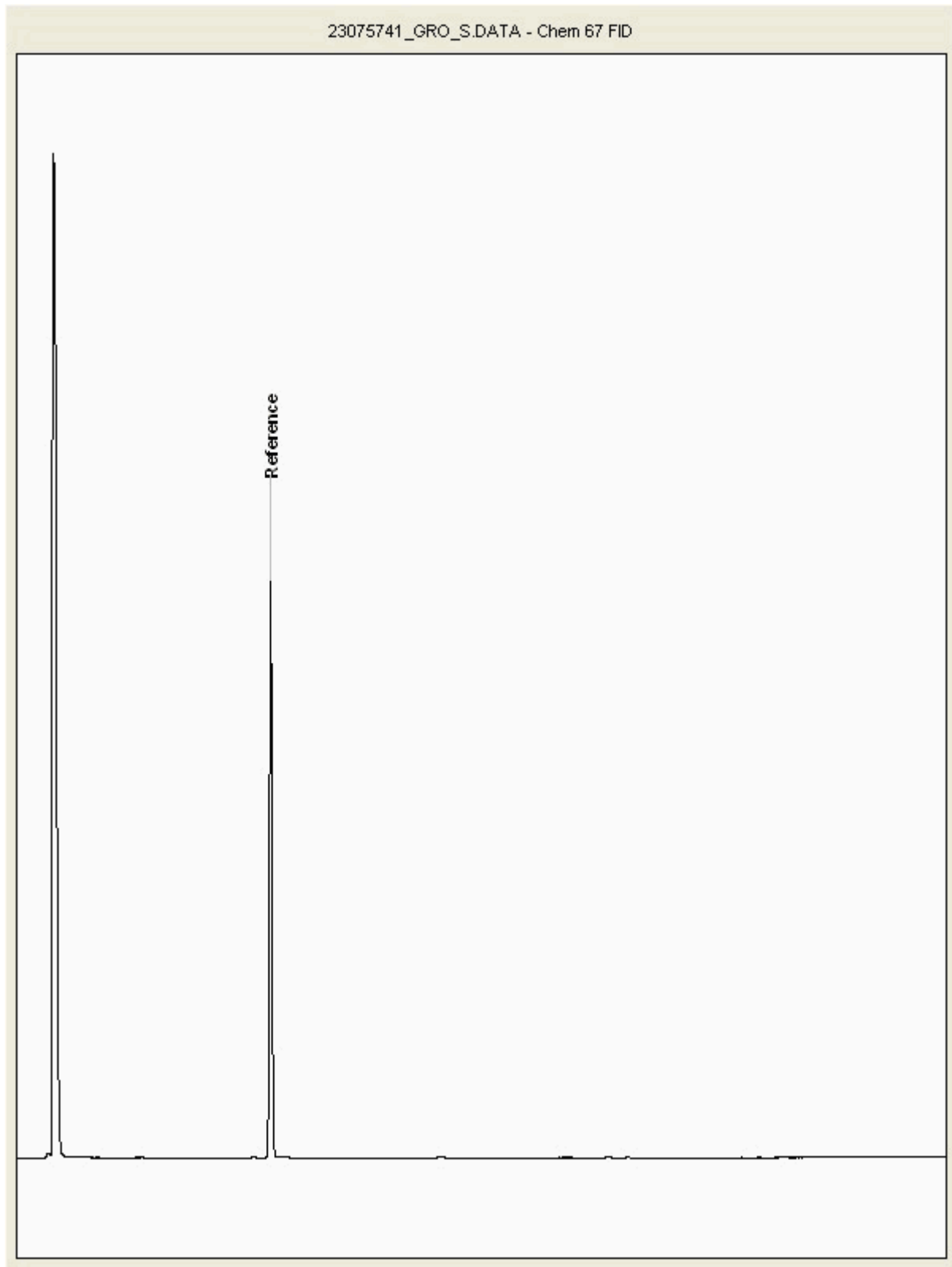
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075741
Sample ID : TP008

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

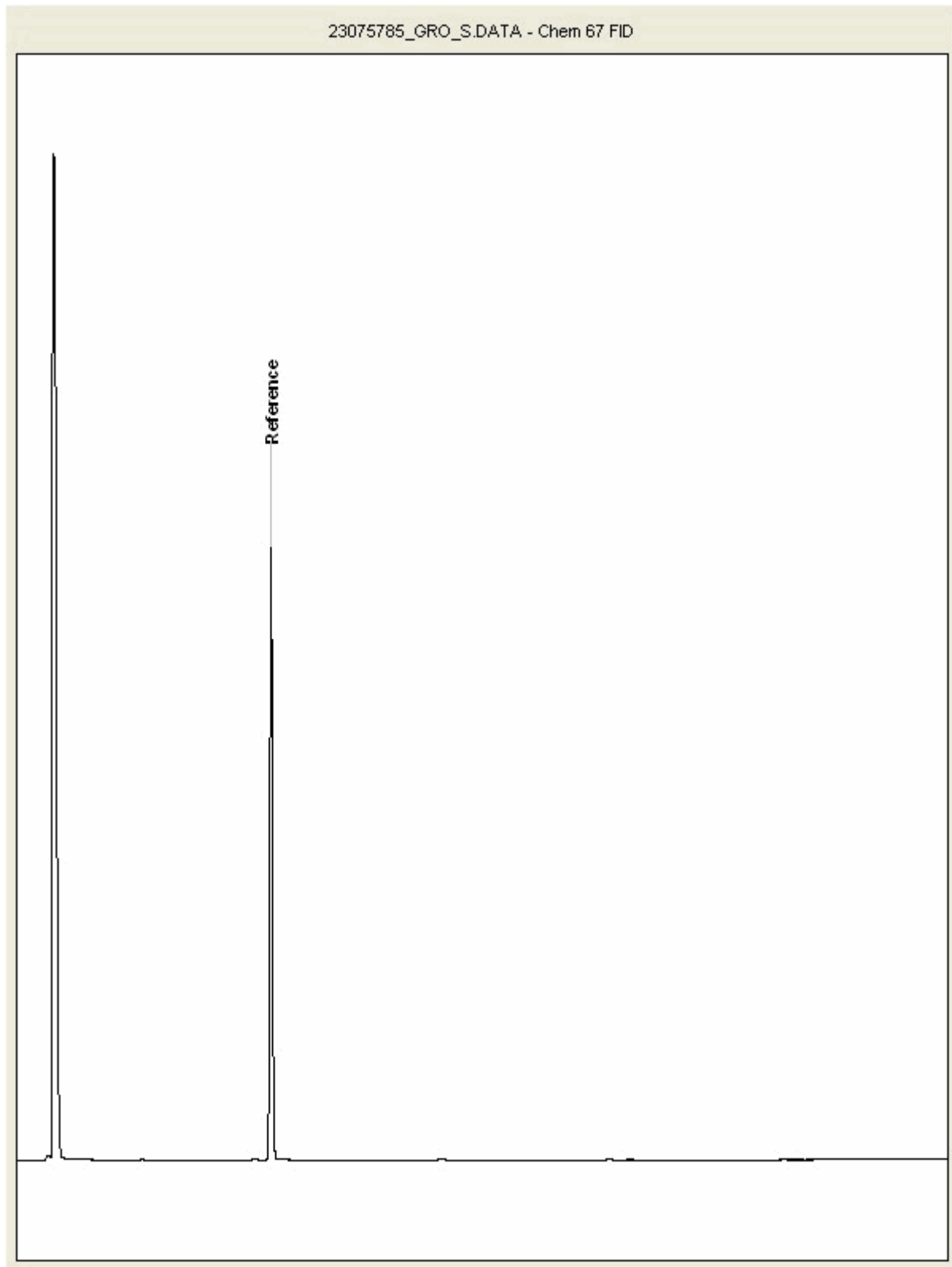
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23075785
Sample ID : TP008

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201015-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

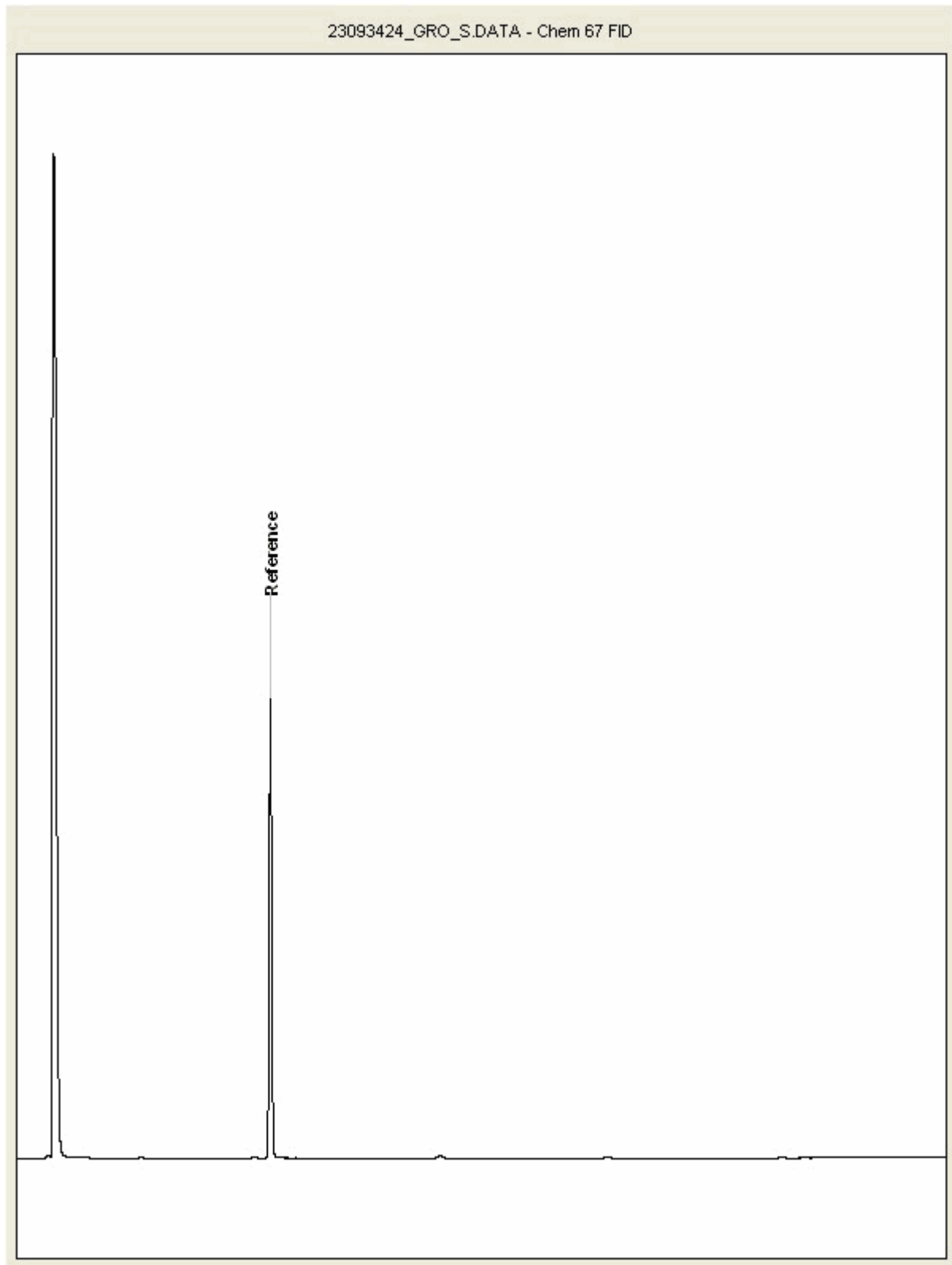
Report Number: 579794
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23093424
Sample ID : TP311

Depth : 1.10 - 1.20





CERTIFICATE OF ANALYSIS

SDG:	201015-115	Client Reference:	2020WW102	Report Number:	579794
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Unit 7-8 Hawarden Business Park
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Hawarden
Deeside
CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

CERTIFICATE OF ANALYSIS

Date of report Generation:	14 December 2020
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	201031-64
Your Reference:	2020WW102
Location:	Arklow Bank
Report No:	579788

We received 36 samples on Saturday October 31, 2020 and 36 of these samples were scheduled for analysis which was completed on Monday December 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23156344	TP207	ES1	0.40 - 0.50	27/10/2020
23156351	TP207	ES5	1.60 - 1.70	27/10/2020
23156204	TP209	ES1	0.50 - 0.60	27/10/2020
23156295	TP209	ES5	1.50 - 1.60	27/10/2020
23156329	TP210	ES1	0.40 - 0.50	27/10/2020
23156337	TP210	ES5	1.50 - 1.60	27/10/2020
23156138	TP301	ES1	0.40 - 0.50	29/10/2020
23156148	TP301	ES2	0.90 - 1.00	29/10/2020
23156162	TP301	ES3	1.00 - 1.10	29/10/2020
23156171	TP301	ES4	1.60 - 1.70	29/10/2020
23156180	TP301	ES6	2.90 - 3.00	29/10/2020
23156259	TP302	ES1	0.40 - 0.50	29/10/2020
23156273	TP302	ES2	1.00 - 1.10	29/10/2020
23156285	TP302	ES3	1.60 - 1.70	29/10/2020
23156303	TP302	ES5	3.10 - 3.20	29/10/2020
23156226	TP304	ES1	0.40 - 0.50	29/10/2020
23156239	TP304	ES2	1.00 - 1.10	29/10/2020
23156246	TP304	ES3	1.60 - 1.70	29/10/2020
23156253	TP304	ES5	3.20 - 3.30	29/10/2020
23156390	TP310	ES1	0.50 - 0.60	29/10/2020
23156402	TP310	ES2	1.00 - 1.10	29/10/2020
23156116	TP310	ES4	1.40 - 1.50	29/10/2020
23156124	TP310	ES5	2.50 - 2.60	29/10/2020
23156107	TP312	ES1	0.40 - 0.50	29/10/2020
23156130	TP312	ES2	0.80 - 0.90	29/10/2020
23156234	TP312	ES3	1.40 - 1.50	29/10/2020
23156310	TP312	ES4	2.10 - 2.20	29/10/2020
23156322	TP312	ES6	3.00 - 3.10	29/10/2020
23156358	TP314	ES1	0.50 - 0.60	29/10/2020
23156366	TP314	ES2	1.10 - 1.20	29/10/2020
23156371	TP314	ES4	1.80 - 1.90	29/10/2020
23156383	TP314	ES6	2.90 - 3.00	29/10/2020
23156190	TP315	ES1	0.40 - 0.50	29/10/2020
23156196	TP315	ES2	0.90 - 1.00	29/10/2020
23156210	TP315	ES3	1.50 - 1.60	29/10/2020
23156217	TP315	ES5	2.50 - 2.60	29/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64 Client Reference: 2020WW102 Report Number: 579788
 Location: Arklow Bank Order Number: 9028 Superseded Report:

Results Legend			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23156344	TP207	0.40 - 0.50	Light Brown	Loamy Sand	Stones	Vegetation
23156351	TP207	1.60 - 1.70	Dark Brown	Sandy Clay	Stones	Vegetation
23156204	TP209	0.50 - 0.60	Light Brown	Loamy Sand	Stones	Vegetation
23156295	TP209	1.50 - 1.60	Dark Brown	Silt Loam	Stones	Vegetation
23156329	TP210	0.40 - 0.50	Light Brown	Clay Loam	Vegetation	None
23156337	TP210	1.50 - 1.60	Dark Brown	Loamy Sand	Vegetation	Stones
23156138	TP301	0.40 - 0.50	Dark Brown	Sand	Stones	None
23156148	TP301	0.90 - 1.00	Red	N/A	N/A	N/A
23156162	TP301	1.00 - 1.10	Beige	N/A	N/A	N/A
23156171	TP301	1.60 - 1.70	Dark Brown	Clay Loam	Vegetation	None
23156180	TP301	2.90 - 3.00	Dark Brown	Silty Clay Loam	None	None
23156259	TP302	0.40 - 0.50	Dark Brown	Sand	Stones	Vegetation
23156273	TP302	1.00 - 1.10	Red	Sand	Stones	Vegetation
23156285	TP302	1.60 - 1.70	Dark Brown	Silt Loam	Stones	Vegetation
23156303	TP302	3.10 - 3.20	Dark Brown	Silt Loam	None	None
23156226	TP304	0.40 - 0.50	Dark Brown	Sand	Stones	None
23156239	TP304	1.00 - 1.10	Light Brown	N/A	Stones	None
23156246	TP304	1.60 - 1.70	Dark Brown	Silt Loam	Vegetation	None
23156253	TP304	3.20 - 3.30	Grey	Sand	Stones	None
23156116	TP310	1.40 - 1.50	Beige	N/A	N/A	N/A
23156124	TP310	2.50 - 2.60	Dark Brown	Silty Clay Loam	None	None
23156390	TP310	0.50 - 0.60	Dark Brown	Sand	Stones	None
23156402	TP310	1.00 - 1.10	Dark Brown	Loamy Sand	Stones	None
23156107	TP312	0.40 - 0.50	Dark Brown	Sand	Stones	None
23156130	TP312	0.80 - 0.90	Dark Brown	Sand	Stones	Crushed Brick
23156234	TP312	1.40 - 1.50	Cream	Chalk	Vegetation	Stones
23156310	TP312	2.10 - 2.20	Dark Brown	Clay Loam	Vegetation	Stones
23156322	TP312	3.00 - 3.10	Dark Brown	Clay Loam	Vegetation	Stones
23156358	TP314	0.50 - 0.60	Light Brown	Sandy Loam	Stones	None
23156366	TP314	1.10 - 1.20	Dark Brown	N/A	Stones	Vegetation
23156371	TP314	1.80 - 1.90	Dark Brown	Clay Loam	Stones	None
23156383	TP314	2.90 - 3.00	Dark Brown	Sand	Stones	None
23156190	TP315	0.40 - 0.50	Light Brown	Sandy Clay Loam	Stones	Vegetation
23156196	TP315	0.90 - 1.00	Light Brown	N/A	Stones	None
23156210	TP315	1.50 - 1.60	Dark Brown	Silt Loam	Stones	None
23156217	TP315	2.50 - 2.60	Dark Brown	Gravel	Stones	None



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SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Results Legend			Customer Sample Ref.	TP207	TP207	TP209	TP209	TP210	TP210
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.60 - 1.70 Soil/Solid (S) 27/10/2020	0.50 - 0.60 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		8.9	8.9	12	11	16	13
Loss on ignition	<0.7 %	TM018		3.83	4.54	1.88	2.15	4.63	2.02
Organic Carbon, Total	<0.2 %	TM132		0.482	0.322	0.267	0.33	0.765	0.298
pH	1 pH Units	TM133		7.75	8.59	7.1	8.46	7.16	7.25
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Cyanide, Total	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
Cyanide, Free	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 52	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 101	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 118	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 138	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 153	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 180	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
Sulphide, Easily liberated	<15 mg/kg	TM180		<15	<15	<15	<15	<15	<15
Chromium, Trivalent	<0.9 mg/kg	TM181		21.6	29.8	20.4	25.6	26.5	21.2
Antimony	<0.6 mg/kg	TM181		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Arsenic	<0.6 mg/kg	TM181		11.5	15.5	13.8	9.12	5.99	11.5
Barium	<0.6 mg/kg	TM181		72.4	62	66	41.8	104	58.4
Cadmium	<0.02 mg/kg	TM181		0.114	0.132	0.257	0.136	0.106	0.231
Chromium	<0.9 mg/kg	TM181		21.6	29.8	20.4	25.6	26.5	21.2
Copper	<1.4 mg/kg	TM181		5.6	20.7	10.5	17.1	5.8	18.7
Lead	<0.7 mg/kg	TM181		15.3	14.6	12.5	14.2	16.5	11.4
Mercury	<0.14 mg/kg	TM181		<0.14	<0.14	0.151	<0.14	<0.14	<0.14
Molybdenum	<0.1 mg/kg	TM181		0.178	0.324	0.484	0.279	0.119	0.192
Nickel	<0.2 mg/kg	TM181		15.7	38.5	26	29.3	16.1	27
Selenium	<1 mg/kg	TM181		<1	<1	<1	<1	<1	<1
Zinc	<1.9 mg/kg	TM181		49	65.4	39	51.2	48.9	40.6
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410		<318	<318	<318	<318	<318	<318
Coronene	<200 µg/kg	TM410		<200	<200	<200	<200	<200	<200



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Results Legend			Customer Sample Ref.	TP301	TP301	TP301	TP301	TP301	TP302
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERES accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		6	27	28	29	24	1.4
Loss on ignition	<0.7 %	TM018		4.79	1.24	20	4.56	10.3	1.81
Organic Carbon, Total	<0.2 %	TM132		2.21	<0.2	<0.2	0.364	1.05	0.239
pH	1 pH Units	TM133		9.04	6.59	7.3	6.93	5.4	7.21
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6	<0.6	6.86	<0.6	<0.6	<0.6
Cyanide, Total	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
Cyanide, Free	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 52	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 101	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 118	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 138	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 153	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
PCB congener 180	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
Sulphide, Easily liberated	<15 mg/kg	TM180		<15	<15	<15	<15	<15	<15
Chromium, Trivalent	<0.9 mg/kg	TM181		1.79	<0.9	<0.9	21.2	27.7	125
Antimony	<0.6 mg/kg	TM181		<0.6	18.2	<0.6	<0.6	<0.6	<0.6
Arsenic	<0.6 mg/kg	TM181		2.91	2290	41	78.3	54.8	120
Barium	<0.6 mg/kg	TM181		7.44	24	38.6	47.2	97.7	96.4
Cadmium	<0.02 mg/kg	TM181		0.0585	12.6	1.19	0.816	0.611	0.517
Chromium	<0.9 mg/kg	TM181		1.79	<0.9	4.27	21.2	27.7	125
Copper	<1.4 mg/kg	TM181		5.01	3720	30.2	930	71.7	92.1
Lead	<0.7 mg/kg	TM181		3.83	1950	6.09	61.4	63.4	51
Mercury	<0.14 mg/kg	TM181		<0.14	1.05	<0.14	<0.14	<0.14	<0.14
Molybdenum	<0.1 mg/kg	TM181		0.431	62.1	3.53	1.5	1.23	7.4
Nickel	<0.2 mg/kg	TM181		3.57	6.73	0.321	22.5	31.1	81
Selenium	<1 mg/kg	TM181		<1	<1	<1	<1	<1	<1
Zinc	<1.9 mg/kg	TM181		22.4	3810	47.3	320	216	585
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410		<318	<318	<318	<318	<318	<318
Coronene	<200 µg/kg	TM410		<200	<200	<200	<200	<200	<200



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Results Legend			Customer Sample Ref.	TP302	TP302	TP302	TP304	TP304	TP304
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	3.10 - 3.20 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		20	15	13	2.8	11	27
Loss on ignition	<0.7 %	TM018		<0.7 M	4.3 M	17.1 M	0.975 M	2.78	11.5 M
Organic Carbon, Total	<0.2 %	TM132		<0.2 M	0.336 M	0.519 M	0.335 M	0.452	1.33 M
pH	1 pH Units	TM133		6.98 M	6.78 M	5.58 M	8.62 M	6.8	7.46 M
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6	<0.6 #
Cyanide, Total	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1	<1 M
Cyanide, Free	<1 mg/kg	TM153		<1 M	<1 M	<1 M	<1 M	<1	<1 M
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 52	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 101	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 118	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 138	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 153	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
PCB congener 180	<3 µg/kg	TM168		<3 M	<3 M	<3 M	<3 M	<3	<3 M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
Sulphide, Easily liberated	<15 mg/kg	TM180		<15 ♦ M	<15 ♦ M	<15 ♦ M	<15 ♦ M	<15 ♦	296 ♦ M
Chromium, Trivalent	<0.9 mg/kg	TM181		<0.9	16.6	26	<0.9	21.4	21.7
Antimony	<0.6 mg/kg	TM181		13 #	<0.6 #	<0.6 #	<0.6 #	<0.6	<0.6 #
Arsenic	<0.6 mg/kg	TM181		1920 M	49 M	29.7 M	5.55 M	19.5	43 M
Barium	<0.6 mg/kg	TM181		28.5 #	23 #	64 #	20.1 #	45.7	51.1 #
Cadmium	<0.02 mg/kg	TM181		15.4 M	0.715 M	0.0984 M	0.354 M	0.171	0.411 M
Chromium	<0.9 mg/kg	TM181		<0.9 M	16.6 M	26 M	<0.9 M	21.4	21.7 M
Copper	<1.4 mg/kg	TM181		4430 M	315 M	23.7 M	31.2 M	41.9	41 M
Lead	<0.7 mg/kg	TM181		2250 M	32.5 M	50 M	8.4 M	22.5	39.2 M
Mercury	<0.14 mg/kg	TM181		1.2 M	<0.14 M	<0.14 M	<0.14 M	0.272	0.207 M
Molybdenum	<0.1 mg/kg	TM181		70.9 #	0.755 #	1.07 #	0.747 #	<0.1	0.818 #
Nickel	<0.2 mg/kg	TM181		3.96 M	18.4 M	23.6 M	16.6 M	47.3	22 M
Selenium	<1 mg/kg	TM181		<1 #	<1 #	<1 #	<1 #	<1	<1 #
Zinc	<1.9 mg/kg	TM181		4170 M	308 M	106 M	105 M	138	89.7 M
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410		<318	<318	<318	<318	<318	<318
Coronene	<200 µg/kg	TM410		<200	<200	<200	<200	<200	<200



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Results Legend		Customer Sample Ref.	TP304	TP310	TP310	TP310	TP310	TP312
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.20 - 3.30 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Moisture Content Ratio (% of as received sample)	%	PM024	26	5.2	10	28	30	5.8
Loss on ignition	<0.7 %	TM018	2	1.85	3.61	19	3.99	2.53
			M	M	M		M	M
Organic Carbon, Total	<0.2 %	TM132	0.416	0.319	0.448	<0.2	0.678	3.42
			M	M	M		M	M
pH	1 pH Units	TM133	6.38	8.28	7.42	7.57	6.13	9.13
			M	M	M		M	M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
			#	#	#		#	#
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
			M	M	M		M	M
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
			M	M	M		M	M
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168	<3	<15	<3	<3	<3	<3
			M	M	M		M	M
PCB congener 52	<3 µg/kg	TM168	<3	<15	<3	<3	<3	<3
			M	M	M		M	M
PCB congener 101	<3 µg/kg	TM168	<3	<15	<3	<3	<3	<3
			M	M	M		M	M
PCB congener 118	<3 µg/kg	TM168	<3	<15	<3	<3	<3	<3
			M	M	M		M	M
PCB congener 138	<3 µg/kg	TM168	<3	<15	<3	<3	<3	<3
			M	M	M		M	M
PCB congener 153	<3 µg/kg	TM168	<3	<15	<3	<3	<3	<3
			M	M	M		M	M
PCB congener 180	<3 µg/kg	TM168	<3	<15	<3	<3	<3	<3
			M	M	M		M	M
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<105	<21	<21	<21	<21
Sulphide, Easily liberated	<15 mg/kg	TM180	<15	114	<15	<15	<15	<15
			♦ M	♦ M	♦ M	♦	♦ M	♦ M
Chromium, Trivalent	<0.9 mg/kg	TM181	14.9	4.73	26.3	3.46	13.6	3.74
Antimony	<0.6 mg/kg	TM181	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
			#	#	#		#	#
Arsenic	<0.6 mg/kg	TM181	23.3	27.3	22.1	2.83	84.2	12.1
			M	M	M		M	M
Barium	<0.6 mg/kg	TM181	25.5	17.6	69.3	28.8	72.7	11.4
			#	#	#		#	#
Cadmium	<0.02 mg/kg	TM181	0.353	0.437	0.213	1.38	0.449	0.431
			M	M	M		M	M
Chromium	<0.9 mg/kg	TM181	14.9	4.73	26.3	3.46	13.6	3.74
			M	M	M		M	M
Copper	<1.4 mg/kg	TM181	16.8	59.6	44.2	<14	64.5	51.5
			M	M	M		M	M
Lead	<0.7 mg/kg	TM181	21.8	37.9	24.8	3.31	71.7	13.1
			M	M	M		M	M
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
			M	M	M		M	M
Molybdenum	<0.1 mg/kg	TM181	0.411	1.57	<0.1	0.187	1.76	0.76
			#	#	#		#	#
Nickel	<0.2 mg/kg	TM181	21.3	9.29	49.2	1.77	25.4	5.81
			M	M	M		M	M
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1
			#	#	#		#	#
Zinc	<1.9 mg/kg	TM181	115	161	124	6.83	138	182
			M	M	M		M	M
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318	<318
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Results Legend			Customer Sample Ref.	TP312	TP312	TP312	TP312	TP314	TP314
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 0.90 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.10 - 2.20 Soil/Solid (S) 29/10/2020	3.00 - 3.10 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.10 - 1.20 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		7.2	30	39	41	6.1	4.3
Loss on ignition	<0.7 %	TM018		1.44	19.2	6.38	8.32	1.35	3.38
				M	#	M	M	M	
Organic Carbon, Total	<0.2 %	TM132		<0.2	<0.2	1.57	3.97	<0.2	<0.2
				M	#	M	M	M	
pH	1 pH Units	TM133		8.05	6.07	7.04	5.22	7.19	6.97
				M	#	M	M	M	
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6	2.39	<0.6	<0.6	<0.6	<0.6
				#	#	#	#	#	
Cyanide, Total	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
				M	#	M	M	M	
Cyanide, Free	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
				M	#	M	M	M	
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
				M	#	M	M	M	
PCB congener 52	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
				M	#	M	M	M	
PCB congener 101	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
				M	#	M	M	M	
PCB congener 118	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
				M	#	M	M	M	
PCB congener 138	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
				M	#	M	M	M	
PCB congener 153	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
				M	#	M	M	M	
PCB congener 180	<3 µg/kg	TM168		<3	<3	<3	<3	<3	<3
				M	#	M	M	M	
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<21	<21	<21
Sulphide, Easily liberated	<15 mg/kg	TM180		<15	<15	536	71.1	<15	<15
				♦ M	♦ #	♦ M	♦ M	♦ M	♦
Chromium, Trivalent	<0.9 mg/kg	TM181		2.77	2.66	25.3	34.7	17.4	25.9
Antimony	<0.6 mg/kg	TM181		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
				#	#	#	#	#	
Arsenic	<0.6 mg/kg	TM181		131	11.2	65	42.4	37	46.5
				M	#	M	M	M	
Barium	<0.6 mg/kg	TM181		39.3	40.8	69.4	107	28.9	72.3
				#	#	#	#	#	
Cadmium	<0.02 mg/kg	TM181		1.89	1.15	0.841	0.161	0.325	0.329
				M	#	M	M	M	
Chromium	<0.9 mg/kg	TM181		2.77	5.05	25.3	34.7	17.4	25.9
				M	#	M	M	M	
Copper	<1.4 mg/kg	TM181		361	48.9	135	29.1	73.3	89.2
				M	#	M	M	M	
Lead	<0.7 mg/kg	TM181		160	5.92	111	53.8	30.8	69.3
				M	#	M	M	M	
Mercury	<0.14 mg/kg	TM181		0.325	<0.14	<0.14	<0.14	<0.14	0.175
				M	#	M	M	M	
Molybdenum	<0.1 mg/kg	TM181		6.15	0.222	0.782	0.421	0.706	0.249
				#	#	#	#	#	
Nickel	<0.2 mg/kg	TM181		31.5	1.79	28.7	30.2	37.7	49.3
				M	#	M	M	M	
Selenium	<1 mg/kg	TM181		<1	<1	<1	<1	<1	<1
				#	#	#	#	#	
Zinc	<1.9 mg/kg	TM181		497	41.3	447	131	148	234
				M	#	M	M	M	
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410		<318	<318	<318	<318	<318	<318
Coronene	<200 µg/kg	TM410		<200	<200	<200	<200	<200	<200



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Results Legend			Customer Sample Ref.	TP314	TP314	TP315	TP315	TP315	TP315
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.80 - 1.90 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.50 - 1.60 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Moisture Content Ratio (% of as received sample)	%	PM024		35	12	6.4	7.3	21	7.9
Loss on ignition	<0.7 %	TM018		5.72	<0.7	2.83	2.01	13.7	1.81
				M	M	M	#	M	#
Organic Carbon, Total	<0.2 %	TM132		2.35	<0.2	<0.2	2.9	0.836	<0.2
				M	M	M	#	M	#
pH	1 pH Units	TM133		6.9	7.01	4.89	7.98	6.88	7.27
				M	M	M	#	M	#
Chromium, Hexavalent	<0.6 mg/kg	TM151		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
				#	#	#	#	#	#
Cyanide, Total	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
				M	M	M	#	M	#
Cyanide, Free	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
				M	M	M	#	M	#
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1	<1	<1
PCB congener 28	<3 µg/kg	TM168		<3	<3	<3	<150	<3	<3
				M	M	M	#	M	#
PCB congener 52	<3 µg/kg	TM168		<3	<3	<3	<150	<3	<3
				M	M	M	#	M	#
PCB congener 101	<3 µg/kg	TM168		<3	<3	<3	<150	<3	<3
				M	M	M	#	M	#
PCB congener 118	<3 µg/kg	TM168		<3	<3	<3	<150	<3	<3
				M	M	M	#	M	#
PCB congener 138	<3 µg/kg	TM168		<3	<3	<3	<150	<3	<3
				M	M	M	#	M	#
PCB congener 153	<3 µg/kg	TM168		<3	<3	<3	<150	<3	<3
				M	M	M	#	M	#
PCB congener 180	<3 µg/kg	TM168		<3	<3	<3	<150	<3	<3
				M	M	M	#	M	#
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168		<21	<21	<21	<1050	<21	<21
Sulphide, Easily liberated	<15 mg/kg	TM180		34.1	<15	<15	<15	67	<15
				♦ M	♦ M	♦ M	♦ #	♦ M	♦ #
Chromium, Trivalent	<0.9 mg/kg	TM181		22.8	15.8	14	15.4	17.5	8.13
Antimony	<0.6 mg/kg	TM181		<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
				#	#	#	#	#	#
Arsenic	<0.6 mg/kg	TM181		21	8.29	30.9	13.6	46.5	5.35
				M	M	M	#	M	#
Barium	<0.6 mg/kg	TM181		68	13.9	39.3	28.1	50.7	9.15
				#	#	#	#	#	#
Cadmium	<0.02 mg/kg	TM181		0.21	0.147	<0.02	0.279	0.335	0.259
				M	M	M	#	M	#
Chromium	<0.9 mg/kg	TM181		22.8	15.8	14	15.4	17.5	8.13
				M	M	M	#	M	#
Copper	<1.4 mg/kg	TM181		25.4	19.4	49.7	35.1	45.1	14.3
				M	M	M	#	M	#
Lead	<0.7 mg/kg	TM181		33.5	14.6	20.9	19.8	54	22.2
				M	M	M	#	M	#
Mercury	<0.14 mg/kg	TM181		0.181	<0.14	0.15	<0.14	<0.14	<0.14
				M	M	M	#	M	#
Molybdenum	<0.1 mg/kg	TM181		<0.1	0.254	<0.1	<0.1	1.12	0.365
				#	#	#	#	#	#
Nickel	<0.2 mg/kg	TM181		27.3	27.9	47.2	35.1	22	11.9
				M	M	M	#	M	#
Selenium	<1 mg/kg	TM181		<1	<1	<1	<1	1.82	<1
				#	#	#	#	#	#
Zinc	<1.9 mg/kg	TM181		92.8	180	124	159	118	105
				M	M	M	#	M	#
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410		<318	<318	<318	<318	<318	<318
Coronene	<200 µg/kg	TM410		<200	<200	<200	<2000	<200	<200



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP207	TP207	TP209	TP209	TP210	TP210
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.60 - 1.70 Soil/Solid (S) 27/10/2020	0.50 - 0.60 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP207	TP207	TP209	TP209	TP210	TP210
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.60 - 1.70 Soil/Solid (S) 27/10/2020	0.50 - 0.60 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156344 ES1	31/10/2020 201031-64 23156351 ES5	31/10/2020 201031-64 23156204 ES1	31/10/2020 201031-64 23156295 ES5	31/10/2020 201031-64 23156329 ES1	31/10/2020 201031-64 23156337 ES5
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<100	<1000	<100	<100	<1000	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP301	TP301	TP301	TP301	TP301	TP302
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP301	TP301	TP301	TP301	TP301	TP302
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156138 ES1	31/10/2020 201031-64 23156148 ES2	31/10/2020 201031-64 23156162 ES3	31/10/2020 201031-64 23156171 ES4	31/10/2020 201031-64 23156180 ES6	31/10/2020 201031-64 23156259 ES1
(F)	Trigger breach confirmed								
1-4&6@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<1000	<1000	<100	<1000	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP302	TP302	TP302	TP304	TP304	TP304
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	3.10 - 3.20 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020
M	mCERES accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP302	TP302	TP302	TP304	TP304	TP304
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	3.10 - 3.20 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156273 ES2	31/10/2020 201031-64 23156285 ES3	31/10/2020 201031-64 23156303 ES5	31/10/2020 201031-64 23156226 ES1	31/10/2020 201031-64 23156239 ES2	31/10/2020 201031-64 23156246 ES3
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<100	<100	<1000	<100	<1000	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP304	TP310	TP310	TP310	TP310	TP312
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.20 - 3.30 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERES accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Phenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP304	TP310	TP310	TP310	TP310	TP312
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.20 - 3.30 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156253 ES5	31/10/2020 201031-64 23156390 ES1	31/10/2020 201031-64 23156402 ES2	31/10/2020 201031-64 23156116 ES4	31/10/2020 201031-64 23156124 ES5	31/10/2020 201031-64 23156107 ES1
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<500	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<100	<5000	<100	<100	<1000	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP312	TP312	TP312	TP312	TP314	TP314
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 0.90 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.10 - 2.20 Soil/Solid (S) 29/10/2020	3.00 - 3.10 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.10 - 1.20 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP312	TP312	TP312	TP312	TP314	TP314
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 0.90 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.10 - 2.20 Soil/Solid (S) 29/10/2020	3.00 - 3.10 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.10 - 1.20 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156130 ES2	31/10/2020 201031-64 23156234 ES3	31/10/2020 201031-64 23156310 ES4	31/10/2020 201031-64 23156322 ES6	31/10/2020 201031-64 23156358 ES1	31/10/2020 201031-64 23156366 ES2
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<1000



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP314	TP314	TP315	TP315	TP315	TP315
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.80 - 1.90 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.50 - 1.60 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Phenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP314	TP314	TP315	TP315	TP315	TP315
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.80 - 1.90 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.50 - 1.60 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156371 ES4	31/10/2020 201031-64 23156383 ES6	31/10/2020 201031-64 23156190 ES1	31/10/2020 201031-64 23156196 ES2	31/10/2020 201031-64 23156210 ES3	31/10/2020 201031-64 23156217 ES5
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<100	<100	<100	<1000	<100	<1000



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP207	TP207	TP209	TP209	TP210	TP210
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.60 - 1.70 Soil/Solid (S) 27/10/2020	0.50 - 0.60 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		98.1	94.9	129	118	102	112
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		<1000	<1000	1780	<1000	4290	<1000
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		<1000	1260	<1000	4060	<1000	6080
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	<5000	<5000	5150	<5000	7080
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20

SDG:	201031-64
Location:	Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

TPH CWG (S)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP304	TP310	TP310	TP310	TP310	TP312
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.20 - 3.30	0.50 - 0.60	1.00 - 1.10	1.40 - 1.50	2.50 - 2.60	0.40 - 0.50
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020	29/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.			31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/10/2020	31/10/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201031-64	201031-64	201031-64	201031-64	201031-64	201031-64
(F)	Trigger breach confirmed			23156253	23156390	23156402	23156116	23156124	23156107
1-4*5@	Sample deviation (see appendix)			ES5	ES1	ES2	ES4	ES5	ES1
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		102	90.5	94.4	121	93.9	108
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	10.5	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	10100	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	26100	<1000	<1000	<1000	1070
Aliphatics >C21-C35	<1000 µg/kg	TM414		5810	57100	3920	<1000	2700	17100
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	52600	<1000	<1000	<1000	3590
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		6360	147000	<5000	<5000	<5000	21800
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		12100	231000	<10000	<10000	<10000	25000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	1300	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		3940	60500	<1000	<1000	3200	1960
Aromatics >EC35-EC44	<1000 µg/kg	TM414		1780	22200	<1000	<1000	1530	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	17700	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		5720	84000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		12100	231000	<10000	<10000	<10000	21800
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579788
Superseded Report:

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP312	TP312	TP312	TP312	TP314	TP314
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 0.90 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.10 - 2.20 Soil/Solid (S) 29/10/2020	3.00 - 3.10 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.10 - 1.20 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		104	93.3	107	73.3	83.9	89.1
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		5600	3140	1040	3730	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		61400	5980	13600	47800	7290	<1000
Aliphatics >C35-C44	<1000 µg/kg	TM414		16000	<1000	1880	3850	1170	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		83300	9850	16500	55600	8830	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		90300	13100	23300	127000	15400	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		5940	2250	4380	51700	5590	<1000
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	2450	18100	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		6980	<5000	6830	71400	6590	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		90300	<10000	23300	127000	15400	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP207	TP207	TP209	TP209	TP210	TP210
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.60 - 1.70 Soil/Solid (S) 27/10/2020	0.50 - 0.60 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116		136	112	109	124	108	110
Toluene-d8**	%	TM116		101	96.1	98.6	96.1	96.8	98.4
4-Bromofluorobenzene**	%	TM116		94.5	84.6	96.2	85.6	92.2	97.5
Dichlorodifluoromethane	<6 µg/kg	TM116		<6	<6	<6	<6	<6	<6
Chloromethane	<7 µg/kg	TM116		<7	<7	<7	<7	<7	<7
Vinyl Chloride	<6 µg/kg	TM116		<6	<6	<6	<6	<6	<6
Bromomethane	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Chloroethane	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	<6 µg/kg	TM116		<6	<6	<6	<6	<6	<6
1,1-Dichloroethene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Carbon Disulphide	<7 µg/kg	TM116		<7	<7	<7	<7	<7	<7
Dichloromethane	<10 µg/kg	TM116		<10	25.1	<10	17.4	<10	<10
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
1,1-Dichloroethane	<8 µg/kg	TM116		<8	<8	<8	<8	<8	<8
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6	<6	<6	<6	<6	<6
2,2-Dichloropropane	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Bromochloromethane	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Chloroform	<8 µg/kg	TM116		<8	<8	<8	<8	<8	<8
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7	<7	<7	<7	<7	<7
1,1-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Carbontetrachloride	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
1,2-Dichloroethane	<5 µg/kg	TM116		<5	<5	<5	<5	<5	<5
Benzene	<9 µg/kg	TM116		<9	<9	<9	<9	<9	<9
Trichloroethene	<9 µg/kg	TM116		<9	<9	<9	<9	<9	<9
1,2-Dichloropropane	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Dibromomethane	<9 µg/kg	TM116		<9	<9	<9	<9	<9	<9
Bromodichloromethane	<7 µg/kg	TM116		<7	<7	<7	<7	<7	<7
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
Toluene	<7 µg/kg	TM116		<7	<7	<7	<7	<7	<7
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP207	TP207	TP209	TP209	TP210	TP210
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.60 - 1.70 Soil/Solid (S) 27/10/2020	0.50 - 0.60 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020	0.40 - 0.50 Soil/Solid (S) 27/10/2020	1.50 - 1.60 Soil/Solid (S) 27/10/2020
M	mCERES accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156344 ES1	31/10/2020 201031-64 23156351 ES5	31/10/2020 201031-64 23156204 ES1	31/10/2020 201031-64 23156295 ES5	31/10/2020 201031-64 23156329 ES1	31/10/2020 201031-64 23156337 ES5
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP301	TP301	TP301	TP301	TP301	TP302
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116		111	107	109	108	115	118
Toluene-d8**	%	TM116		98.9	99.9	95.5	98.9	98.2	92.3
4-Bromofluorobenzene**	%	TM116		104	106	91.5	101	97.4	88.5
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<6	<6	<6 M	<60 M	<6 M
Chloromethane	<7 µg/kg	TM116		<7 #	<7	<7	<7 #	<70 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<6 #	<6	<6 M	<60 M	<6 M
Bromomethane	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M
Chloroethane	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116		<6 M	<6 #	<6	<6 M	<60 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<10	<10	<10 #	<100 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		<7 M	<7	<7	<7 M	<70 M	<7 M
Dichloromethane	<10 µg/kg	TM116		<10 #	<10	<10	<10 #	<100 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 #	<10	<10 M	<100 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<10 #	<10	<10 M	<100 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<8	<8	<8 M	<80 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<6	<6	<6 M	<60 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<10	<10	<10	<10	<100	<10
Bromochloromethane	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M
Chloroform	<8 µg/kg	TM116		<8 M	<8	<8	<8 M	<80 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<7	<7	<7 M	<70 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<5	<5	<5 M	<50 M	<5 M
Benzene	<9 µg/kg	TM116		<9 M	<9	<9	<9 M	<90 M	<9 M
Trichloroethene	<9 µg/kg	TM116		<9 #	<9 #	<9	<9 #	<90 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M
Dibromomethane	<9 µg/kg	TM116		<9 M	<9	<9	<9 M	<90 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<7	<7	<7 M	<70 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M
Toluene	<7 µg/kg	TM116		<7 M	<7 #	<7	<7 M	<70 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<10	<10	<10	<100	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<10	<10	<10 M	<100 M	<10 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP301	TP301	TP301	TP301	TP301	TP302
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7	<7 M	<7 M	<70 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 #	<5 M	<50 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5	<5 M	<50 M	<50 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4	<4 M	<40 M	<40 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<100 #	<100 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<100 #	<100 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5	<5 #	<50 #	<50 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10	<10 #	<100 #	<100 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16	<16 M	<160 M	<160 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 #	<10 M	<100 M	<100 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9	<9 M	<90 M	<90 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8	<8 M	<80 M	<80 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 #	<14 M	<140 M	<140 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9	<9 #	<90 #	<90 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<100	<100	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8	<8 M	<80 M	<80 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5	<5 M	<50 M	<50 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<110	<110	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10	<10 M	<100 M	<100 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14	<14 M	<140 M	<140 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<100 #	<100 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<200	<200	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<200	<200	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13	<13 M	<130 M	<130 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP302	TP302	TP302	TP304	TP304	TP304
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	3.10 - 3.20 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116		107	107	105	110	109	109
Toluene-d8**	%	TM116		99	98.5	90.5	95.5	99.6	97
4-Bromofluorobenzene**	%	TM116		103	96	72.6	96.1	95.3	91.4
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Bromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP302	TP302	TP302	TP304	TP304	TP304
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020	3.10 - 3.20 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.60 - 1.70 Soil/Solid (S) 29/10/2020
M	mCERES accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			31/10/2020 201031-64 23156273 ES2	31/10/2020 201031-64 23156285 ES3	31/10/2020 201031-64 23156303 ES5	31/10/2020 201031-64 23156226 ES1	31/10/2020 201031-64 23156239 ES2	31/10/2020 201031-64 23156246 ES3
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11 M	<11 M	<11 M	<11 M	<11 M	<11 M
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20 M	<20 M	<20 M	<20 M	<20 M	<20 M
Hexachlorobutadiene	<20 µg/kg	TM116		<20 M	<20 M	<20 M	<20 M	<20 M	<20 M
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP304	TP310	TP310	TP310	TP310	TP312
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.20 - 3.30 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116		110	115	113	119	117	115
Toluene-d8**	%	TM116		96.6	90.8	99.4	99.2	98.4	98.6
4-Bromofluorobenzene**	%	TM116		91.5	83.9	92.4	97.9	88.6	100
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116		<10 #	<10 #	12.8 #	16.7 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Bromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP304	TP310	TP310	TP310	TP310	TP312
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	3.20 - 3.30 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.00 - 1.10 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP312	TP312	TP312	TP312	TP314	TP314
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 0.90 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.10 - 2.20 Soil/Solid (S) 29/10/2020	3.00 - 3.10 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.10 - 1.20 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116		112	118	113	110	118	117
Toluene-d8**	%	TM116		96.8	99.2	95.9	97.7	98.8	98.5
4-Bromofluorobenzene**	%	TM116		91.5	103	91.3	93.3	95.1	99.3
Dichlorodifluoromethane	<6 µg/kg	TM116		<6 M	<60 M	<6 M	<120 M	<6 M	<6
Chloromethane	<7 µg/kg	TM116		<7 #	<70 #	<7 #	<140 #	<7 #	<7
Vinyl Chloride	<6 µg/kg	TM116		<6 M	<60 M	<6 M	<120 M	<6 M	<6
Bromomethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
Chloroethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
Trichlorofluoromethane	<6 µg/kg	TM116		<6 M	<60 M	<6 M	<120 M	<6 M	<6
1,1-Dichloroethene	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<200 #	<10 #	<10
Carbon Disulphide	<7 µg/kg	TM116		<7 M	<70 M	<7 M	<140 M	<7 M	<7
Dichloromethane	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<200 #	19.7 #	<10
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
1,1-Dichloroethane	<8 µg/kg	TM116		<8 M	<80 M	<8 M	<160 M	<8 M	<8
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<6 M	<60 M	<6 M	<120 M	<6 M	<6
2,2-Dichloropropane	<10 µg/kg	TM116		<10	<100	<10	<200	<10	<10
Bromochloromethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
Chloroform	<8 µg/kg	TM116		<8 M	<80 M	<8 M	<160 M	<8 M	<8
1,1,1-Trichloroethane	<7 µg/kg	TM116		<7 M	<70 M	<7 M	<140 M	<7 M	<7
1,1-Dichloropropene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
Carbontetrachloride	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
1,2-Dichloroethane	<5 µg/kg	TM116		<5 M	<50 M	<5 M	<100 M	<5 M	<5
Benzene	<9 µg/kg	TM116		<9 M	<90 M	<9 M	<180 M	<9 M	<9
Trichloroethene	<9 µg/kg	TM116		<9 #	<90 #	<9 #	<180 #	<9 #	<9
1,2-Dichloropropane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
Dibromomethane	<9 µg/kg	TM116		<9 M	<90 M	<9 M	<180 M	<9 M	<9
Bromodichloromethane	<7 µg/kg	TM116		<7 M	<70 M	<7 M	<140 M	<7 M	<7
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10
Toluene	<7 µg/kg	TM116		<7 M	<70 M	<7 M	<140 M	<7 M	<7
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<10	<100	<10	<200	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP312	TP312	TP312	TP312	TP314	TP314
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.80 - 0.90 Soil/Solid (S) 29/10/2020	1.40 - 1.50 Soil/Solid (S) 29/10/2020	2.10 - 2.20 Soil/Solid (S) 29/10/2020	3.00 - 3.10 Soil/Solid (S) 29/10/2020	0.50 - 0.60 Soil/Solid (S) 29/10/2020	1.10 - 1.20 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<70 M	<7 M	<140 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<50 M	<5 M	<100 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<50 M	<5 M	<100 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<40 M	<4 M	<80 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<200 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<200 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<50 #	<5 #	<100 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<200 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<160 M	<16 M	<320 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<90 M	<9 M	<180 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<80 M	<8 M	<160 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<140 M	<14 M	<280 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<90 #	<9 #	<180 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<80 M	<8 M	<160 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<50 M	<5 M	<100 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11 M	<110 M	<11 M	<220 M	<11 M	<11 M
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<100 M	<10 M	<200 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<140 M	<14 M	<280 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<100 #	<10 #	<200 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20 M	<200 M	<20 M	<400 M	<20 M	<20 M
Hexachlorobutadiene	<20 µg/kg	TM116		<20 M	<200 M	<20 M	<400 M	<20 M	<20 M
Naphthalene	<13 µg/kg	TM116		<13 M	<130 M	<13 M	<260 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP314	TP314	TP315	TP315	TP315	TP315
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.80 - 1.90 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.50 - 1.60 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM116		118	107	112	124	108	109
Toluene-d8**	%	TM116		97.6	99.9	92.6	94.5	94.5	99.1
4-Bromofluorobenzene**	%	TM116		92.3	106	85.4	89.9	78.8	101
Dichlorodifluoromethane	<6 µg/kg	TM116		<120	<6	<6	<120	<6	<6
Chloromethane	<7 µg/kg	TM116		<140	<7	<7	<140	<7	<7
Vinyl Chloride	<6 µg/kg	TM116		<120	<6	<6	<120	<6	<6
Bromomethane	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Chloroethane	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Trichlorofluoromethane	<6 µg/kg	TM116		<120	<6	<6	<120	<6	<6
1,1-Dichloroethene	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Carbon Disulphide	<7 µg/kg	TM116		<140	<7	<7	<140	<7	<7
Dichloromethane	<10 µg/kg	TM116		<200	<10	<10	<200	35.1	<10
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
trans-1,2-Dichloroethene	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
1,1-Dichloroethane	<8 µg/kg	TM116		<160	<8	<8	<160	<8	<8
cis-1,2-Dichloroethene	<6 µg/kg	TM116		<120	<6	<6	<120	<6	<6
2,2-Dichloropropane	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Bromochloromethane	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Chloroform	<8 µg/kg	TM116		<160	<8	<8	<160	<8	<8
1,1,1-Trichloroethane	<7 µg/kg	TM116		<140	<7	<7	<140	<7	<7
1,1-Dichloropropene	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Carbontetrachloride	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
1,2-Dichloroethane	<5 µg/kg	TM116		<100	<5	<5	<100	<5	<5
Benzene	<9 µg/kg	TM116		<180	<9	<9	<180	<9	<9
Trichloroethene	<9 µg/kg	TM116		<180	<9	<9	<180	<9	<9
1,2-Dichloropropane	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Dibromomethane	<9 µg/kg	TM116		<180	<9	<9	<180	<9	<9
Bromodichloromethane	<7 µg/kg	TM116		<140	<7	<7	<140	<7	<7
cis-1,3-Dichloropropene	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
Toluene	<7 µg/kg	TM116		<140	<7	<7	<140	<7	<7
trans-1,3-Dichloropropene	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

VOC MS (S)

Results Legend			Customer Sample Ref.	TP314	TP314	TP315	TP315	TP315	TP315
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	1.80 - 1.90 Soil/Solid (S) 29/10/2020	2.90 - 3.00 Soil/Solid (S) 29/10/2020	0.40 - 0.50 Soil/Solid (S) 29/10/2020	0.90 - 1.00 Soil/Solid (S) 29/10/2020	1.50 - 1.60 Soil/Solid (S) 29/10/2020	2.50 - 2.60 Soil/Solid (S) 29/10/2020
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4&@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,3-Dichloropropane	<7 µg/kg	TM116		<140 M	<7 M	<7 M	<140 M	<7 M	<7 #
Tetrachloroethene	<5 µg/kg	TM116		<100 M	<5 M	<5 M	<100 M	<5 M	<5 #
Dibromochloromethane	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
1,2-Dibromoethane	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
Chlorobenzene	<5 µg/kg	TM116		<100 M	<5 M	<5 M	<100 M	<5 M	<5 #
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
Ethylbenzene	<4 µg/kg	TM116		<80 M	<4 M	<4 M	<80 M	<4 M	<4 #
p/m-Xylene	<10 µg/kg	TM116		<200 #	<10 #	<10 #	<200 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
Styrene	<10 µg/kg	TM116		<200 #	<10 #	<10 #	<200 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
Isopropylbenzene	<5 µg/kg	TM116		<100 #	<5 #	<5 #	<100 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116		<200 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<320 M	<16 M	<16 M	<320 M	<16 M	<16 #
Bromobenzene	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
Propylbenzene	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
2-Chlorotoluene	<9 µg/kg	TM116		<180 M	<9 M	<9 M	<180 M	<9 M	<9 #
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<160 M	<8 M	<8 M	<160 M	<8 M	<8 #
4-Chlorotoluene	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
tert-Butylbenzene	<14 µg/kg	TM116		<280 M	<14 M	<14 M	<280 M	<14 M	<14 #
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<180 #	<9 #	<9 #	<180 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<200	<10	<10	<200	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
1,3-Dichlorobenzene	<8 µg/kg	TM116		<160 M	<8 M	<8 M	<160 M	<8 M	<8 #
1,4-Dichlorobenzene	<5 µg/kg	TM116		<100 M	<5 M	<5 M	<100 M	<5 M	<5 #
n-Butylbenzene	<11 µg/kg	TM116		<220	<11	<11	<220	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<200 M	<10 M	<10 M	<200 M	<10 M	<10 #
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<280 M	<14 M	<14 M	<280 M	<14 M	<14 #
Tert-amyl methyl ether	<10 µg/kg	TM116		<200 #	<10 #	<10 #	<200 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<400	<20	<20	<400	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<400	<20	<20	<400	<20	<20
Naphthalene	<13 µg/kg	TM116		<260 M	<13 M	<13 M	<260 M	<13 M	<13 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64 Client Reference: 2020WW102 Report Number: 579788
Location: Arklow Bank Order Number: 9028 Superseded Report:

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&#9@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP207ES1 0.40 - 0.50 SOLID 27/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156344 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP207ES5 1.60 - 1.70 SOLID 27/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156351 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP209ES1 0.50 - 1.60 SOLID 27/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156204 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP209ES5 1.50 - 1.60 SOLID 27/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156295 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP210ES1 0.40 - 0.50 SOLID 27/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156329 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP210ES5 1.50 - 1.60 SOLID 27/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156337 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP301ES1 0.40 - 0.50 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156138 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP301ES2 0.90 - 1.00 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156148 TM048	11/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP301ES3 1.00 - 1.10 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156162 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP301ES4 1.60 - 1.70 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156171 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP301ES6 2.90 - 3.00 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156180 TM048	11/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP302ES1 0.40 - 0.50 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156259 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP302ES2 1.00 - 1.10 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156273 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP302ES3 1.60 - 1.70 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156285 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP302ES5 3.10 - 3.20 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156303 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP304ES1 0.40 - 0.50 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156226 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP304ES2 1.00 - 1.10 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156239 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP304ES3 1.60 - 1.70 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156246 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP304ES5 3.20 - 3.30 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156253 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP310ES1 0.50 - 0.60 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156390 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP310ES2 1.00 - 1.10 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156402 TM048	11/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP310ES4 1.40 - 1.50 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156116 TM048	11/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP310ES5 2.50 - 2.60 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156124 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP312ES1 0.40 - 0.50 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156107 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP312ES2 0.80 - 0.90 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156130 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP312ES3 1.40 - 1.50 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156234 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP312ES4 2.10 - 2.20 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156310 TM048	11/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP312ES6 3.00 - 3.10 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156322 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP314ES1 0.50 - 0.60 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156358 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP314ES2 1.10 - 1.20 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156366 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP314ES4 1.80 - 1.90 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156371 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP314ES6 2.90 - 3.00 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156383 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP315ES1 0.40 - 0.50 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156190 TM048	10/11/2020	James Richards	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP315ES2 0.90 - 1.00 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156196 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP315ES3 1.50 - 1.60 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156210 TM048	10/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64 Client Reference: 2020WW102 Report Number: 579788
Location: Arklow Bank Order Number: 9028 Superseded Report:

Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP315E5 2.50 - 2.60 SOLID 29/10/2020 00:00:00 31/10/2020 09:00:00 201031-64 23156217 TM048	Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
		10/11/2020	Barbara Urbanek-Wals h	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.095
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 5.73
Dry Matter Content (%) 94.6

Case

SDG 201031-64
Lab Sample Number(s) 23156107
Sampled Date 29-Oct-2020
Customer Sample Ref. TP312 ES1
Depth (m) 0.40 - 0.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00746	<0.0005	0.0746	<0.005	-	-	-
Barium	0.00325	<0.0002	0.0325	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00374	<0.0003	0.0374	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.00552	<0.003	0.0552	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00129	<0.001	0.0129	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	71.2	<5	712	<50	-	-	-

Leach Test Information

Date Prepared 04-Nov-2020
pH (pH Units) 8.57
Conductivity (µS/cm) 76.50
Temperature (°C) 20.30
Volume Leachant (Litres) 0.895

Mcerts Certification does not apply to leachates
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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64 Client Reference: 2020WW102 Report Number: 579788
Location: Arklow Bank Order Number: 9028 Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.108	Natural Moisture Content (%)	20
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83.3
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156116
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP310 ES4
Depth (m)	1.40 - 1.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	1.98	<0.5	19.8	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00636	<0.0005	0.0636	<0.005	-	-	-
Barium	0.0236	<0.0002	0.236	<0.002	-	-	-
Cadmium	0.00012	<0.00008	0.0012	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00163	<0.0003	0.0163	<0.003	-	-	-
Lead	0.000204	<0.0002	0.00204	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.0065	<0.0004	0.065	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00469	<0.001	0.0469	<0.01	-	-	-
Chloride	2.5	<2	25	<20	-	-	-
Sulphate (soluble)	1430	<10	14300	<100	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	1550	<5	15500	<50	-	-	-

Leach Test Information

Date Prepared	04-Nov-2020
pH (pH Units)	6.86
Conductivity (µS/cm)	2,030.00
Temperature (°C)	21.40
Volume Leachant (Litres)	0.882

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.131	Natural Moisture Content (%)	44.4
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	69.3
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156124
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP310 ES5
Depth (m)	2.50 - 2.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.19	<3	31.9	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00599	<0.0005	0.0599	<0.005	-	-	-
Barium	0.0175	<0.0002	0.175	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00289	<0.0003	0.0289	<0.003	-	-	-
Lead	0.000598	<0.0002	0.00598	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00046	<0.0004	0.0046	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00482	<0.001	0.0482	<0.01	-	-	-
Chloride	3.1	<2	31	<20	-	-	-
Sulphate (soluble)	42.6	<2	426	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	99.7	<5	997	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	7.41
Conductivity (µS/cm)	124.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.860

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.096
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	6.26
Dry Matter Content (%)	94.1

Case

SDG	201031-64
Lab Sample Number(s)	23156130
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP312 ES2
Depth (m)	0.80 - 0.90

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	5.8	<3	58	<30	-	-	-
Fluoride	2.72	<0.5	27.2	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.0552	<0.0005	0.552	<0.005	-	-	-
Barium	0.00785	<0.0002	0.0785	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00872	<0.0003	0.0872	<0.003	-	-	-
Lead	0.00106	<0.0002	0.0106	<0.002	-	-	-
Molybdenum	0.025	<0.003	0.25	<0.03	-	-	-
Nickel	0.000411	<0.0004	0.00411	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00372	<0.001	0.0372	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	61.6	<2	616	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	171	<5	1710	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	7.68
Conductivity (µS/cm)	208.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.894

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.095
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 5.62
Dry Matter Content (%) 94.7

Case

SDG 201031-64
Lab Sample Number(s) 23156138
Sampled Date 29-Oct-2020
Customer Sample Ref. TP301 ES1
Depth (m) 0.40 - 0.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00352	<0.0005	0.0352	<0.005	-	-	-
Barium	0.00199	<0.0002	0.0199	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00147	<0.0003	0.0147	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00165	<0.001	0.0165	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	55.4	<5	554	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 8.69
Conductivity (µS/cm) 74.60
Temperature (°C) 20.70
Volume Leachant (Litres) 0.895

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.122
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	34.7
Dry Matter Content (%)	74.3

Case

SDG	201031-64
Lab Sample Number(s)	23156148
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP301 ES2
Depth (m)	0.90 - 1.00

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	1.43	<0.5	14.3	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.01	<0.01	<0.1	<0.1	-	-	-
Arsenic	2.84	<0.0234	28.4	<0.234	-	-	-
Barium	0.00461	<0.002	0.0461	<0.02	-	-	-
Cadmium	0.00111	<0.0008	0.0111	<0.008	-	-	-
Chromium	<0.01	<0.01	<0.1	<0.1	-	-	-
Copper	0.00341	<0.003	0.0341	<0.03	-	-	-
Lead	<0.002	<0.002	<0.02	<0.02	-	-	-
Molybdenum	0.235	<0.03	2.35	<0.3	-	-	-
Nickel	<0.004	<0.004	<0.04	<0.04	-	-	-
Selenium	<0.01	<0.01	<0.1	<0.1	-	-	-
Zinc	0.198	<0.01	1.98	<0.1	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	49.5	<2	495	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	108	<5	1080	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	6.45
Conductivity (µS/cm)	127.00
Temperature (°C)	21.50
Volume Leachant (Litres)	0.868

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.127	Natural Moisture Content (%)	41.5
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	70.6
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156162
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP301 ES3
Depth (m)	1.00 - 1.10

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.66	<3	36.6	<30	-	-	-
Fluoride	2.94	<0.5	29.4	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00324	<0.001	0.0324	<0.01	-	-	-
Arsenic	0.662	<0.00551	6.62	<0.0551	-	-	-
Barium	0.0248	<0.0002	0.248	<0.002	-	-	-
Cadmium	0.00381	<0.00008	0.0381	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00629	<0.0003	0.0629	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.99	<0.003	9.9	<0.03	-	-	-
Nickel	0.0106	<0.0004	0.106	<0.004	-	-	-
Selenium	0.00135	<0.001	0.0135	<0.01	-	-	-
Zinc	2.07	<0.001	20.7	<0.01	-	-	-
Chloride	2.3	<2	23	<20	-	-	-
Sulphate (soluble)	1370	<10	13700	<100	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	1440	<5	14400	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	6.63
Conductivity (µS/cm)	1,960.00
Temperature (°C)	20.30
Volume Leachant (Litres)	0.863

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.136	Natural Moisture Content (%)	51.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	65.8
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156171
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP301 ES4
Depth (m)	1.60 - 1.70

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	11.4	<3	114	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.0104	<0.0005	0.104	<0.005	-	-	-
Barium	0.0223	<0.0002	0.223	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00394	<0.0003	0.0394	<0.003	-	-	-
Lead	0.000774	<0.0002	0.00774	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000761	<0.0004	0.00761	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00711	<0.001	0.0711	<0.01	-	-	-
Chloride	3.2	<2	32	<20	-	-	-
Sulphate (soluble)	60.3	<2	603	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	162	<5	1620	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	7.46
Conductivity (µS/cm)	212.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.854

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.141
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 55.4
Dry Matter Content (%) 64.3

Case

SDG 201031-64
Lab Sample Number(s) 23156180
Sampled Date 29-Oct-2020
Customer Sample Ref. TP301 ES6
Depth (m) 2.90 - 3.00

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	5.33	<3	53.3	<30	-	-	-
Fluoride	1.24	<0.5	12.4	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.0894	<0.0005	0.894	<0.005	-	-	-
Barium	0.0369	<0.0002	0.369	<0.002	-	-	-
Cadmium	0.000137	<0.00008	0.00137	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000649	<0.0003	0.00649	<0.003	-	-	-
Lead	0.000244	<0.0002	0.00244	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00776	<0.0004	0.0776	<0.004	-	-	-
Selenium	0.00142	<0.001	0.0142	<0.01	-	-	-
Zinc	0.0681	<0.001	0.681	<0.01	-	-	-
Chloride	4	<2	40	<20	-	-	-
Sulphate (soluble)	87	<2	870	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	151	<5	1510	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 6.79
Conductivity (µS/cm) 193.00
Temperature (°C) 20.90
Volume Leachant (Litres) 0.849

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.100
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 11
Dry Matter Content (%) 90.1

Case

SDG 201031-64
Lab Sample Number(s) 23156190
Sampled Date 29-Oct-2020
Customer Sample Ref. TP315 ES1
Depth (m) 0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.0248	<0.0002	0.248	<0.002	-	-	-
Cadmium	0.000158	<0.00008	0.00158	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00389	<0.0003	0.0389	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00533	<0.0004	0.0533	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0276	<0.001	0.276	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	57.7	<2	577	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	106	<5	1060	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 8.22
Conductivity (µS/cm) 130.00
Temperature (°C) 20.90
Volume Leachant (Litres) 0.890

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.100	Natural Moisture Content (%)	11.2
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	89.9
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156196
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP315 ES2
Depth (m)	0.90 - 1.00

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.09	<3	30.9	<30	-	-	-
Fluoride	1.35	<0.5	13.5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00431	<0.0005	0.0431	<0.005	-	-	-
Barium	0.00227	<0.0002	0.0227	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00106	<0.0003	0.0106	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	3.1	<2	31	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	56.7	<5	567	<50	-	-	-

Leach Test Information

Date Prepared	06-Nov-2020
pH (pH Units)	7.71
Conductivity (µS/cm)	69.60
Temperature (°C)	20.90
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.105
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 15.9
Dry Matter Content (%) 86.3

Case

SDG 201031-64
Lab Sample Number(s) 23156204
Sampled Date 27-Oct-2020
Customer Sample Ref. TP209 ES1
Depth (m) 0.50 - 0.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.000614	<0.0002	0.00614	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00103	<0.0003	0.0103	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00153	<0.001	0.0153	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	9.61	<5	96.1	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 8.37
Conductivity (µS/cm) 9.14
Temperature (°C) 20.70
Volume Leachant (Litres) 0.885

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64 Client Reference: 2020WW102 Report Number: 579788
Location: Arklow Bank Order Number: 9028 Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.132	Natural Moisture Content (%)	47.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	67.6
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156210
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP315 ES3
Depth (m)	1.50 - 1.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	13.6	<3	136	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.0472	<0.0005	0.472	<0.005	-	-	-
Barium	0.0123	<0.0002	0.123	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00475	<0.0003	0.0475	<0.003	-	-	-
Lead	0.00365	<0.0002	0.0365	<0.002	-	-	-
Molybdenum	0.00362	<0.003	0.0362	<0.03	-	-	-
Nickel	0.00152	<0.0004	0.0152	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.014	<0.001	0.14	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	45.9	<2	459	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	105	<5	1050	<50	-	-	-

Leach Test Information

Date Prepared	06-Nov-2020
pH (pH Units)	7.81
Conductivity (µS/cm)	145.00
Temperature (°C)	20.90
Volume Leachant (Litres)	0.858

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.100
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 10.4
Dry Matter Content (%) 90.6

Case

SDG 201031-64
Lab Sample Number(s) 23156217
Sampled Date 29-Oct-2020
Customer Sample Ref. TP315 ES5
Depth (m) 2.50 - 2.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00234	<0.001	0.0234	<0.01	-	-	-
Arsenic	0.00868	<0.0005	0.0868	<0.005	-	-	-
Barium	0.00144	<0.0002	0.0144	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00133	<0.0003	0.0133	<0.003	-	-	-
Lead	0.000277	<0.0002	0.00277	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00436	<0.001	0.0436	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	2.5	<2	25	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	14.2	<5	142	<50	-	-	-

Leach Test Information

Date Prepared 04-Nov-2020
pH (pH Units) 7.08
Conductivity (µS/cm) 17.80
Temperature (°C) 22.70
Volume Leachant (Litres) 0.891

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.109
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	20.3
Dry Matter Content (%)	83.2

Case

SDG	201031-64
Lab Sample Number(s)	23156226
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP304 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	0.572	<0.5	5.72	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.0018	<0.0005	0.018	<0.005	-	-	-
Barium	0.00265	<0.0002	0.0265	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00543	<0.0003	0.0543	<0.003	-	-	-
Lead	0.000604	<0.0002	0.00604	<0.002	-	-	-
Molybdenum	0.011	<0.003	0.11	<0.03	-	-	-
Nickel	0.000452	<0.0004	0.00452	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00566	<0.001	0.0566	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	46.5	<5	465	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	8.43
Conductivity (µS/cm)	59.50
Temperature (°C)	22.20
Volume Leachant (Litres)	0.882

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.122
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 35.2
Dry Matter Content (%) 74

Case

SDG 201031-64
Lab Sample Number(s) 23156234
Sampled Date 29-Oct-2020
Customer Sample Ref. TP312 ES3
Depth (m) 1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	1.88	<0.5	18.8	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.0015	<0.001	0.015	<0.01	-	-	-
Arsenic	0.0352	<0.0005	0.352	<0.005	-	-	-
Barium	0.0328	<0.0002	0.328	<0.002	-	-	-
Cadmium	0.00164	<0.00008	0.0164	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00431	<0.0003	0.0431	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00748	<0.0004	0.0748	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.631	<0.001	6.31	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	1380	<10	13800	<100	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	1490	<5	14900	<50	-	-	-

Leach Test Information

Date Prepared 04-Nov-2020
pH (pH Units) 7.14
Conductivity (µS/cm) 1,980.00
Temperature (°C) 20.30
Volume Leachant (Litres) 0.868

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.097
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	7.22
Dry Matter Content (%)	93.3

Case

SDG	201031-64
Lab Sample Number(s)	23156239
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP304 ES2
Depth (m)	1.00 - 1.10

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00094	<0.0005	0.0094	<0.005	-	-	-
Barium	0.00926	<0.0002	0.0926	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00101	<0.0003	0.0101	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000517	<0.0004	0.00517	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00117	<0.001	0.0117	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	23	<2	230	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	60.8	<5	608	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	6.60
Conductivity (µS/cm)	75.10
Temperature (°C)	20.90
Volume Leachant (Litres)	0.894

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.116
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	28.6
Dry Matter Content (%)	77.8

Case

SDG	201031-64
Lab Sample Number(s)	23156246
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP304 ES3
Depth (m)	1.60 - 1.70

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	12.7	<3	127	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00104	<0.001	0.0104	<0.01	-	-	-
Arsenic	0.0205	<0.0005	0.205	<0.005	-	-	-
Barium	0.0173	<0.0002	0.173	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00141	<0.001	0.0141	<0.01	-	-	-
Copper	0.00611	<0.0003	0.0611	<0.003	-	-	-
Lead	0.00384	<0.0002	0.0384	<0.002	-	-	-
Molybdenum	0.00514	<0.003	0.0514	<0.03	-	-	-
Nickel	0.00129	<0.0004	0.0129	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00585	<0.001	0.0585	<0.01	-	-	-
Chloride	3.4	<2	34	<20	-	-	-
Sulphate (soluble)	103	<2	1030	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	232	<5	2320	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	7.76
Conductivity (µS/cm)	302.00
Temperature (°C)	20.30
Volume Leachant (Litres)	0.875

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.111
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 23.9
Dry Matter Content (%) 80.7

Case

SDG 201031-64
Lab Sample Number(s) 23156253
Sampled Date 29-Oct-2020
Customer Sample Ref. TP304 ES5
Depth (m) 3.20 - 3.30

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.47	<3	34.7	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00667	<0.001	0.0667	<0.01	-	-	-
Arsenic	0.0387	<0.0005	0.387	<0.005	-	-	-
Barium	0.00587	<0.0002	0.0587	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00179	<0.0003	0.0179	<0.003	-	-	-
Lead	0.000244	<0.0002	0.00244	<0.002	-	-	-
Molybdenum	0.00355	<0.003	0.0355	<0.03	-	-	-
Nickel	0.00231	<0.0004	0.0231	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00877	<0.001	0.0877	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	22.1	<2	221	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	51.5	<5	515	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 7.89
Conductivity (µS/cm) 59.50
Temperature (°C) 19.90
Volume Leachant (Litres) 0.879

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.094	Natural Moisture Content (%)	4.74
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	95.5
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156259
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP302 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	3.2	<1	32	<10	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00195	<0.0005	0.0195	<0.005	-	-	-
Barium	0.00486	<0.0002	0.0486	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00122	<0.001	0.0122	<0.01	-	-	-
Copper	0.00104	<0.0003	0.0104	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.00508	<0.003	0.0508	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00186	<0.001	0.0186	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	49.6	<2	496	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	140	<5	1400	<50	-	-	-

Leach Test Information

Date Prepared	04-Nov-2020
pH (pH Units)	7.04
Conductivity (µS/cm)	179.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.896

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.114
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 27
Dry Matter Content (%) 78.7

Case

SDG 201031-64
Lab Sample Number(s) 23156273
Sampled Date 29-Oct-2020
Customer Sample Ref. TP302 ES2
Depth (m) 1.00 - 1.10

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	0.0000194	<0.00001	0.000194	<0.0001	-	-	-
Antimony	0.00328	<0.001	0.0328	<0.01	-	-	-
Arsenic	0.653	<0.00514	6.53	<0.0514	-	-	-
Barium	0.00147	<0.0002	0.0147	<0.002	-	-	-
Cadmium	0.000383	<0.00008	0.00383	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00511	<0.0003	0.0511	<0.003	-	-	-
Lead	0.00576	<0.0002	0.0576	<0.002	-	-	-
Molybdenum	0.143	<0.003	1.43	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.0035	<0.001	0.035	<0.01	-	-	-
Zinc	0.0342	<0.001	0.342	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	21.7	<2	217	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	51.4	<5	514	<50	-	-	-

Leach Test Information

Date Prepared 04-Nov-2020
pH (pH Units) 6.01
Conductivity (µS/cm) 59.00
Temperature (°C) 20.80
Volume Leachant (Litres) 0.876

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.118
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 32.3
Dry Matter Content (%) 75.6

Case

SDG 201031-64
Lab Sample Number(s) 23156285
Sampled Date 29-Oct-2020
Customer Sample Ref. TP302 ES3
Depth (m) 1.60 - 1.70

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	11	<3	110	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.0184	<0.0005	0.184	<0.005	-	-	-
Barium	0.00803	<0.0002	0.0803	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00309	<0.0003	0.0309	<0.003	-	-	-
Lead	0.00108	<0.0002	0.0108	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00445	<0.001	0.0445	<0.01	-	-	-
Chloride	4.5	<2	45	<20	-	-	-
Sulphate (soluble)	31.9	<2	319	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	91	<5	910	<50	-	-	-

Leach Test Information

Date Prepared 04-Nov-2020
pH (pH Units) 7.52
Conductivity (µS/cm) 113.00
Temperature (°C) 21.10
Volume Leachant (Litres) 0.872

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.100
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	10.7
Dry Matter Content (%)	90.3

Case

SDG	201031-64
Lab Sample Number(s)	23156295
Sampled Date	27-Oct-2020
Customer Sample Ref.	TP209 ES5
Depth (m)	1.50 - 1.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.0037	<0.001	0.037	<0.01	-	-	-
Arsenic	0.00116	<0.0005	0.0116	<0.005	-	-	-
Barium	0.00807	<0.0002	0.0807	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000656	<0.0003	0.00656	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.00774	<0.003	0.0774	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	7	<2	70	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	76.5	<5	765	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	6.73
Conductivity (µS/cm)	95.50
Temperature (°C)	20.10
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.130	Natural Moisture Content (%)	45.4
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	68.8
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156303
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP302 ES5
Depth (m)	3.10 - 3.20

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	5.83	<3	58.3	<30	-	-	-
Fluoride	1.6	<0.5	16	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.075	<0.0005	0.75	<0.005	-	-	-
Barium	0.0154	<0.0002	0.154	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00428	<0.0004	0.0428	<0.004	-	-	-
Selenium	0.00112	<0.001	0.0112	<0.01	-	-	-
Zinc	0.00535	<0.001	0.0535	<0.01	-	-	-
Chloride	2.4	<2	24	<20	-	-	-
Sulphate (soluble)	69.5	<2	695	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	126	<5	1260	<50	-	-	-

Leach Test Information

Date Prepared	04-Nov-2020
pH (pH Units)	6.32
Conductivity (µS/cm)	160.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.860

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.155
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 73.3
Dry Matter Content (%) 57.7

Case

SDG 201031-64
Lab Sample Number(s) 23156310
Sampled Date 29-Oct-2020
Customer Sample Ref. TP312 ES4
Depth (m) 2.10 - 2.20

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	13.6	<3	136	<30	-	-	-
Fluoride	0.724	<0.5	7.24	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00779	<0.0005	0.0779	<0.005	-	-	-
Barium	0.111	<0.0002	1.11	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00131	<0.0003	0.0131	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.00605	<0.003	0.0605	<0.03	-	-	-
Nickel	0.00202	<0.0004	0.0202	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0111	<0.001	0.111	<0.01	-	-	-
Chloride	2.7	<2	27	<20	-	-	-
Sulphate (soluble)	954	<10	9540	<100	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	1130	<5	11300	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 7.23
Conductivity (µS/cm) 1,500.00
Temperature (°C) 21.20
Volume Leachant (Litres) 0.835

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.170
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 87.2
Dry Matter Content (%) 53.4

Case

SDG 201031-64
Lab Sample Number(s) 23156322
Sampled Date 29-Oct-2020
Customer Sample Ref. TP312 ES6
Depth (m) 3.00 - 3.10

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.64	<3	36.4	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00105	<0.001	0.0105	<0.01	-	-	-
Arsenic	0.0877	<0.0005	0.877	<0.005	-	-	-
Barium	0.0626	<0.0002	0.626	<0.002	-	-	-
Cadmium	0.00109	<0.00008	0.0109	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00358	<0.0003	0.0358	<0.003	-	-	-
Lead	0.00239	<0.0002	0.0239	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00309	<0.0004	0.0309	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0234	<0.001	0.234	<0.01	-	-	-
Chloride	3.9	<2	39	<20	-	-	-
Sulphate (soluble)	188	<2	1880	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	301	<5	3010	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 6.95
Conductivity (µS/cm) 400.00
Temperature (°C) 20.20
Volume Leachant (Litres) 0.820

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference

Mass Sample taken (kg) 0.108

Mass of dry sample (kg) 0.090

Particle Size <4mm >95%

Site Location

Arklow Bank

Natural Moisture Content (%) 20.6

Dry Matter Content (%) 82.9

Case

SDG 201031-64

Lab Sample Number(s) 23156329

Sampled Date 27-Oct-2020

Customer Sample Ref. TP210 ES1

Depth (m) 0.40 - 0.50

Eluate Analysis

C2 Concⁿ in 10:1 eluate (mg/l) A2 10:1 concⁿ leached (mg/kg)

	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.000704	<0.0002	0.00704	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	10.5	<5	105	<50	-	-	-

Leach Test Information

Date Prepared 04-Nov-2020
pH (pH Units) 7.70
Conductivity (µS/cm) 9.68
Temperature (°C) 20.20
Volume Leachant (Litres) 0.882

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CERTIFICATE OF ANALYSIS

Validated

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.100	Natural Moisture Content (%)	11.6
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	89.6
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156337
Sampled Date	27-Oct-2020
Customer Sample Ref.	TP210 ES5
Depth (m)	1.50 - 1.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000575	<0.0005	0.00575	<0.005	-	-	-
Barium	0.00571	<0.0002	0.0571	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00291	<0.0003	0.0291	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	66.1	<5	661	<50	-	-	-

Leach Test Information

Date Prepared	04-Nov-2020
pH (pH Units)	7.72
Conductivity (µS/cm)	70.70
Temperature (°C)	20.30
Volume Leachant (Litres)	0.890

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.101
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 12.6
Dry Matter Content (%) 88.8

Case

SDG 201031-64
Lab Sample Number(s) 23156344
Sampled Date 27-Oct-2020
Customer Sample Ref. TP207 ES1
Depth (m) 0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.000795	<0.0002	0.00795	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000678	<0.0003	0.00678	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	15.2	<5	152	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 7.89
Conductivity (µS/cm) 16.30
Temperature (°C) 22.60
Volume Leachant (Litres) 0.889

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.105
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 16.7
Dry Matter Content (%) 85.7

Case

SDG 201031-64
Lab Sample Number(s) 23156351
Sampled Date 27-Oct-2020
Customer Sample Ref. TP207 ES5
Depth (m) 1.60 - 1.70

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.0013	<0.0002	0.013	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	58.8	<5	588	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 8.70
Conductivity (µS/cm) 75.30
Temperature (°C) 21.30
Volume Leachant (Litres) 0.885

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.096
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 6.47
Dry Matter Content (%) 93.9

Case

SDG 201031-64
Lab Sample Number(s) 23156358
Sampled Date 29-Oct-2020
Customer Sample Ref. TP314 ES1
Depth (m) 0.50 - 0.60

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00183	<0.0002	0.0183	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	<0.0003	<0.0003	<0.003	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000738	<0.0004	0.00738	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00652	<0.001	0.0652	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	19.2	<2	192	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	48.4	<5	484	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 8.46
Conductivity (µS/cm) 68.40
Temperature (°C) 21.10
Volume Leachant (Litres) 0.894

Mcerts Certification does not apply to leachates
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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.111
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	22.7
Dry Matter Content (%)	81.5

Case

SDG	201031-64
Lab Sample Number(s)	23156366
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP314 ES2
Depth (m)	1.10 - 1.20

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00215	<0.0005	0.0215	<0.005	-	-	-
Barium	0.00357	<0.0002	0.0357	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000531	<0.0003	0.00531	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00176	<0.0004	0.0176	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00426	<0.001	0.0426	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	20.4	<2	204	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	58.8	<5	588	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	8.12
Conductivity (µS/cm)	69.10
Temperature (°C)	20.50
Volume Leachant (Litres)	0.879

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.137
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	50.9
Dry Matter Content (%)	66.3

Case

SDG	201031-64
Lab Sample Number(s)	23156371
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP314 ES4
Depth (m)	1.80 - 1.90

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	19.1	<3	191	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.0288	<0.0005	0.288	<0.005	-	-	-
Barium	0.00767	<0.0002	0.0767	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00139	<0.001	0.0139	<0.01	-	-	-
Copper	0.0154	<0.0003	0.154	<0.003	-	-	-
Lead	0.00477	<0.0002	0.0477	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.00203	<0.0004	0.0203	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0106	<0.001	0.106	<0.01	-	-	-
Chloride	2.8	<2	28	<20	-	-	-
Sulphate (soluble)	24	<2	240	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	76.5	<5	765	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	7.71
Conductivity (µS/cm)	90.30
Temperature (°C)	20.90
Volume Leachant (Litres)	0.854

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.109	Natural Moisture Content (%)	20.3
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	83.1
Particle Size <4mm	>95%		

Case

SDG	201031-64
Lab Sample Number(s)	23156383
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP314 ES6
Depth (m)	2.90 - 3.00

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.36	<3	33.6	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00992	<0.001	0.0992	<0.01	-	-	-
Arsenic	0.0206	<0.0005	0.206	<0.005	-	-	-
Barium	0.00446	<0.0002	0.0446	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00433	<0.0003	0.0433	<0.003	-	-	-
Lead	0.00268	<0.0002	0.0268	<0.002	-	-	-
Molybdenum	0.0105	<0.003	0.105	<0.03	-	-	-
Nickel	0.00124	<0.0004	0.0124	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0365	<0.001	0.365	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	5.7	<2	57	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	25	<5	250	<50	-	-	-

Leach Test Information

Date Prepared	05-Nov-2020
pH (pH Units)	8.17
Conductivity (µS/cm)	28.10
Temperature (°C)	21.20
Volume Leachant (Litres)	0.882

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference
Mass Sample taken (kg) 0.095
Mass of dry sample (kg) 0.090
Particle Size <4mm >95%

Site Location Arklow Bank
Natural Moisture Content (%) 5.48
Dry Matter Content (%) 94.8

Case

SDG 201031-64
Lab Sample Number(s) 23156390
Sampled Date 29-Oct-2020
Customer Sample Ref. TP310 ES1
Depth (m) 0.50 - 0.60

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	3.1	<3	31	<30	-	-	-
Fluoride	1.52	<0.5	15.2	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	0.00178	<0.001	0.0178	<0.01	-	-	-
Arsenic	0.0077	<0.0005	0.077	<0.005	-	-	-
Barium	0.00476	<0.0002	0.0476	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00574	<0.0003	0.0574	<0.003	-	-	-
Lead	0.00045	<0.0002	0.0045	<0.002	-	-	-
Molybdenum	0.00878	<0.003	0.0878	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	0.0015	<0.001	0.015	<0.01	-	-	-
Zinc	0.00207	<0.001	0.0207	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	28.2	<2	282	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	110	<5	1100	<50	-	-	-

Leach Test Information

Date Prepared 05-Nov-2020
pH (pH Units) 7.92
Conductivity (µS/cm) 136.00
Temperature (°C) 20.30
Volume Leachant (Litres) 0.895

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.099
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	10.2
Dry Matter Content (%)	90.8

Case

SDG	201031-64
Lab Sample Number(s)	23156402
Sampled Date	29-Oct-2020
Customer Sample Ref.	TP310 ES2
Depth (m)	1.00 - 1.10

Eluate Analysis	C2 Conc ⁿ in 10:1 eluate (mg/l)		A2 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00102	<0.0005	0.0102	<0.005	-	-	-
Barium	0.0101	<0.0002	0.101	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00134	<0.0003	0.0134	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000441	<0.0004	0.00441	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	<0.001	<0.001	<0.01	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	37.8	<2	378	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	84.6	<5	846	<50	-	-	-

Leach Test Information

Date Prepared	04-Nov-2020
pH (pH Units)	8.15
Conductivity (µS/cm)	105.00
Temperature (°C)	21.30
Volume Leachant (Litres)	0.891

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64 Client Reference: 2020WW102 Report Number: 579788
Location: Arklow Bank Order Number: 9028 Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579788
Superseded Report:

Test Completion Dates

Lab Sample No(s) Customer Sample Ref.	23156344	23156351	23156204	23156295	23156329	23156337	23156138	23156148	23156162	23156171
	TP207	TP207	TP209	TP209	TP210	TP210	TP301	TP301	TP301	TP301
	ES1	ES5	ES1	ES5	ES1	ES5	ES1	ES2	ES3	ES4
	Depth Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	10-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Asbestos ID in Solid Samples	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020
CEN 10:1 Leachate (1 Stage)	07-Nov-2020	07-Nov-2020	07-Nov-2020	07-Nov-2020	07-Nov-2020	06-Nov-2020	06-Nov-2020	07-Nov-2020	06-Nov-2020	06-Nov-2020
CEN Readings	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	08-Nov-2020	10-Nov-2020	10-Nov-2020
Chromium III	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Coronene	09-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
Dissolved Metals by ICP-MS	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	18-Nov-2020	12-Nov-2020	13-Nov-2020	12-Nov-2020	12-Nov-2020
Dissolved Organic/Inorganic Carbon	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Easily Liberated Sulphide	11-Nov-2020	09-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	09-Nov-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Fluoride	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020
GRO by GC-FID (S)	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	04-Nov-2020	04-Nov-2020	05-Nov-2020	04-Nov-2020
Hexavalent Chromium (s)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Loss on Ignition in soils	06-Nov-2020	06-Nov-2020	10-Nov-2020	06-Nov-2020	10-Nov-2020	10-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020
Mercury Dissolved	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Metals in solid samples by OES	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020
Moisture at 105C	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	04-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020
PAH 16 & 17 Calc	09-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
PAH by GCMS	09-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
PCBs by GCMS	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
pH	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	06-Nov-2020	05-Nov-2020	06-Nov-2020
Phenols by HPLC (W)	12-Nov-2020	12-Nov-2020	11-Nov-2020	12-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	12-Nov-2020	10-Nov-2020	11-Nov-2020
Sample description	04-Nov-2020	04-Nov-2020	04-Nov-2020	04-Nov-2020	05-Nov-2020	04-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020	03-Nov-2020
Semi Volatile Organic Compounds	06-Nov-2020	09-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020
Total Dissolved Solids	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020
Total Organic Carbon	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
TPH CWG GC (S)	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
VOC MS (S)	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	05-Nov-2020	05-Nov-2020	04-Nov-2020	05-Nov-2020

Lab Sample No(s) Customer Sample Ref.	23156180	23156259	23156273	23156285	23156303	23156226	23156239	23156246	23156253	23156116
	TP301	TP302	TP302	TP302	TP302	TP304	TP304	TP304	TP304	TP310
	ES6	ES1	ES2	ES3	ES5	ES1	ES2	ES3	ES5	ES4
	Depth Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Asbestos ID in Solid Samples	11-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	11-Nov-2020
CEN 10:1 Leachate (1 Stage)	07-Nov-2020	07-Nov-2020	07-Nov-2020	07-Nov-2020	07-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	07-Nov-2020
CEN Readings	08-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020
Chromium III	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Coronene	06-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	06-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	09-Nov-2020
Dissolved Metals by ICP-MS	12-Nov-2020	12-Nov-2020	12-Nov-2020	11-Nov-2020	11-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020
Dissolved Organic/Inorganic Carbon	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Easily Liberated Sulphide	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	06-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020
Fluoride	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	10-Nov-2020
GRO by GC-FID (S)	04-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Hexavalent Chromium (s)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Loss on Ignition in soils	05-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
Mercury Dissolved	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Metals in solid samples by OES	10-Nov-2020	09-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	11-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020
Moisture at 105C	05-Nov-2020	04-Nov-2020	04-Nov-2020	04-Nov-2020	04-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	04-Nov-2020
PAH 16 & 17 Calc	11-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020
PAH by GCMS	11-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020
PCBs by GCMS	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
pH	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	06-Nov-2020	05-Nov-2020	06-Nov-2020	05-Nov-2020
Phenols by HPLC (W)	12-Nov-2020	12-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	12-Nov-2020	11-Nov-2020	12-Nov-2020	12-Nov-2020
Sample description	03-Nov-2020	04-Nov-2020	04-Nov-2020	04-Nov-2020	04-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	03-Nov-2020
Semi Volatile Organic Compounds	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Total Dissolved Solids	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	10-Nov-2020
Total Organic Carbon	10-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
TPH CWG GC (S)	06-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020
VOC MS (S)	05-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64 Client Reference: 2020WW102 Report Number: 579788
Location: Arklow Bank Order Number: 9028 Superseded Report:

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	23156124	23156390	23156402	23156107	23156130	23156234	23156310	23156322	23156358	23156366
	TP310	TP310	TP310	TP312	TP312	TP312	TP312	TP312	TP314	TP314
	ES5	ES1	ES2	ES1	ES2	ES3	ES4	ES6	ES1	ES2
	2.50 - 2.60	0.50 - 0.60	1.00 - 1.10	0.40 - 0.50	0.80 - 0.90	1.40 - 1.50	2.10 - 2.20	3.00 - 3.10	0.50 - 0.60	1.10 - 1.20
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	10-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Asbestos ID in Solid Samples	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
CEN 10:1 Leachate (1 Stage)	06-Nov-2020	06-Nov-2020	07-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	07-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
CEN Readings	10-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	08-Nov-2020	10-Nov-2020	08-Nov-2020	07-Nov-2020
Chromium III	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Coronene	06-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	10-Nov-2020	06-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
Dissolved Metals by ICP-MS	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	18-Nov-2020	13-Nov-2020	18-Nov-2020
Dissolved Organic/Inorganic Carbon	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Easily Liberated Sulphide	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020	09-Nov-2020
Fluoride	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
GRO by GC-FID (S)	06-Nov-2020	04-Nov-2020	04-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Hexavalent Chromium (s)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Loss on Ignition in soils	06-Nov-2020	05-Nov-2020	05-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	06-Nov-2020
Mercury Dissolved	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Metals in solid samples by OES	06-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
Moisture at 105C	05-Nov-2020	05-Nov-2020	04-Nov-2020	04-Nov-2020	05-Nov-2020	04-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020
PAH 16 & 17 Calc	11-Nov-2020	11-Nov-2020	11-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020
PAH by GCMS	11-Nov-2020	11-Nov-2020	11-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020
PCBs by GCMS	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
pH	05-Nov-2020	06-Nov-2020	06-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	06-Nov-2020	05-Nov-2020
Phenols by HPLC (W)	11-Nov-2020	11-Nov-2020	12-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	12-Nov-2020	11-Nov-2020	11-Nov-2020	10-Nov-2020
Sample description	03-Nov-2020	03-Nov-2020	03-Nov-2020	04-Nov-2020	05-Nov-2020	04-Nov-2020	04-Nov-2020	04-Nov-2020	05-Nov-2020	04-Nov-2020
Semi Volatile Organic Compounds	09-Nov-2020	11-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020
Total Dissolved Solids	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
Total Organic Carbon	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
TPH CWG GC (S)	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020	09-Nov-2020
VOC MS (S)	06-Nov-2020	04-Nov-2020	05-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	23156371	23156383	23156190	23156196	23156210	23156217
	TP314	TP314	TP315	TP315	TP315	TP315
	ES4	ES6	ES1	ES2	ES3	ES5
	1.80 - 1.90	2.90 - 3.00	0.40 - 0.50	0.90 - 1.00	1.50 - 1.60	2.50 - 2.60
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Asbestos ID in Solid Samples	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
CEN 10:1 Leachate (1 Stage)	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	07-Nov-2020
CEN Readings	08-Nov-2020	08-Nov-2020	09-Nov-2020	08-Nov-2020	08-Nov-2020	09-Nov-2020
Chromium III	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Coronene	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
Dissolved Metals by ICP-MS	18-Nov-2020	18-Nov-2020	12-Nov-2020	13-Nov-2020	13-Nov-2020	11-Nov-2020
Dissolved Organic/Inorganic Carbon	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Easily Liberated Sulphide	11-Nov-2020	09-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	06-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
Fluoride	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020
GRO by GC-FID (S)	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020
Hexavalent Chromium (s)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Loss on Ignition in soils	10-Nov-2020	10-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
Mercury Dissolved	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
Metals in solid samples by OES	10-Nov-2020	10-Nov-2020	09-Nov-2020	10-Nov-2020	10-Nov-2020	09-Nov-2020
Moisture at 105C	05-Nov-2020	05-Nov-2020	05-Nov-2020	06-Nov-2020	06-Nov-2020	04-Nov-2020
PAH 16 & 17 Calc	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020
PAH by GCMS	09-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020	11-Nov-2020	09-Nov-2020
PCBs by GCMS	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020
pH	05-Nov-2020	05-Nov-2020	05-Nov-2020	06-Nov-2020	05-Nov-2020	05-Nov-2020
Phenols by HPLC (W)	10-Nov-2020	10-Nov-2020	11-Nov-2020	10-Nov-2020	10-Nov-2020	12-Nov-2020
Sample description	04-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020	05-Nov-2020
Semi Volatile Organic Compounds	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	09-Nov-2020
Total Dissolved Solids	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	10-Nov-2020
Total Organic Carbon	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
TPH CWG GC (S)	06-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
VOC MS (S)	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020	06-Nov-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

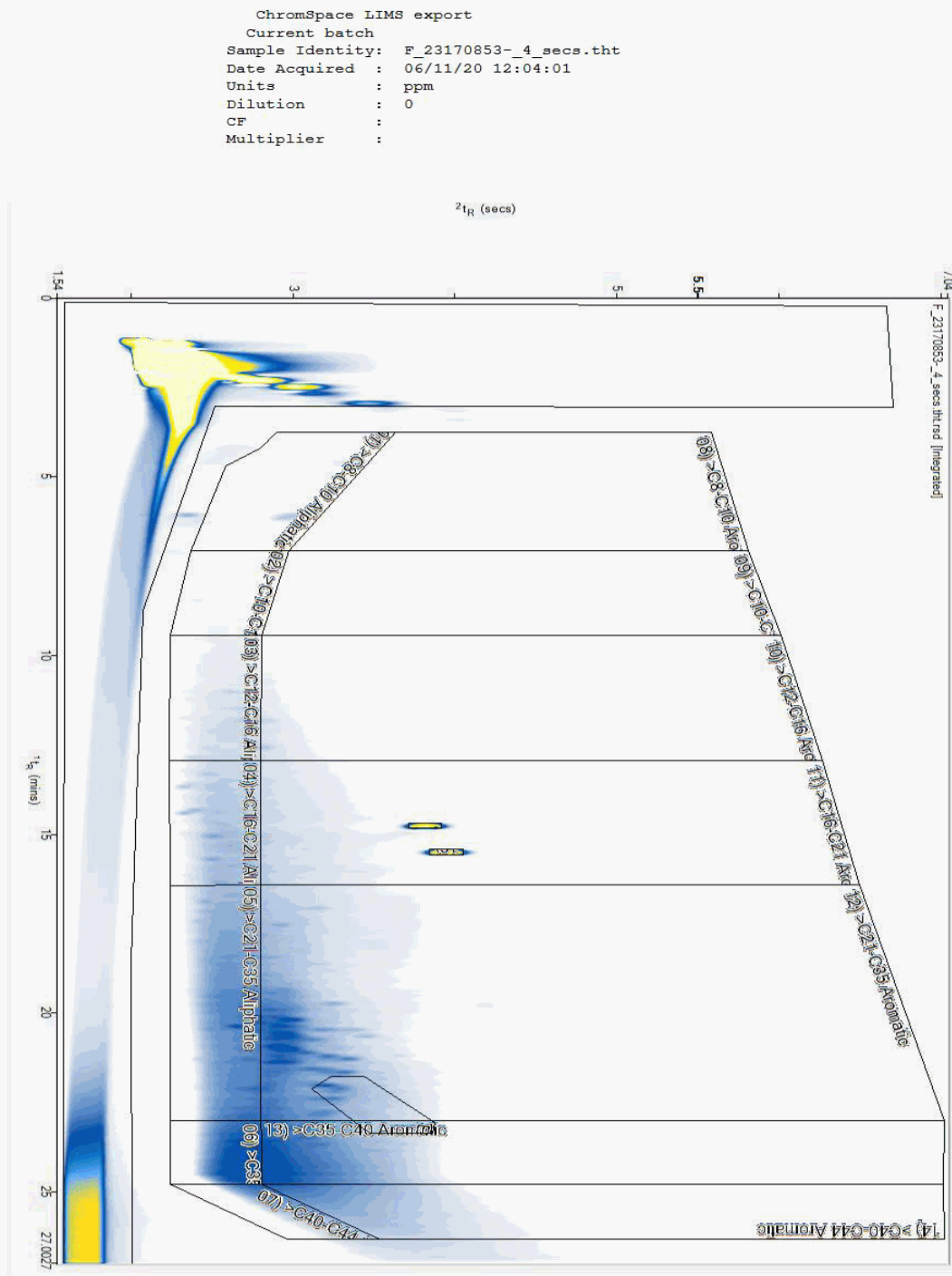
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23170853
Sample ID : TP310

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

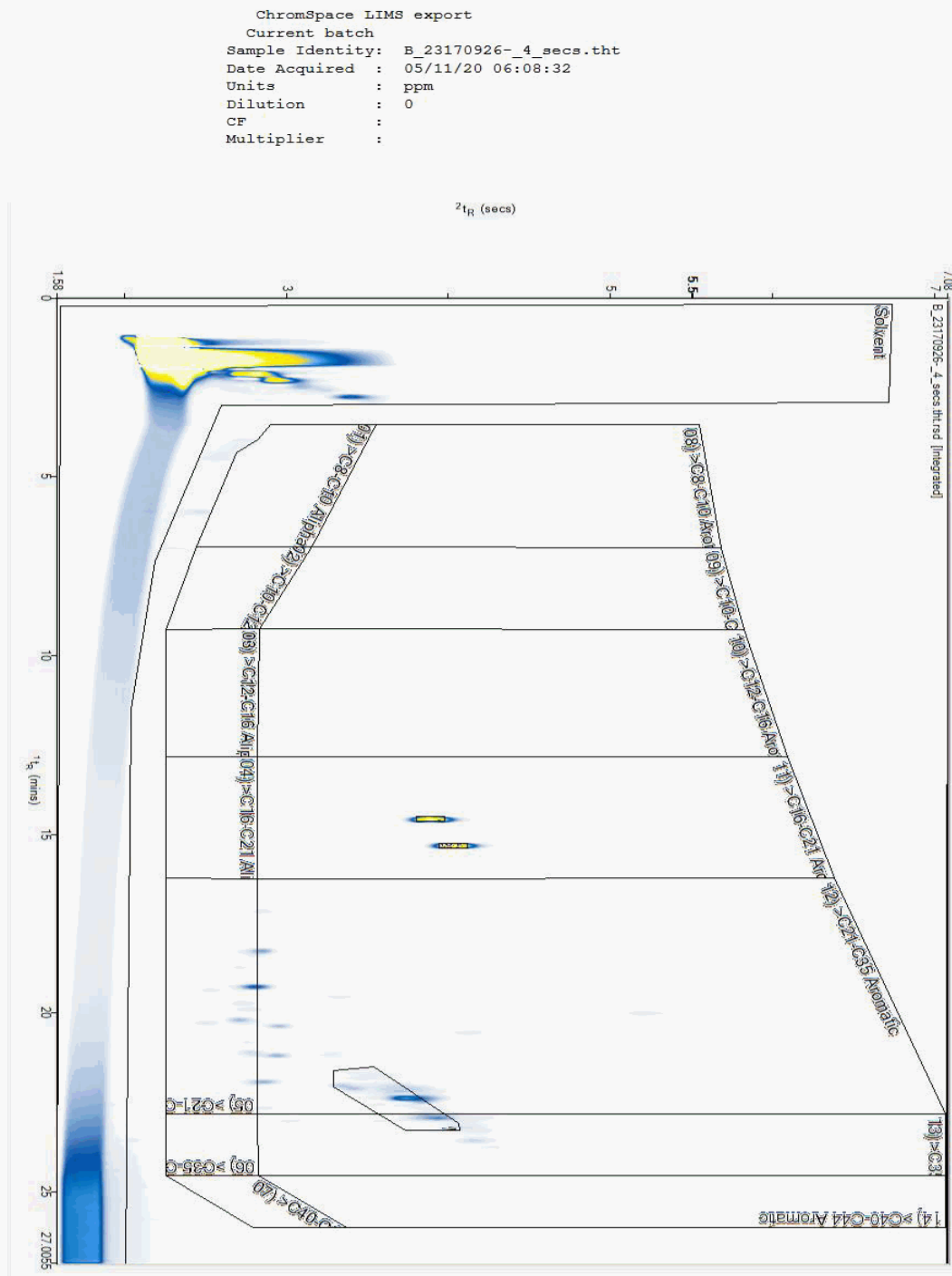
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23170926
Sample ID : TP310

Depth : 2.50 - 2.60



SDG:	201031-64
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

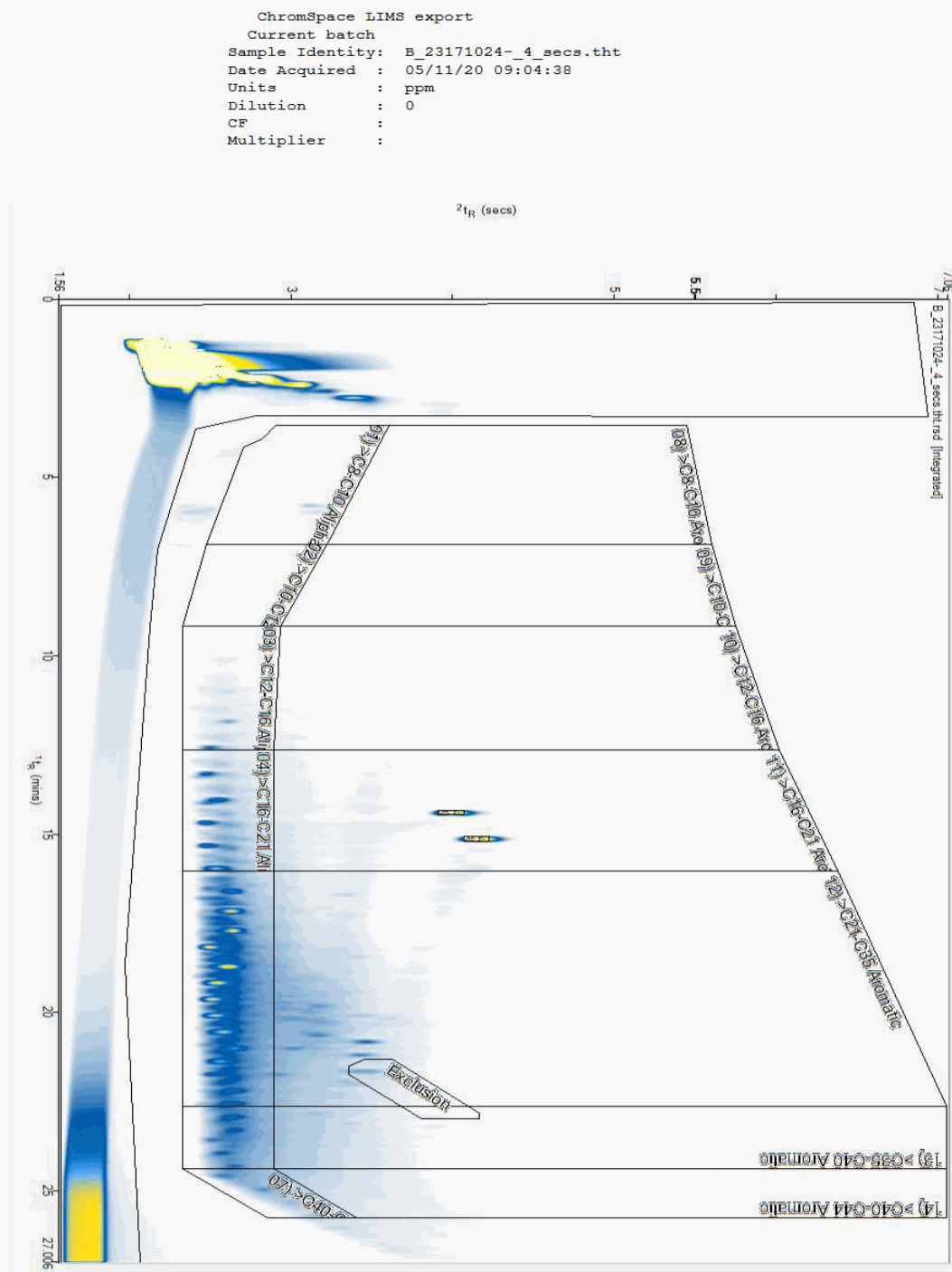
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23171024
Sample ID : TP301

Depth : 0.90 - 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

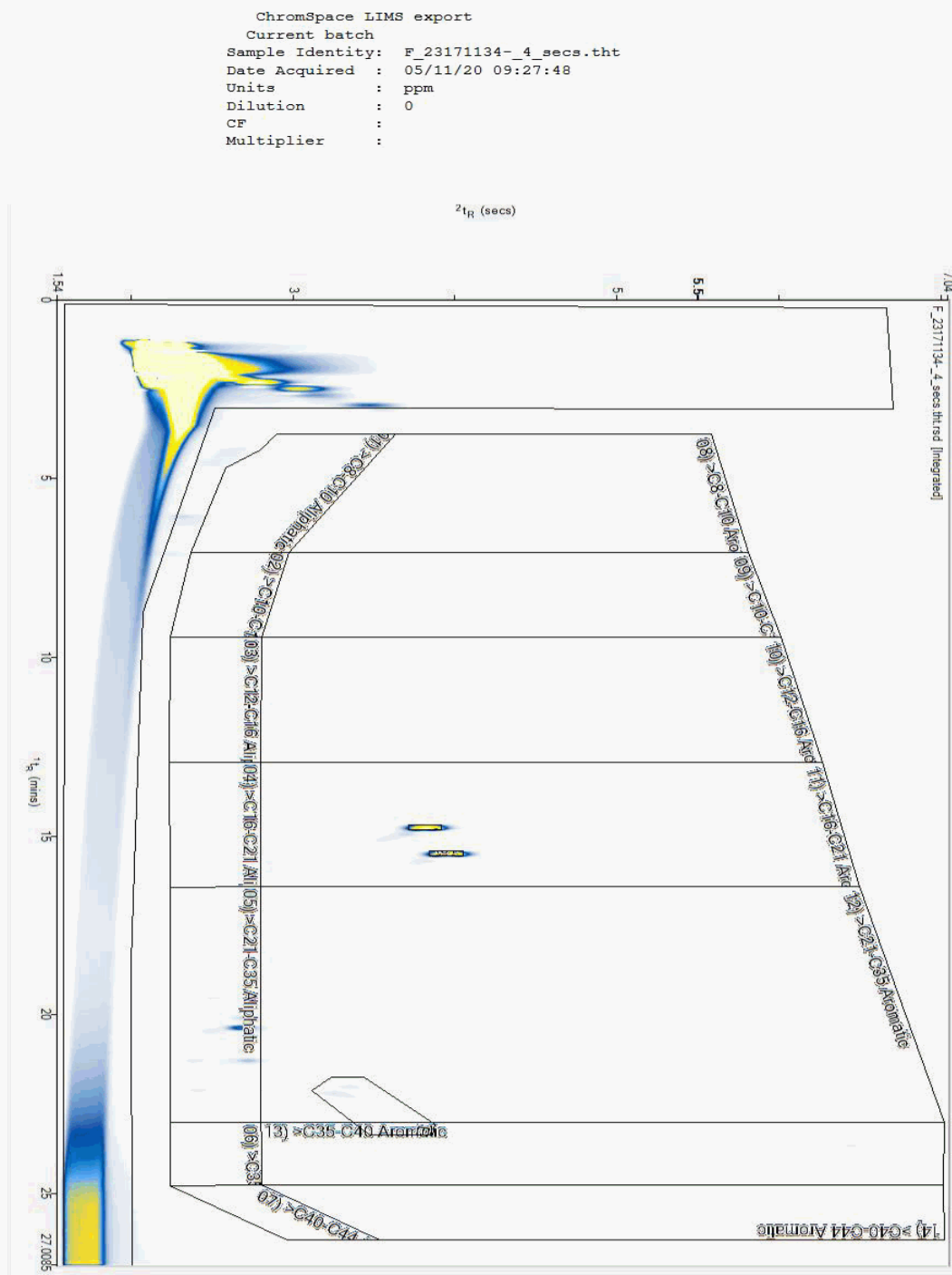
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23171134
Sample ID : TP301

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

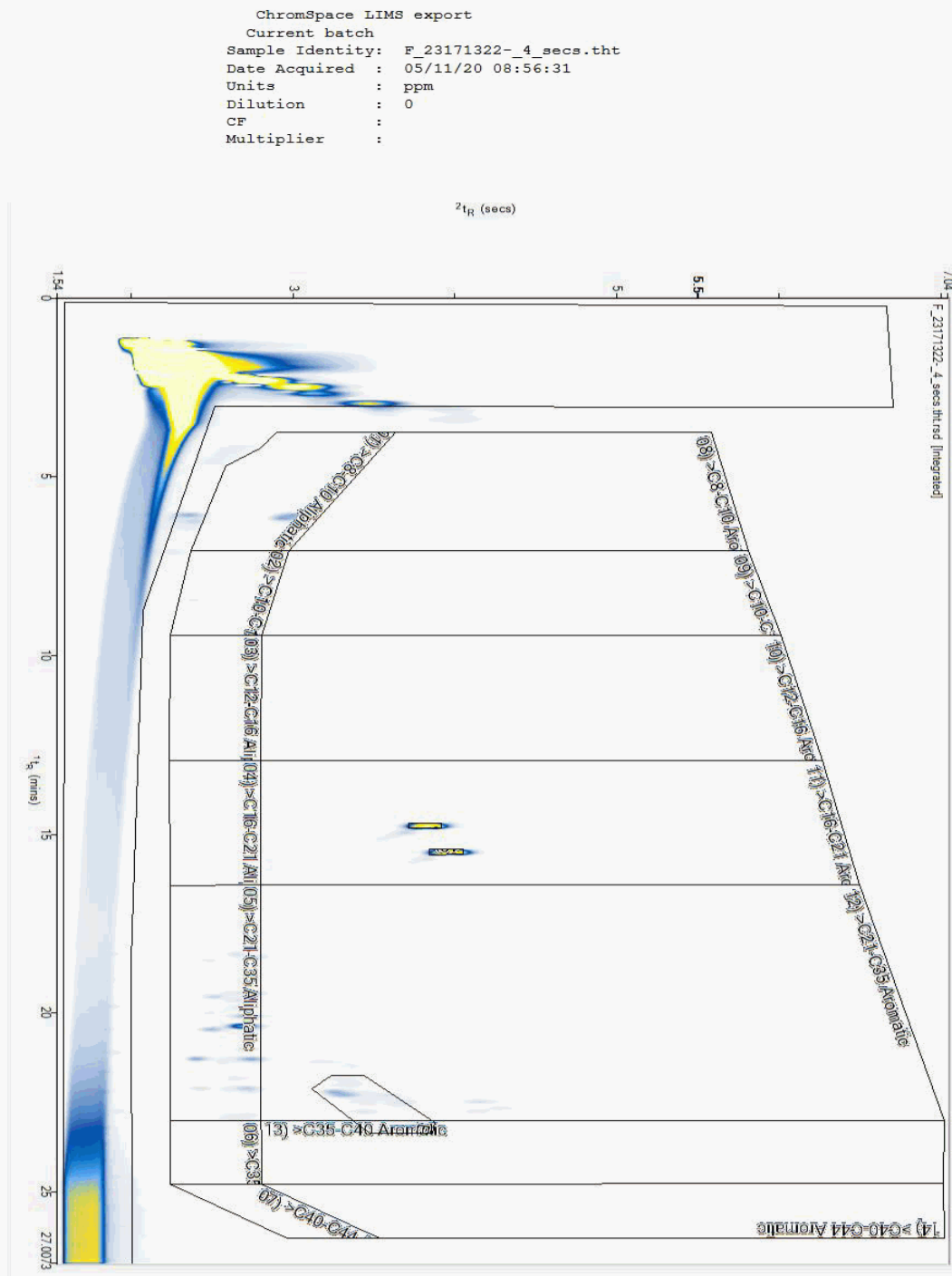
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23171322
Sample ID : TP310

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

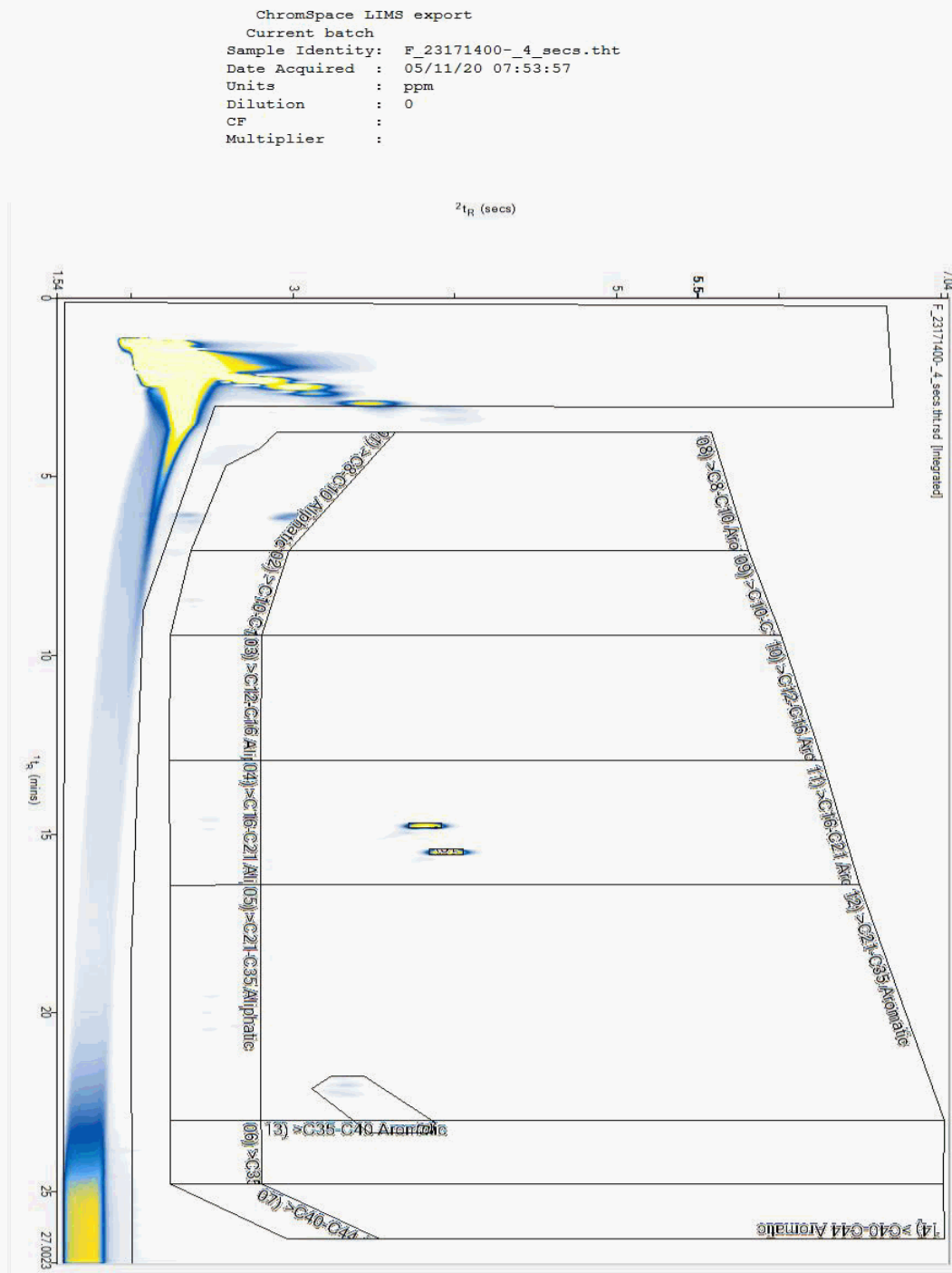
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23171400
Sample ID : TP310

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

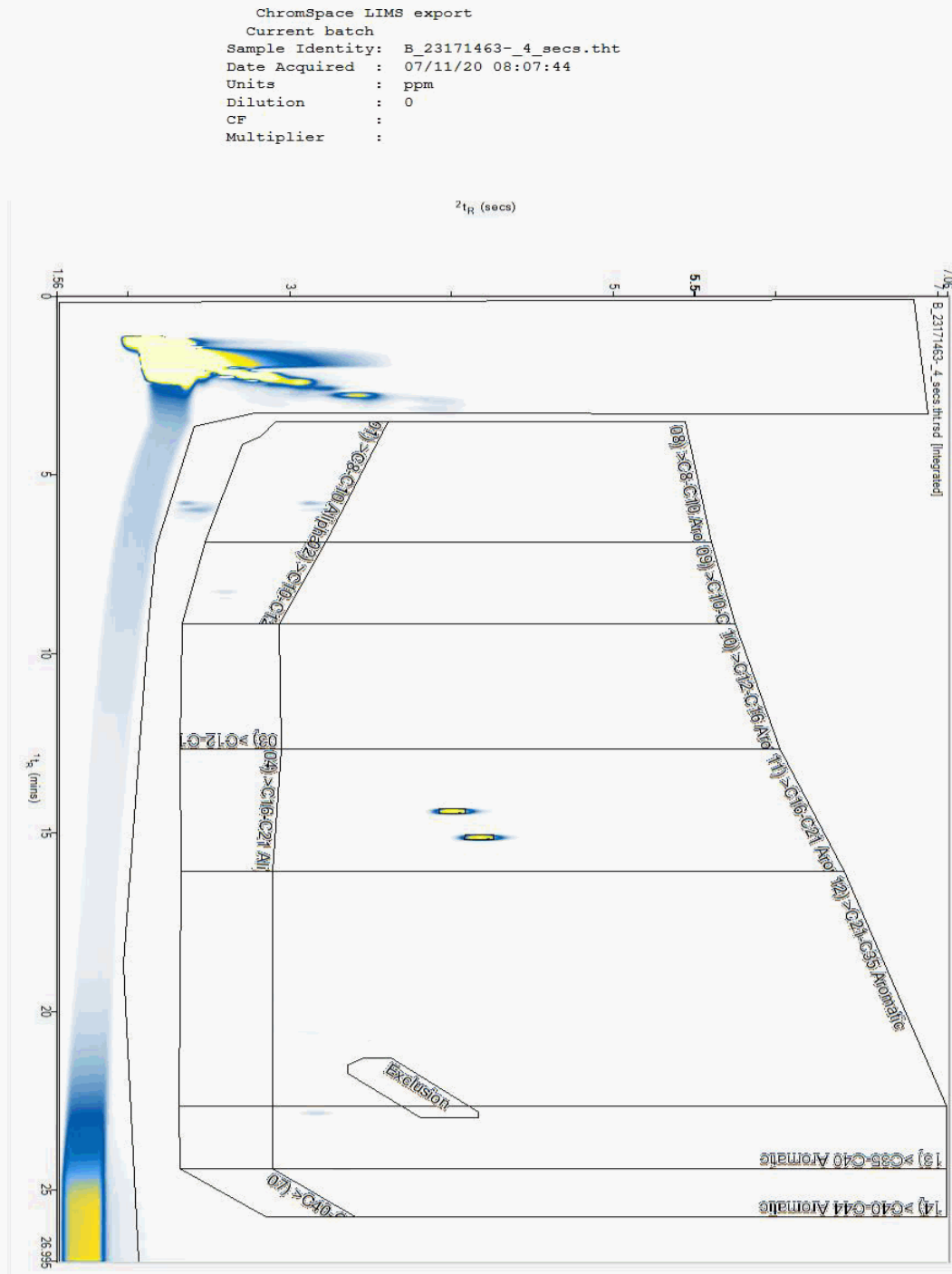
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23171463
Sample ID : TP301

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

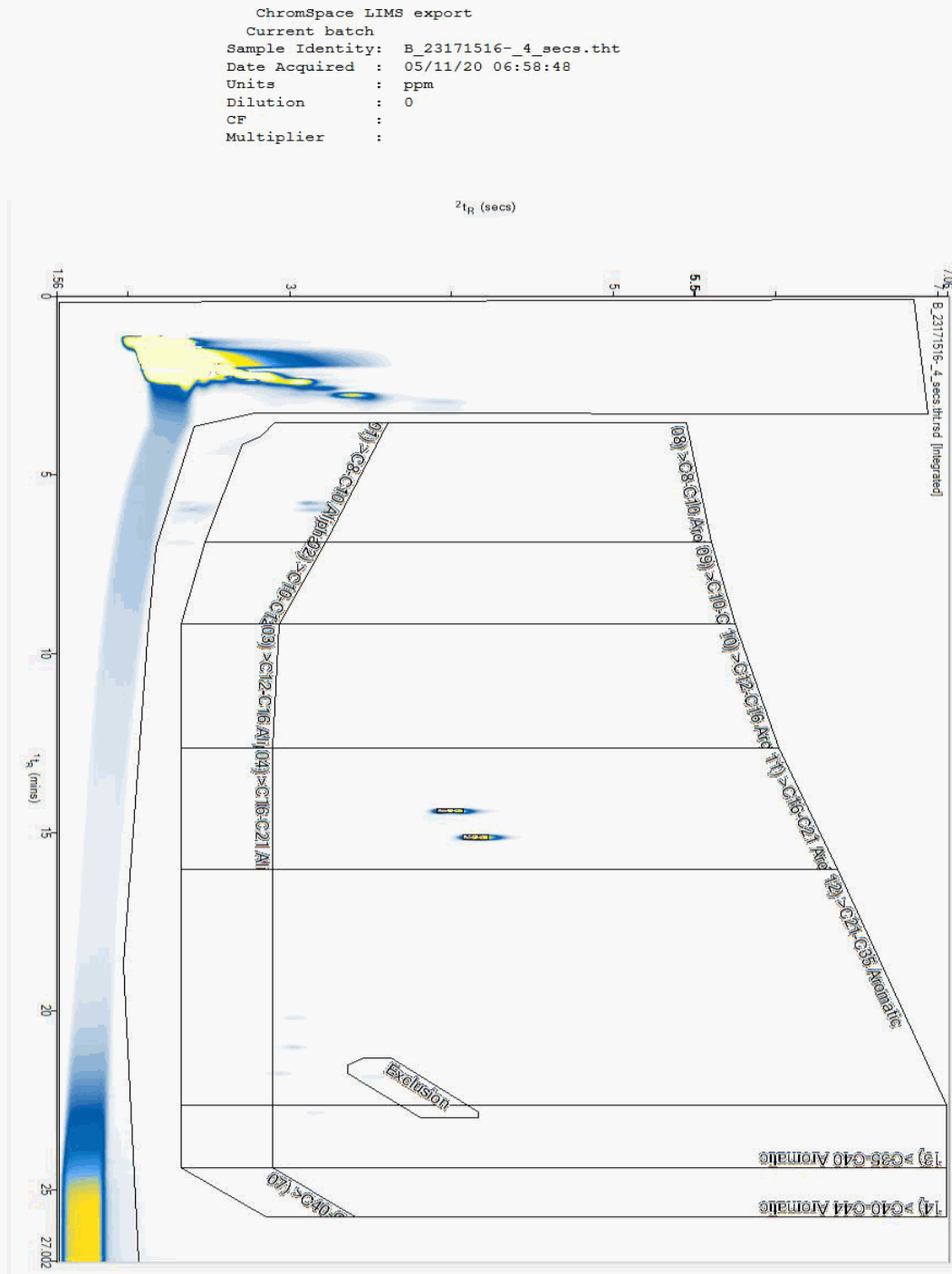
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23171516
Sample ID : TP301

Depth : 1.60 - 1.70



SDG:	201031-64
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

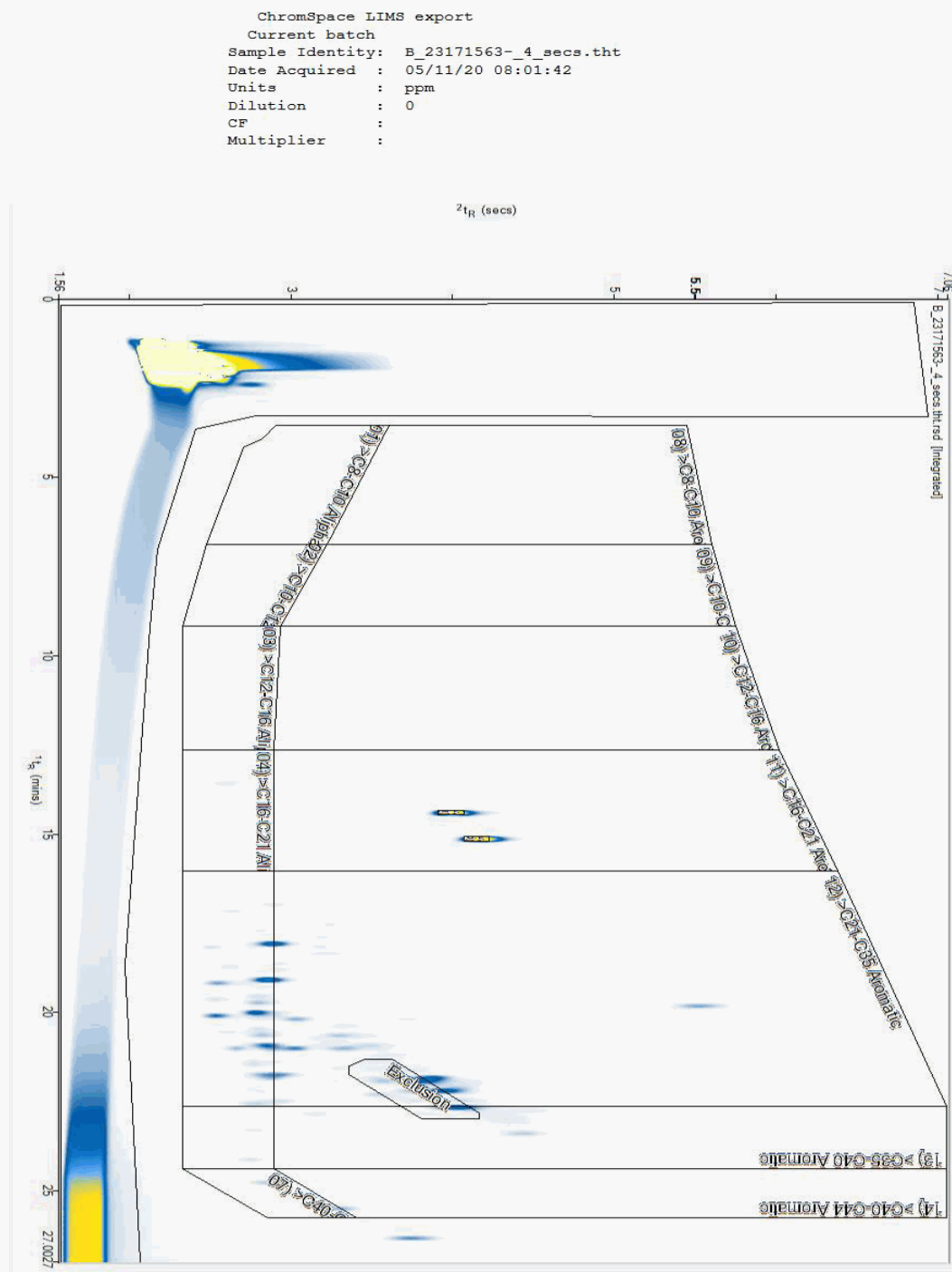
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23171563
Sample ID : TP301

Depth : 2.90 - 3.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

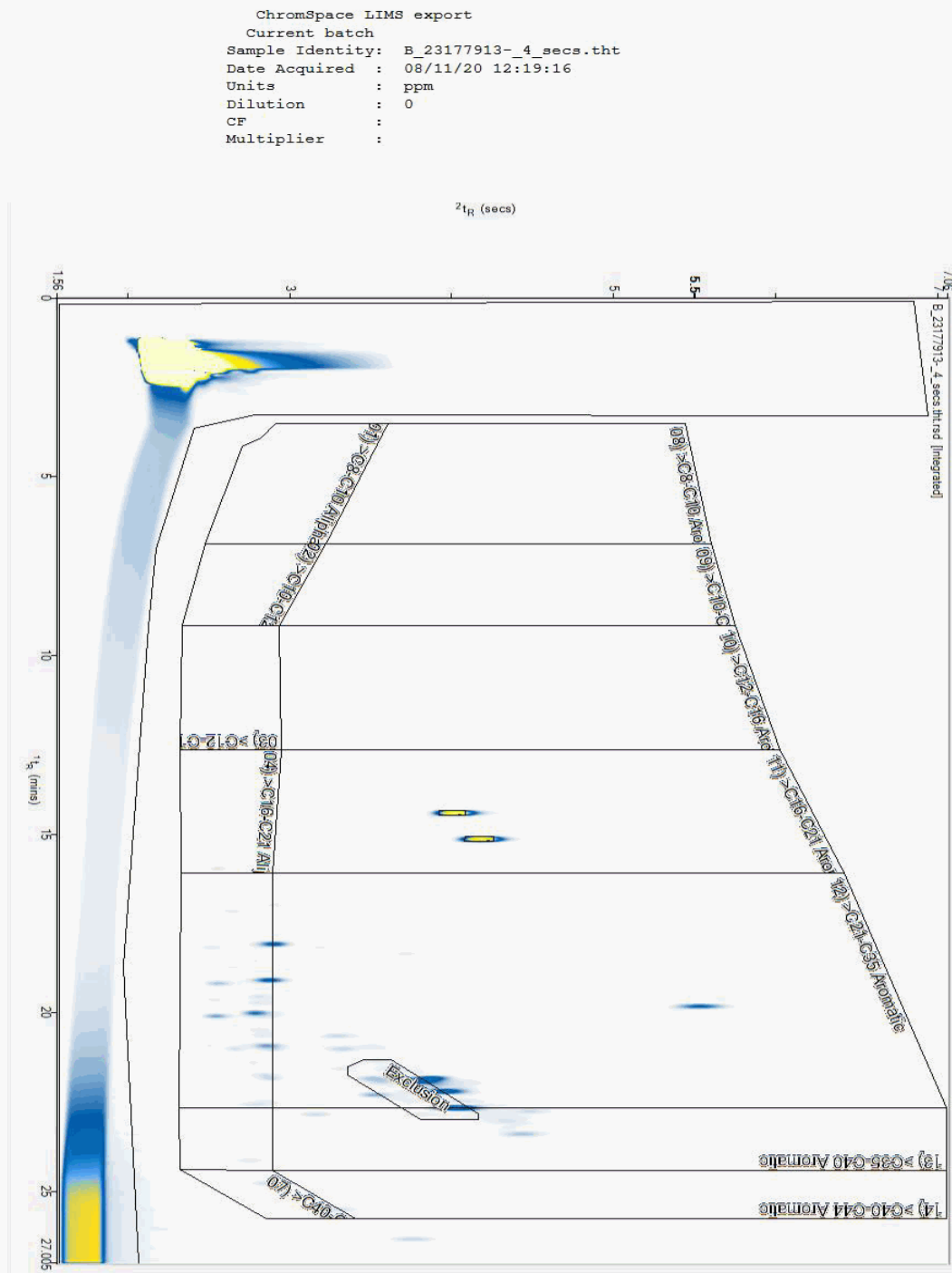
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23177913
Sample ID : TP302

Depth : 3.10 - 3.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

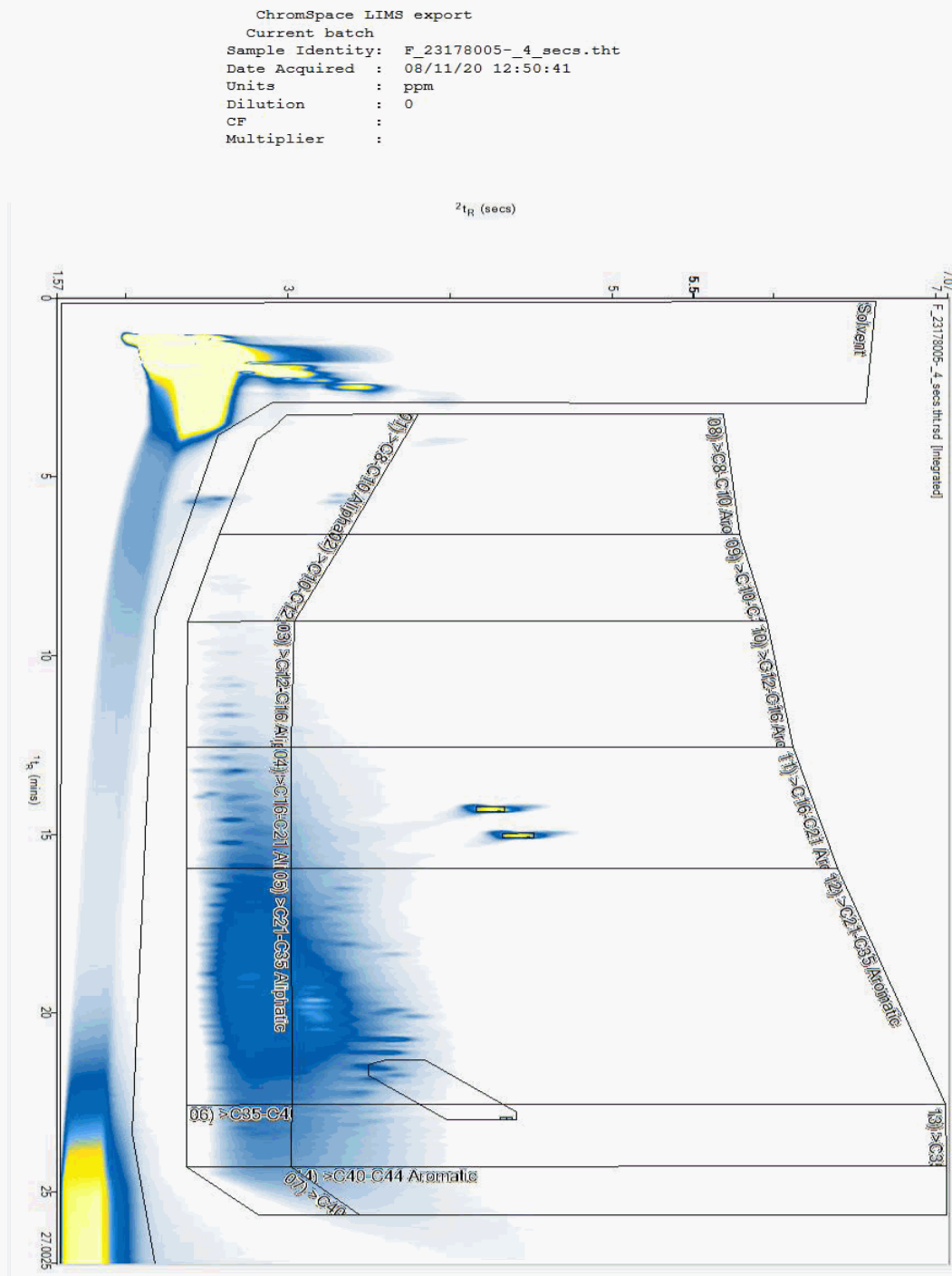
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23178005
Sample ID : TP302

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

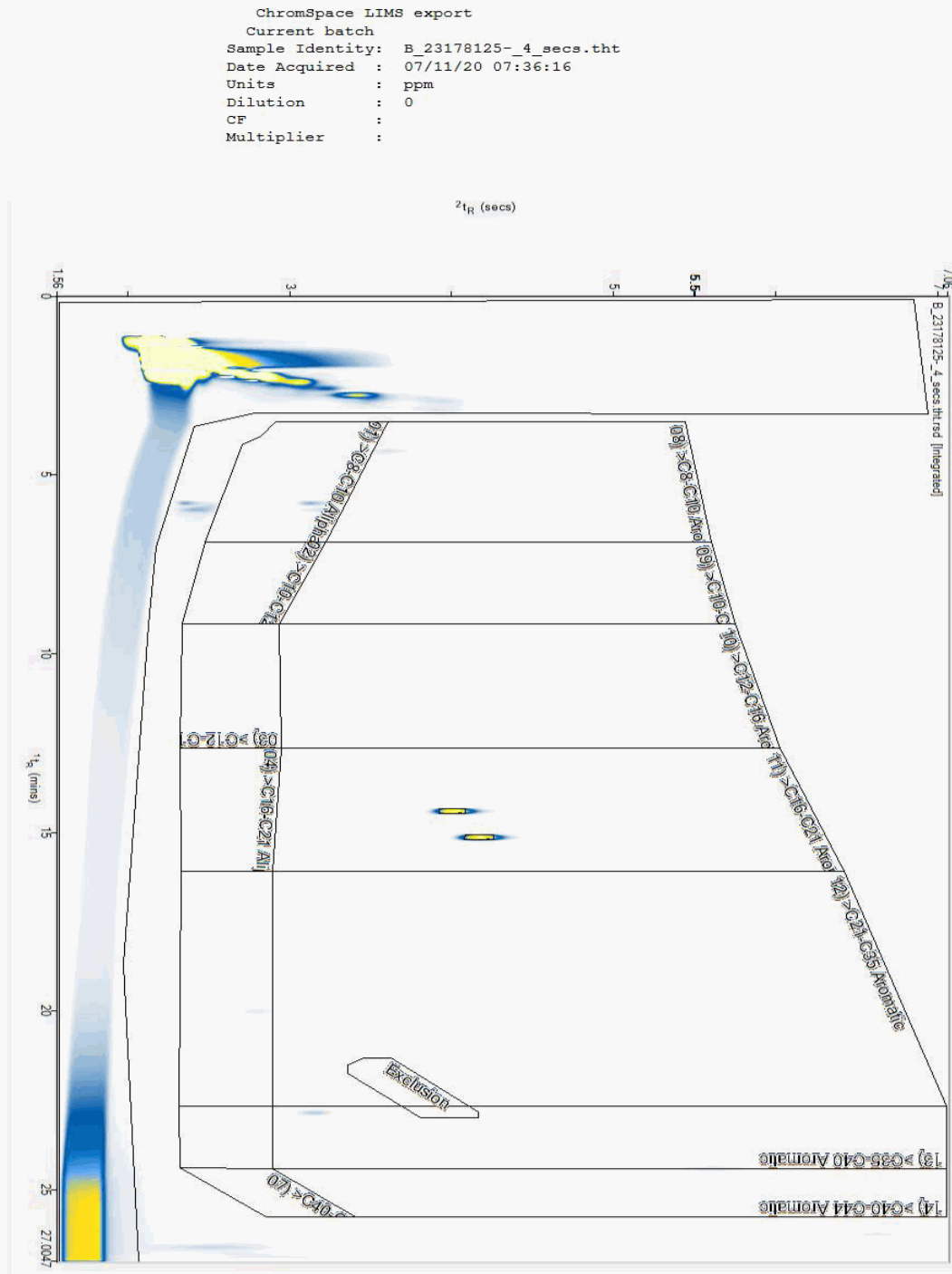
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23178125
Sample ID : TP302

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

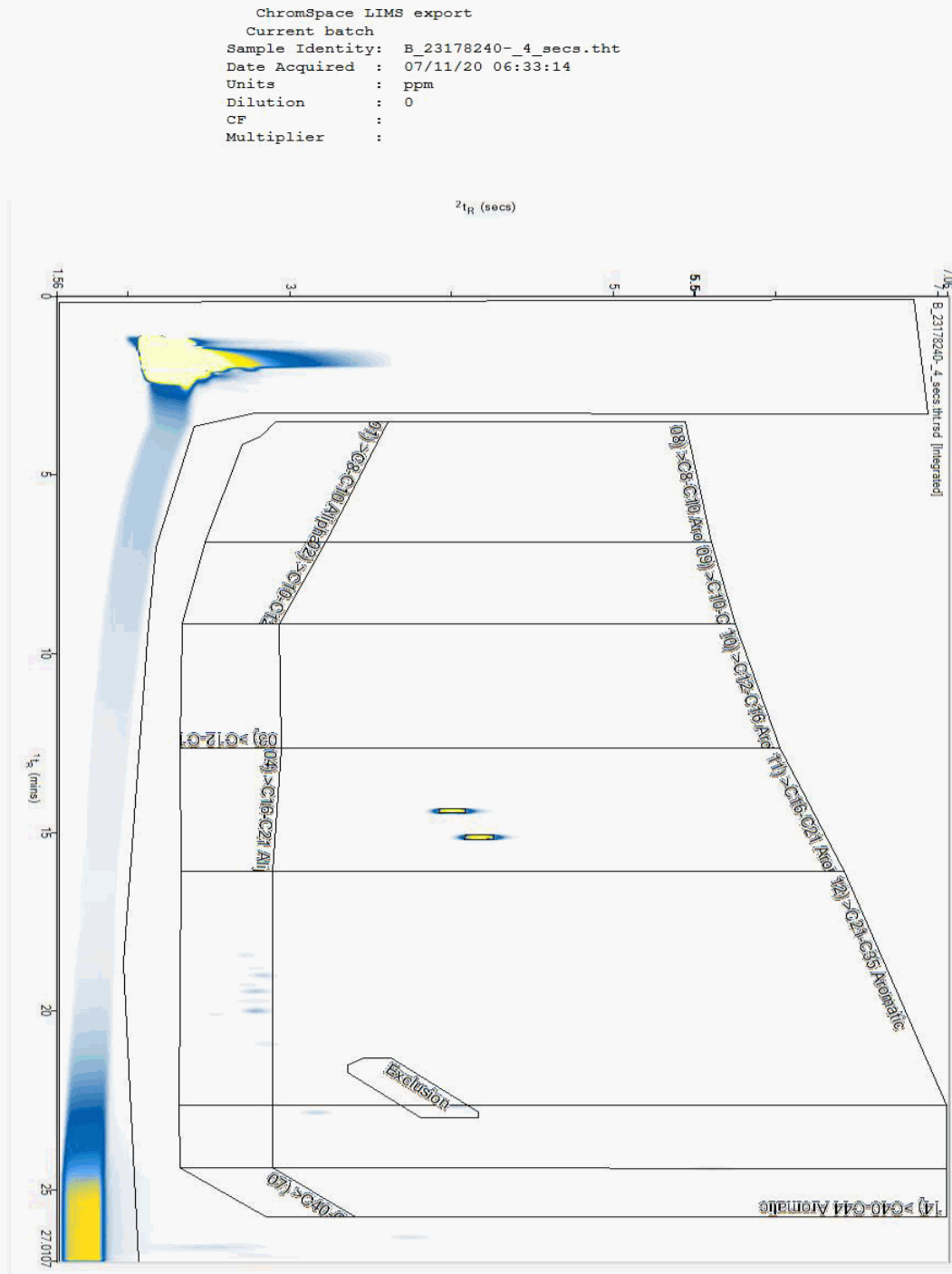
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23178240
Sample ID : TP302

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

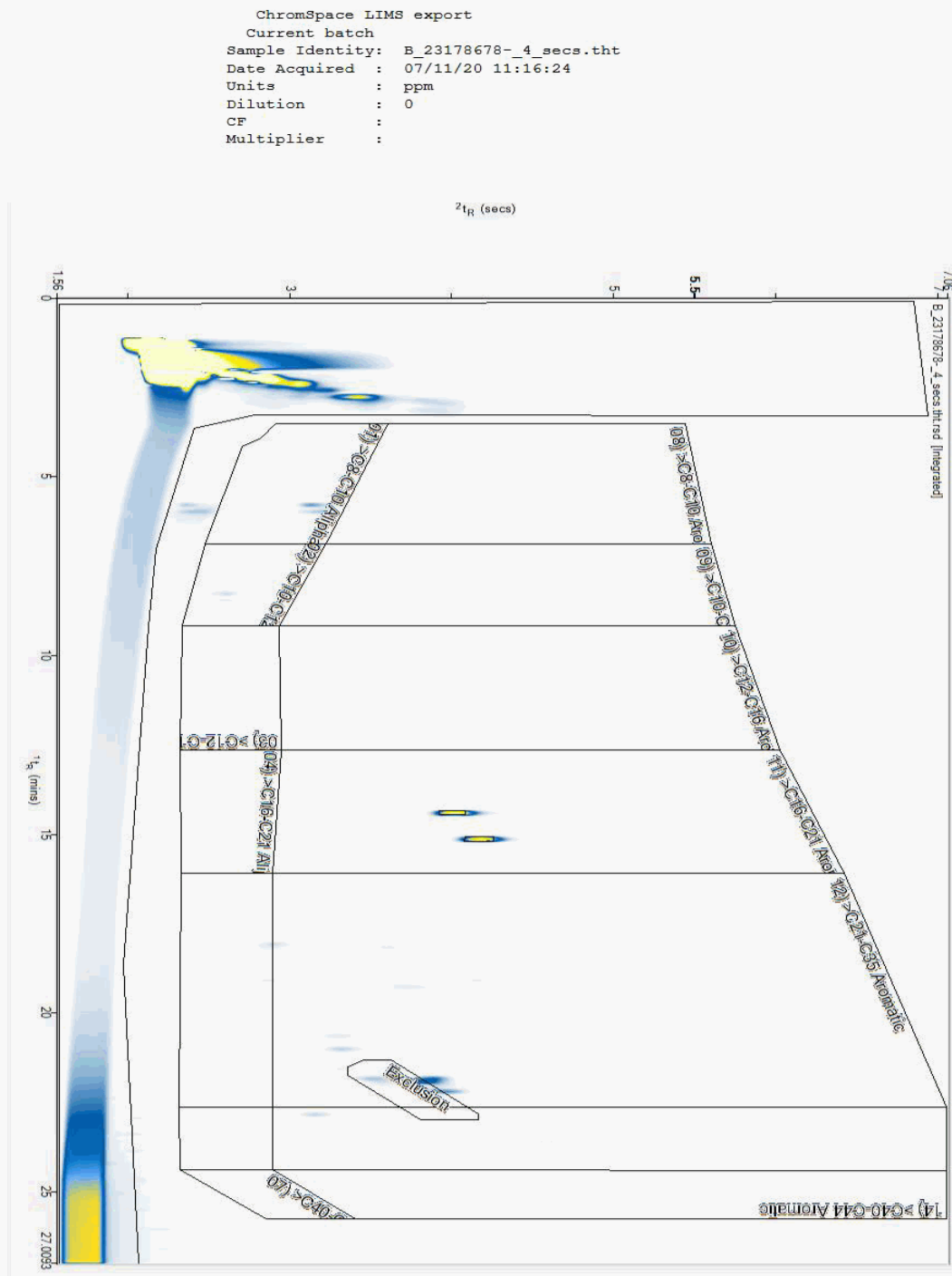
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23178678
Sample ID : TP209

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

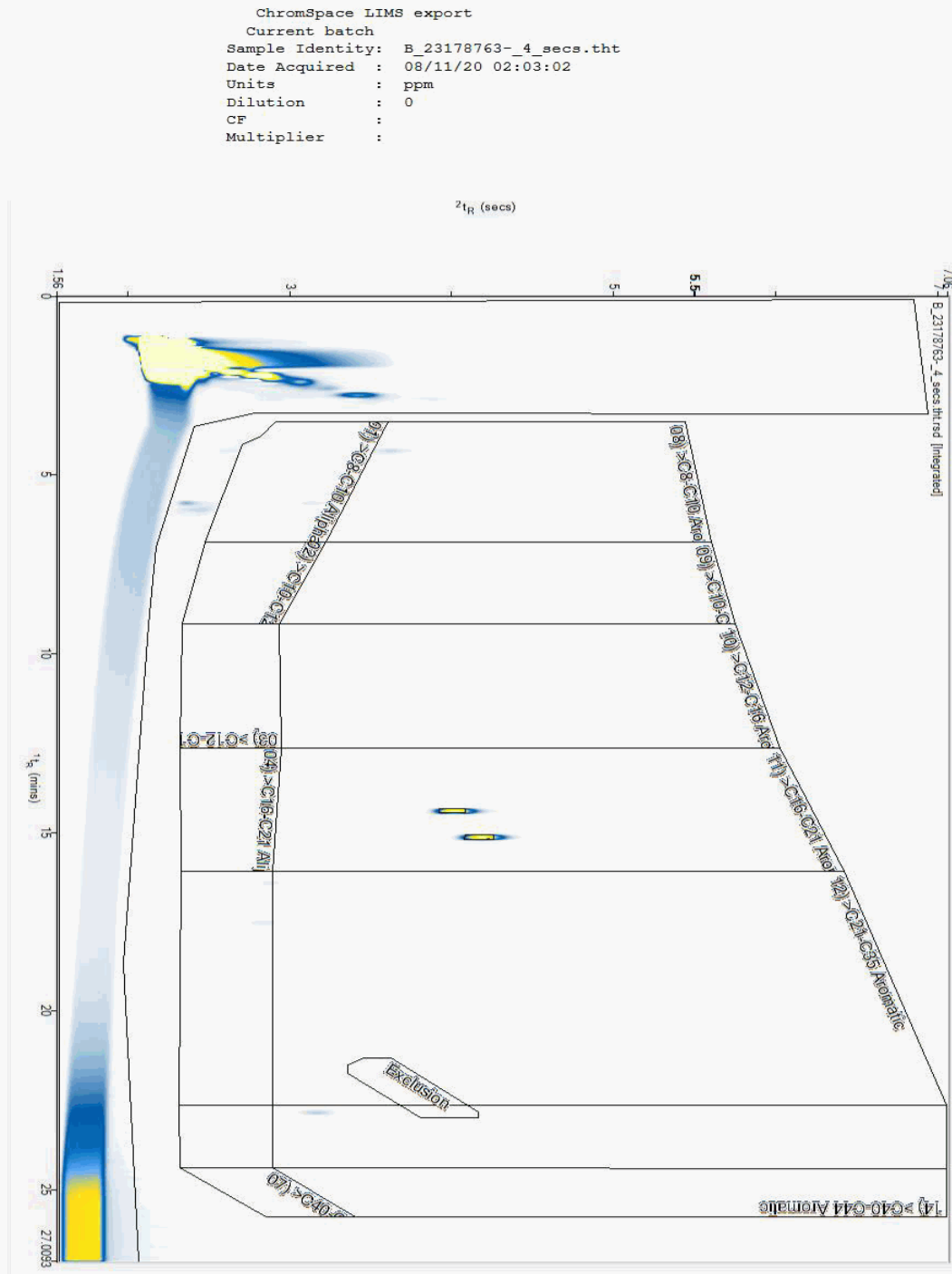
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23178763
Sample ID : TP314

Depth : 1.10 - 1.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

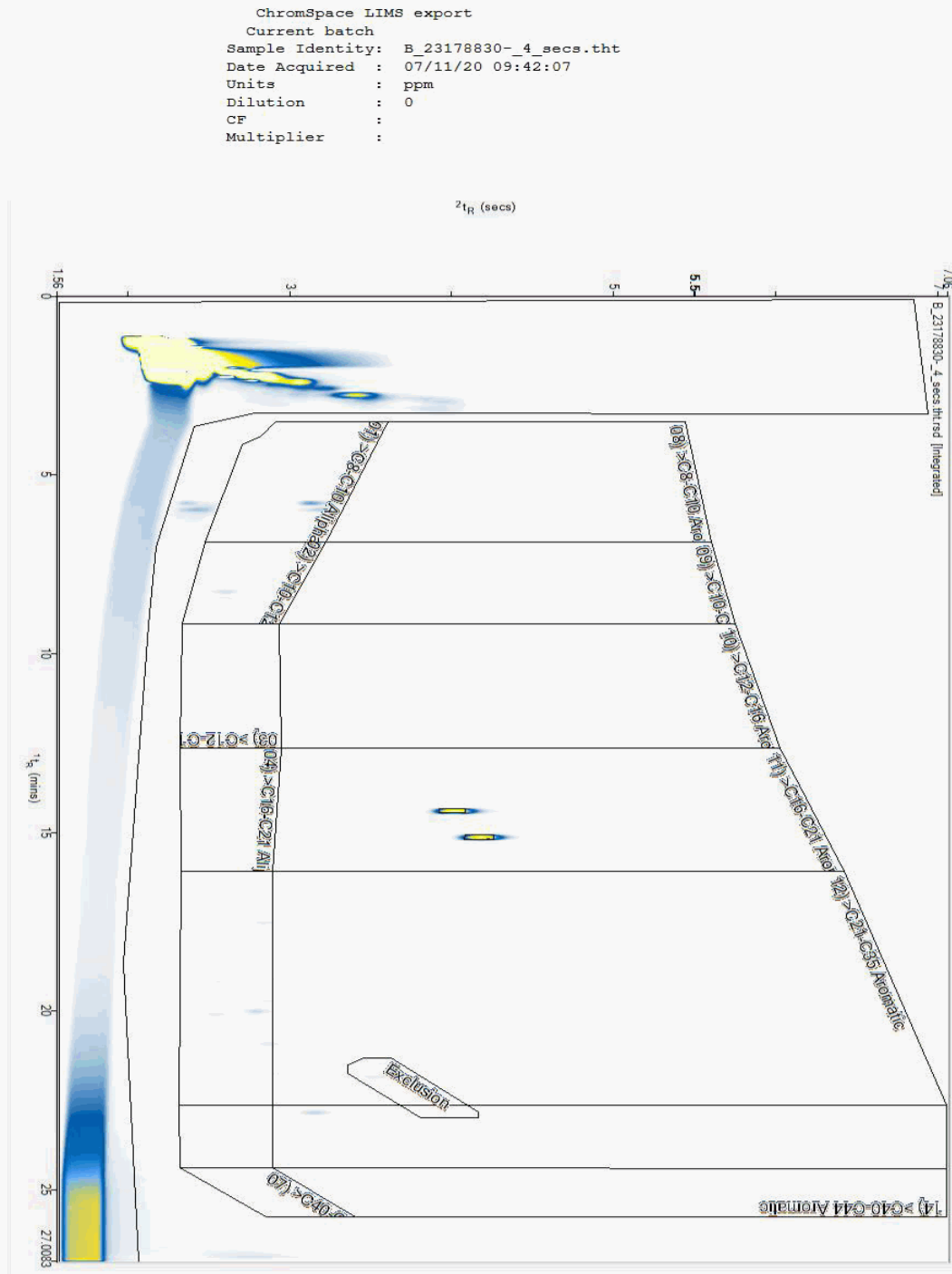
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23178830
Sample ID : TP207

Depth : 0.40 - 0.50



SDG:	201031-64
Location:	Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

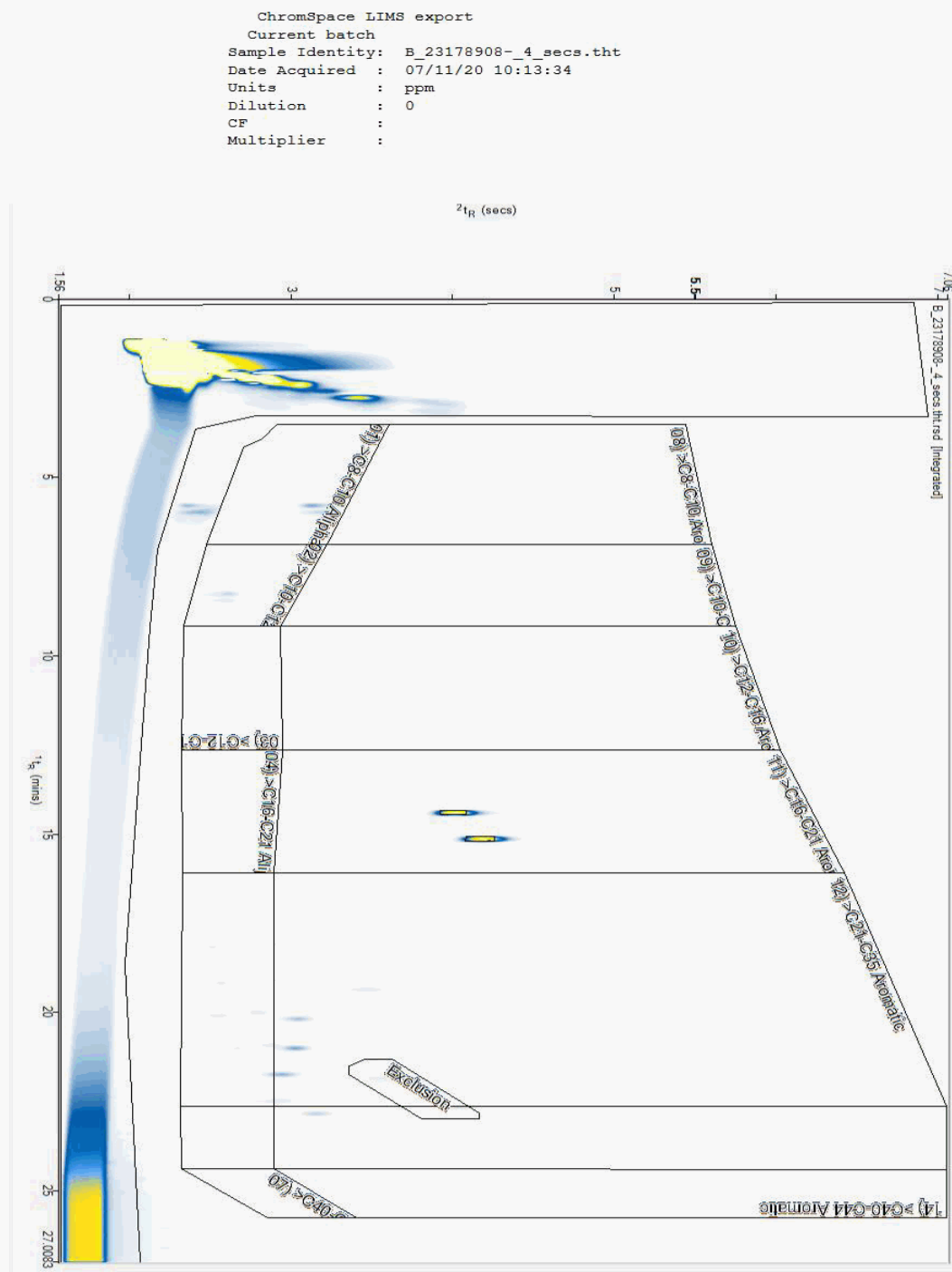
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23178908
Sample ID : TP207

Depth : 1.60 - 1.70



SDG:	201031-64
Location:	Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number:
Superseded Report:

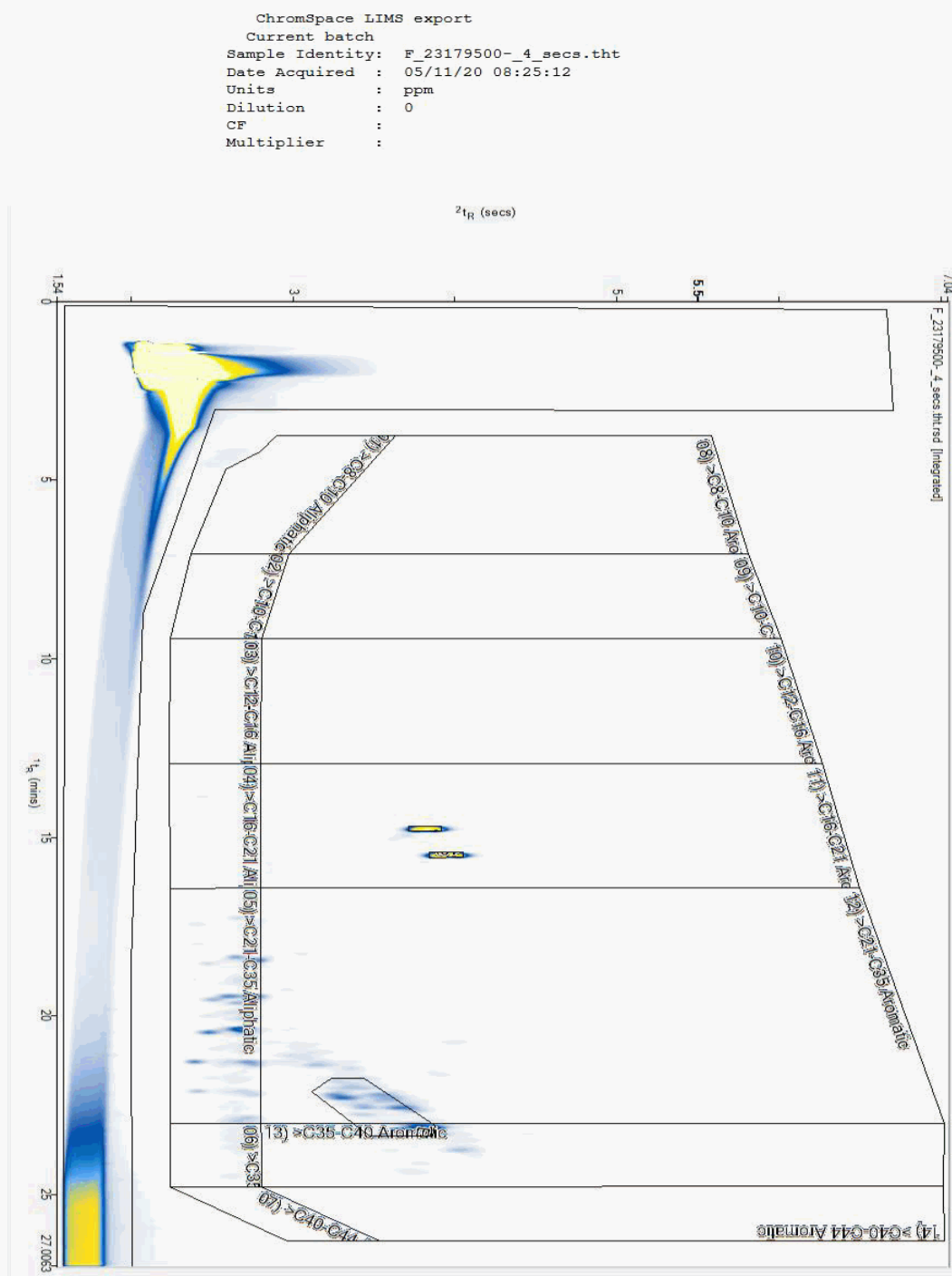
579788

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179500
Sample ID : TP312

Depth : 2.10 - 2.20





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

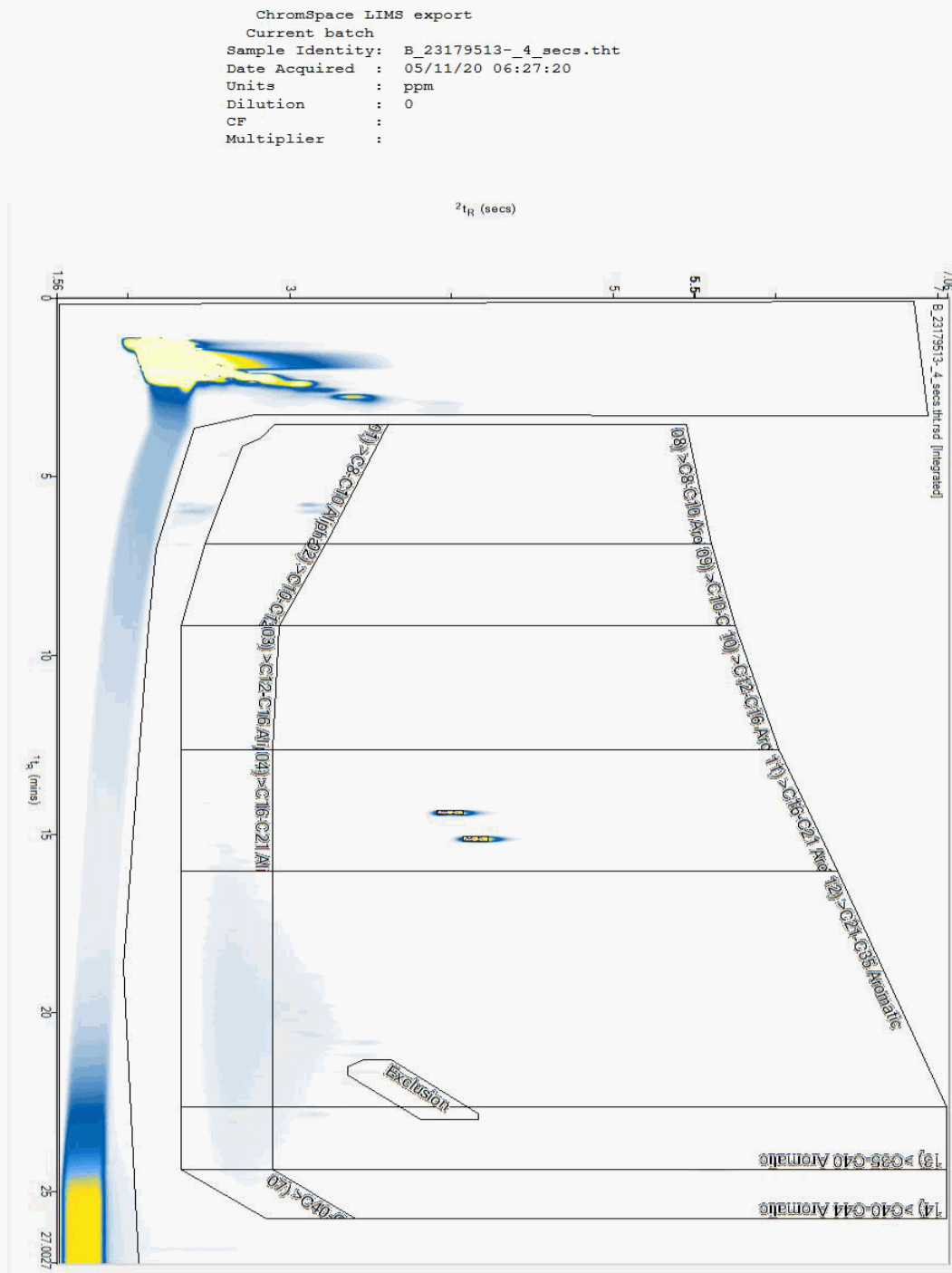
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179513
Sample ID : TP312

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

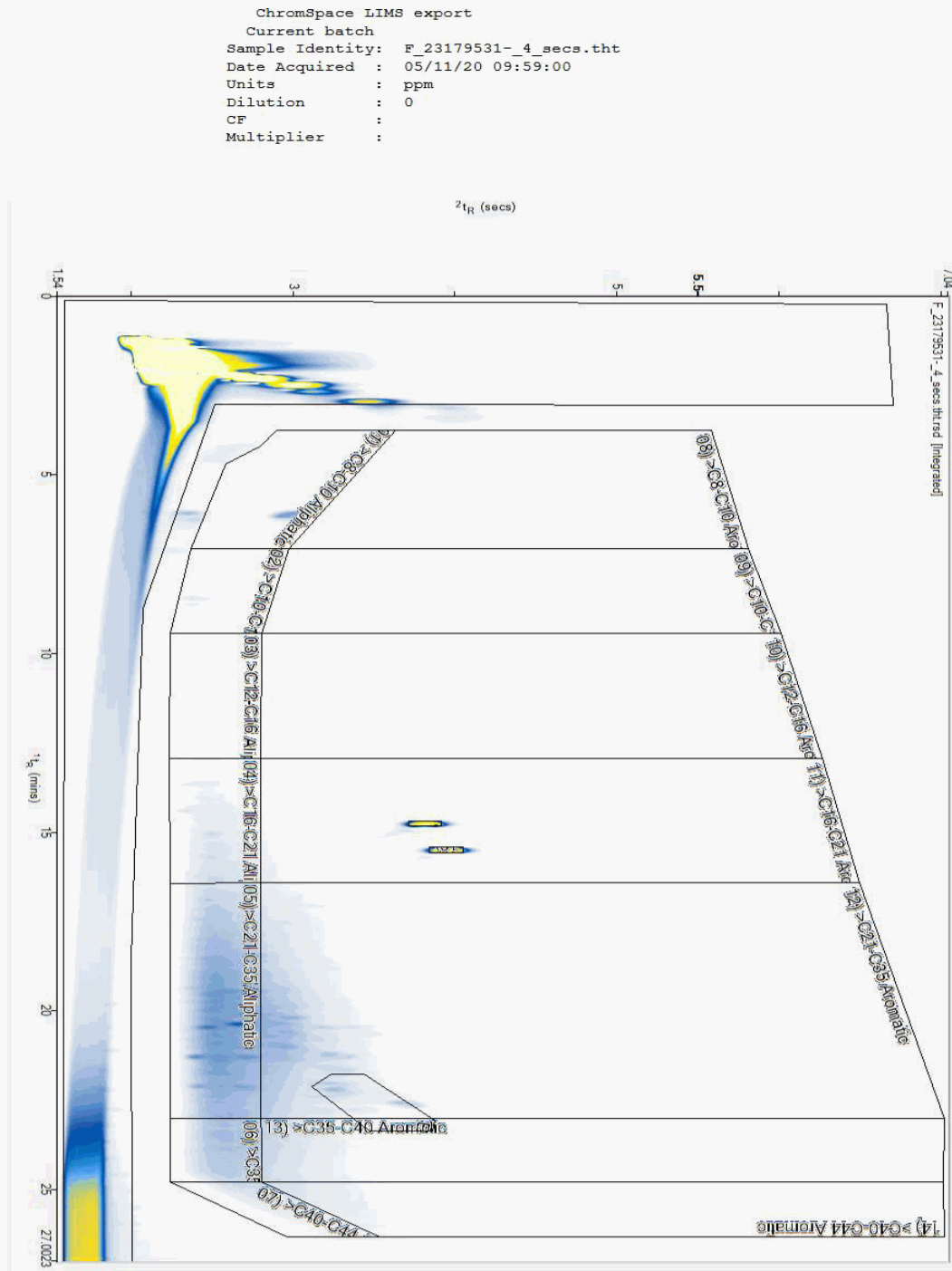
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179531
Sample ID : TP312

Depth : 0.80 - 0.90



SDG:	201031-64
Location:	Arklow Bank

Client Reference:	2020WW102
Order Number:	9028

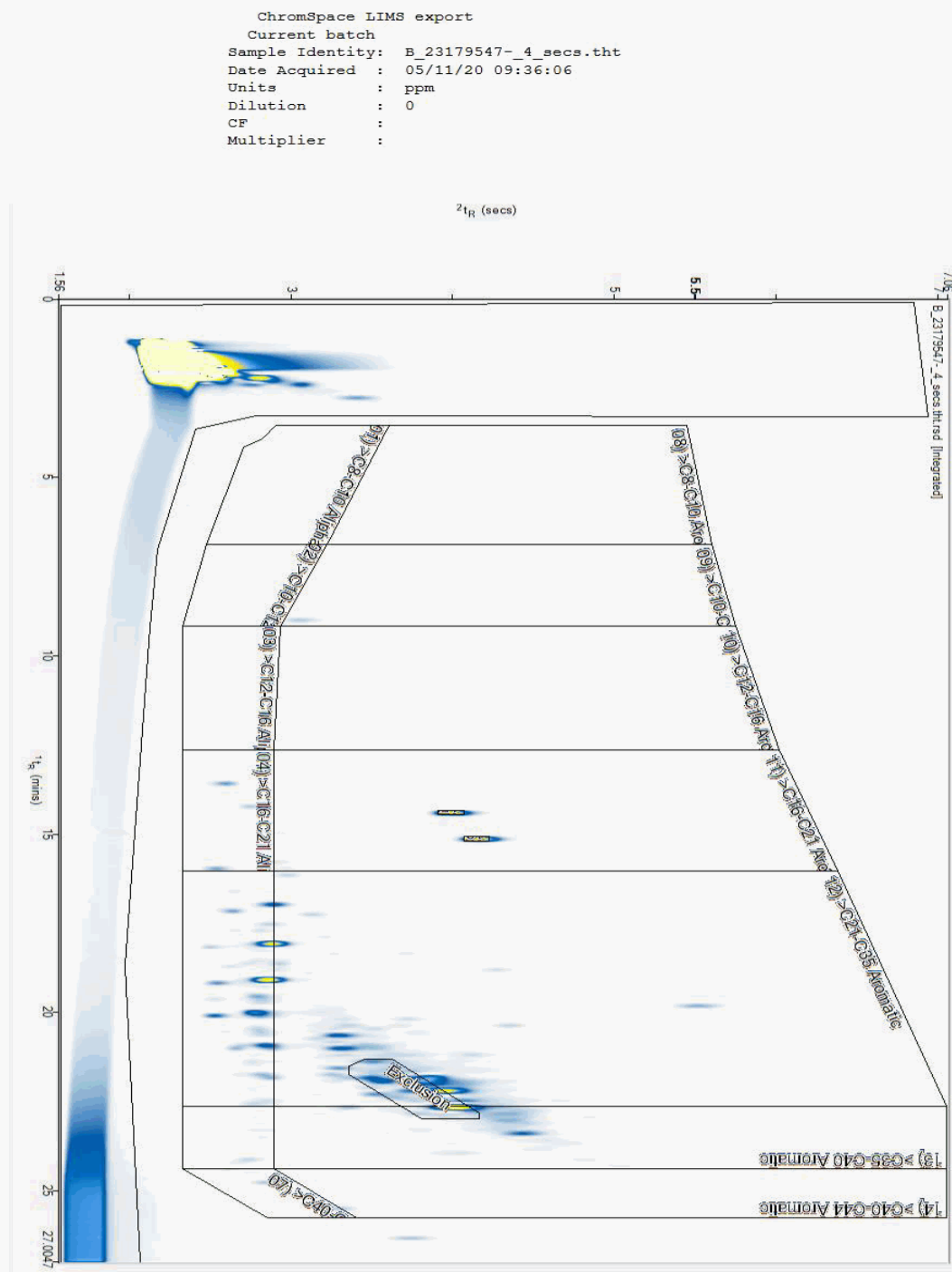
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179547
Sample ID : TP312

Depth : 3.00 - 3.10



SDG:	201031-64
Location:	Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number:
Superseded Report:

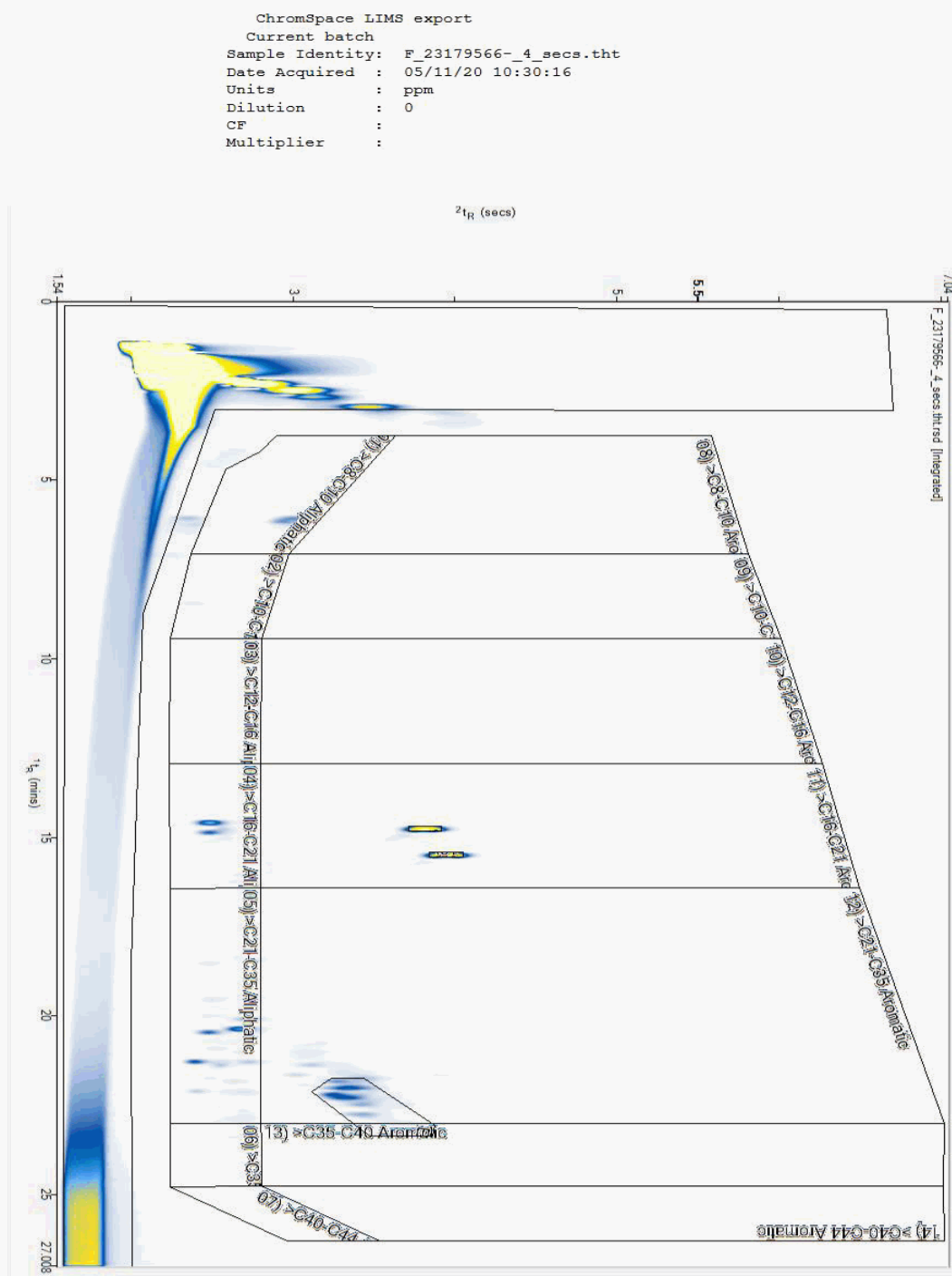
579788

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179566
Sample ID : TP312

Depth : 1.40 - 1.50



SDG:	201031-64
Location:	Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

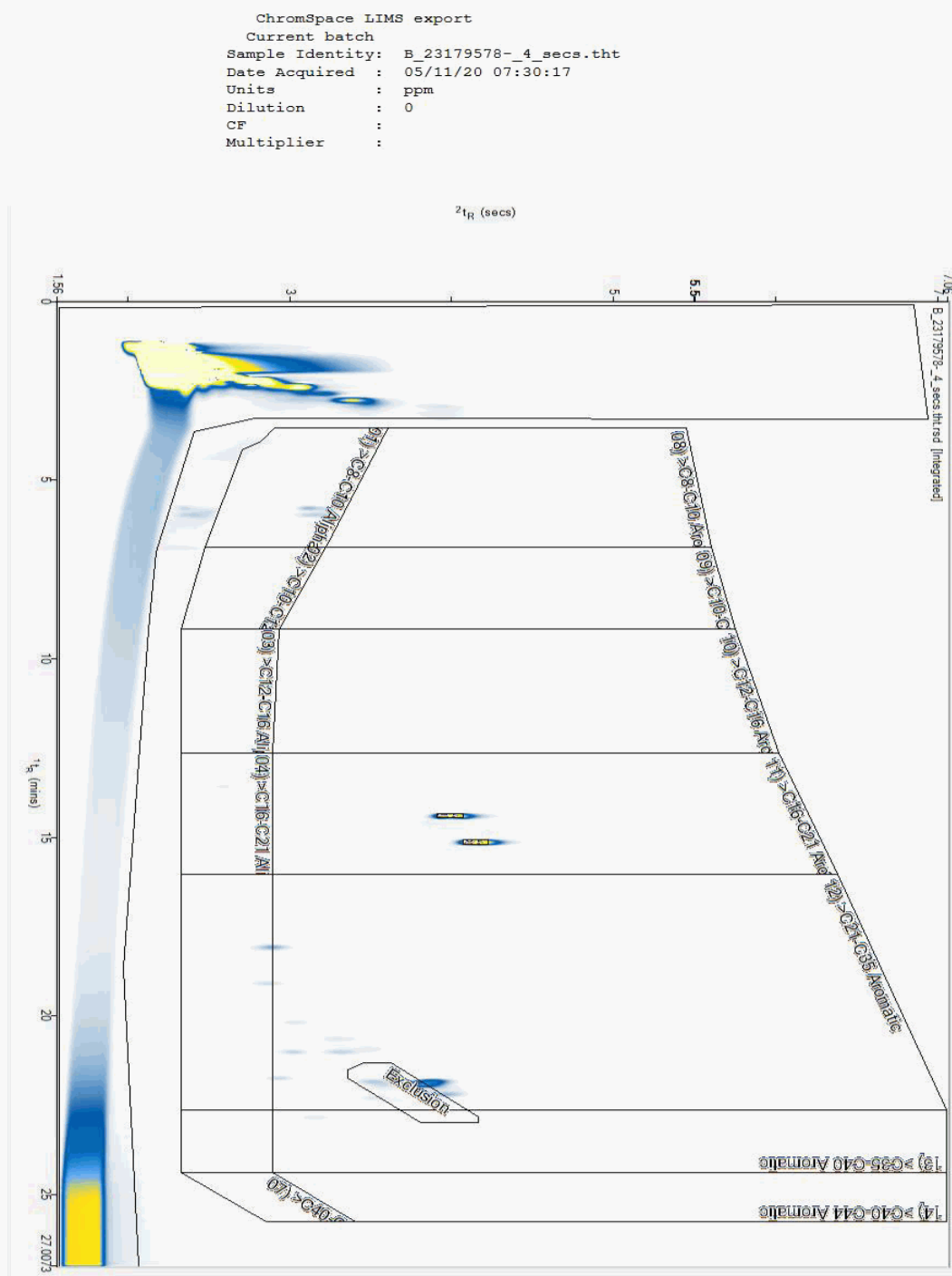
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179578
Sample ID : TP210

Depth : 1.50 - 1.60



SDG:	201031-64
Location:	Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

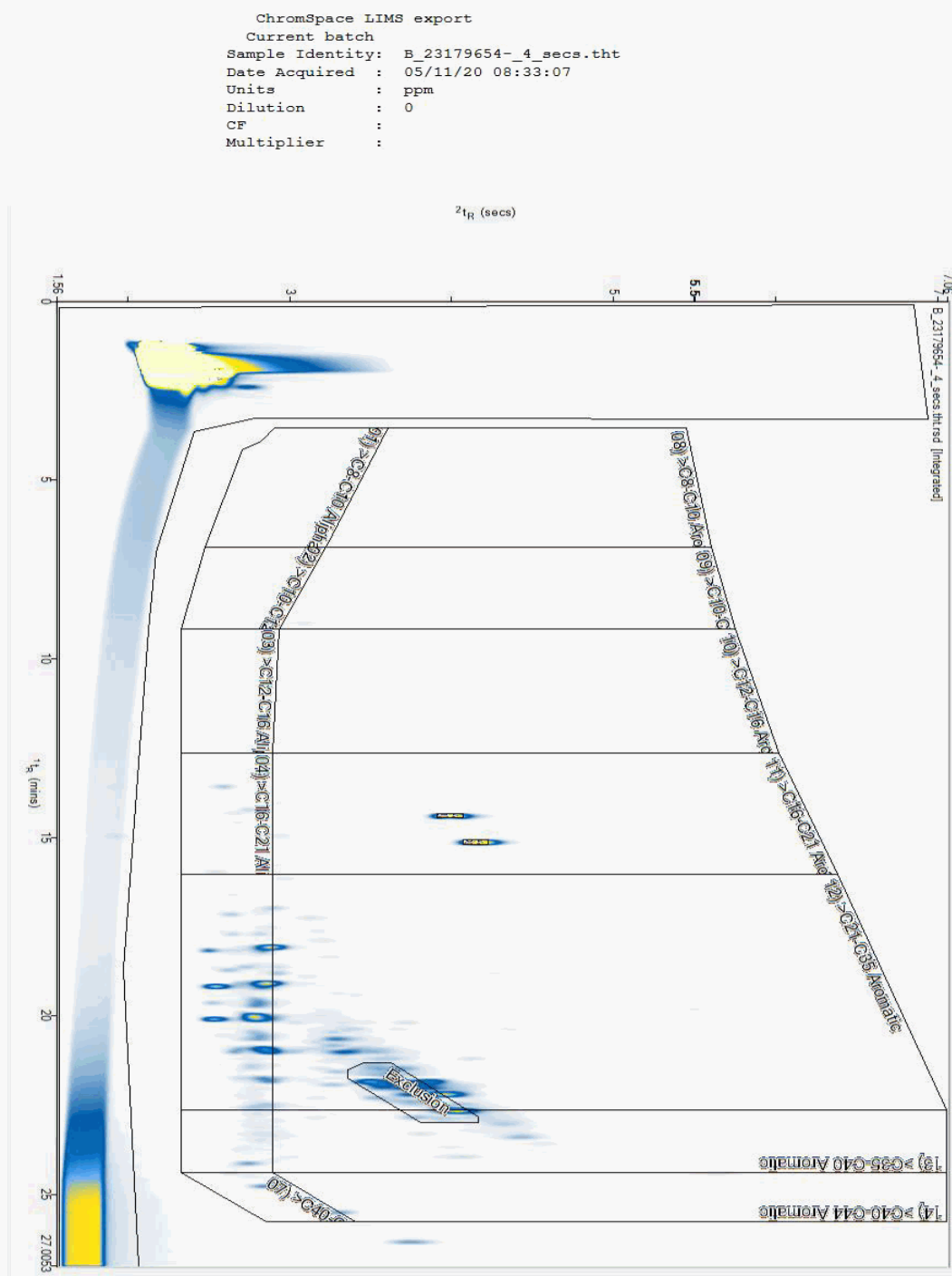
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179654
Sample ID : TP314

Depth : 1.80 - 1.90





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

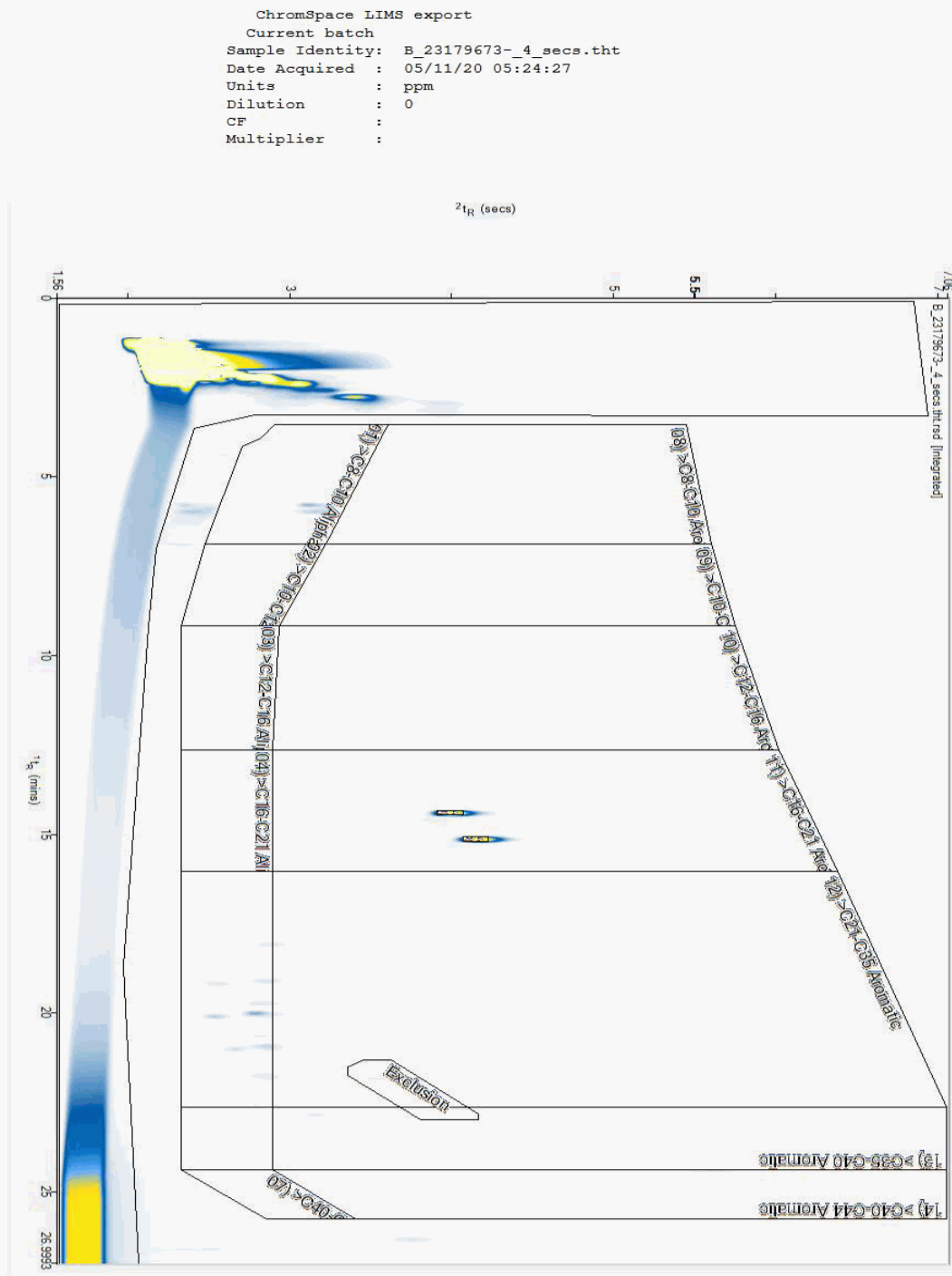
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23179673
Sample ID : TP209

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

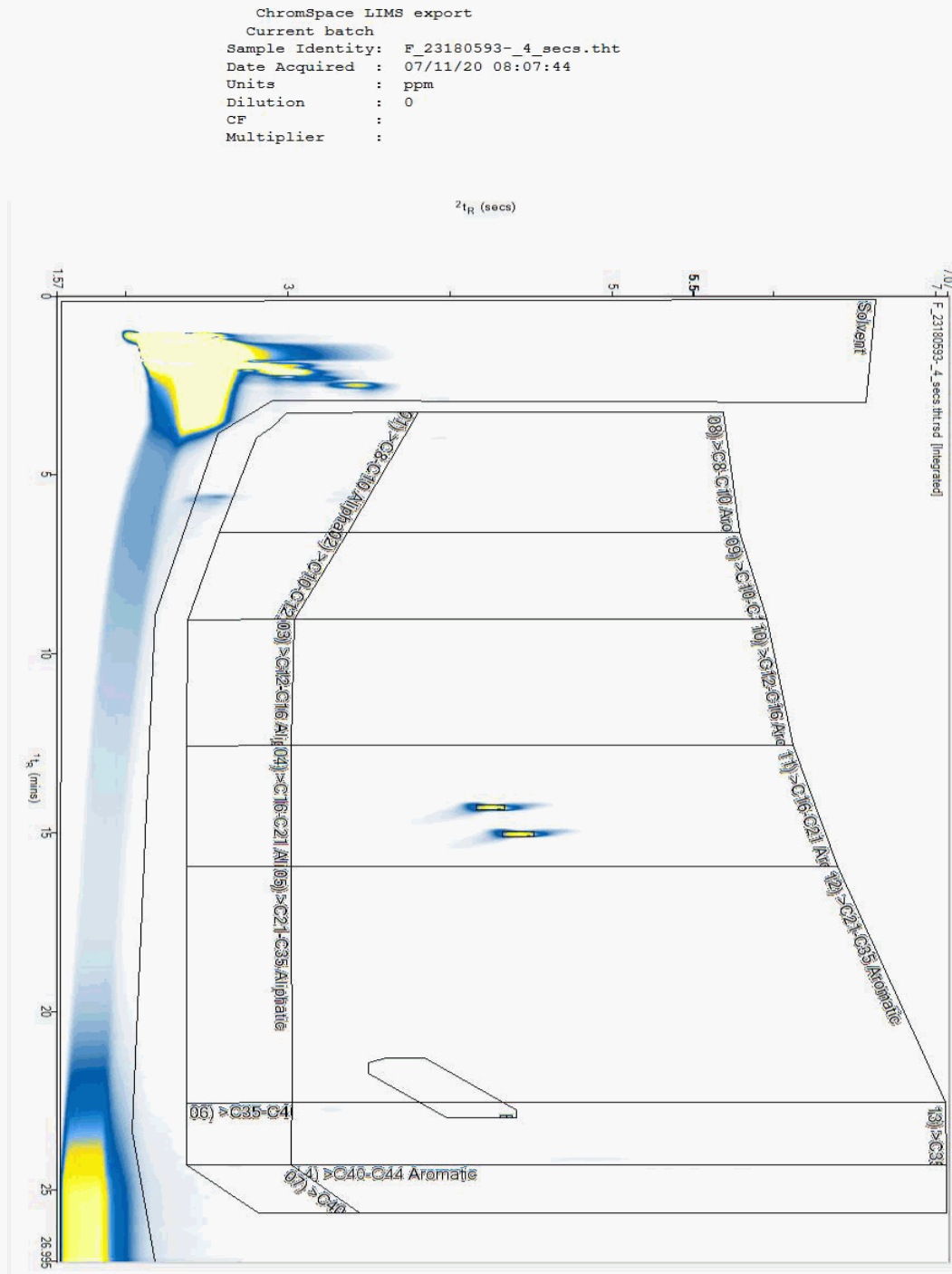
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23180593
Sample ID : TP314

Depth : 2.90 - 3.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

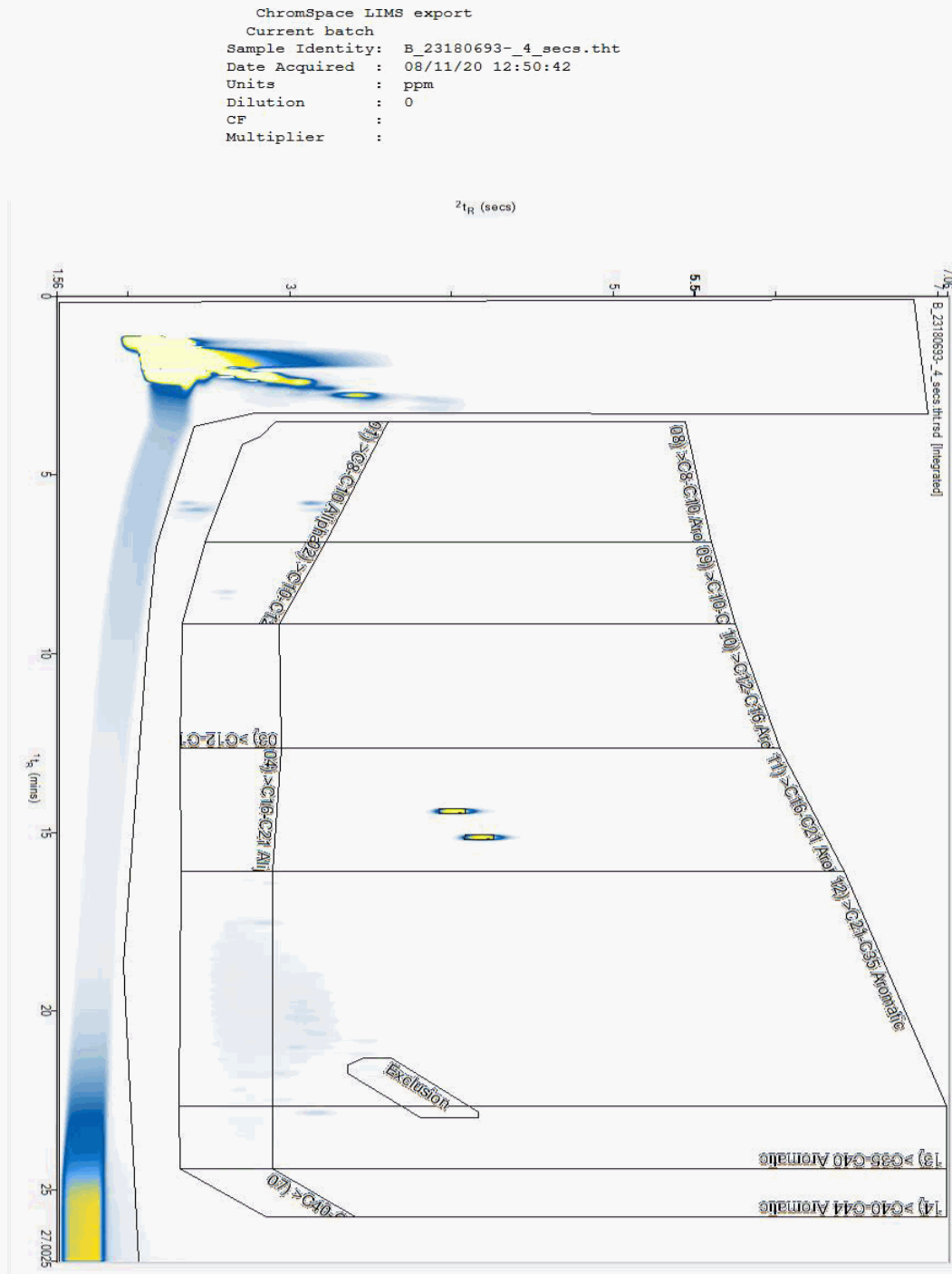
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23180693
Sample ID : TP314

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

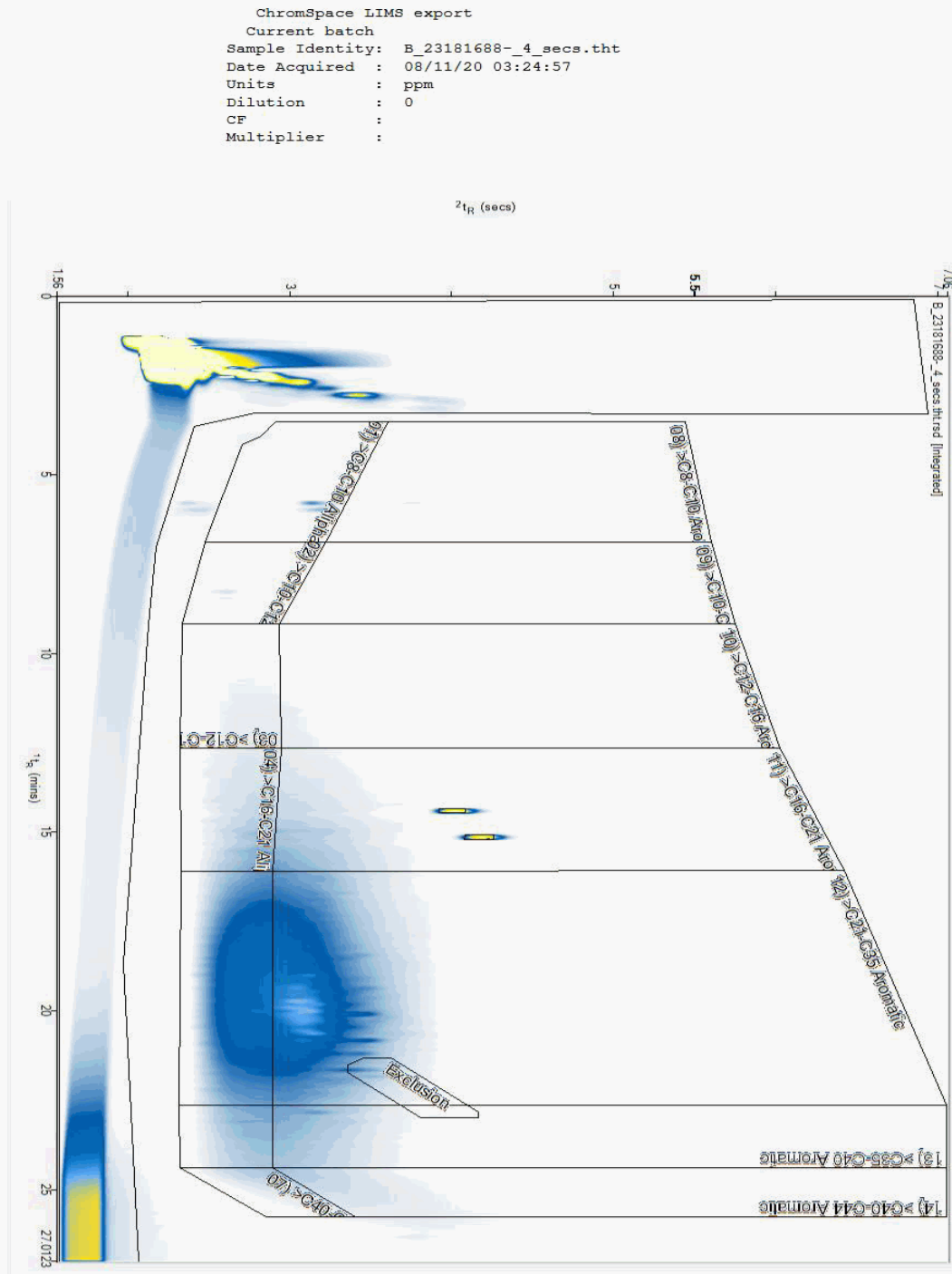
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23181688
Sample ID : TP315

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

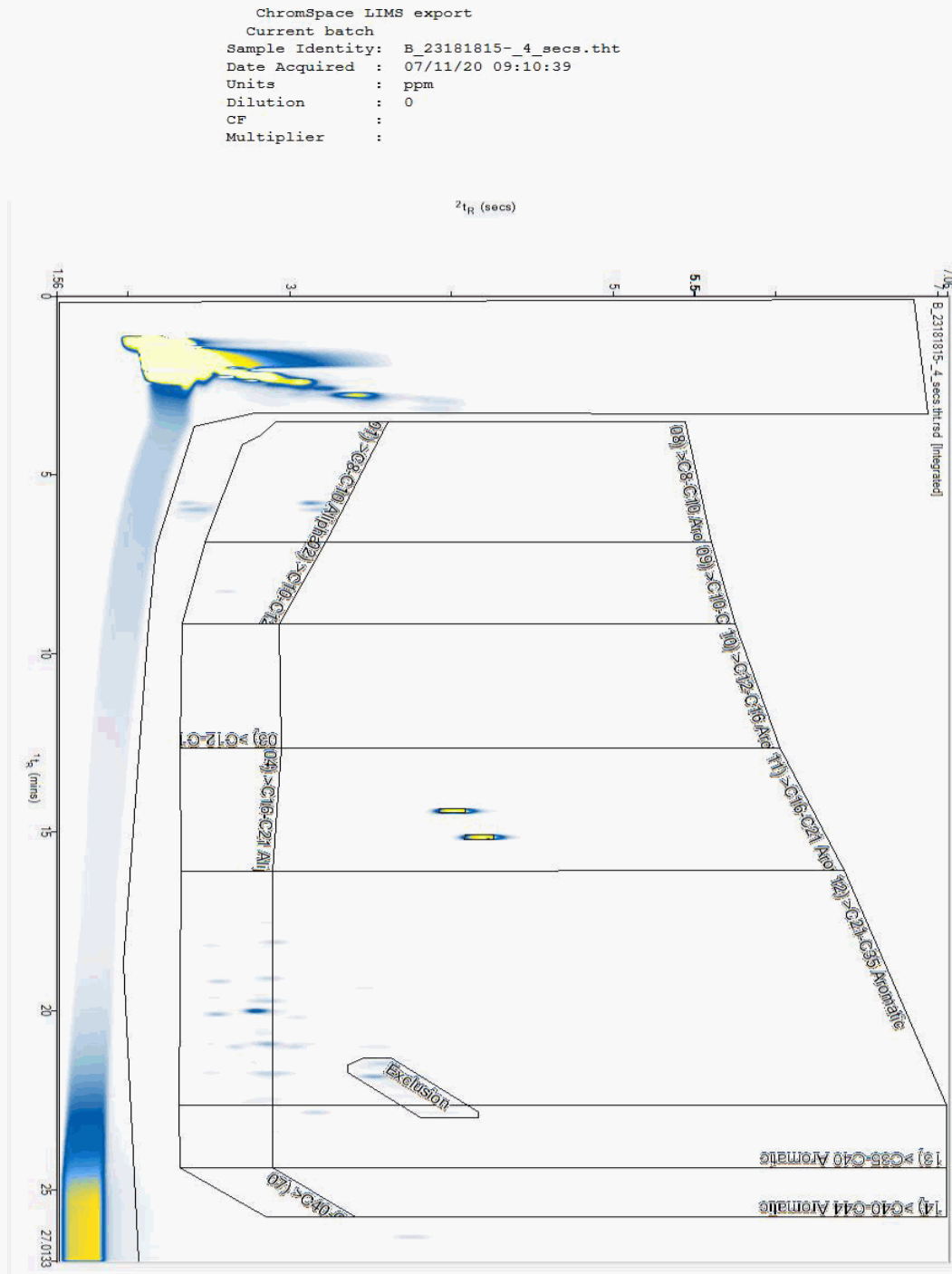
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23181815
Sample ID : TP210

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

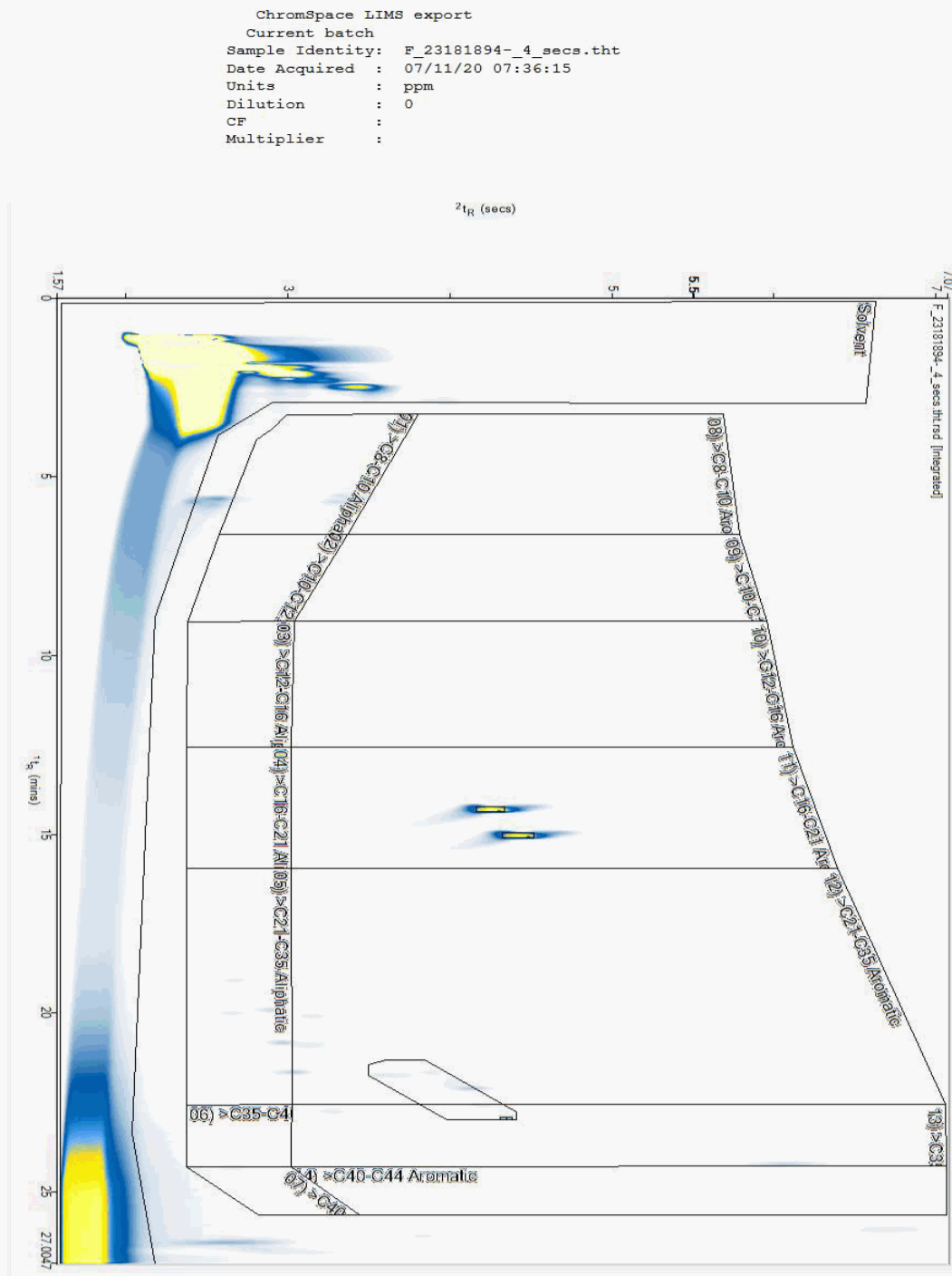
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23181894
Sample ID : TP315

Depth : 2.50 - 2.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

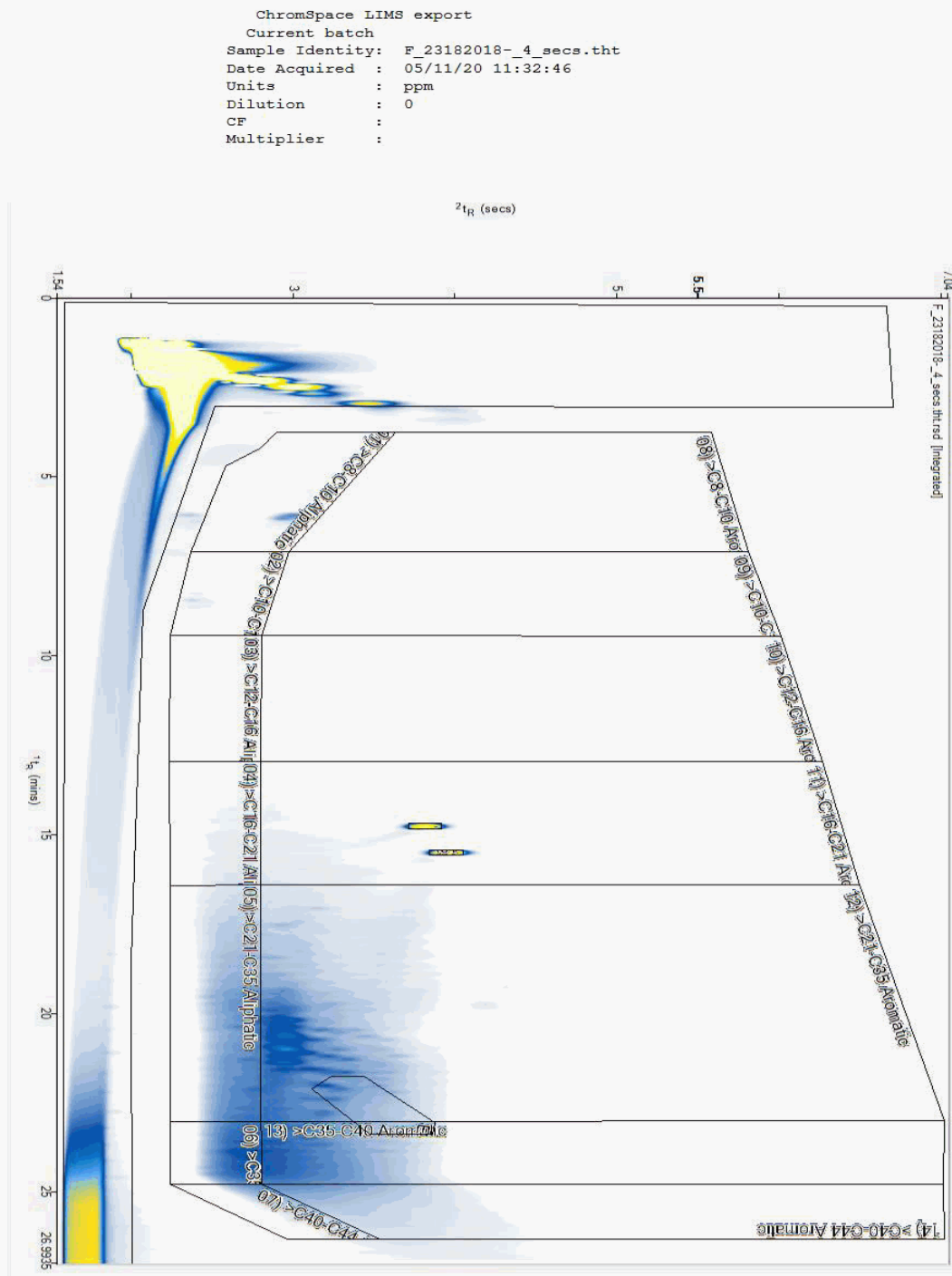
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23182018
Sample ID : TP304

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

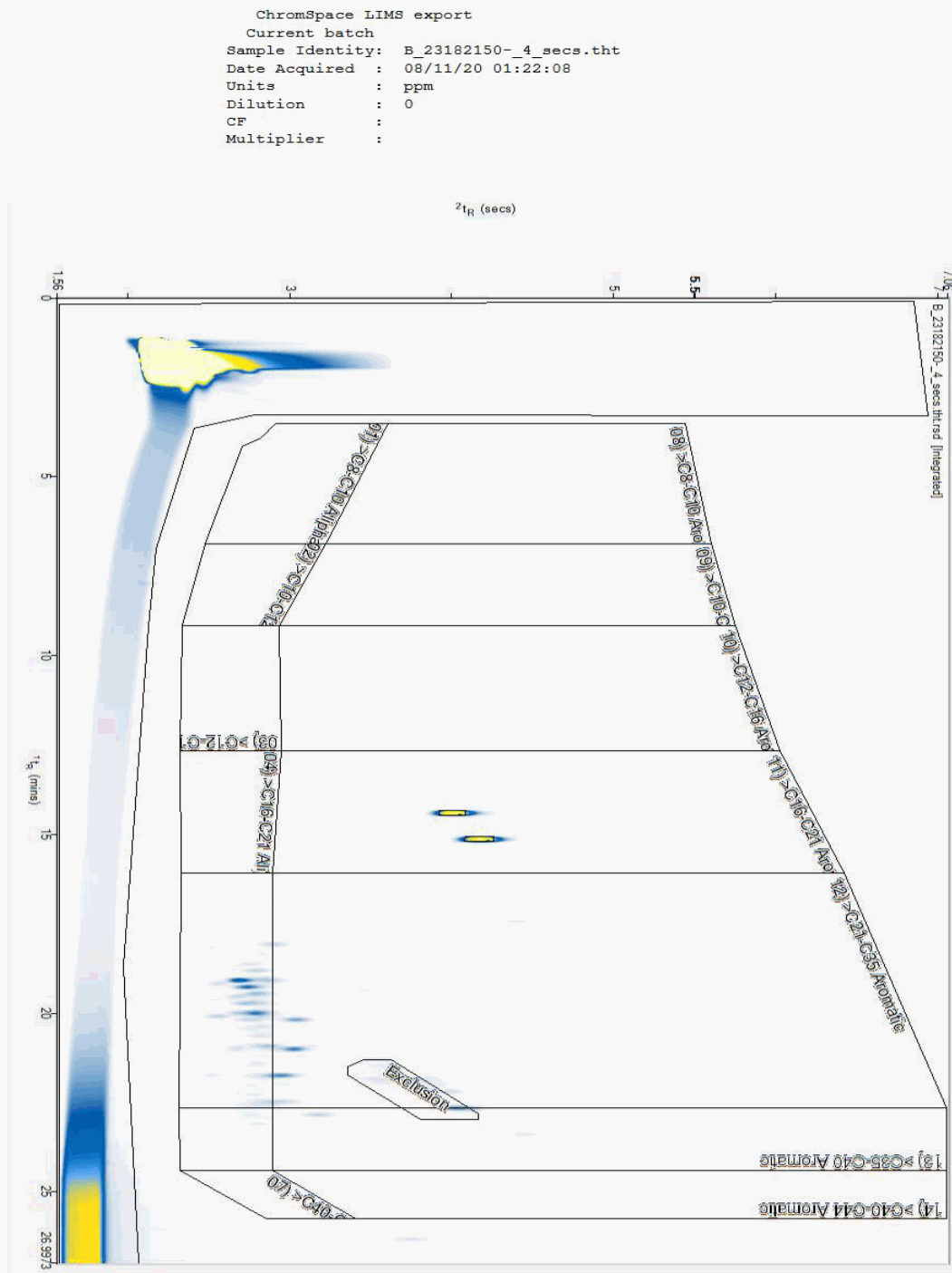
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23182150
Sample ID : TP315

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

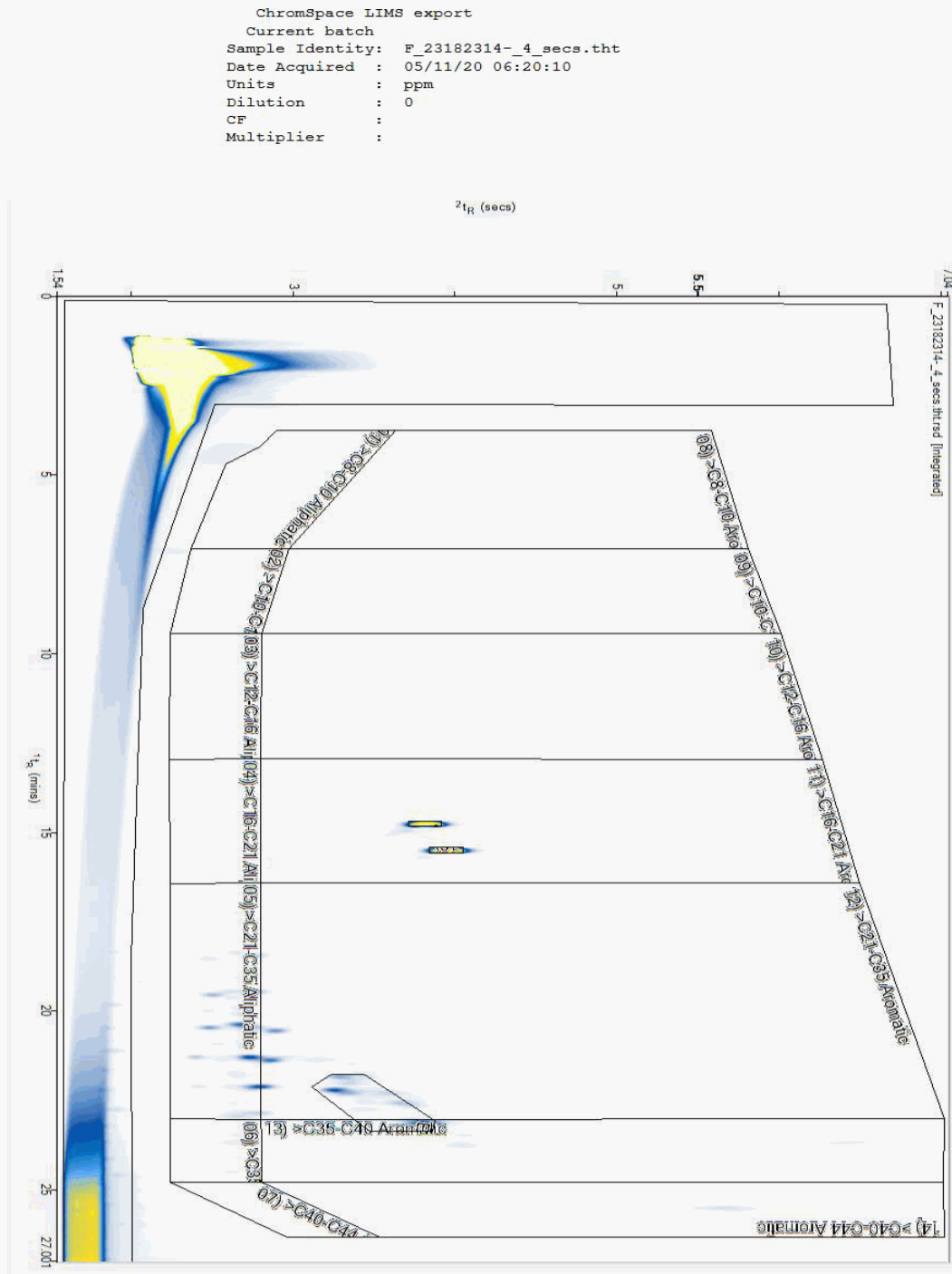
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23182314
Sample ID : TP304

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

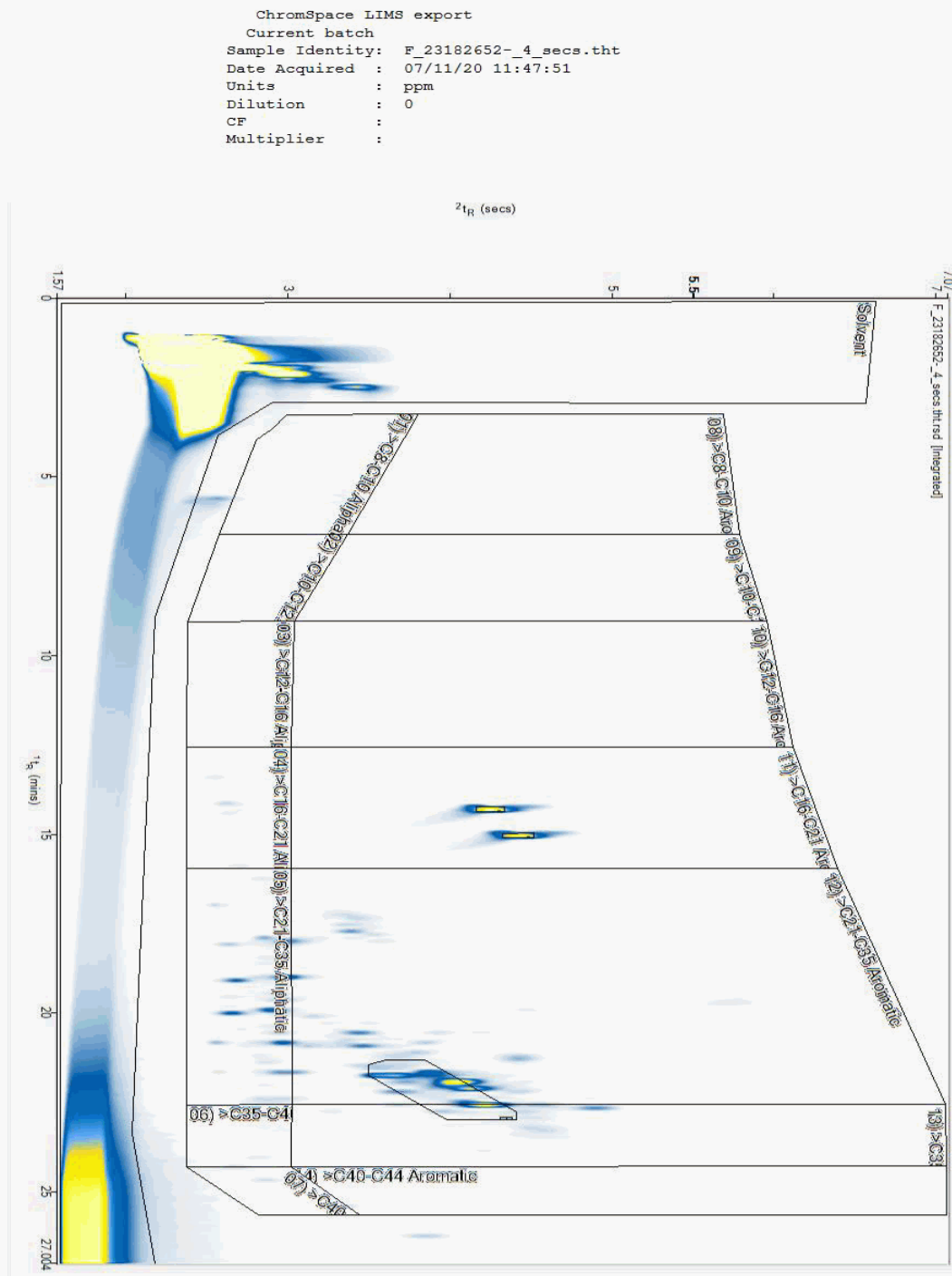
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23182652
Sample ID : TP304

Depth : 3.20 - 3.30





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

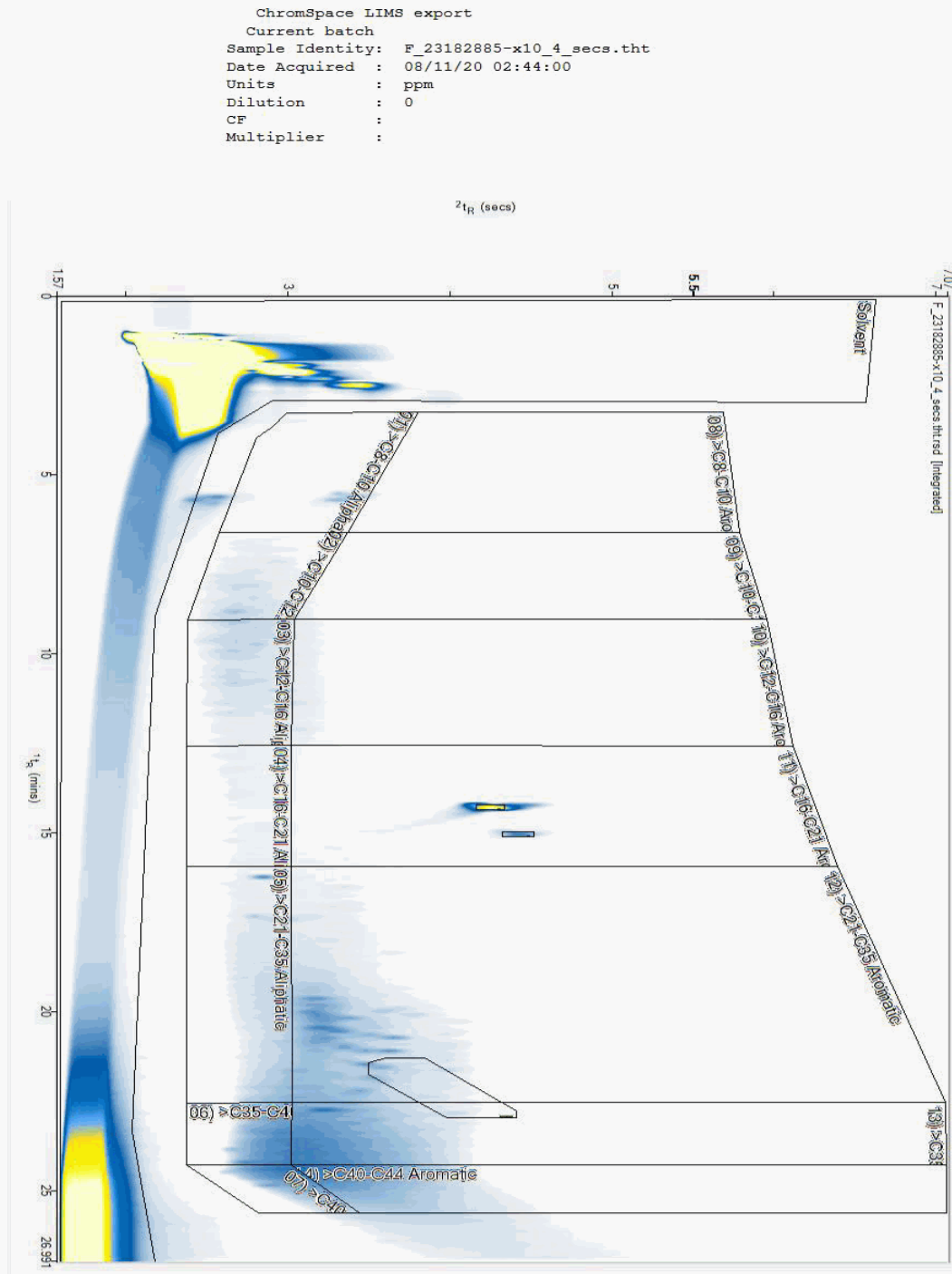
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23182885
Sample ID : TP315

Depth : 0.90 - 1.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

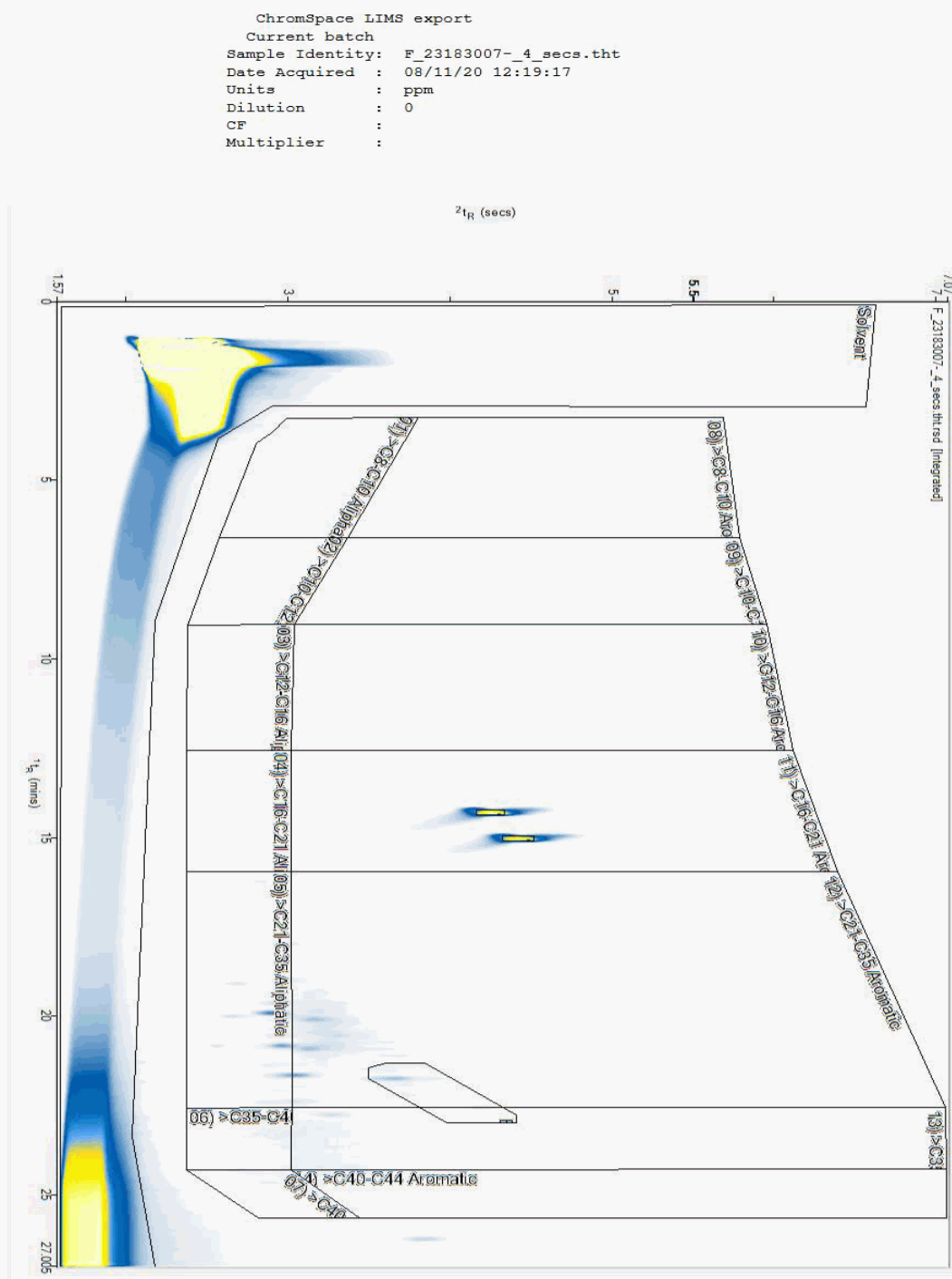
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23183007
Sample ID : TP304

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

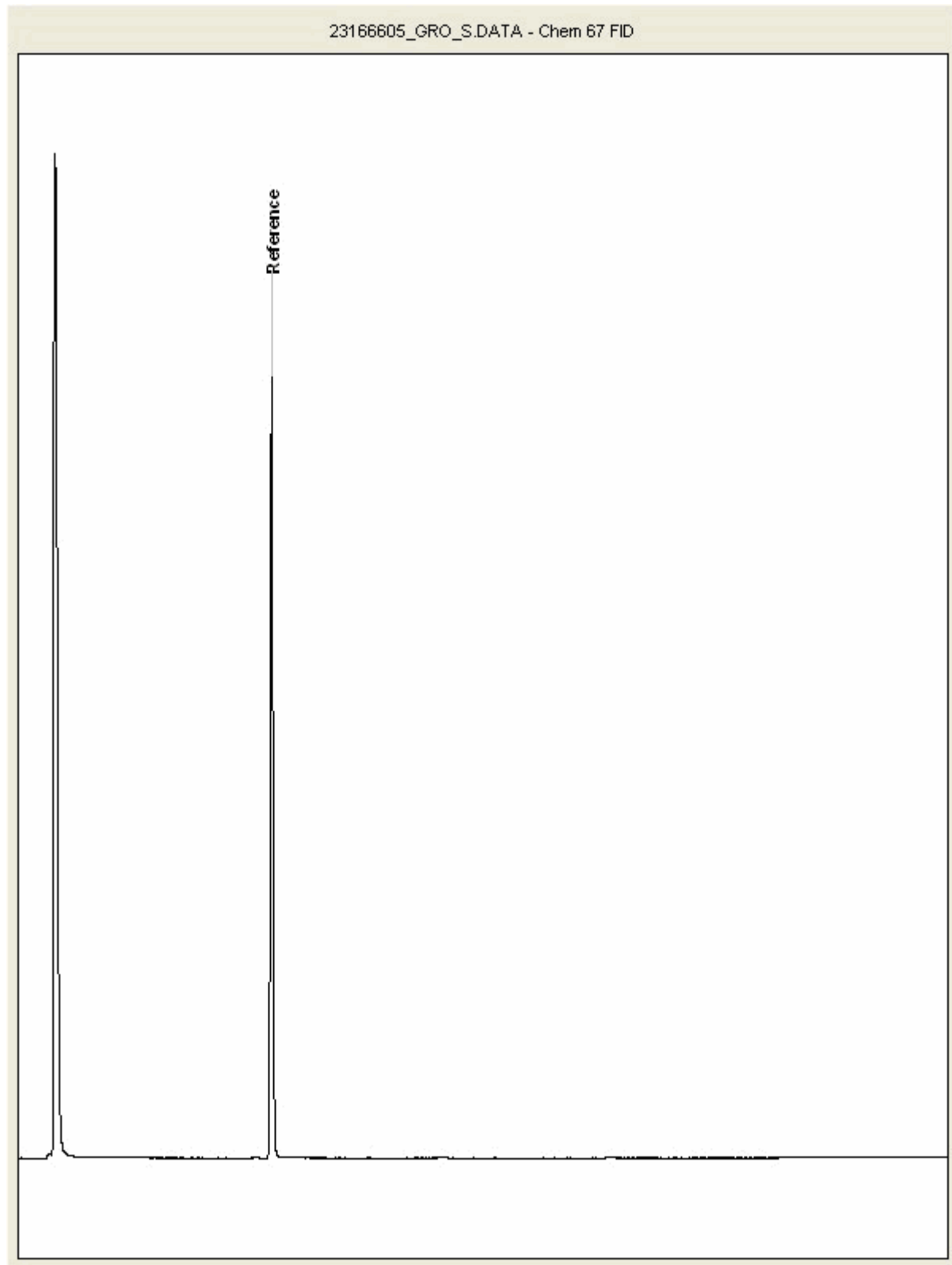
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23166605
Sample ID : TP310

Depth : 2.50 - 2.60





CERTIFICATE OF ANALYSIS

Validated

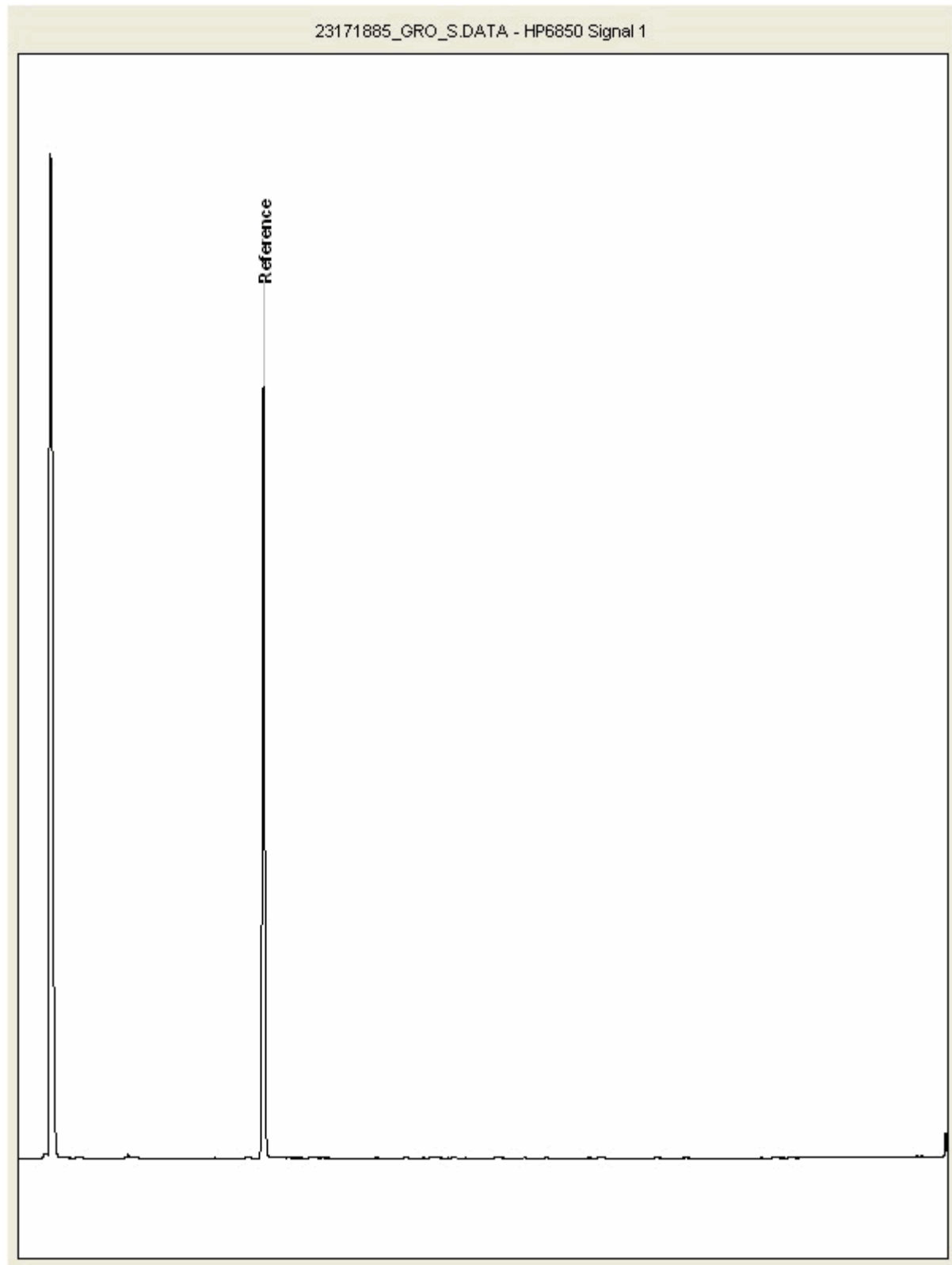
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23171885
Sample ID : TP304

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

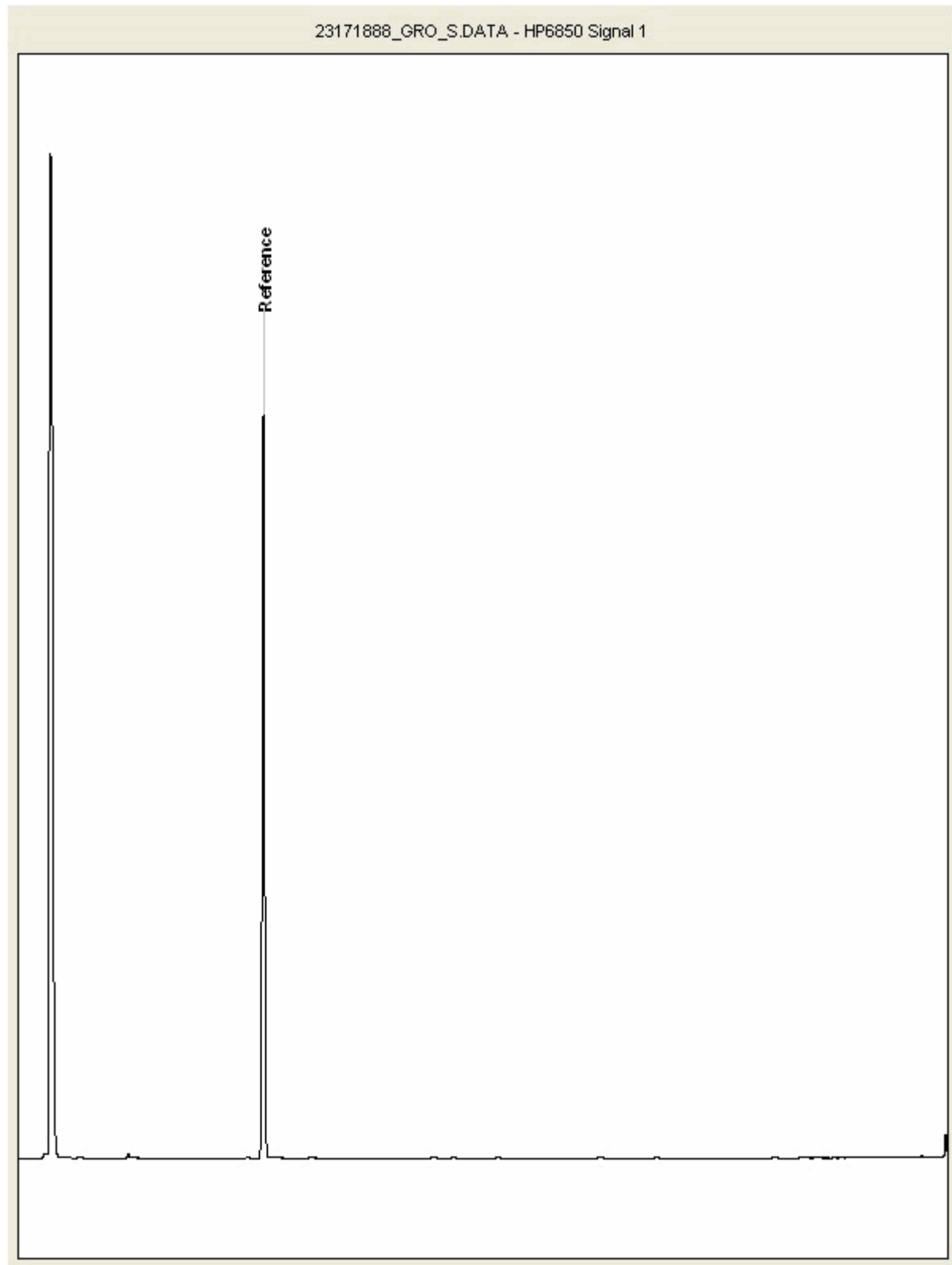
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23171888
Sample ID : TP304

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

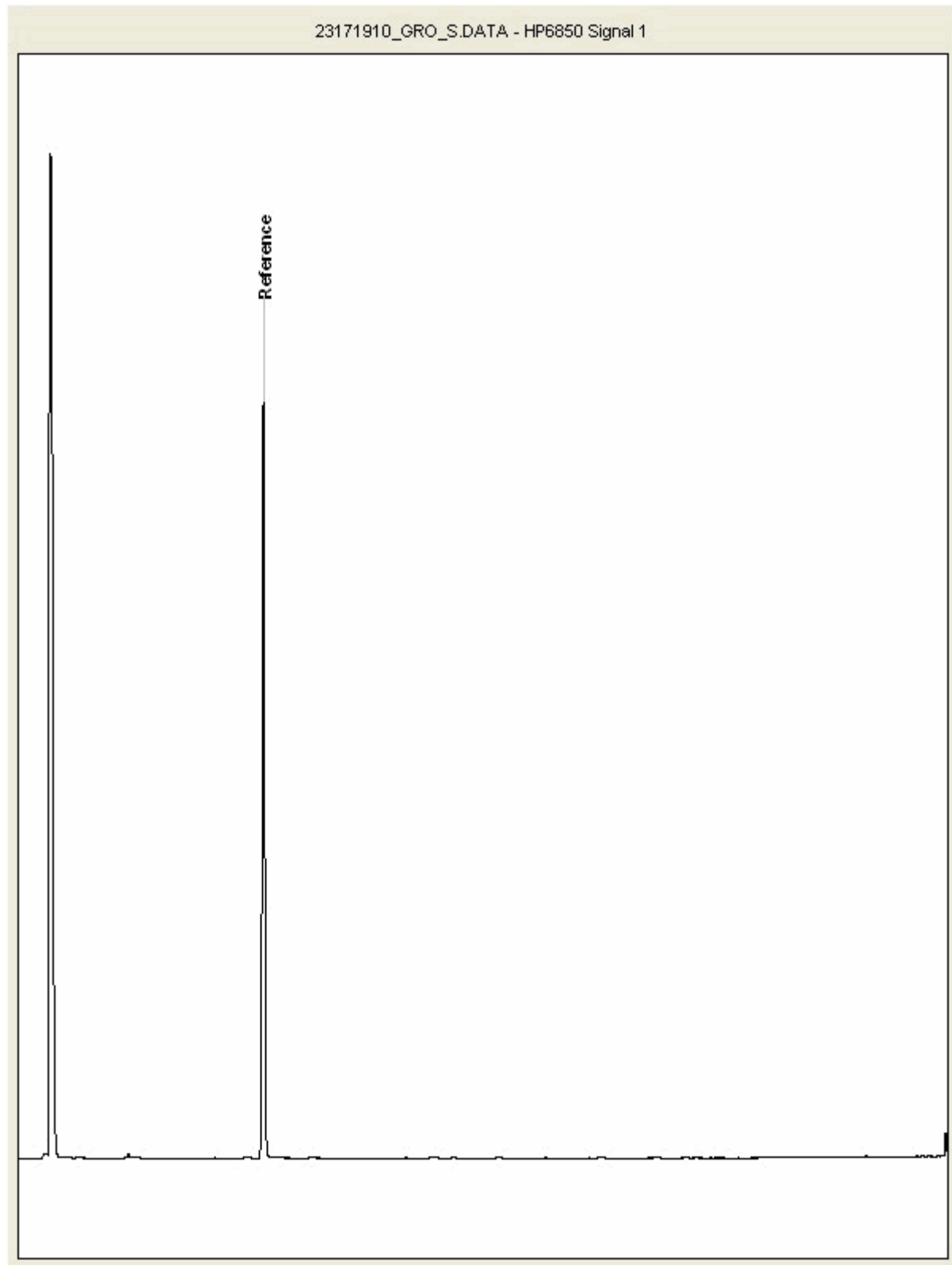
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23171910
Sample ID : TP315

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

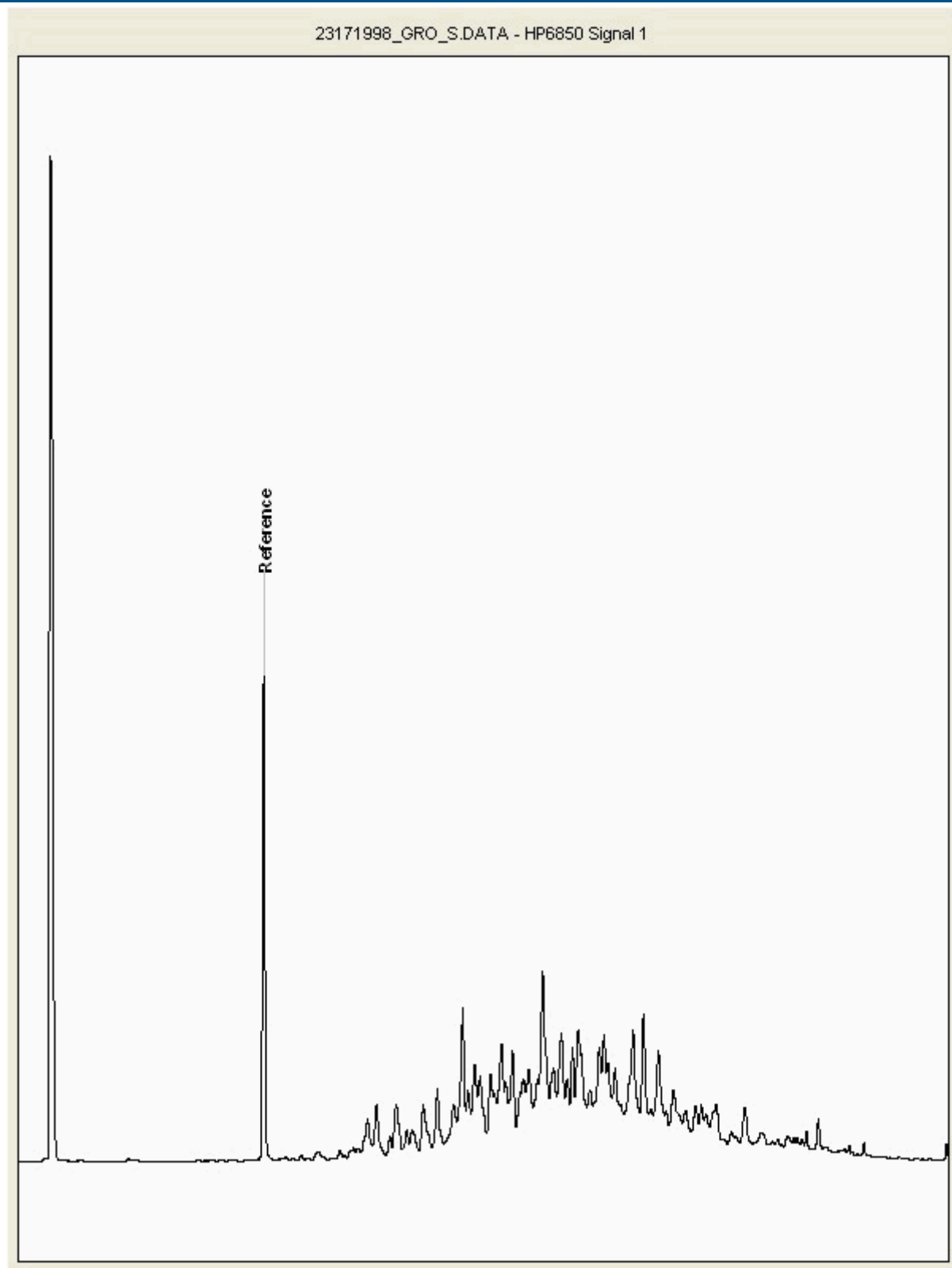
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23171998
Sample ID : TP315

Depth : 0.90 - 1.00





CERTIFICATE OF ANALYSIS

Validated

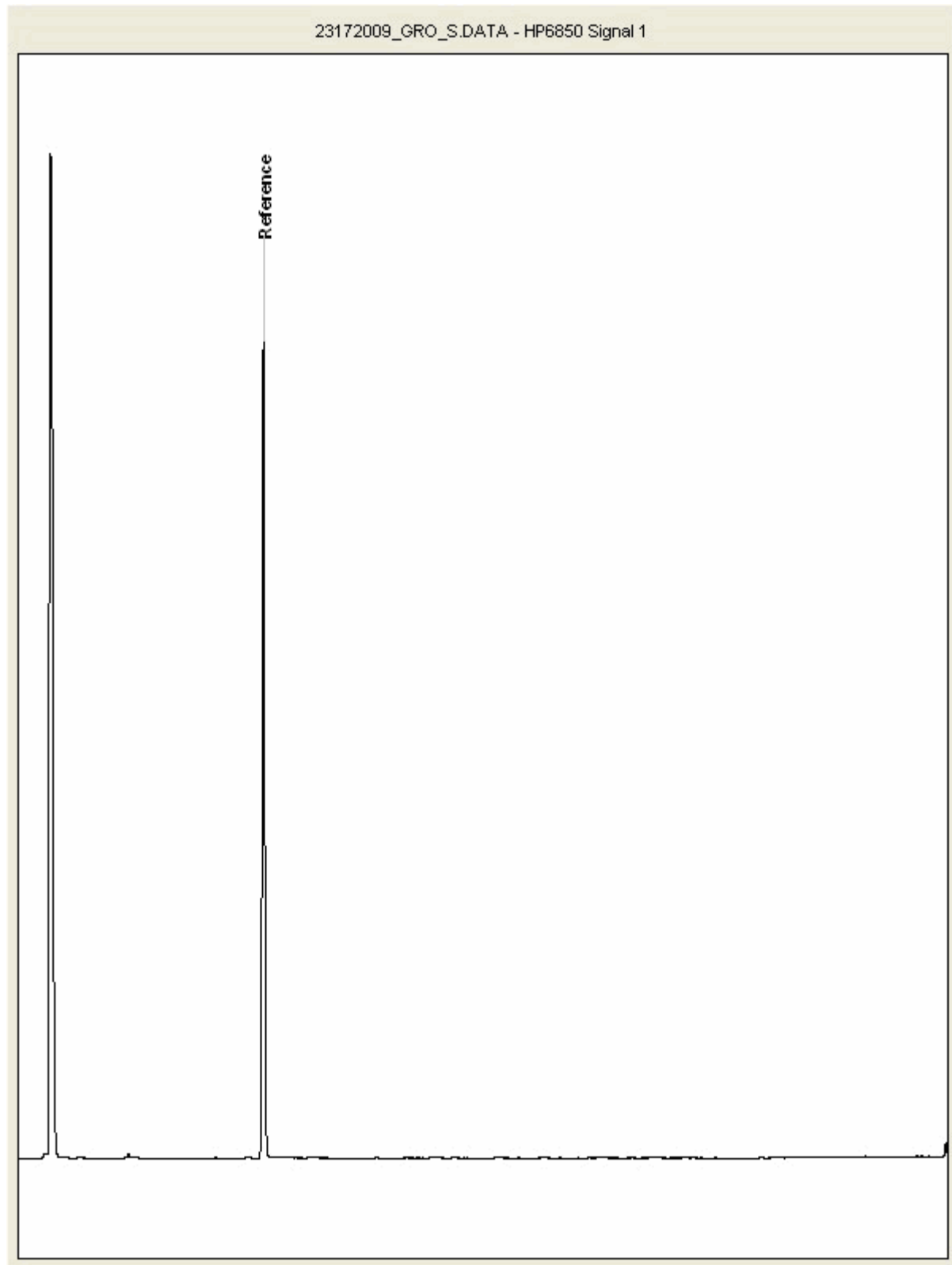
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172009
Sample ID : TP315

Depth : 2.50 - 2.60





CERTIFICATE OF ANALYSIS

Validated

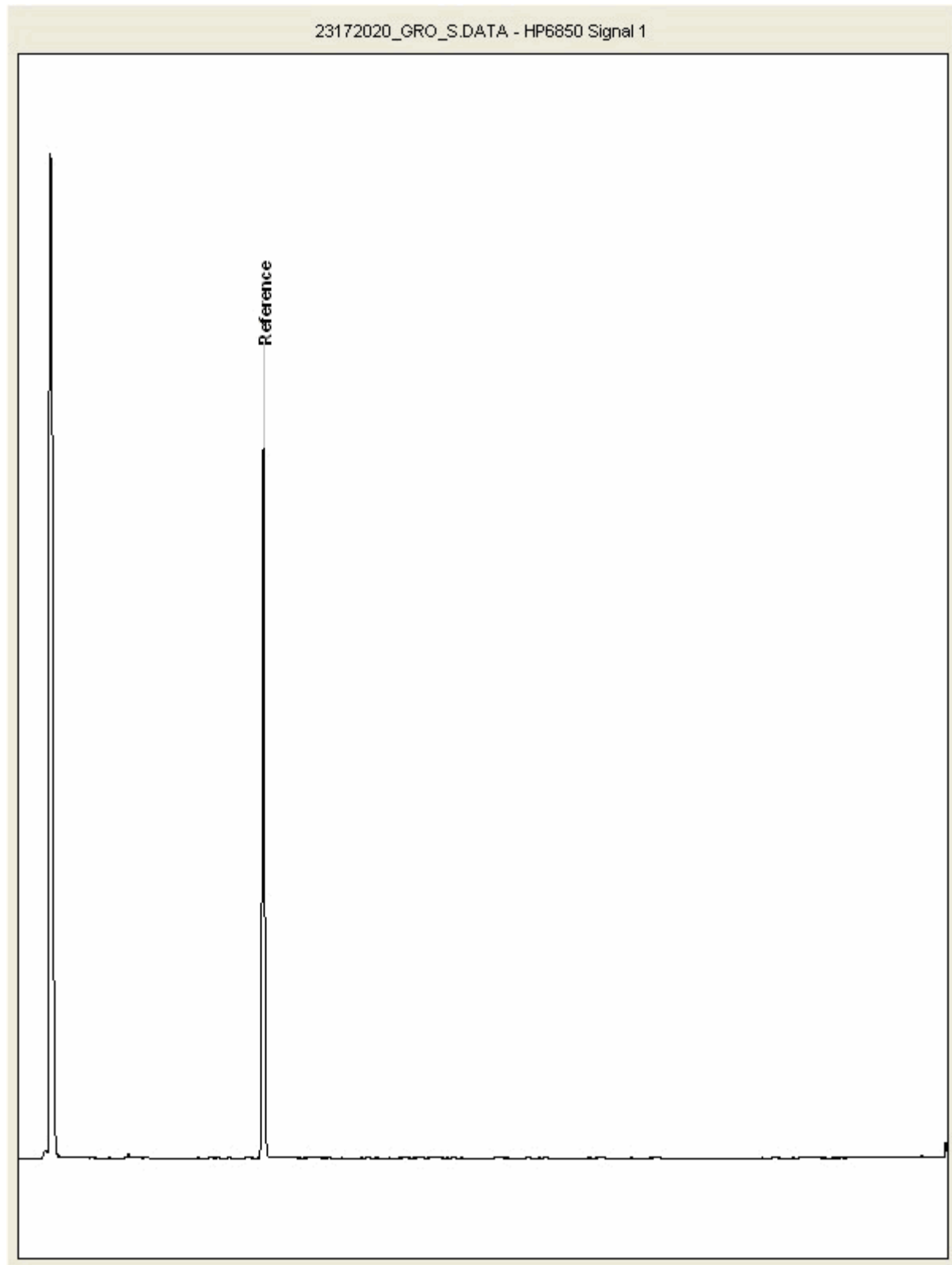
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172020
Sample ID : TP312

Depth : 3.00 - 3.10





CERTIFICATE OF ANALYSIS

Validated

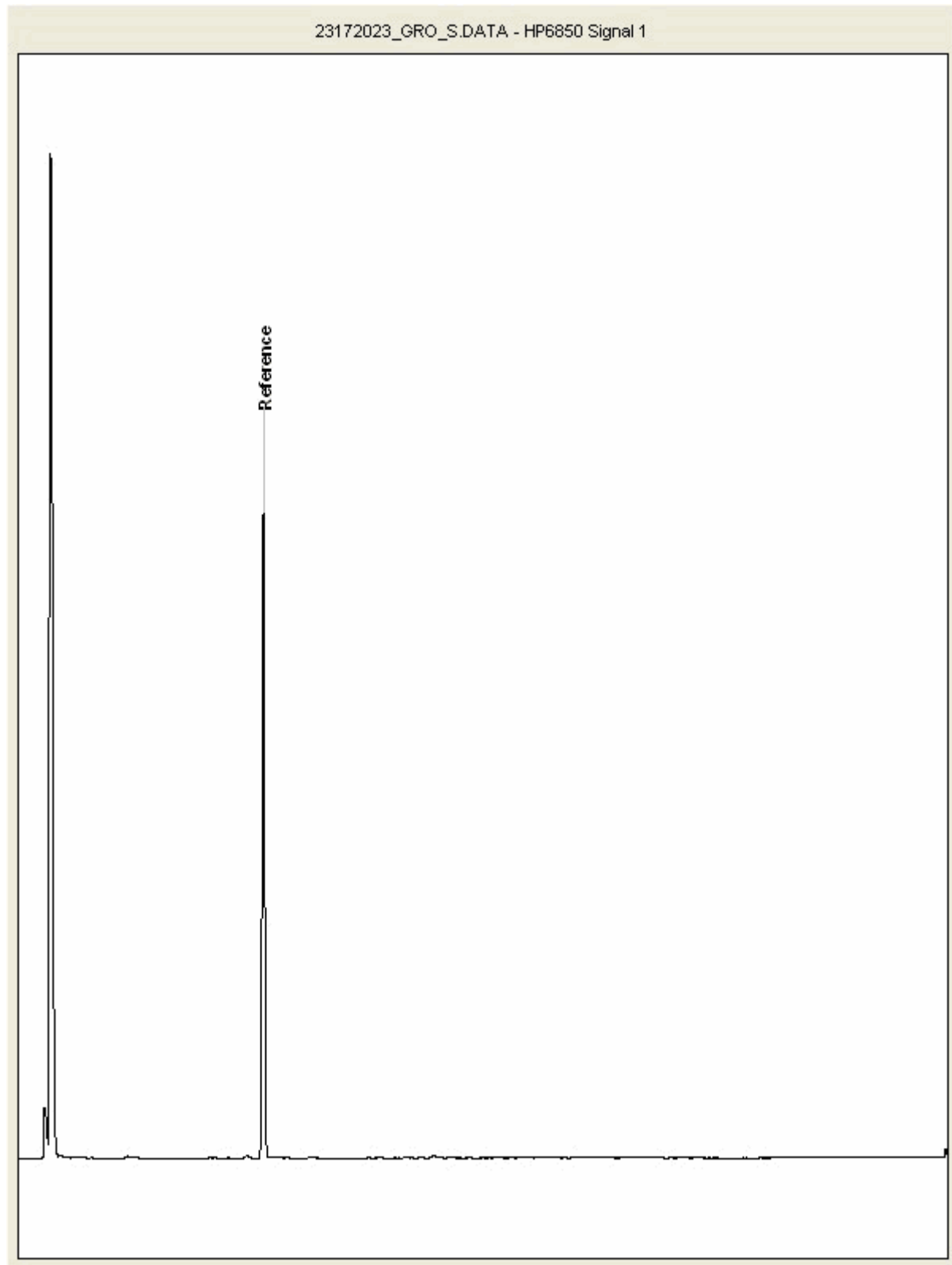
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172023
Sample ID : TP315

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

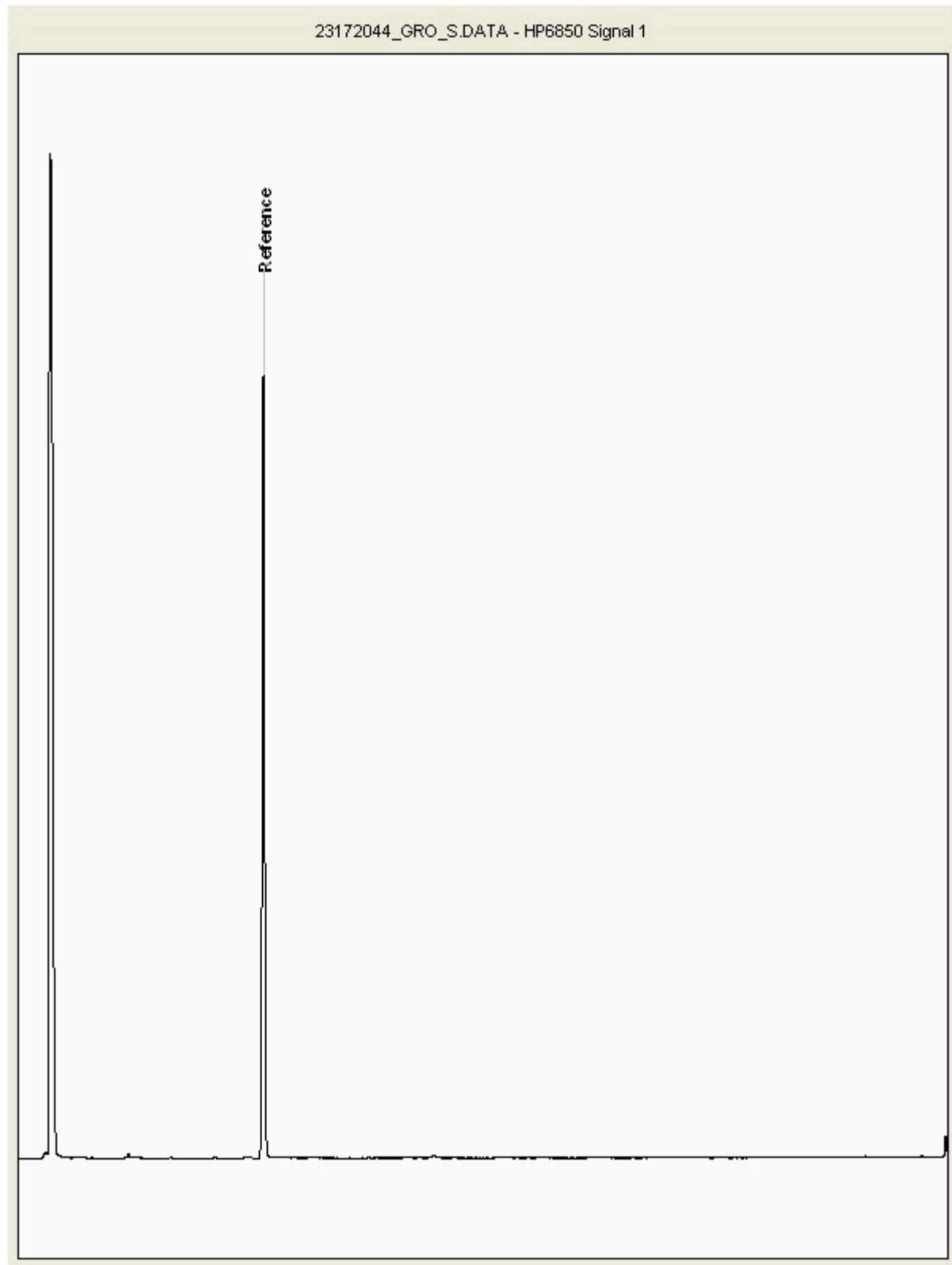
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172044
Sample ID : TP301

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

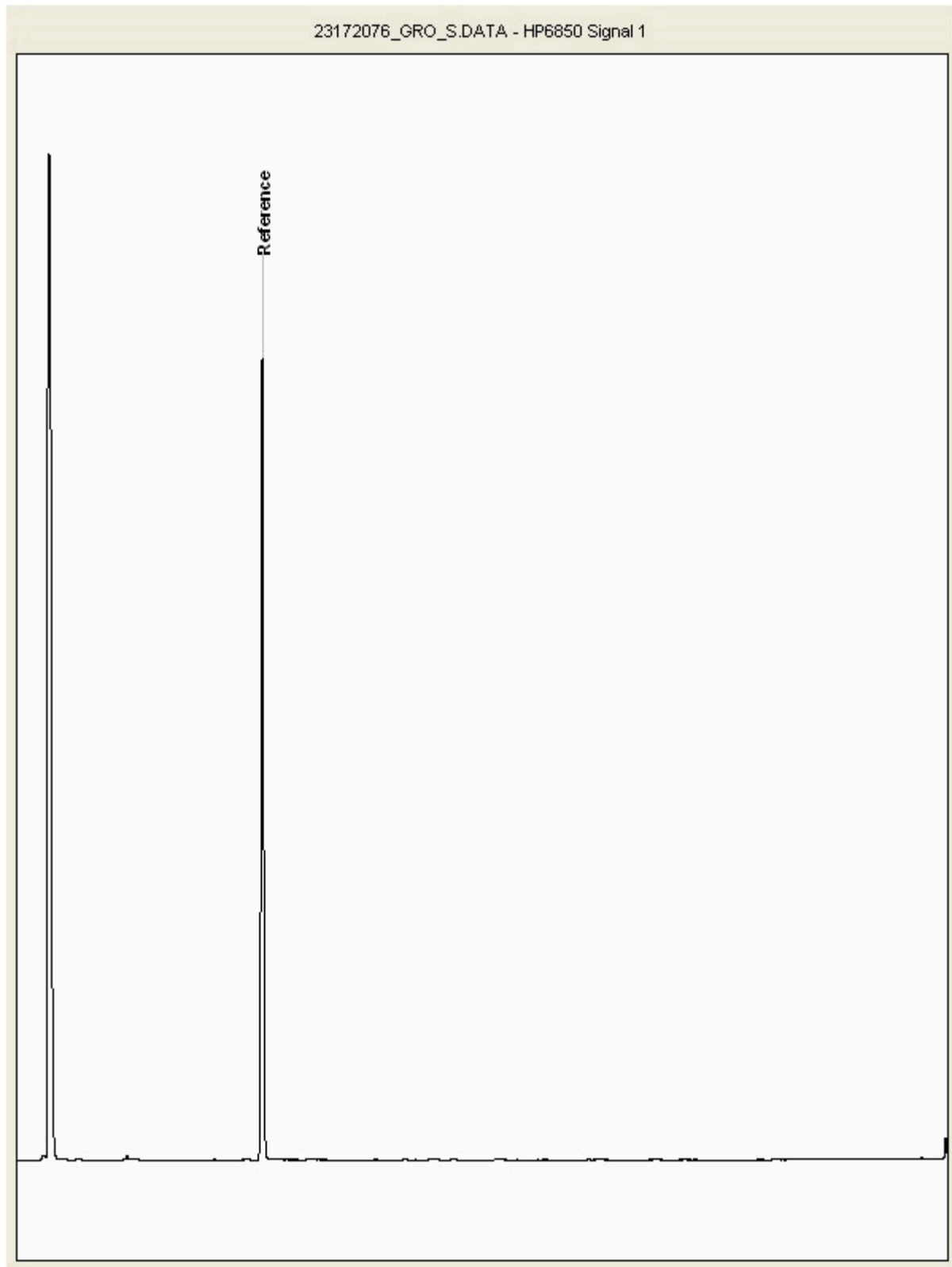
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172076
Sample ID : TP301

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

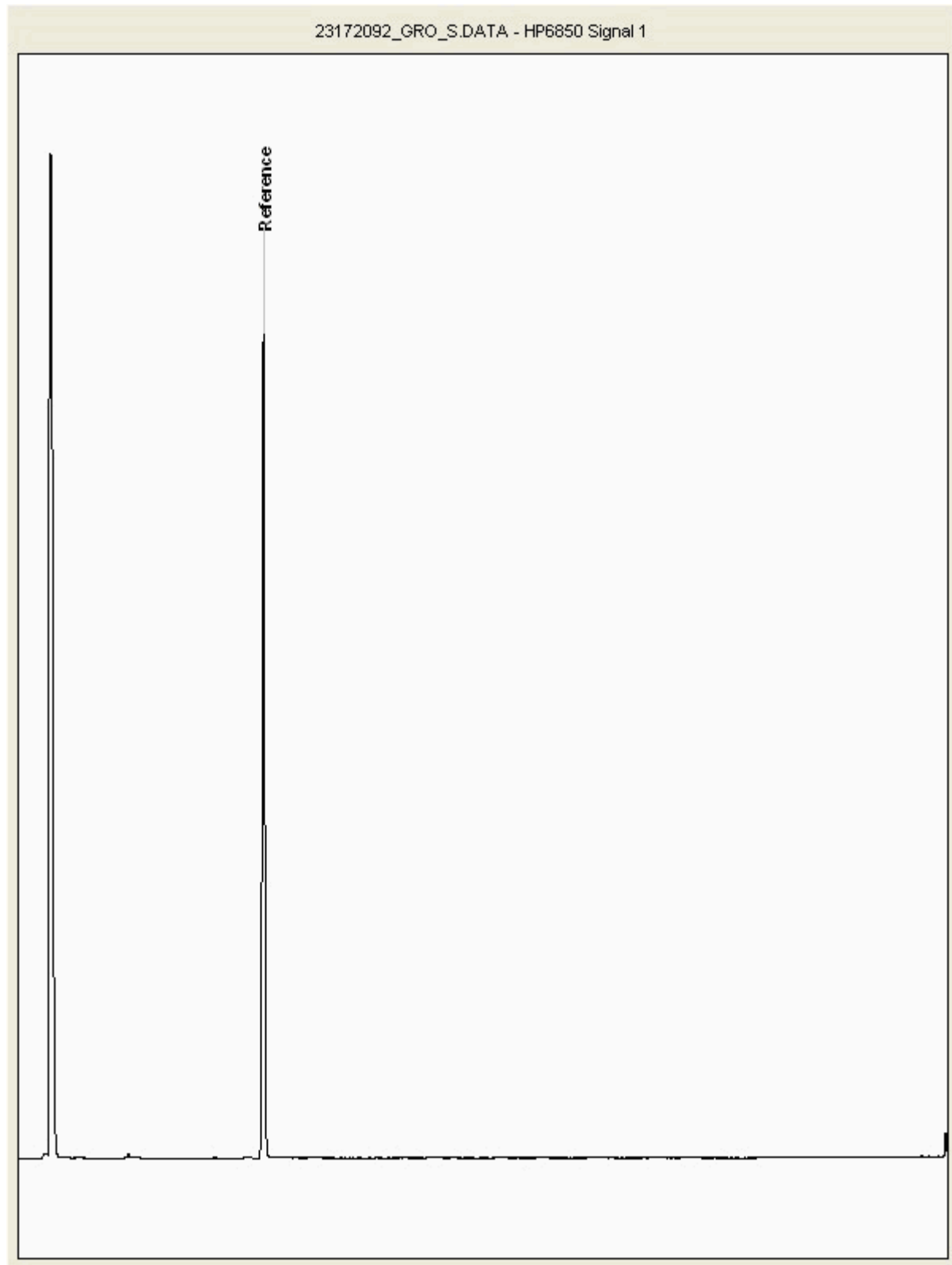
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172092
Sample ID : TP301

Depth : 0.90 - 1.00





CERTIFICATE OF ANALYSIS

Validated

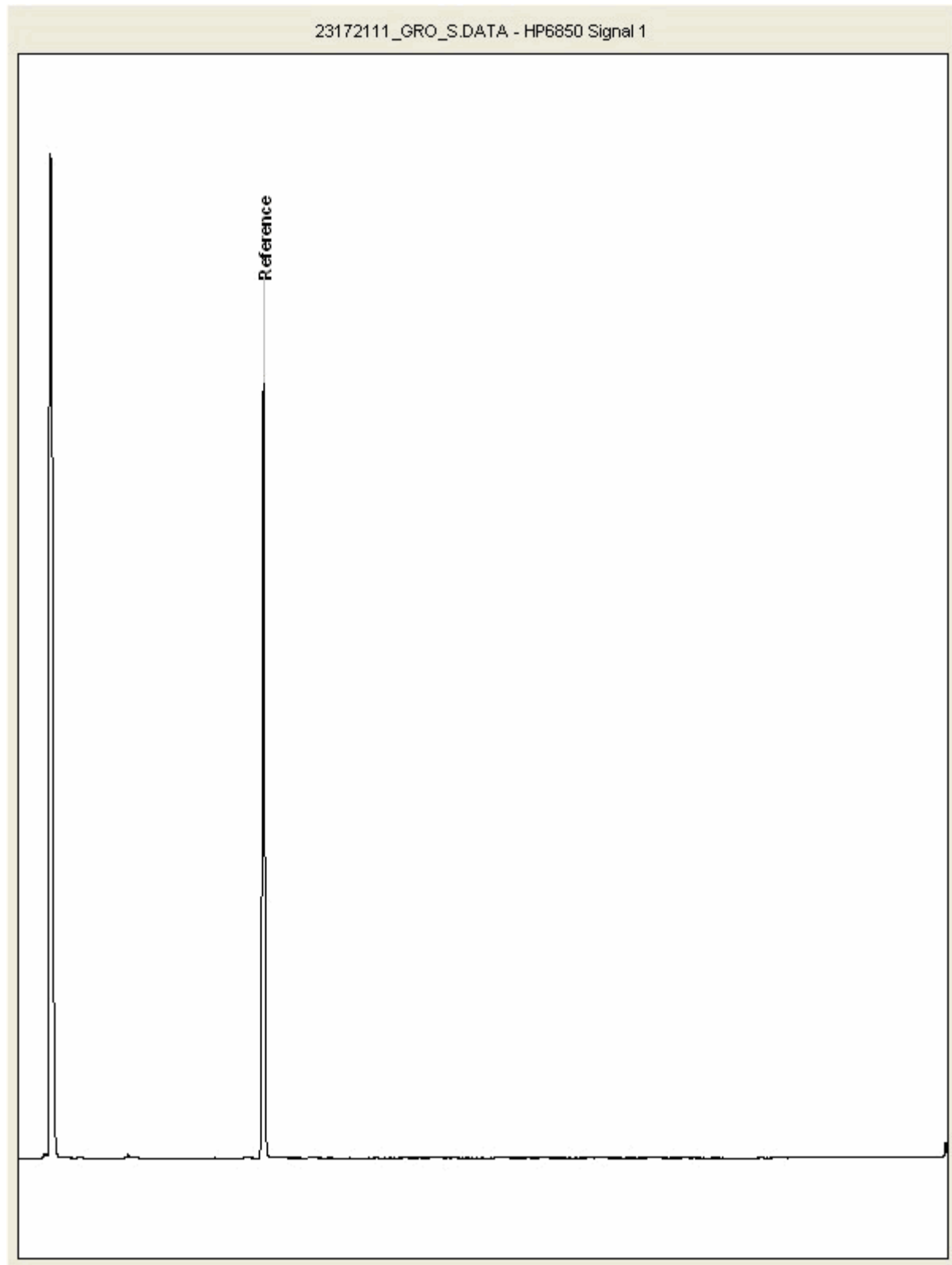
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172111
Sample ID : TP310

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

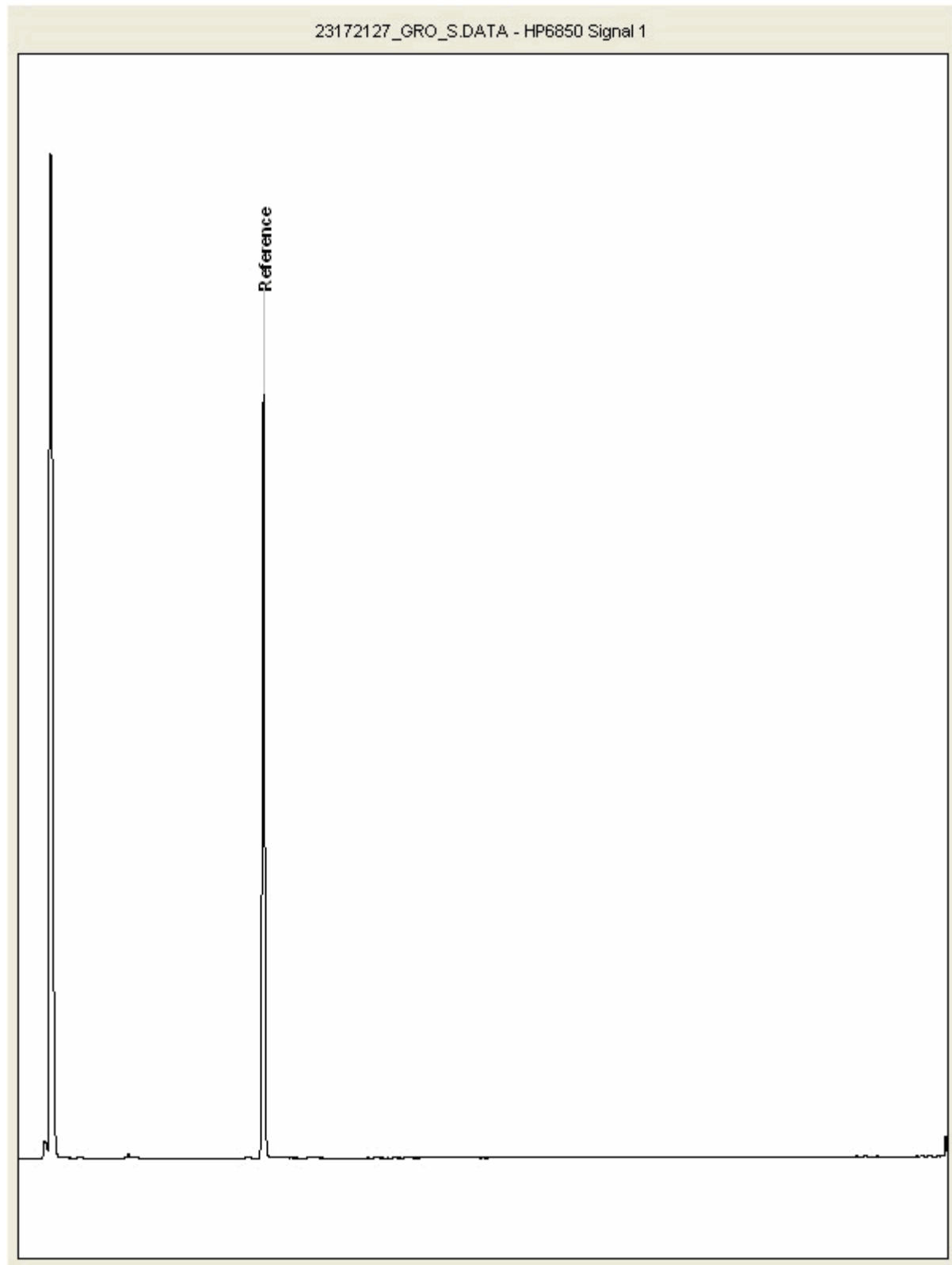
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172127
Sample ID : TP310

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

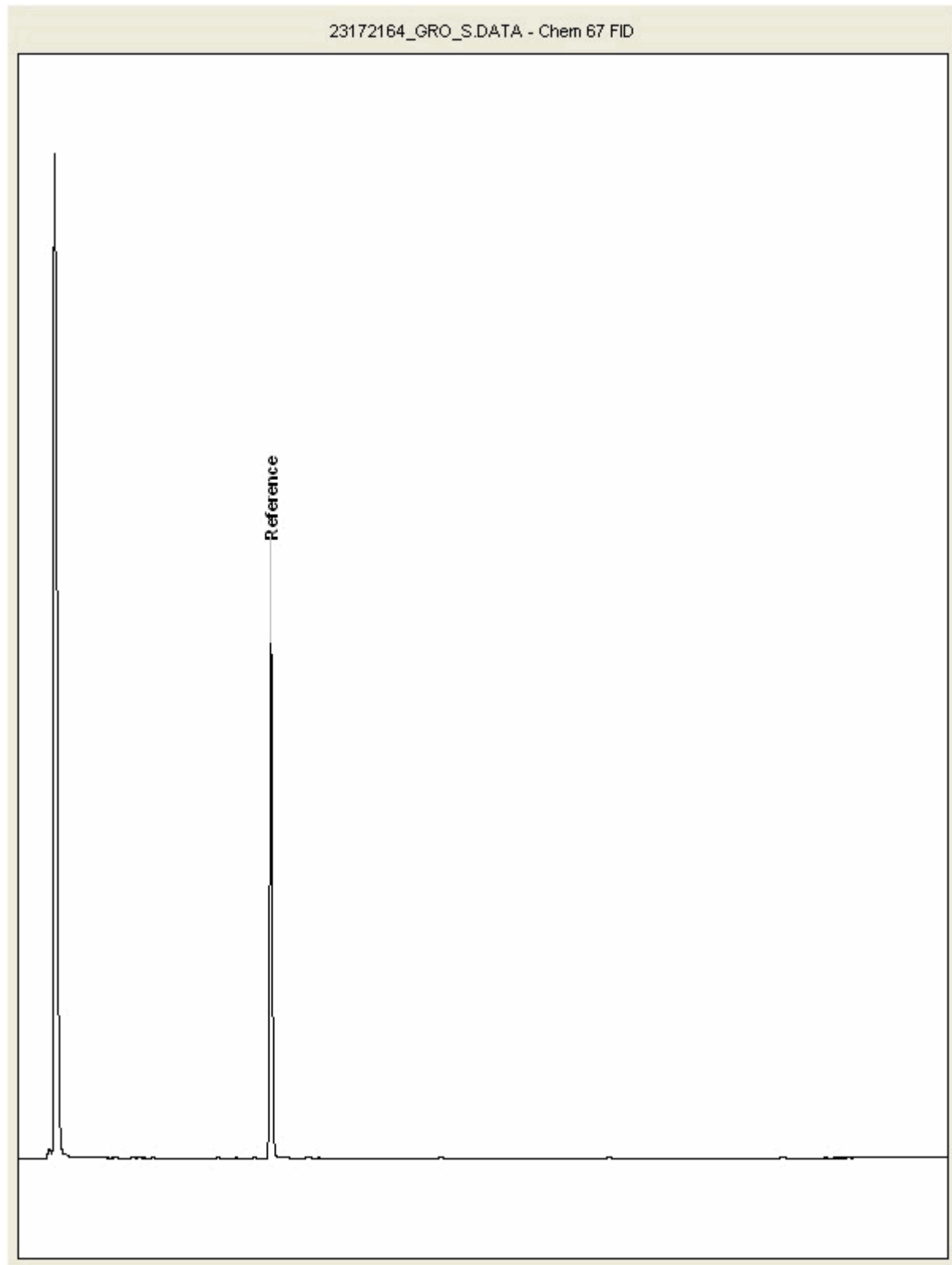
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172164
Sample ID : TP314

Depth : 1.80 - 1.90





CERTIFICATE OF ANALYSIS

Validated

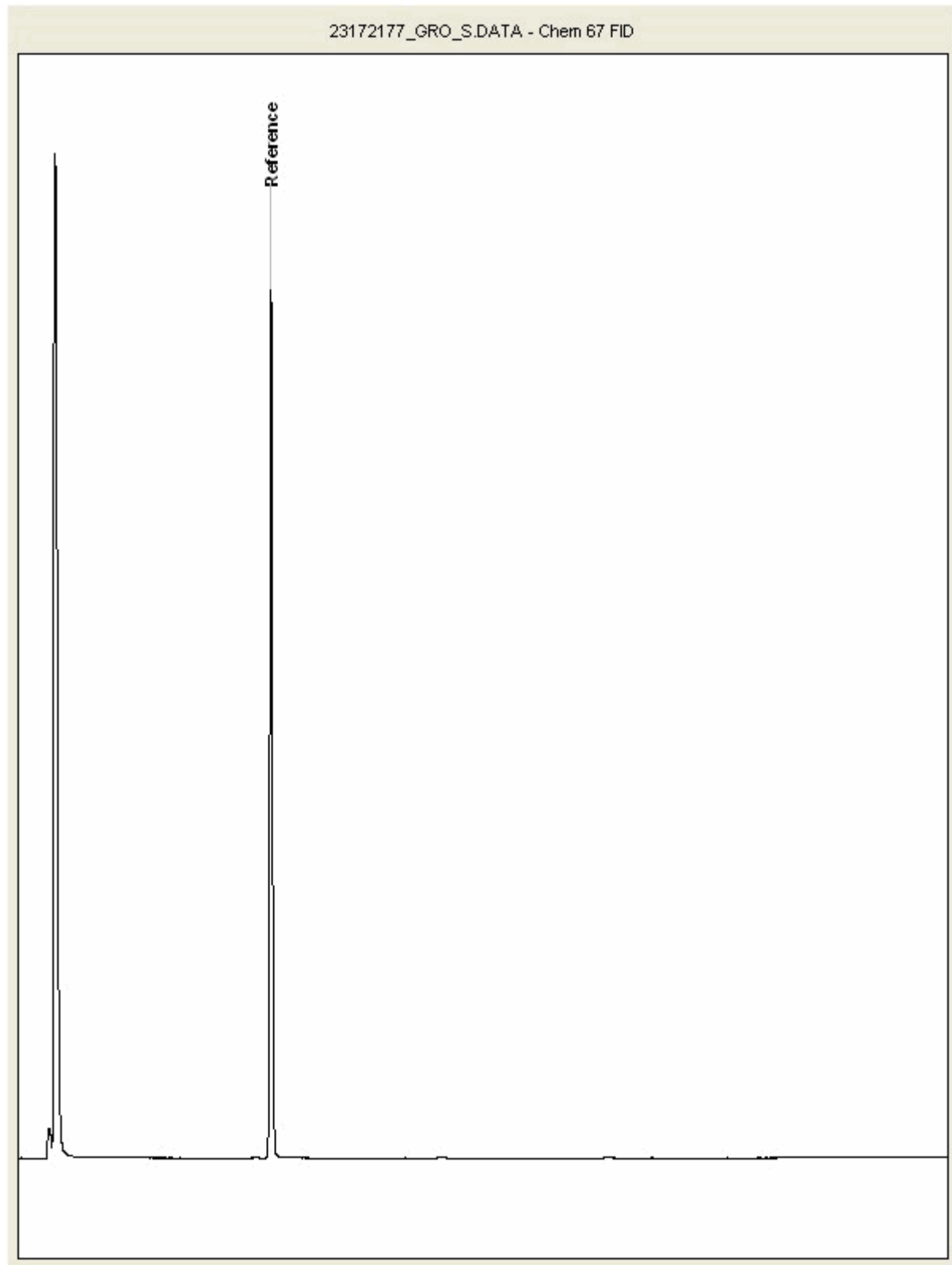
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172177
Sample ID : TP314

Depth : 2.90 - 3.00





CERTIFICATE OF ANALYSIS

Validated

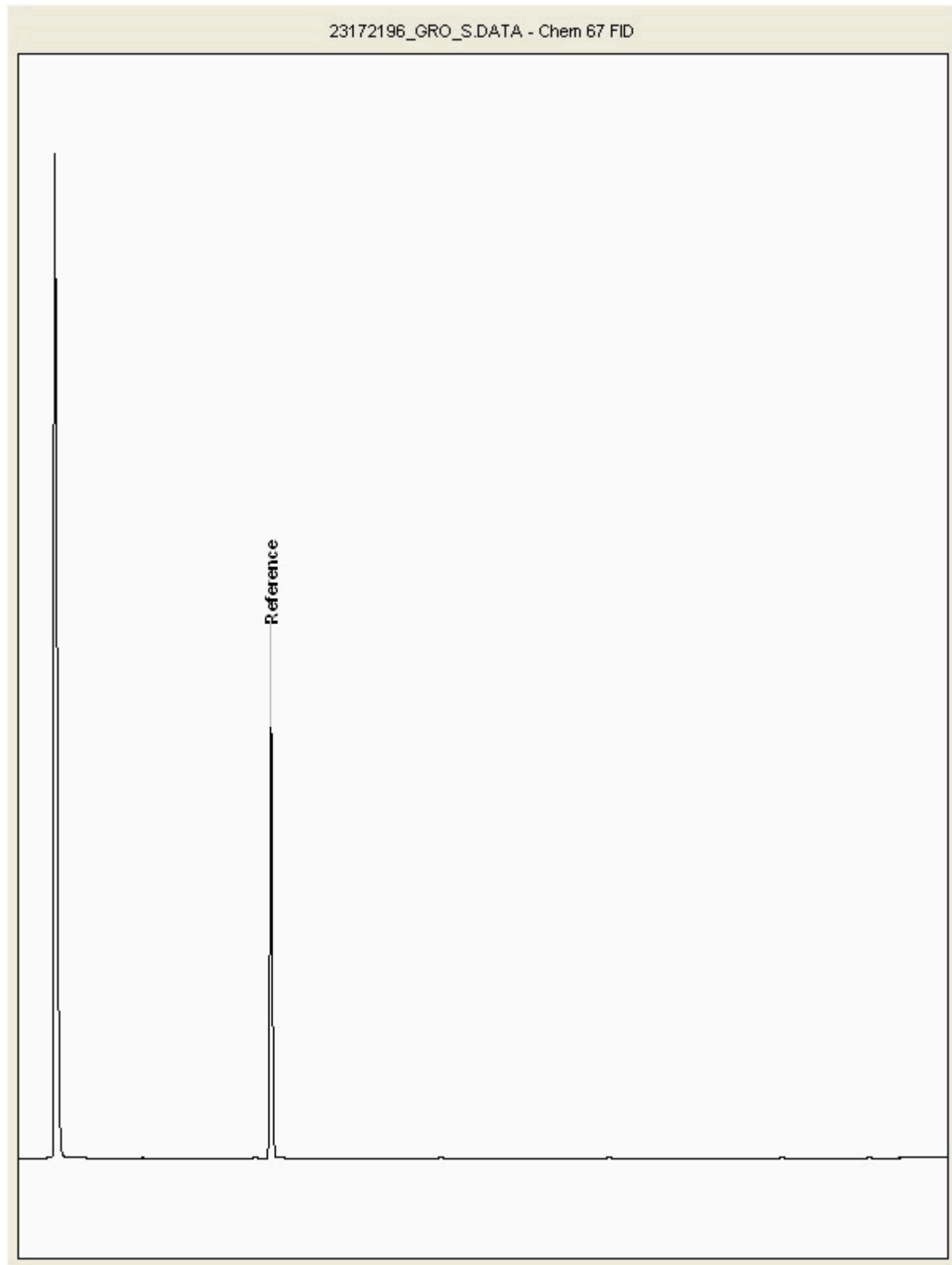
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172196
Sample ID : TP209

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

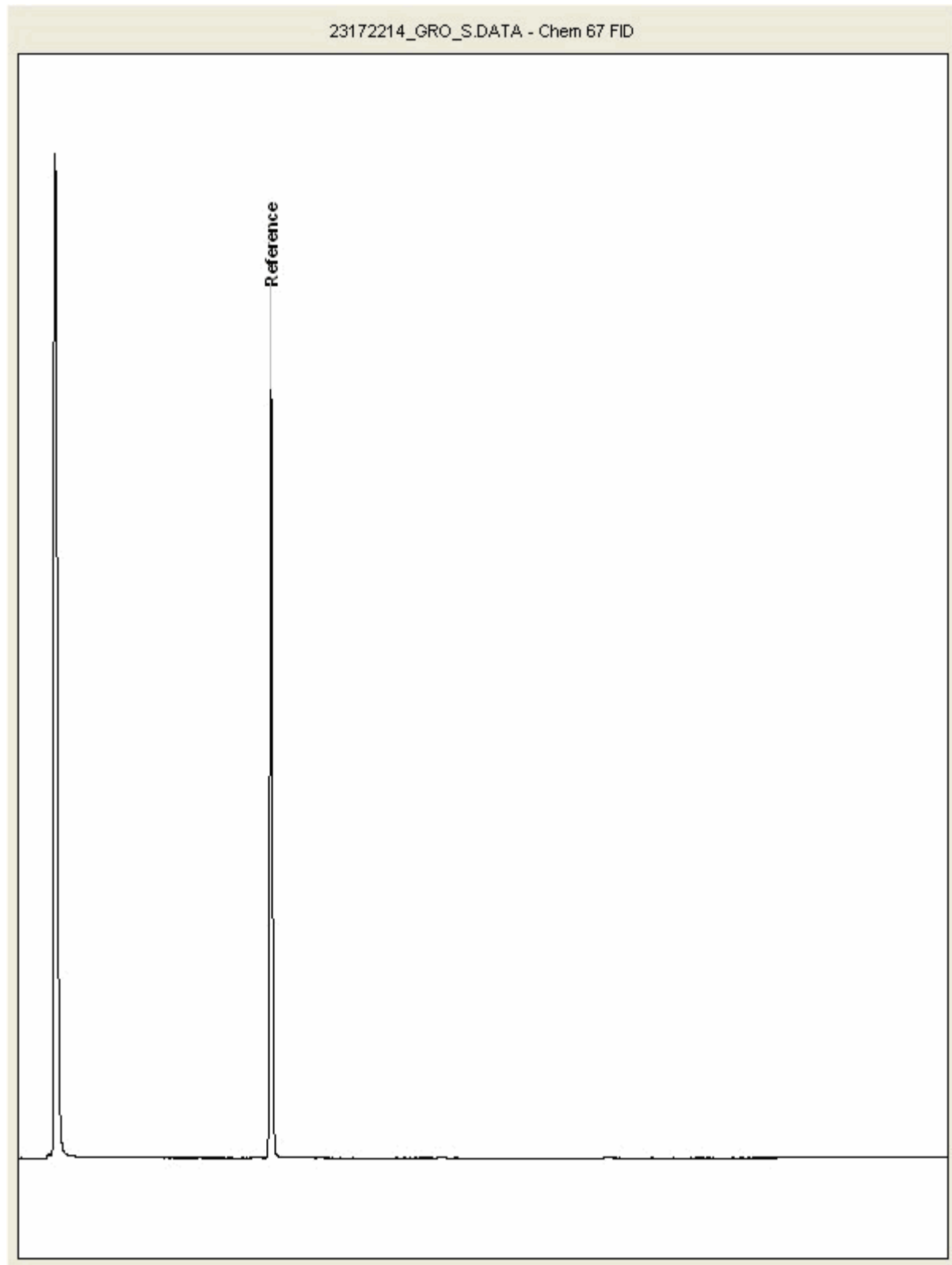
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172214
Sample ID : TP314

Depth : 0.50 - 0.60





CERTIFICATE OF ANALYSIS

Validated

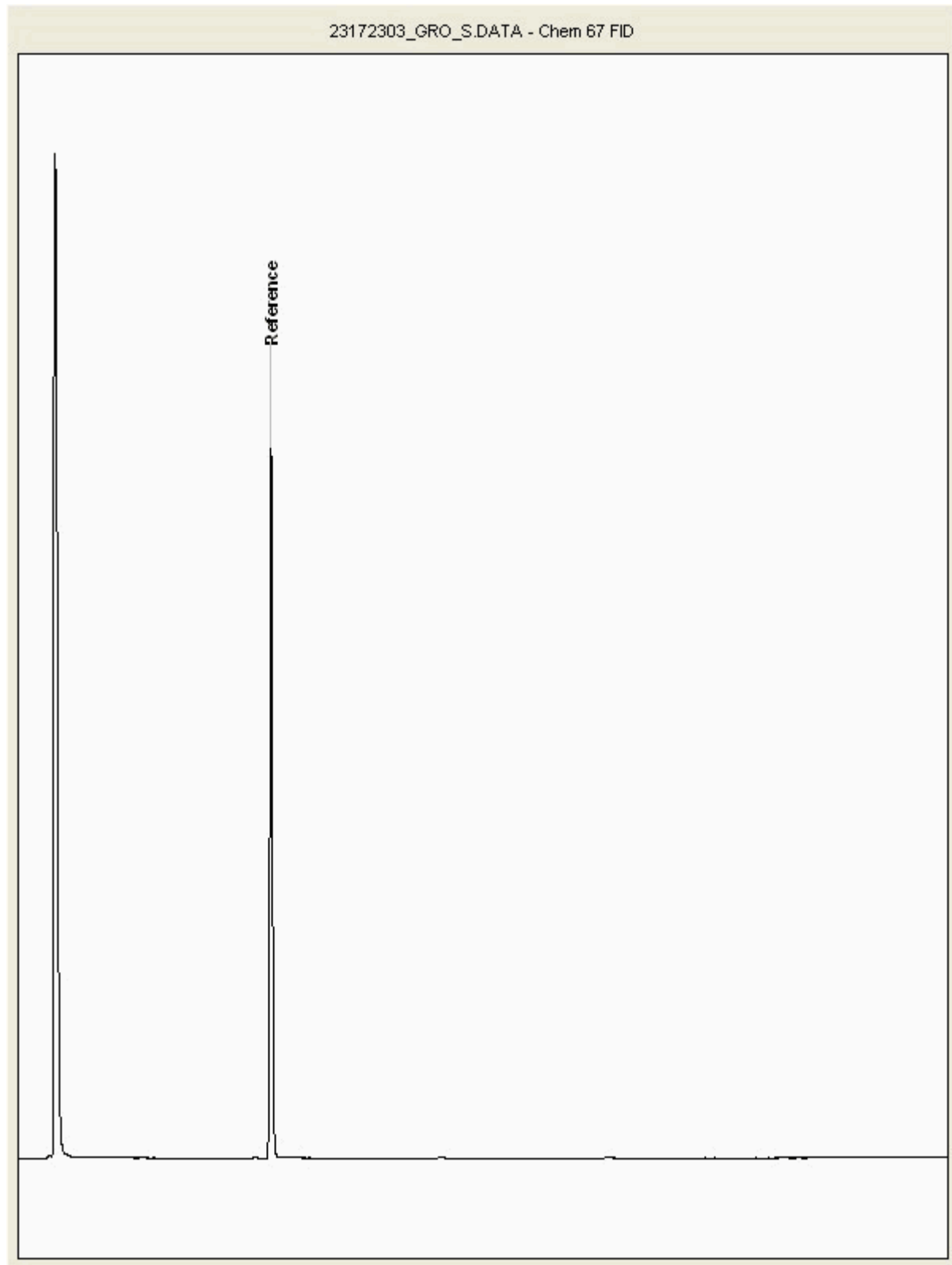
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23172303
Sample ID : TP209

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

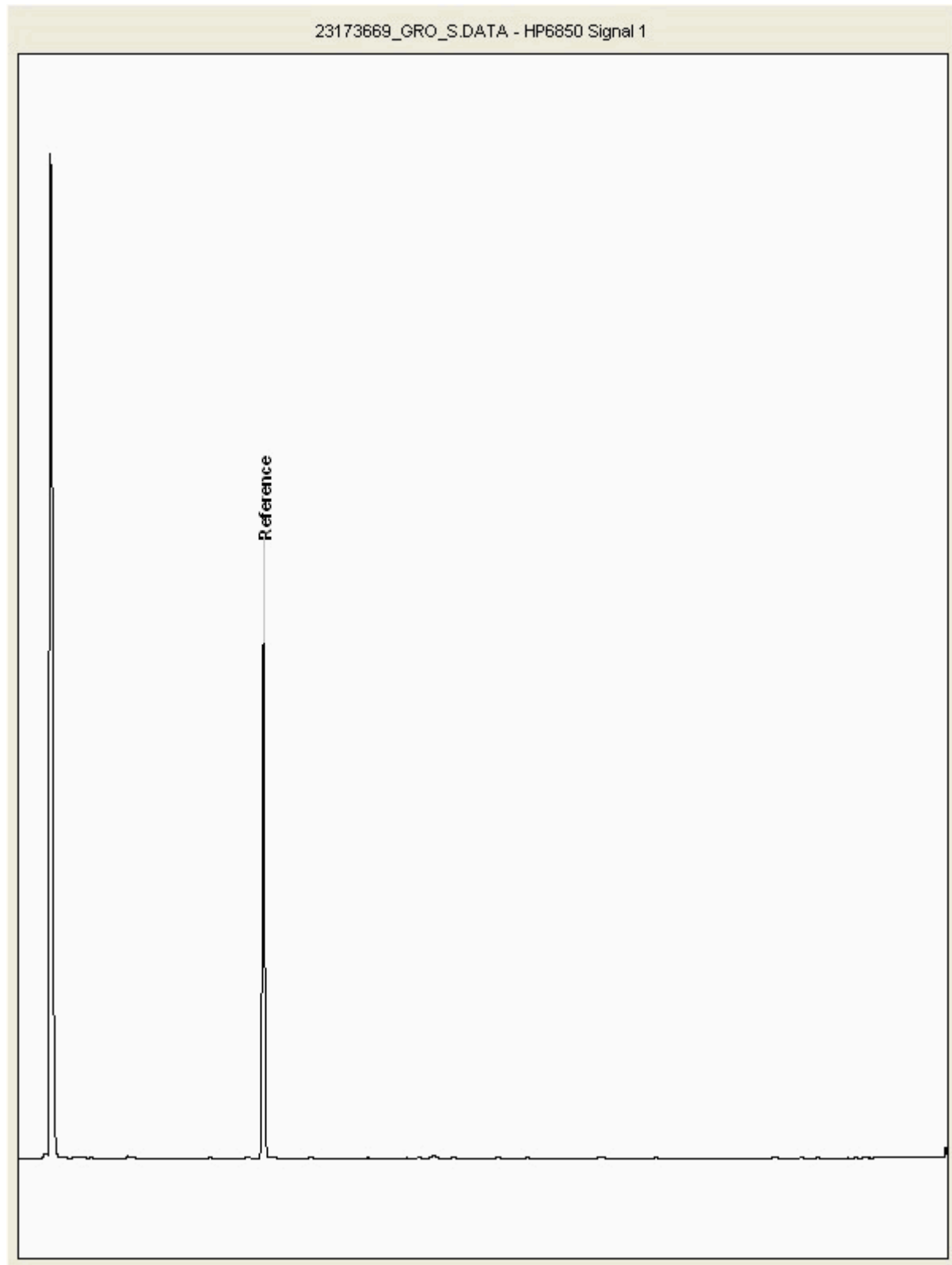
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23173669
Sample ID : TP301

Depth : 2.90 - 3.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

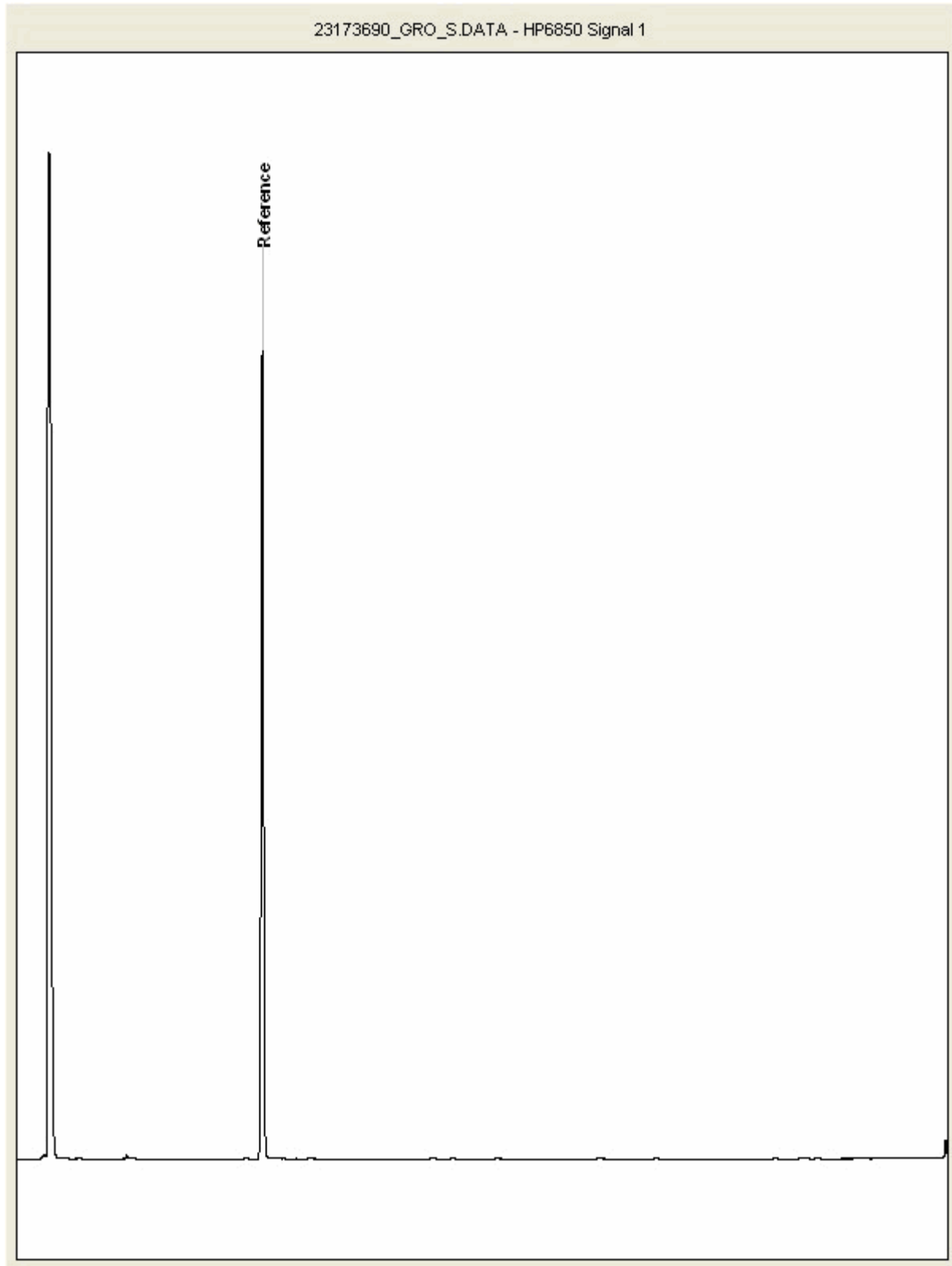
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23173690
Sample ID : TP210

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

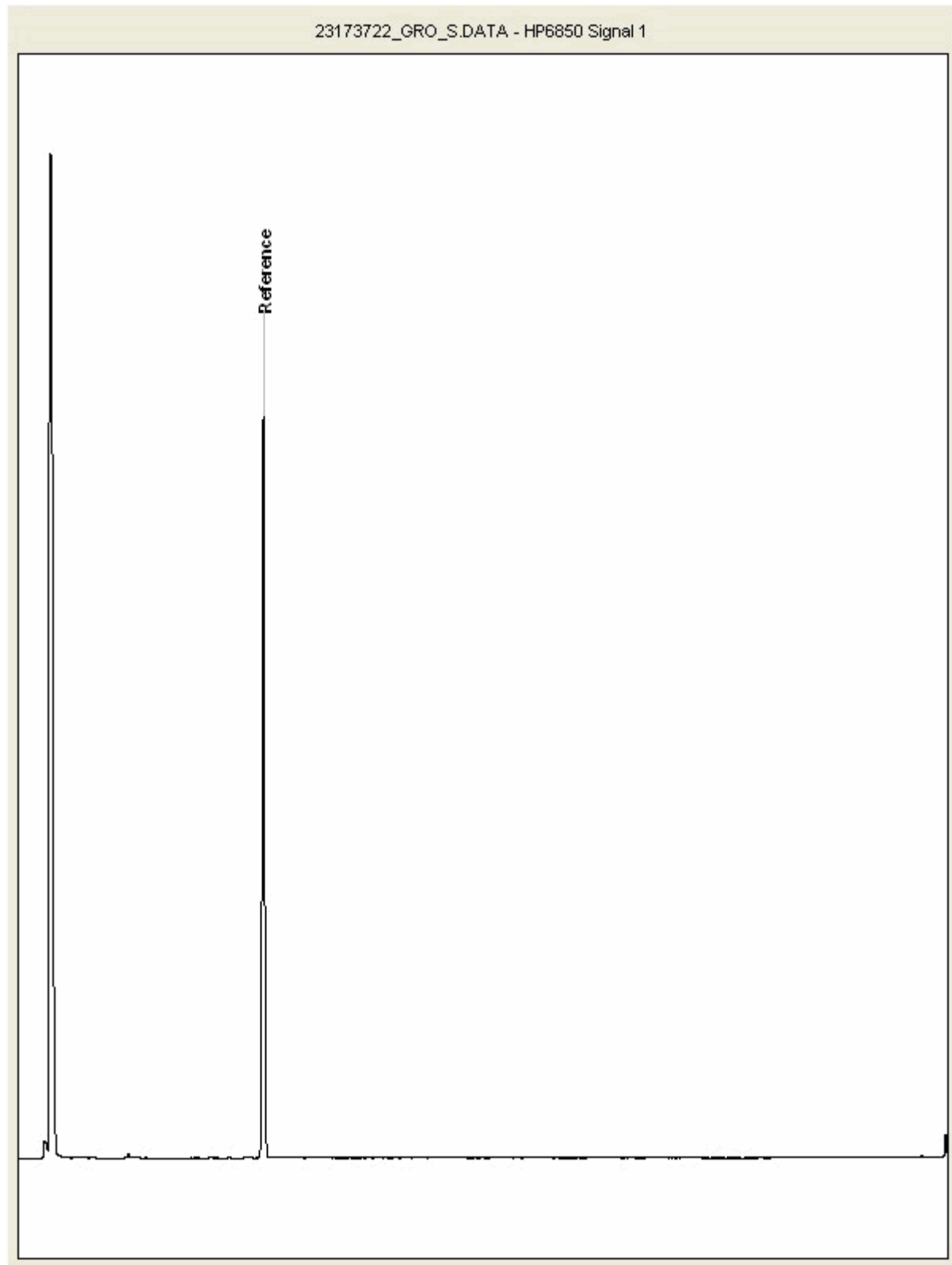
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23173722
Sample ID : TP312

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

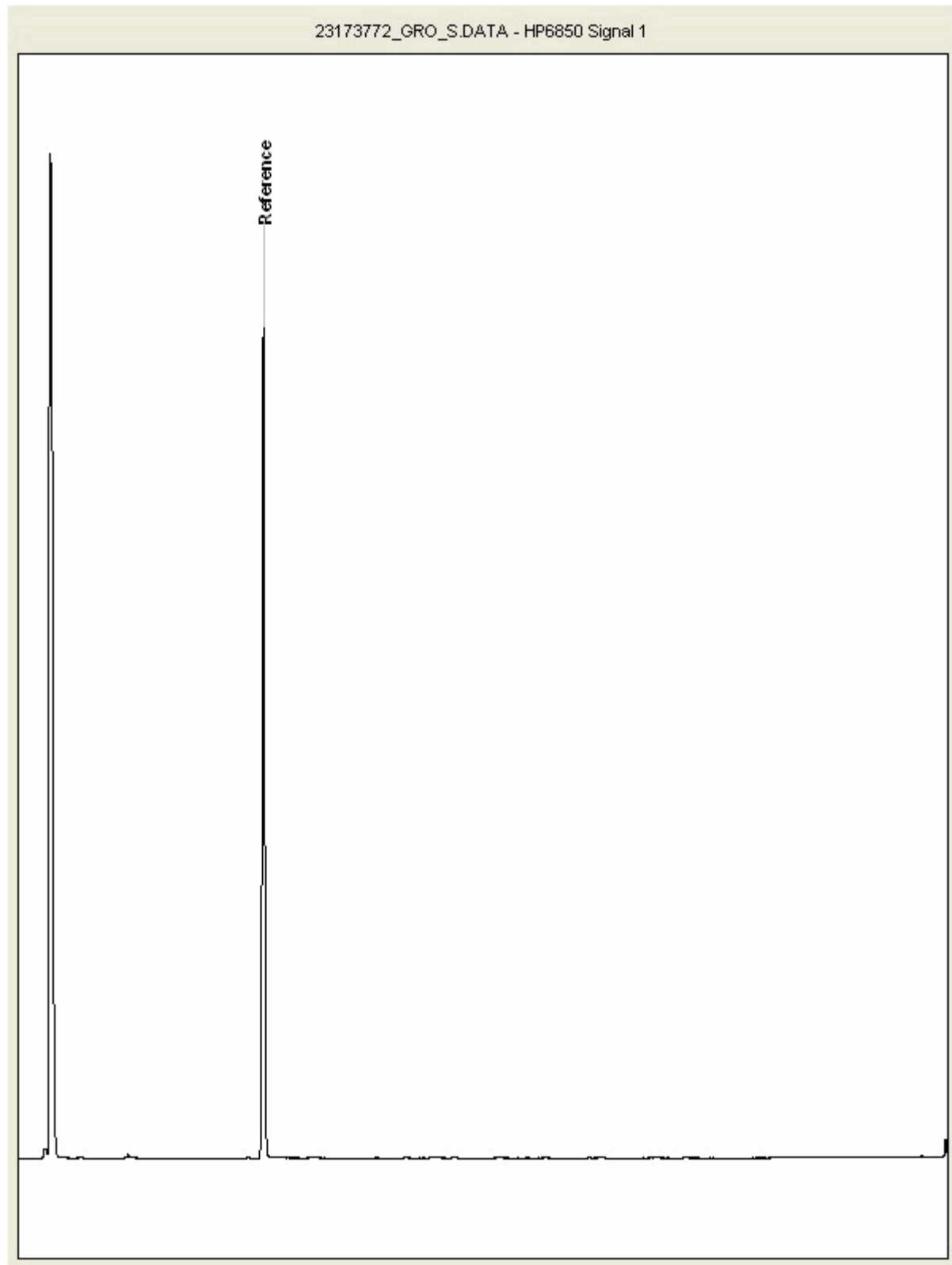
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23173772
Sample ID : TP312

Depth : 2.10 - 2.20





CERTIFICATE OF ANALYSIS

Validated

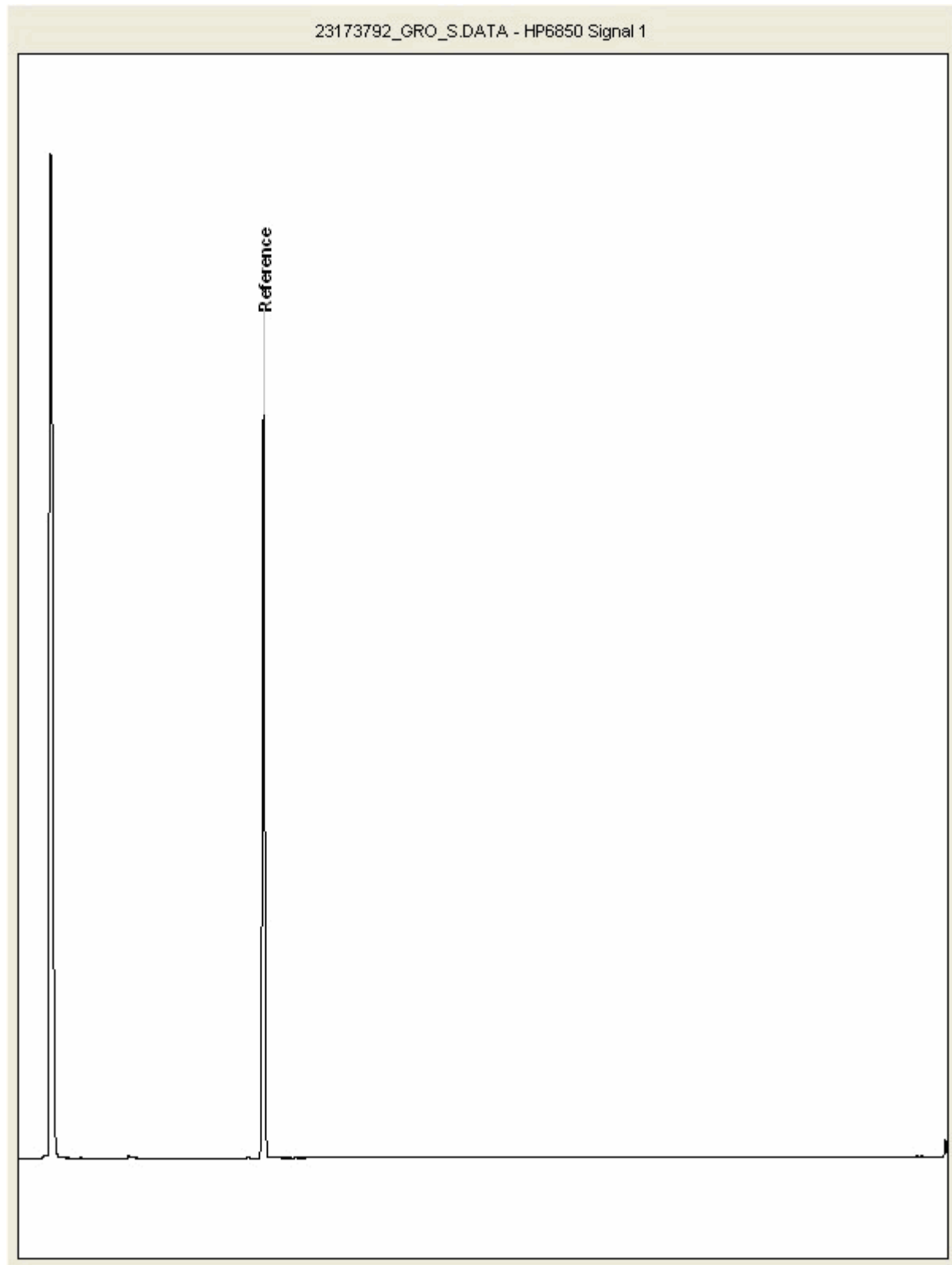
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23173792
Sample ID : TP210

Depth : 1.50 - 1.60





CERTIFICATE OF ANALYSIS

Validated

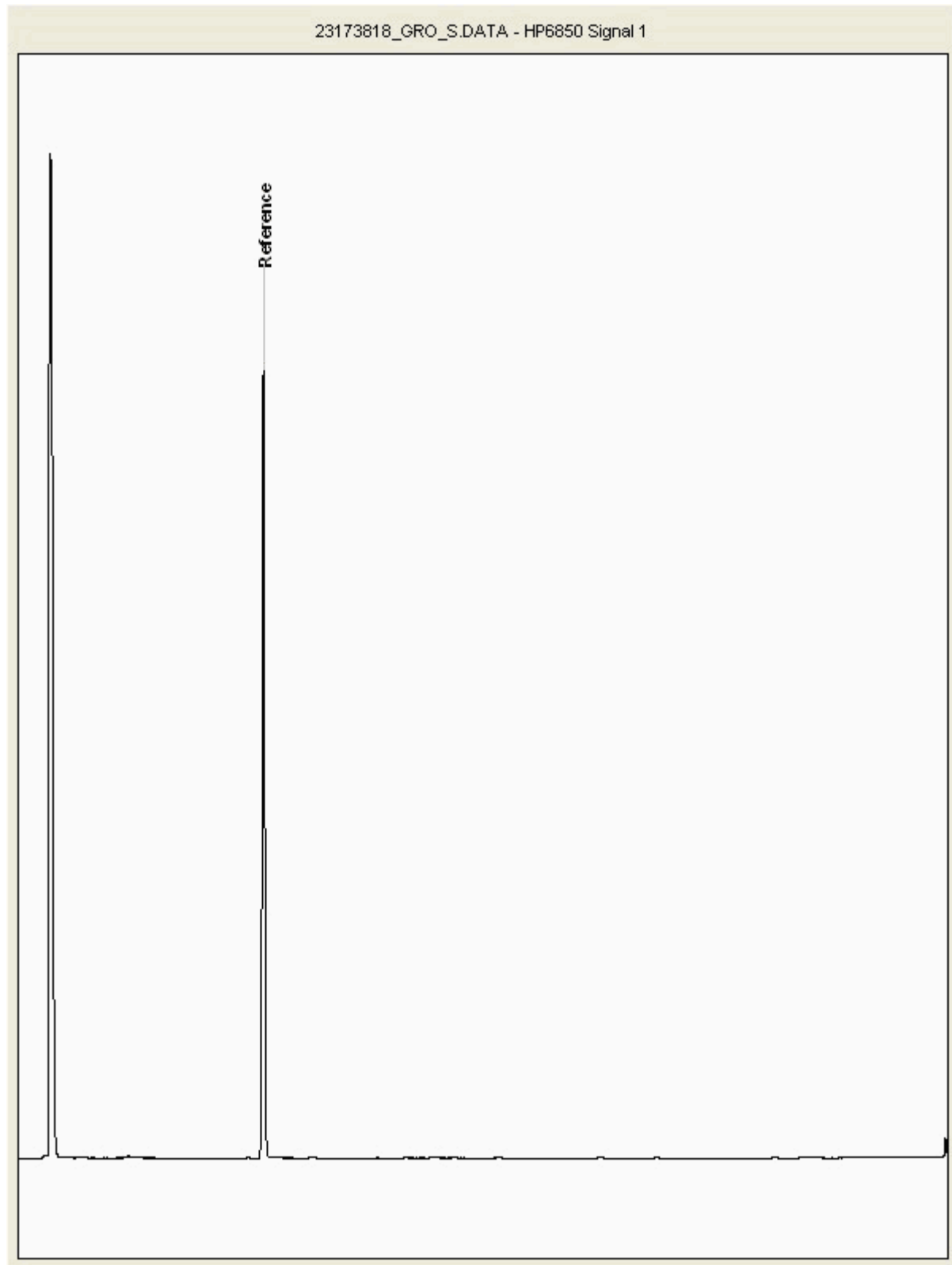
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23173818
Sample ID : TP312

Depth : 0.80 - 0.90





CERTIFICATE OF ANALYSIS

Validated

SDG: 201031-64
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

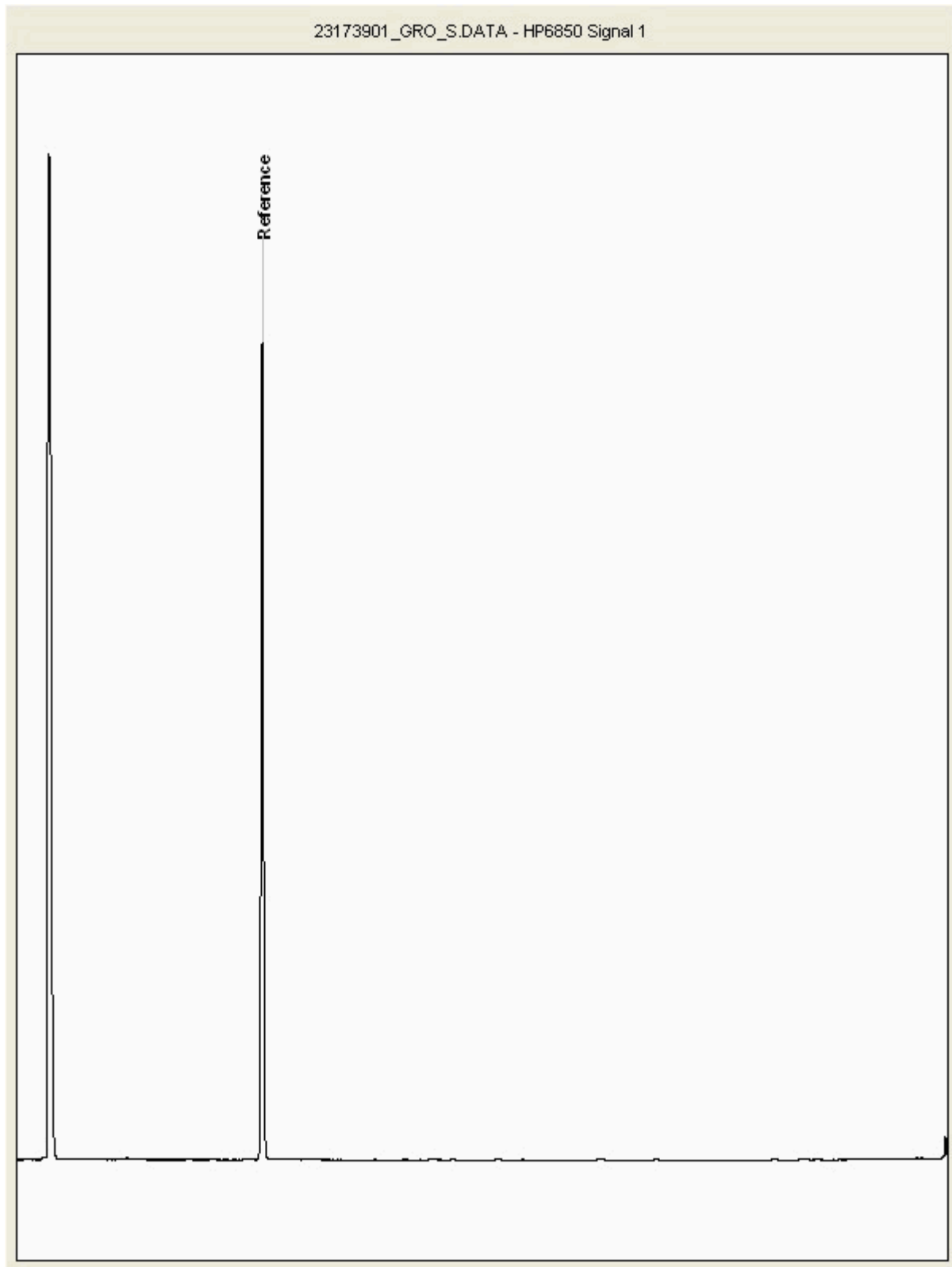
Report Number: 579788
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23173901
Sample ID : TP312

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

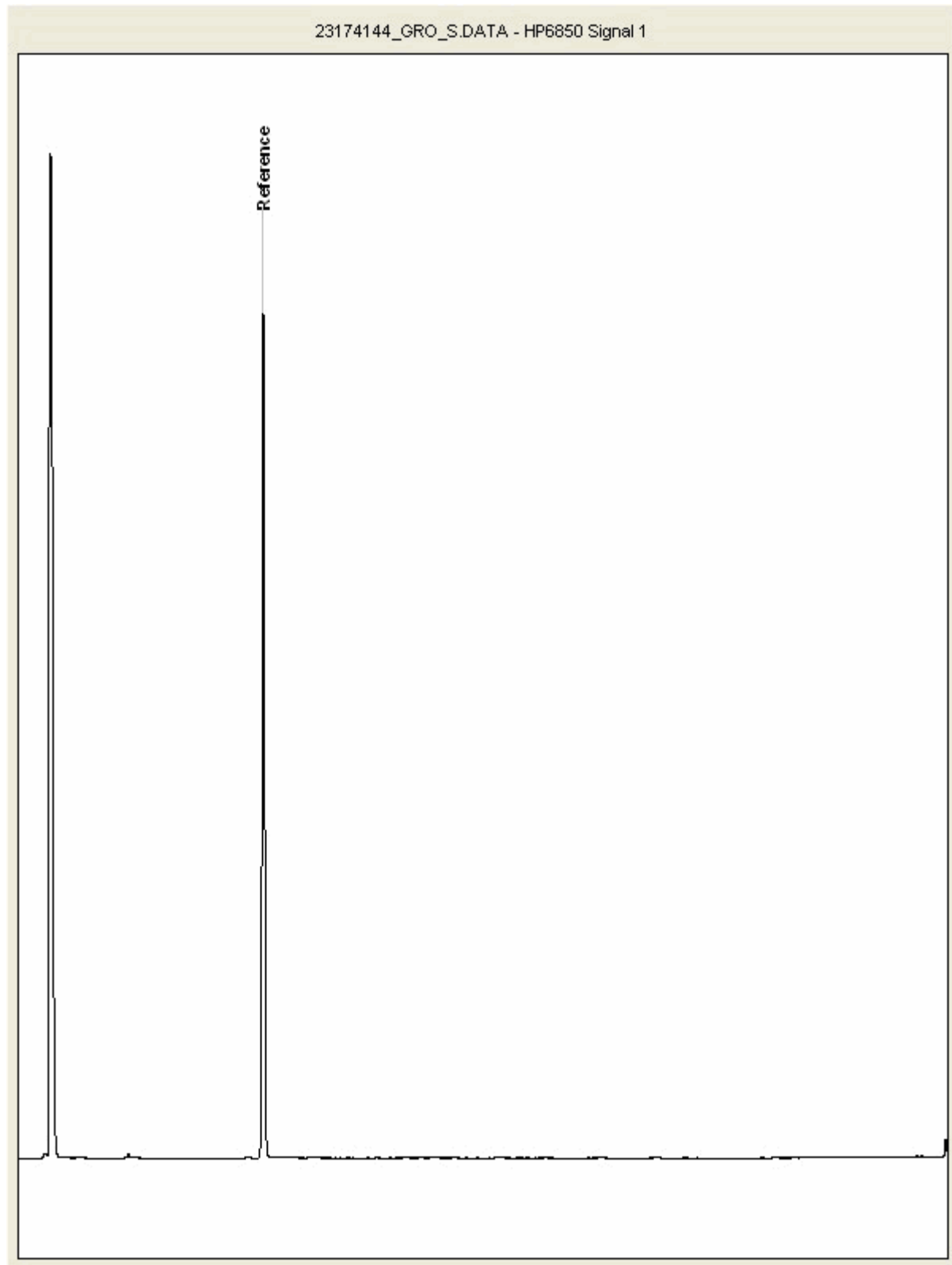
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23174144
Sample ID : TP304

Depth : 3.20 - 3.30





CERTIFICATE OF ANALYSIS

Validated

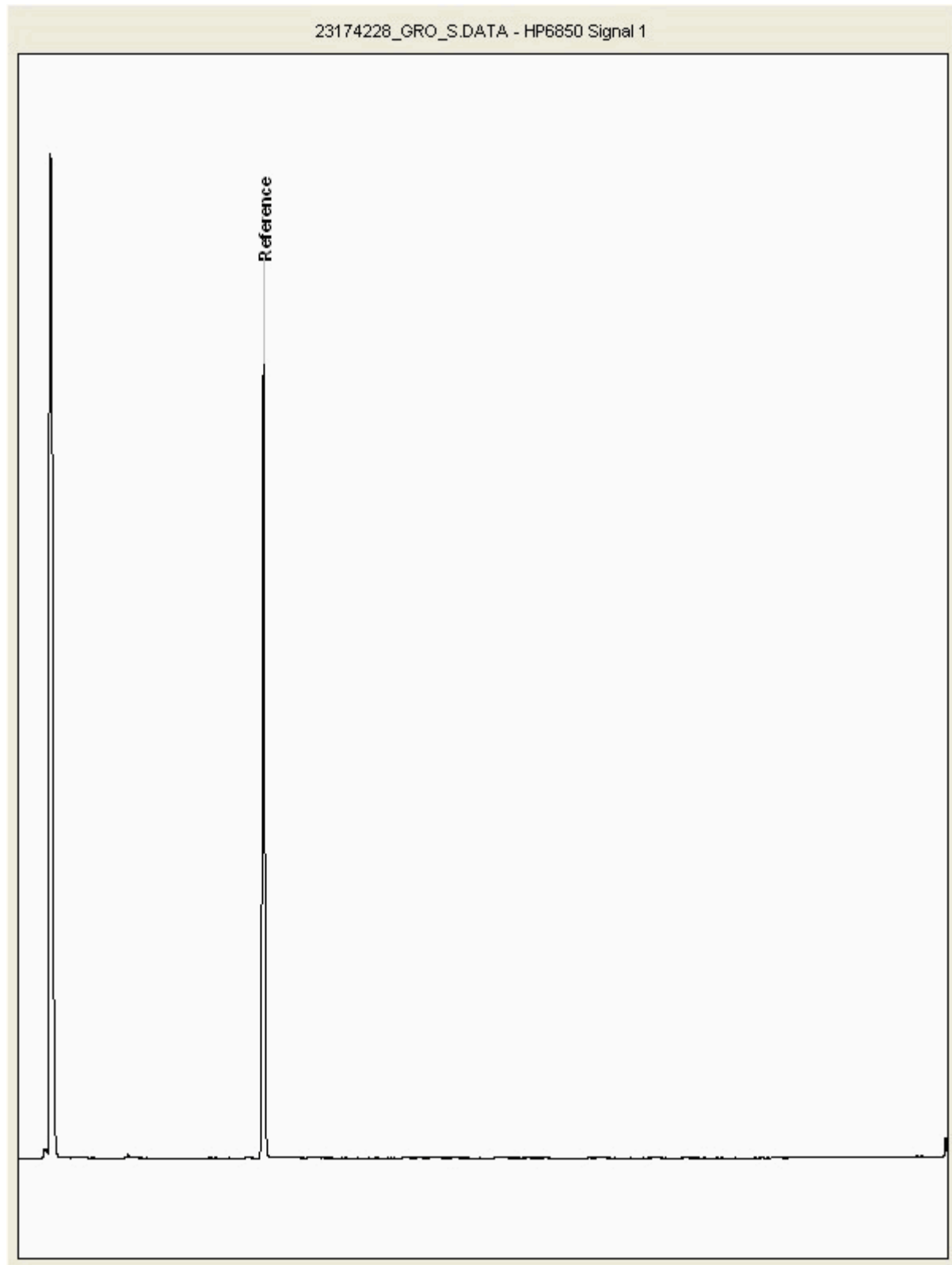
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23174228
Sample ID : TP304

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

Validated

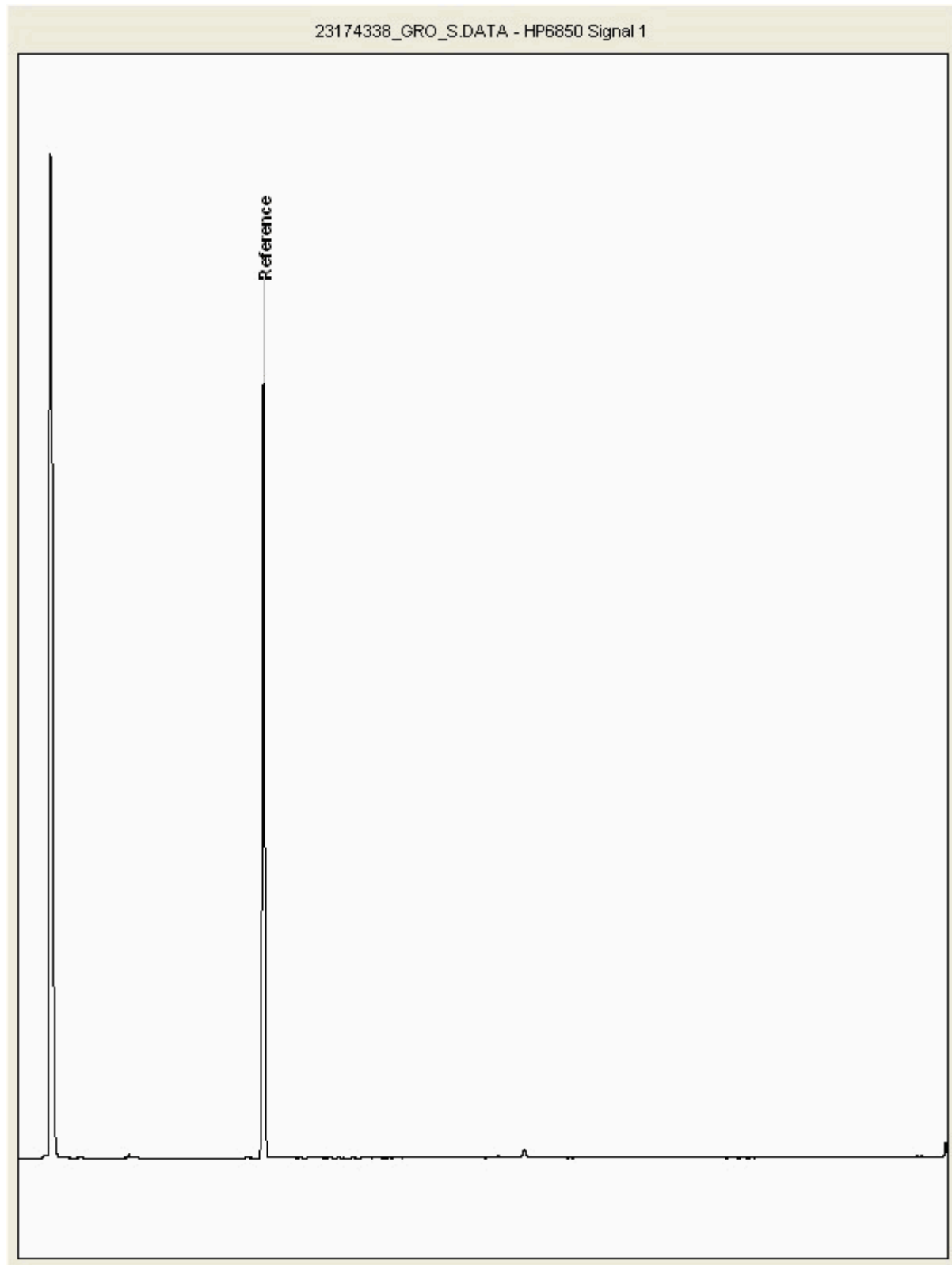
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23174338
Sample ID : TP302

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

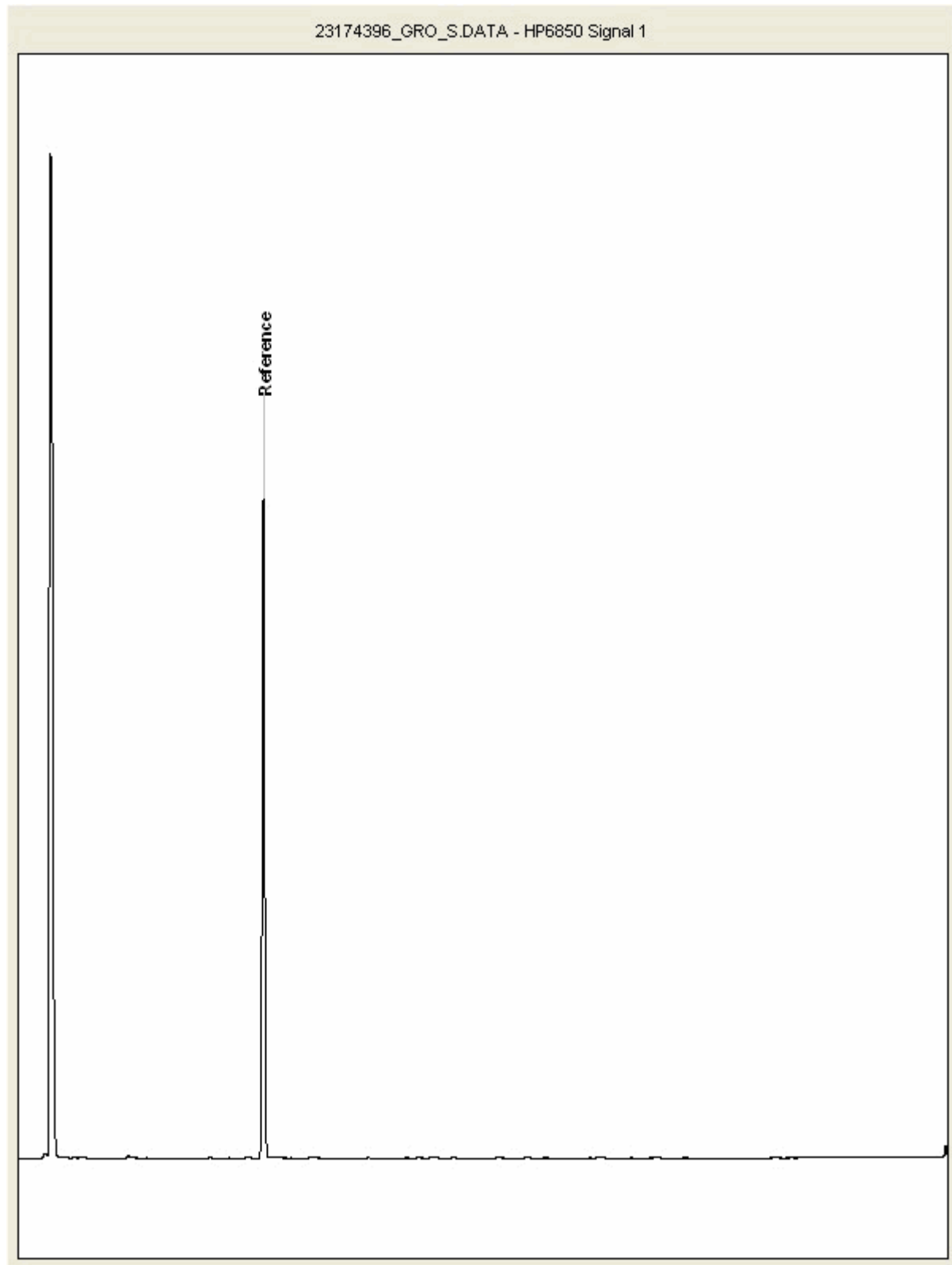
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23174396
Sample ID : TP302

Depth : 3.10 - 3.20





CERTIFICATE OF ANALYSIS

Validated

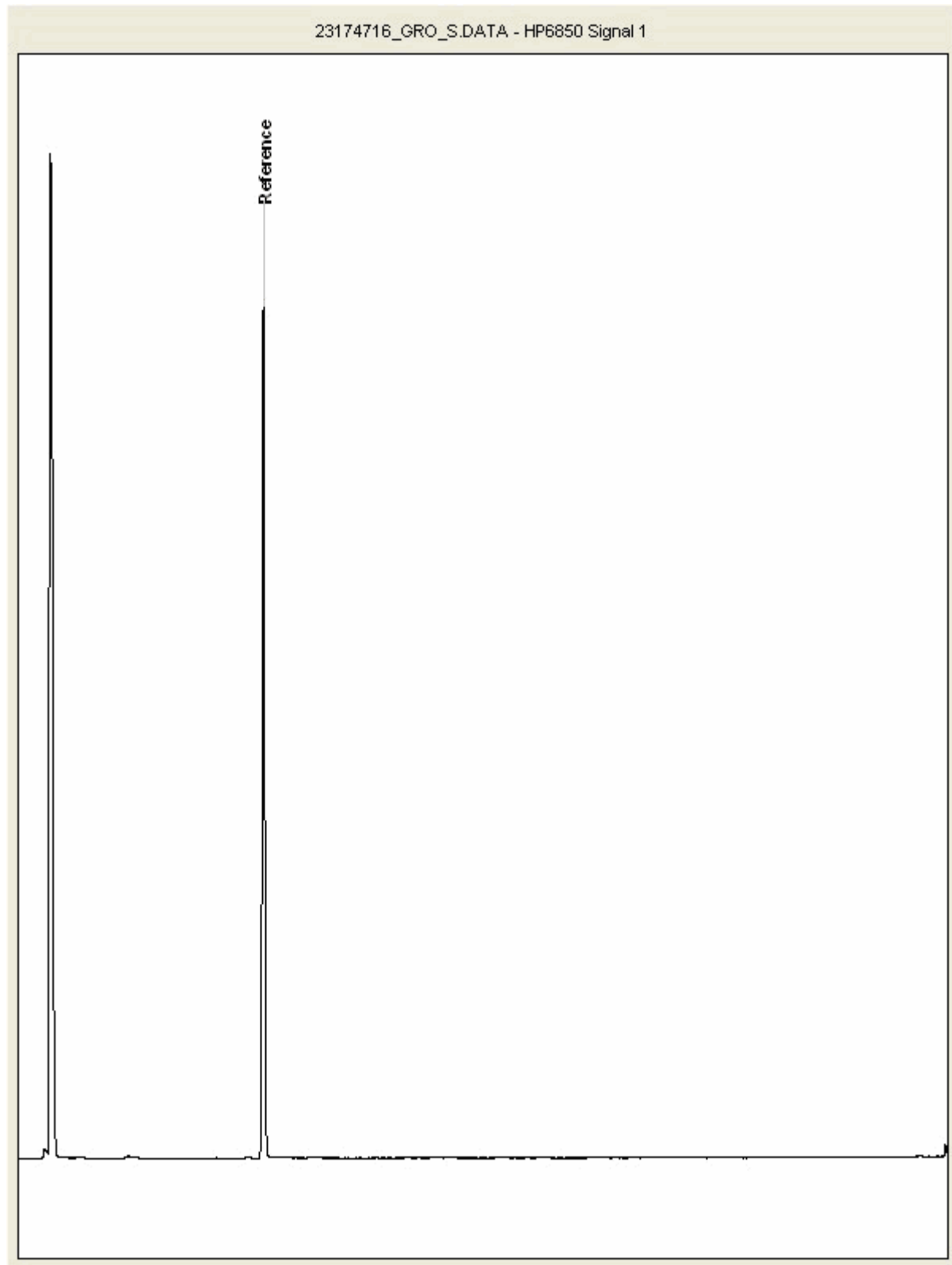
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23174716
Sample ID : TP302

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

Validated

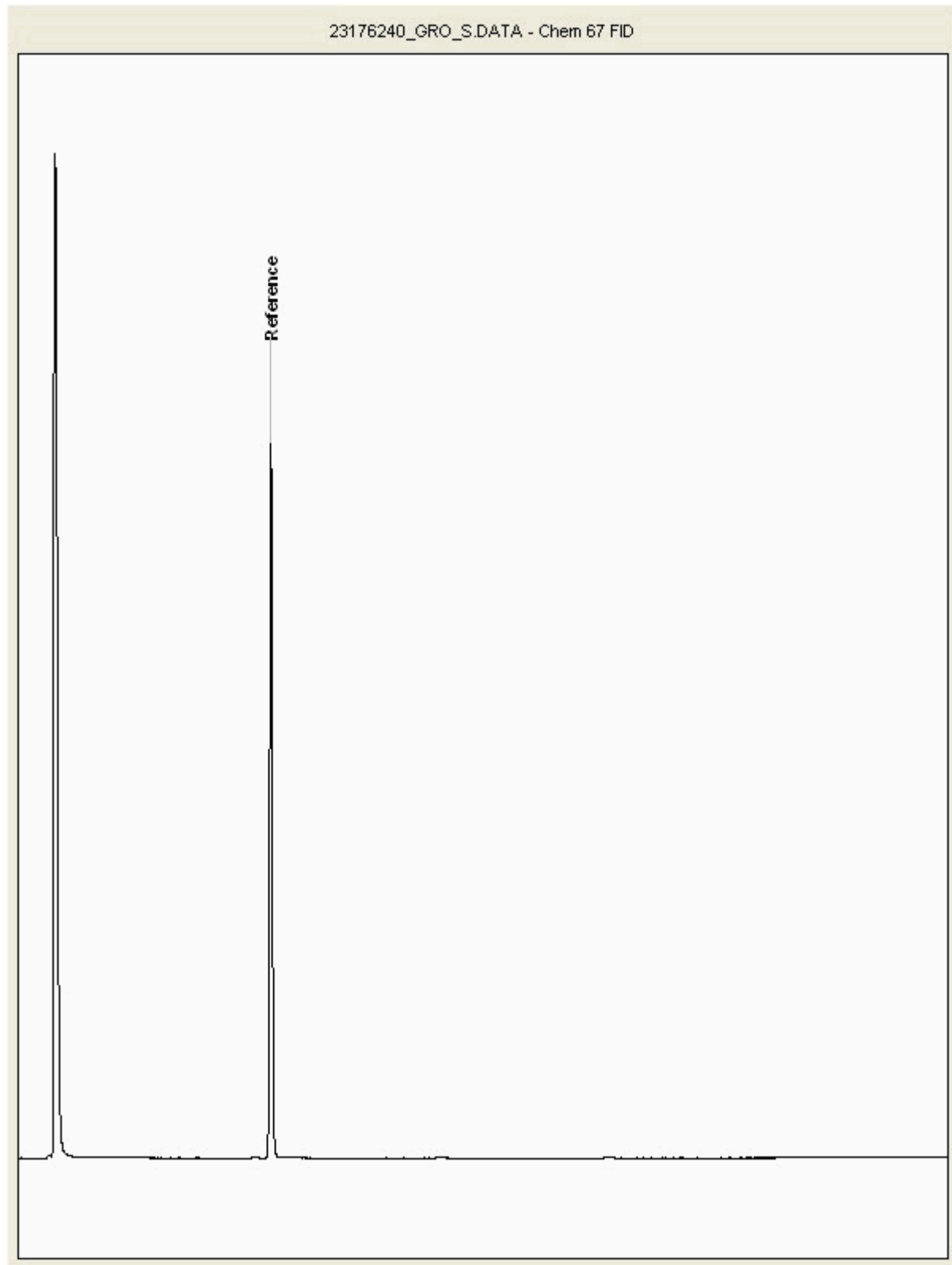
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23176240
Sample ID : TP314

Depth : 1.10 - 1.20





CERTIFICATE OF ANALYSIS

Validated

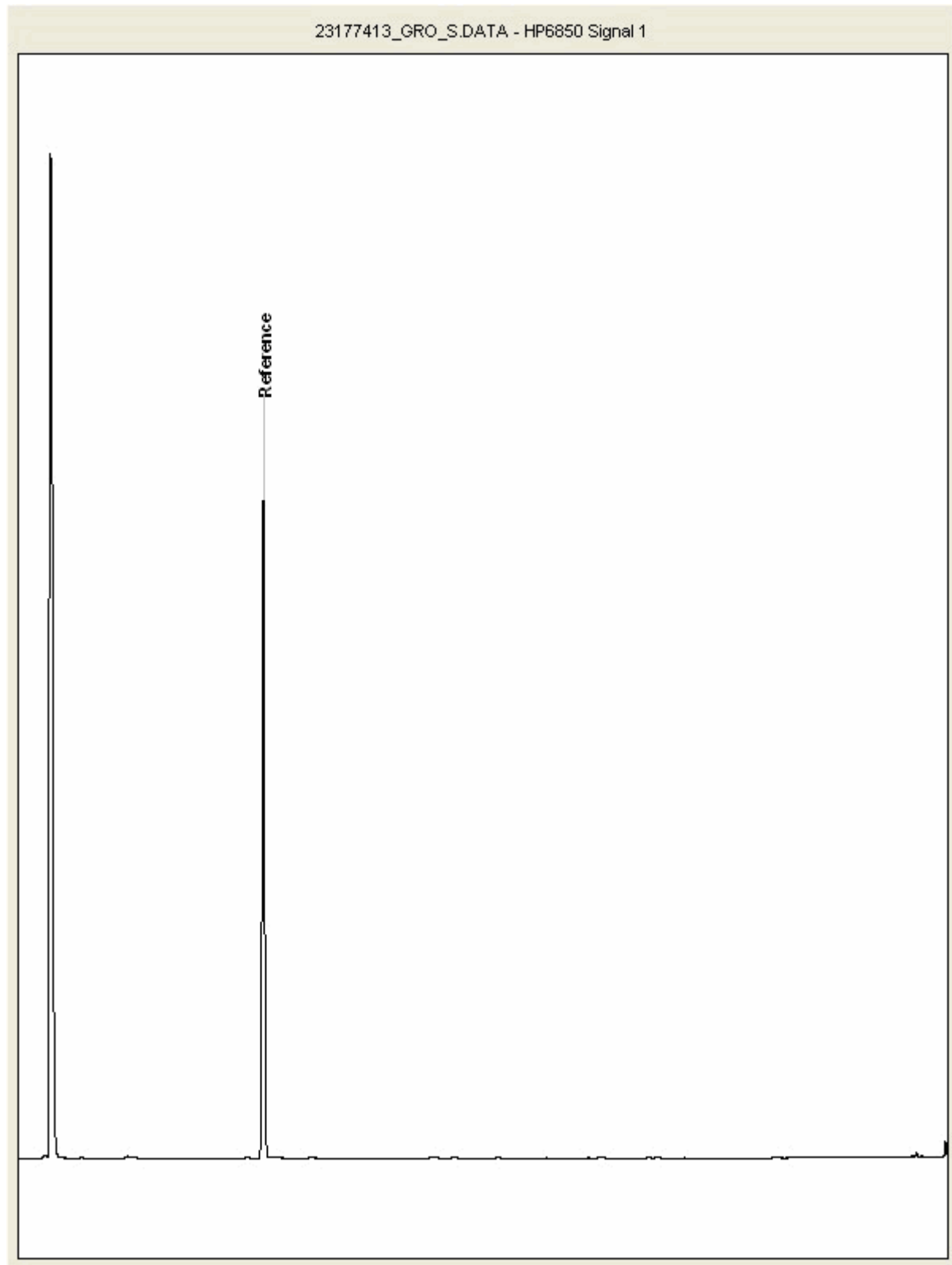
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23177413
Sample ID : TP310

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

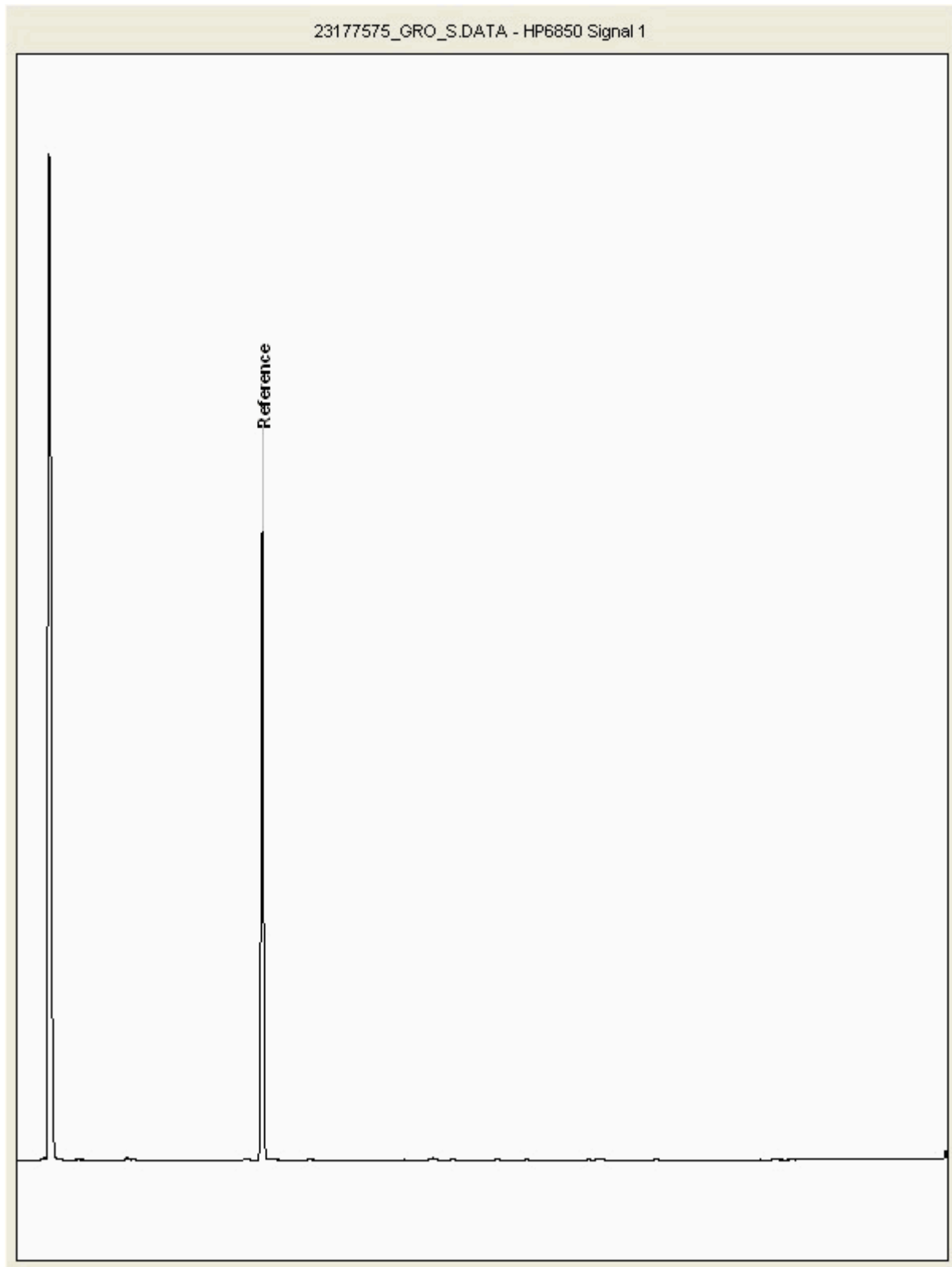
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23177575
Sample ID : TP301

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

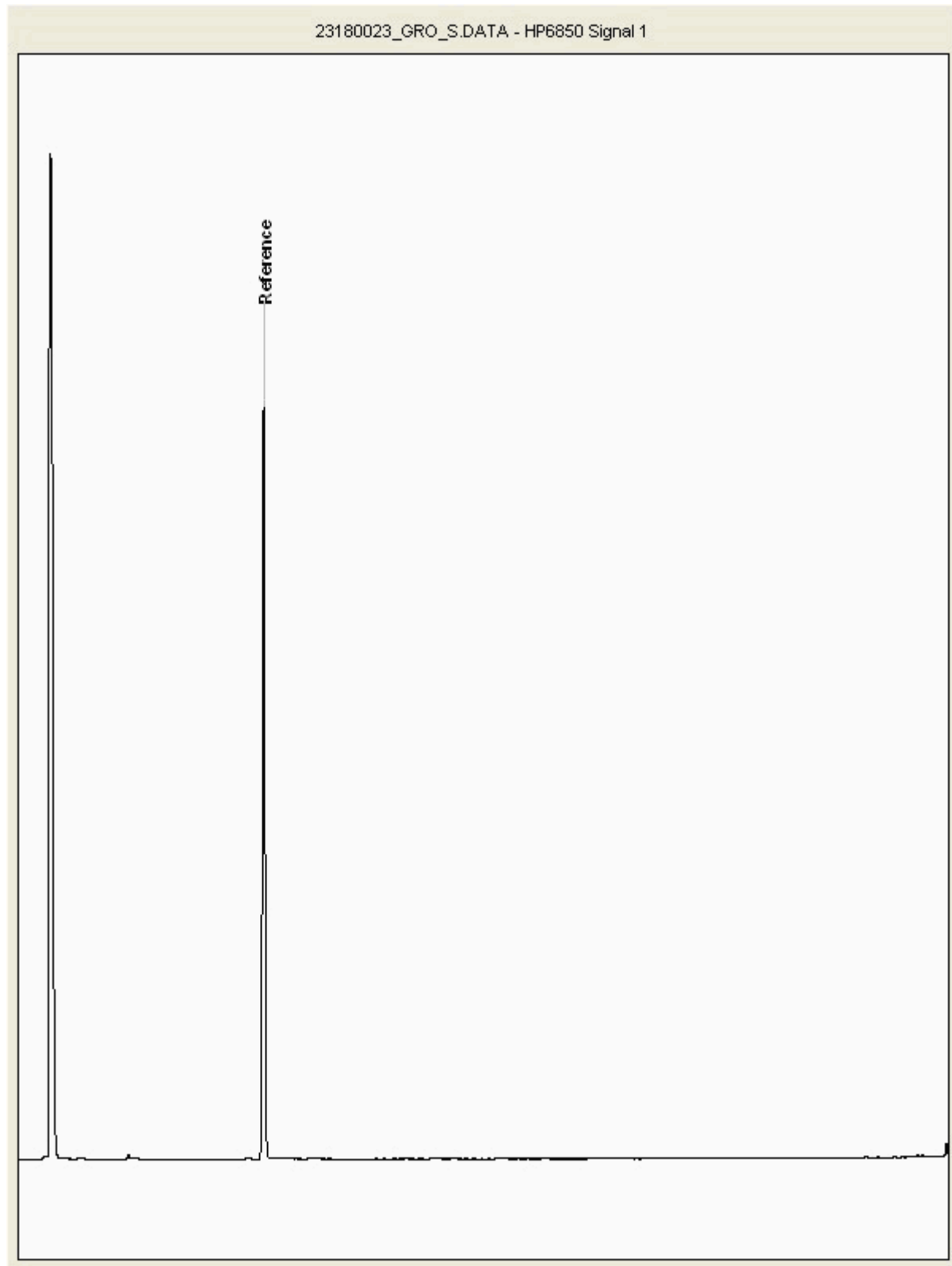
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23180023
Sample ID : TP302

Depth : 1.00 - 1.10





CERTIFICATE OF ANALYSIS

Validated

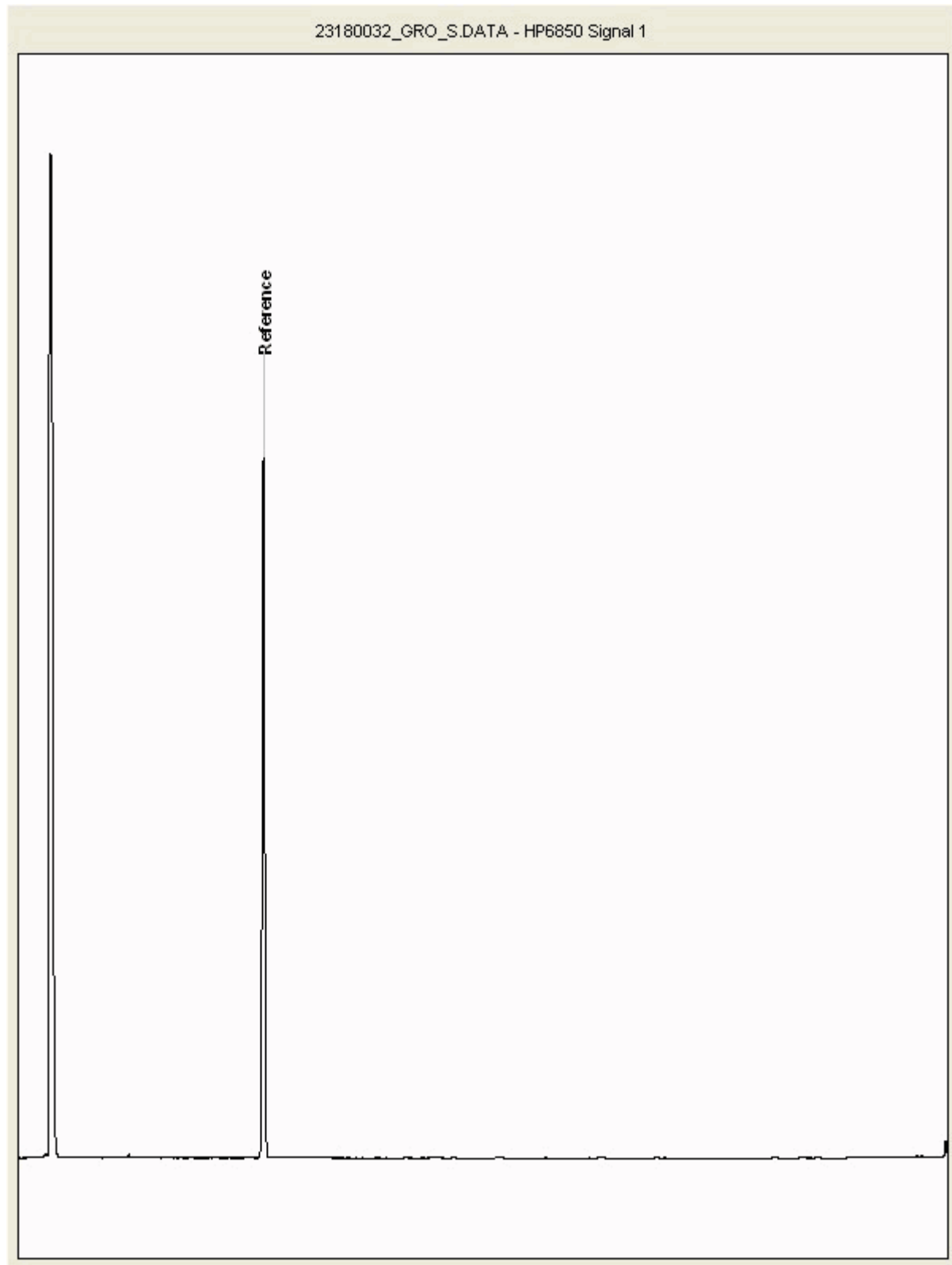
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23180032
Sample ID : TP207

Depth : 1.60 - 1.70





CERTIFICATE OF ANALYSIS

Validated

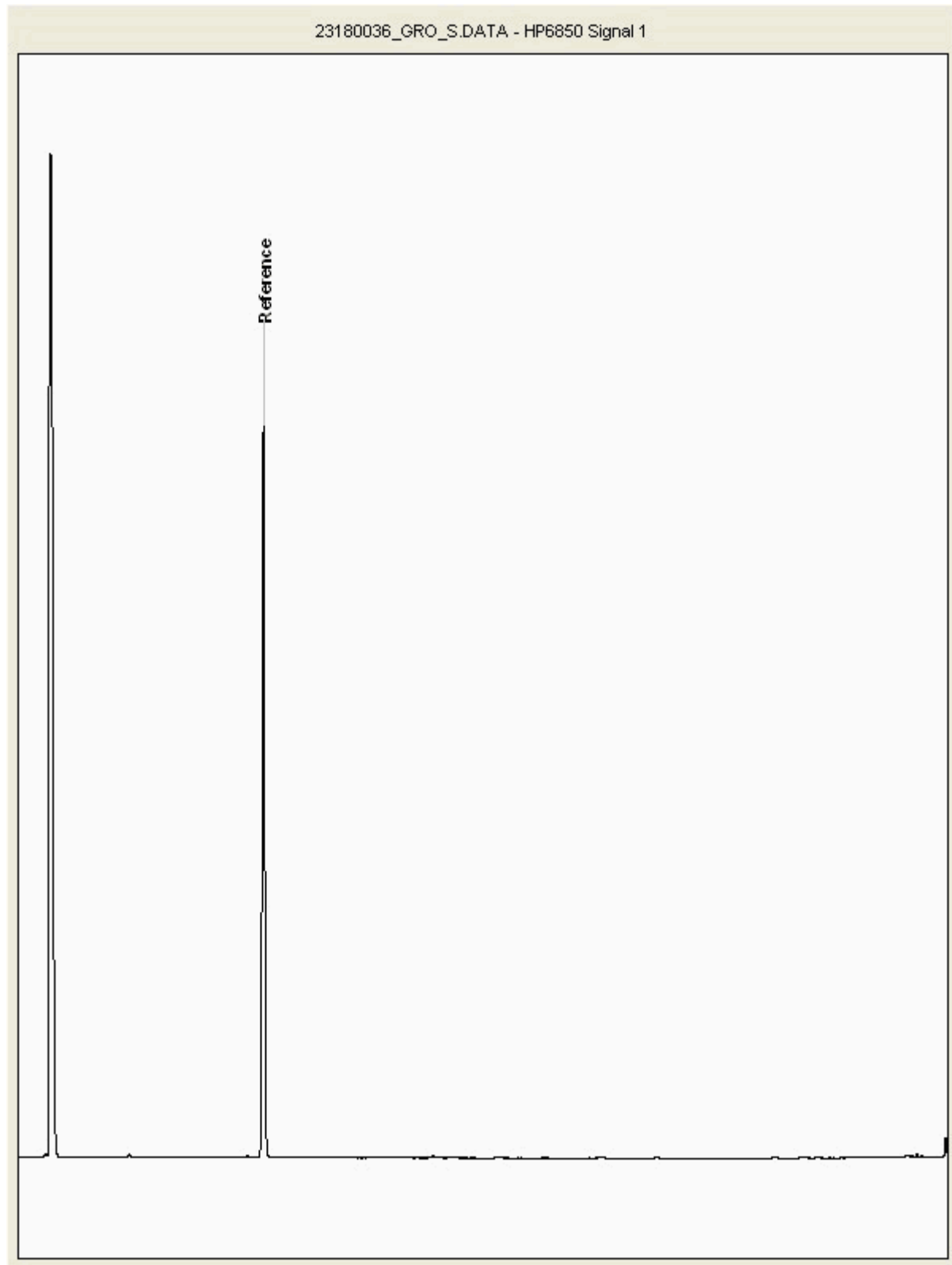
SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23180036
Sample ID : TP207

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

SDG:	201031-64	Client Reference:	2020WW102	Report Number:	579788
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

CERTIFICATE OF ANALYSIS

Date of report Generation: 14 December 2020
Customer: Irish Drilling Limited
Sample Delivery Group (SDG): 201106-115
Your Reference: 2020WW102
Location: Arklow Bank
Report No: 579753

This report has been revised and directly supersedes 576206 in its entirety.

We received 6 samples on Friday November 06, 2020 and 6 of these samples were scheduled for analysis which was completed on Monday December 14, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23193008	TP220	ES1	0.40 - 0.50	30/10/2020
23193018	TP220	ES5	1.90 - 2.00	30/10/2020
23193029	TP221	ES1	0.40 - 0.50	30/10/2020
23193037	TP221	ES5	1.90 - 2.00	30/10/2020
23193044	TP222	ES1	0.40 - 0.50	30/10/2020
23193050	TP222	ES5	1.40 - 1.50	30/10/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
 UNS - Unspecified Solid
 GW - Ground Water
 SW - Surface Water
 LE - Land Leachate
 PL - Prepared Leachate
 PR - Process Water
 SA - Saline Water
 TE - Trade Effluent
 TS - Treated Sewage
 US - Untreated Sewage
 RE - Recreational Water
 DW - Drinking Water Non-regulatory
 UNL - Unspecified Liquid
 SL - Sludge
 G - Gas
 OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Mercury Dissolved

Metals in solid samples by OES

PAH 16 & 17 Calc

PAH by GCMS

PCBs by GCMS

pH

Phenols by HPLC (W)

Sample description

Semi Volatile Organic Compounds

Total Dissolved Solids

Total Organic Carbon

TPH CWG GC (S)

VOC MS (S)

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

NDPs: 0
Tests: 6

23193008	TP220	ES1	0.40 - 0.50	250g Amber Jar (ALE210)	S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
23193008	TP220	0.40 - 0.50	Light Brown	Loamy Sand	Stones	None
23193018	TP220	1.90 - 2.00	Light Brown	Clay	Stones	None
23193029	TP221	0.40 - 0.50	Light Brown	Loamy Sand	Stones	Vegetation
23193037	TP221	1.90 - 2.00	Light Brown	Sand	None	None
23193044	TP222	0.40 - 0.50	Light Brown	Sandy Silt Loam	Stones	Vegetation
23193050	TP222	1.40 - 1.50	Light Brown	Sand	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579753
Superseded Report: 576206

Results Legend			Customer Sample Ref.		TP220	TP220	TP221	TP221	TP222	TP222
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.40 - 1.50
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.				30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.				06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				201106-115	201106-115	201106-115	201106-115	201106-115	201106-115
(F)	Trigger breach confirmed				23193008	23193018	23193029	23193037	23193044	23193050
1-4-5@	Sample deviation (see appendix)				ES1	ES5	ES1	ES5	ES1	ES5
Component	LOD/Units	Method								
Moisture Content Ratio (% of as received sample)	%	PM024	10	11	7	17	14	7.8		
Loss on ignition	<0.7 %	TM018	1.68	2.57	2.65	1.56	3.05	1.59		
			M	M	M	M	M	M		
Organic Carbon, Total	<0.2 %	TM132	<0.2	<0.2	0.277	<0.2	0.406	<0.2		
			M	M	M	M	M	M		
pH	1 pH Units	TM133	8.63	8.67	8.21	8.63	8.21	8.53		
			M	M	M	M	M	M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6		
			#	#	#	#	#	#		
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1		
			M	M	M	M	M	M		
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1		
			M	M	M	M	M	M		
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1		
PCB congener 28	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
			M	M	M	M	M	M		
PCB congener 52	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
			M	M	M	M	M	M		
PCB congener 101	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
			M	M	M	M	M	M		
PCB congener 118	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
			M	M	M	M	M	M		
PCB congener 138	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
			M	M	M	M	M	M		
PCB congener 153	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
			M	M	M	M	M	M		
PCB congener 180	<3 µg/kg	TM168	<3	<3	<3	<3	<3	<3		
			M	M	M	M	M	M		
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	<21	<21	<21	<21	<21	<21		
Sulphide, Easily liberated	<15 mg/kg	TM180	<15	<15	<15	<15	<15	<15		
			@ M	@ M	@ M	@ M	@ M	@ M		
Chromium, Trivalent	<0.9 mg/kg	TM181	18.6	24.7	25.4	17.9	20.7	18.6		
Antimony	<0.6 mg/kg	TM181	<0.6	0.856	0.673	<0.6	<0.6	0.815		
			#	#	#	#	#	#		
Arsenic	<0.6 mg/kg	TM181	8.15	22.3	17.4	11.3	11.6	33.4		
			M	M	M	M	M	M		
Barium	<0.6 mg/kg	TM181	30.9	69.2	24.1	16.6	25.7	29.5		
			#	#	#	#	#	#		
Cadmium	<0.02 mg/kg	TM181	0.0961	0.518	0.301	0.192	0.273	0.306		
			M	M	M	M	M	M		
Chromium	<0.9 mg/kg	TM181	18.6	24.7	25.4	17.9	20.7	18.6		
			M	M	M	M	M	M		
Copper	<1.4 mg/kg	TM181	19.9	34	19	9.51	14.1	17.4		
			M	M	M	M	M	M		
Lead	<0.7 mg/kg	TM181	17	17.7	12.2	8.84	12.6	18.6		
			M	M	M	M	M	M		
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14		
			M	M	M	M	M	M		
Molybdenum	<0.1 mg/kg	TM181	0.381	1.26	1.47	0.589	0.974	1.34		
			#	#	#	#	#	#		
Nickel	<0.2 mg/kg	TM181	27.3	34.2	29.9	11.7	21.3	19.7		
			M	M	M	M	M	M		
Selenium	<1 mg/kg	TM181	<1	<1	<1	<1	<1	<1		
			#	#	#	#	#	#		
Zinc	<1.9 mg/kg	TM181	67.5	94.9	76.5	26.3	70.3	63.6		
			M	M	M	M	M	M		
PAH, Total Detected USEPA 16 + Coronene	<318 µg/kg	TM410	<318	<318	<318	<318	<318	<318		
Coronene	<200 µg/kg	TM410	<200	<200	<200	<200	<200	<200		



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP220	TP220	TP221	TP221	TP222	TP222
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4*\$@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 30/10/2020	1.90 - 2.00 Soil/Solid (S) 30/10/2020	0.40 - 0.50 Soil/Solid (S) 30/10/2020	1.90 - 2.00 Soil/Solid (S) 30/10/2020	0.40 - 0.50 Soil/Solid (S) 30/10/2020	1.40 - 1.50 Soil/Solid (S) 30/10/2020
Phenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pentachlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Nitrobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Isophorone	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachloroethane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobutadiene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Hexachlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dioctyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dimethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Diethyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
n-Dibutyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzofuran	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Carbazole	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Butylbenzyl phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Azobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
4-Bromophenylphenylether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
3-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitrophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Nitroaniline	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579753
Superseded Report: 576206

Semi Volatile Organic Compounds

Results Legend			Customer Sample Ref.	TP220	TP220	TP221	TP221	TP222	TP222
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.40 - 1.50
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			201106-115	201106-115	201106-115	201106-115	201106-115	201106-115
(F)	Trigger breach confirmed			23193008	23193018	23193029	23193037	23193044	23193050
1-4-5@	Sample deviation (see appendix)			ES1	ES5	ES1	ES5	ES1	ES5
Component	LOD/Units	Method							
2-Chlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dimethylphenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4-Dichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Chloronaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
2-Methylnaphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Acenaphthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(b)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(k)fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(a)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Benzo(g,h,i)perylene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Chrysene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluoranthene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Fluorene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Phenanthrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Pyrene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Naphthalene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Dibenzo(a,h)anthracene	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
Bis(2-chloroisopropyl) ether	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100
TIC report		TM157		Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Total SVOC TIC	<100 µg/kg	TM157		<100	<100	<100	<100	<100	<100



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 579753
Superseded Report: 576206

TPH CWG (S)

Results Legend			Customer Sample Ref.	TP220	TP220	TP221	TP221	TP222	TP222
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.40 - 1.50
M	mCERTS accredited.			Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.			30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020
(F)	Trigger breach confirmed			201106-115	201106-115	201106-115	201106-115	201106-115	201106-115
1-4*5@	Sample deviation (see appendix)			23193008	23193018	23193029	23193037	23193044	23193050
				ES1	ES5	ES1	ES5	ES1	ES5
Component	LOD/Units	Method							
GRO Surrogate % recovery**	%	TM089		122	100	97.7	102	127	104
Aliphatics >C5-C6	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aliphatics >C10-C12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C12-C16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C16-C21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aliphatics >C21-C35	<1000 µg/kg	TM414		<1000	<1000	2810	<1000	2110	<1000
Aliphatics >C35-C44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aliphatics >C10-C44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C10-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Aromatics >EC5-EC7	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089		<10	<10	<10	<10	<10	<10
Aromatics > EC10-EC12	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC12-EC16	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC16-EC21	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC21-EC35	<1000 µg/kg	TM414		<1000	<1000	1980	<1000	<1000	<1000
Aromatics >EC35-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Aromatics > EC40-EC44	<1000 µg/kg	TM414		<1000	<1000	<1000	<1000	<1000	<1000
Total Aromatics > EC10-EC44	<5000 µg/kg	TM414		<5000	<5000	<5000	<5000	<5000	<5000
Total Aliphatics & Aromatics >C5-C44	<10000 µg/kg	TM414		<10000	<10000	<10000	<10000	<10000	<10000
Total Aliphatics >C5-C10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
Total Aromatics >EC5-EC10	<50 µg/kg	TM089		<50	<50	<50	<50	<50	<50
GRO >C5-C10	<20 µg/kg	TM089		<20	<20	<20	<20	<20	<20



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

VOC MS (S)

Results Legend			Customer Sample Ref.		TP220	TP220	TP221	TP221	TP222	TP222
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.40 - 1.50
M	mCERTS accredited.				Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
aq	Aqueous / settled sample.				30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020	30/10/2020
diss.filt	Dissolved / filtered sample.				06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020	06/11/2020
tot.unfilt	Total / unfiltered sample.				201106-115	201106-115	201106-115	201106-115	201106-115	201106-115
*	Subcontracted - refer to subcontractor report for accreditation status.				23193008	23193018	23193029	23193037	23193044	23193050
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery				ES1	ES5	ES1	ES5	ES1	ES5
(F)	Trigger breach confirmed									
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dibromofluoromethane**	%	TM116	104	110	111	109	103	105		
Toluene-d8**	%	TM116	99	97.5	98.8	101	98.8	99.3		
4-Bromofluorobenzene**	%	TM116	89.5	79.8	83.1	97.7	86.5	97.8		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 3 M	<6 3 M	<6 M	<6 3 M	<6 3 M	<6 3 M	<6 3 M	<6 3 M
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

VOC MS (S)

Results Legend			Customer Sample Ref.	TP220	TP220	TP221	TP221	TP222	TP222
#	ISO17025 accredited.								
M	mCERTS accredited.								
aq	Aqueous / filtered sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery								
(F)	Trigger breach confirmed								
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method	Depth (m)	0.40 - 0.50 Soil/Solid (S) 30/10/2020	1.90 - 2.00 Soil/Solid (S) 30/10/2020	0.40 - 0.50 Soil/Solid (S) 30/10/2020	1.90 - 2.00 Soil/Solid (S) 30/10/2020	0.40 - 0.50 Soil/Solid (S) 30/10/2020	1.40 - 1.50 Soil/Solid (S) 30/10/2020
1,3-Dichloropropane	<7 µg/kg	TM116	Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.40 - 0.50 Soil/Solid (S) 30/10/2020 06/11/2020 201106-115 23193008 ES1	1.90 - 2.00 Soil/Solid (S) 30/10/2020 06/11/2020 201106-115 23193018 ES5	0.40 - 0.50 Soil/Solid (S) 30/10/2020 06/11/2020 201106-115 23193029 ES1	1.90 - 2.00 Soil/Solid (S) 30/10/2020 06/11/2020 201106-115 23193037 ES5	0.40 - 0.50 Soil/Solid (S) 30/10/2020 06/11/2020 201106-115 23193044 ES1	1.40 - 1.50 Soil/Solid (S) 30/10/2020 06/11/2020 201106-115 23193050 ES5
1,3-Dichloropropane	<7 µg/kg	TM116		<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116		<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116		<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,3-Trichloropropane	<16 µg/kg	TM116		<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116		<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116		<10	<10	<10	<10	<10	<10
4-Isopropyltoluene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116		<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116		<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116		<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116		<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116		<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116		<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116		<13 M	<13 M	<13 M	<13 M	<13 M	<13 M



CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Asbestos Identification - Solid Samples

Results Legend

ISO17025 accredited.
M mCERTS accredited.
* Subcontracted test.
(F) Trigger breach confirmed
1-5&*@ Sample deviation (see appendix)

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP220ES1 0.40 - 0.50 SOLID 30/10/2020 00:00:00 06/11/2020 08:40:00 201106-115 23193008 TM048	13/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP220ES5 1.90 - 2.00 SOLID 30/10/2020 00:00:00 06/11/2020 08:40:00 201106-115 23193018 TM048	13/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP221ES1 0.40 - 0.50 SOLID 30/10/2020 00:00:00 06/11/2020 08:40:00 201106-115 23193029 TM048	13/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP221ES5 1.90 - 2.00 SOLID 30/10/2020 00:00:00 06/11/2020 08:40:00 201106-115 23193037 TM048	13/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP222ES1 0.40 - 0.50 SOLID 30/10/2020 00:00:00 06/11/2020 08:40:00 201106-115 23193044 TM048	13/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Received SDG Original Sample Method Number	TP222ES5 1.40 - 1.50 SOLID 30/10/2020 00:00:00 06/11/2020 08:40:00 201106-115 23193050 TM048	13/11/2020	Barbara Urbanek-Walsh	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected



CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.099	Natural Moisture Content (%)	9.89
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	91
Particle Size <4mm	>95%		

Case

SDG	201106-115
Lab Sample Number(s)	23193008
Sampled Date	30-Oct-2020
Customer Sample Ref.	TP220 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000688	<0.0005	0.00688	<0.005	-	-	-
Barium	0.000871	<0.0002	0.00871	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00414	<0.0003	0.0414	<0.003	-	-	-
Lead	0.000736	<0.0002	0.00736	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000698	<0.0004	0.00698	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00159	<0.001	0.0159	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	20.7	<5	207	<50	-	-	-

Leach Test Information

Date Prepared	09-Nov-2020
pH (pH Units)	8.16
Conductivity (µS/cm)	9.04
Temperature (°C)	20.60
Volume Leachant (Litres)	0.891

Mcerts Certification does not apply to leachates

14/12/2020 13:15:23

13:13:58 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.102	Natural Moisture Content (%)	13.9
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	87.8
Particle Size <4mm	>95%		

Case

SDG	201106-115
Lab Sample Number(s)	23193018
Sampled Date	30-Oct-2020
Customer Sample Ref.	TP220 ES5
Depth (m)	1.90 - 2.00

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.00442	<0.0002	0.0442	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.000495	<0.0003	0.00495	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	0.00625	<0.003	0.0625	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00183	<0.001	0.0183	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	62	<5	620	<50	-	-	-

Leach Test Information

Date Prepared	09-Nov-2020
pH (pH Units)	8.13
Conductivity (µS/cm)	75.60
Temperature (°C)	21.20
Volume Leachant (Litres)	0.888

Mcerts Certification does not apply to leachates

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CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.098	Natural Moisture Content (%)	9.08
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	91.7
Particle Size <4mm	>95%		

Case

SDG	201106-115
Lab Sample Number(s)	23193029
Sampled Date	30-Oct-2020
Customer Sample Ref.	TP221 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	5.93	<3	59.3	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAf)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.000688	<0.0005	0.00688	<0.005	-	-	-
Barium	0.00138	<0.0002	0.0138	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00663	<0.0003	0.0663	<0.003	-	-	-
Lead	0.000322	<0.0002	0.00322	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000748	<0.0004	0.00748	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00652	<0.001	0.0652	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	13.5	<5	135	<50	-	-	-

Leach Test Information

Date Prepared	09-Nov-2020
pH (pH Units)	7.64
Conductivity (µS/cm)	10.50
Temperature (°C)	20.80
Volume Leachant (Litres)	0.892

Mcerts Certification does not apply to leachates

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13:13:58 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.108	Natural Moisture Content (%)	20.7
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	82.8
Particle Size <4mm	>95%		

Case

SDG	201106-115
Lab Sample Number(s)	23193037
Sampled Date	30-Oct-2020
Customer Sample Ref.	TP221 ES5
Depth (m)	1.90 - 2.00

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.000716	<0.0002	0.00716	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	<0.001	<0.001	<0.01	<0.01	-	-	-
Copper	0.00049	<0.0003	0.0049	<0.003	-	-	-
Lead	0.000627	<0.0002	0.00627	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00139	<0.001	0.0139	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	15.1	<5	151	<50	-	-	-

Leach Test Information

Date Prepared	09-Nov-2020
pH (pH Units)	5.75
Conductivity (µS/cm)	10.40
Temperature (°C)	19.70
Volume Leachant (Litres)	0.882

Mcerts Certification does not apply to leachates

14/12/2020 13:15:23

13:13:58 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference		Site Location	Arklow Bank
Mass Sample taken (kg)	0.107	Natural Moisture Content (%)	18.4
Mass of dry sample (kg)	0.090	Dry Matter Content (%)	84.4
Particle Size <4mm	>95%		

Case

SDG	201106-115
Lab Sample Number(s)	23193044
Sampled Date	30-Oct-2020
Customer Sample Ref.	TP222 ES1
Depth (m)	0.40 - 0.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	5.42	<3	54.2	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	0.0000124	<0.00001	0.000124	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	0.00098	<0.0005	0.0098	<0.005	-	-	-
Barium	0.0828	<0.0002	0.828	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00129	<0.001	0.0129	<0.01	-	-	-
Copper	0.00434	<0.0003	0.0434	<0.003	-	-	-
Lead	0.000915	<0.0002	0.00915	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	0.000753	<0.0004	0.00753	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.0385	<0.001	0.385	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	17.5	<5	175	<50	-	-	-

Leach Test Information

Date Prepared	09-Nov-2020
pH (pH Units)	8.03
Conductivity (µS/cm)	18.00
Temperature (°C)	21.30
Volume Leachant (Litres)	0.883

Mcerts Certification does not apply to leachates

14/12/2020 13:15:23

13:13:58 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

CEN 10:1 SINGLE STAGE LEACHATE TEST

CEN ANALYTICAL RESULTS

REF : BS EN 12457/2

Client Reference	
Mass Sample taken (kg)	0.098
Mass of dry sample (kg)	0.090
Particle Size <4mm	>95%

Site Location	Arklow Bank
Natural Moisture Content (%)	9.48
Dry Matter Content (%)	91.3

Case

SDG	201106-115
Lab Sample Number(s)	23193050
Sampled Date	30-Oct-2020
Customer Sample Ref.	TP222 ES5
Depth (m)	1.40 - 1.50

Eluate Analysis	C ₂ Conc ⁿ in 10:1 eluate (mg/l)		A ₂ 10:1 conc ⁿ leached (mg/kg)				
	Result	Limit of Detection	Result	Limit of Detection			
Dissolved Organic Carbon	<3	<3	<30	<30	-	-	-
Fluoride	<0.5	<0.5	<5	<5	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.0001	<0.0001	-	-	-
Antimony	<0.001	<0.001	<0.01	<0.01	-	-	-
Arsenic	<0.0005	<0.0005	<0.005	<0.005	-	-	-
Barium	0.000541	<0.0002	0.00541	<0.002	-	-	-
Cadmium	<0.00008	<0.00008	<0.0008	<0.0008	-	-	-
Chromium	0.00111	<0.001	0.0111	<0.01	-	-	-
Copper	0.000655	<0.0003	0.00655	<0.003	-	-	-
Lead	<0.0002	<0.0002	<0.002	<0.002	-	-	-
Molybdenum	<0.003	<0.003	<0.03	<0.03	-	-	-
Nickel	<0.0004	<0.0004	<0.004	<0.004	-	-	-
Selenium	<0.001	<0.001	<0.01	<0.01	-	-	-
Zinc	0.00224	<0.001	0.0224	<0.01	-	-	-
Chloride	<2	<2	<20	<20	-	-	-
Sulphate (soluble)	<2	<2	<20	<20	-	-	-
Cresols by HPLC (W)	<0.006	<0.006	<0.06	<0.06	-	-	-
Phenol by HPLC (W)	<0.002	<0.002	<0.02	<0.02	-	-	-
Total Monohydric Phenols (W)	<0.016	<0.016	<0.16	<0.16	-	-	-
Xylenols by HPLC (W)	<0.008	<0.008	<0.08	<0.08	-	-	-
Total Dissolved Solids	23.4	<5	234	<50	-	-	-

Leach Test Information

Date Prepared	09-Nov-2020
pH (pH Units)	8.03
Conductivity (µS/cm)	7.85
Temperature (°C)	21.20
Volume Leachant (Litres)	0.891

Mcerts Certification does not apply to leachates

14/12/2020 13:15:23

13:13:58 14/12/2020



CERTIFICATE OF ANALYSIS

Validated

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) by Headspace GC-FID (C4-C12)
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM132	In - house Method	ELTRA CS800 Operators Guide
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the Skalar SANS+ System Segmented Flow Analyser
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM218	Shaker extraction - EPA method 3546.	The determination of PAH in soil samples by GC-MS
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC
TM410	Shaker extraction-In house coronene method	Determination of Coronene in soils by GCMS
TM414	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID
TM415	Analysis of Petroleum Hydrocarbons in Environmental Media.	Determination of Extractable Petroleum Hydrocarbons in Soils by GCxGC-FID

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	23193008	23193018	23193029	23193037	23193044	23193050
	TP220	TP220	TP221	TP221	TP222	TP222
	ES1	ES5	ES1	ES5	ES1	ES5
	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.90 - 2.00	0.40 - 0.50	1.40 - 1.50
	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (w)	16-Nov-2020	16-Nov-2020	16-Nov-2020	16-Nov-2020	16-Nov-2020	16-Nov-2020
Asbestos ID in Solid Samples	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020
CEN 10:1 Leachate (1 Stage)	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020	11-Nov-2020
CEN Readings	13-Nov-2020	13-Nov-2020	13-Nov-2020	14-Nov-2020	13-Nov-2020	13-Nov-2020
Chromium III	16-Nov-2020	16-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	16-Nov-2020
Coronene	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
Cyanide Comp/Free/Total/Thiocyanate	12-Nov-2020	12-Nov-2020	11-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020
Dissolved Metals by ICP-MS	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020	19-Nov-2020
Dissolved Organic/Inorganic Carbon	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020
Easily Liberated Sulphide	11-Nov-2020	11-Nov-2020	11-Nov-2020	13-Nov-2020	11-Nov-2020	11-Nov-2020
EPH by GCxGC-FID	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020	14-Dec-2020
EPH CWG GC (S)	10-Nov-2020	11-Nov-2020	11-Nov-2020	10-Nov-2020	11-Nov-2020	11-Nov-2020
Fluoride	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020
GRO by GC-FID (S)	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
Hexavalent Chromium (s)	16-Nov-2020	16-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	16-Nov-2020
Loss on Ignition in soils	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020
Mercury Dissolved	16-Nov-2020	13-Nov-2020	16-Nov-2020	16-Nov-2020	16-Nov-2020	13-Nov-2020
Metals in solid samples by OES	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020
Moisture at 105C	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020	09-Nov-2020
PAH 16 & 17 Calc	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
PAH by GCMS	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
PCBs by GCMS	11-Nov-2020	11-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020
pH	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020
Phenols by HPLC (W)	16-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	13-Nov-2020	16-Nov-2020
Sample description	07-Nov-2020	07-Nov-2020	07-Nov-2020	07-Nov-2020	07-Nov-2020	07-Nov-2020
Semi Volatile Organic Compounds	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020
Total Dissolved Solids	16-Nov-2020	16-Nov-2020	16-Nov-2020	16-Nov-2020	16-Nov-2020	16-Nov-2020
Total Organic Carbon	12-Nov-2020	12-Nov-2020	12-Nov-2020	12-Nov-2020	16-Nov-2020	12-Nov-2020
TPH CWG GC (S)	10-Nov-2020	11-Nov-2020	11-Nov-2020	10-Nov-2020	11-Nov-2020	11-Nov-2020
VOC MS (S)	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020	10-Nov-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

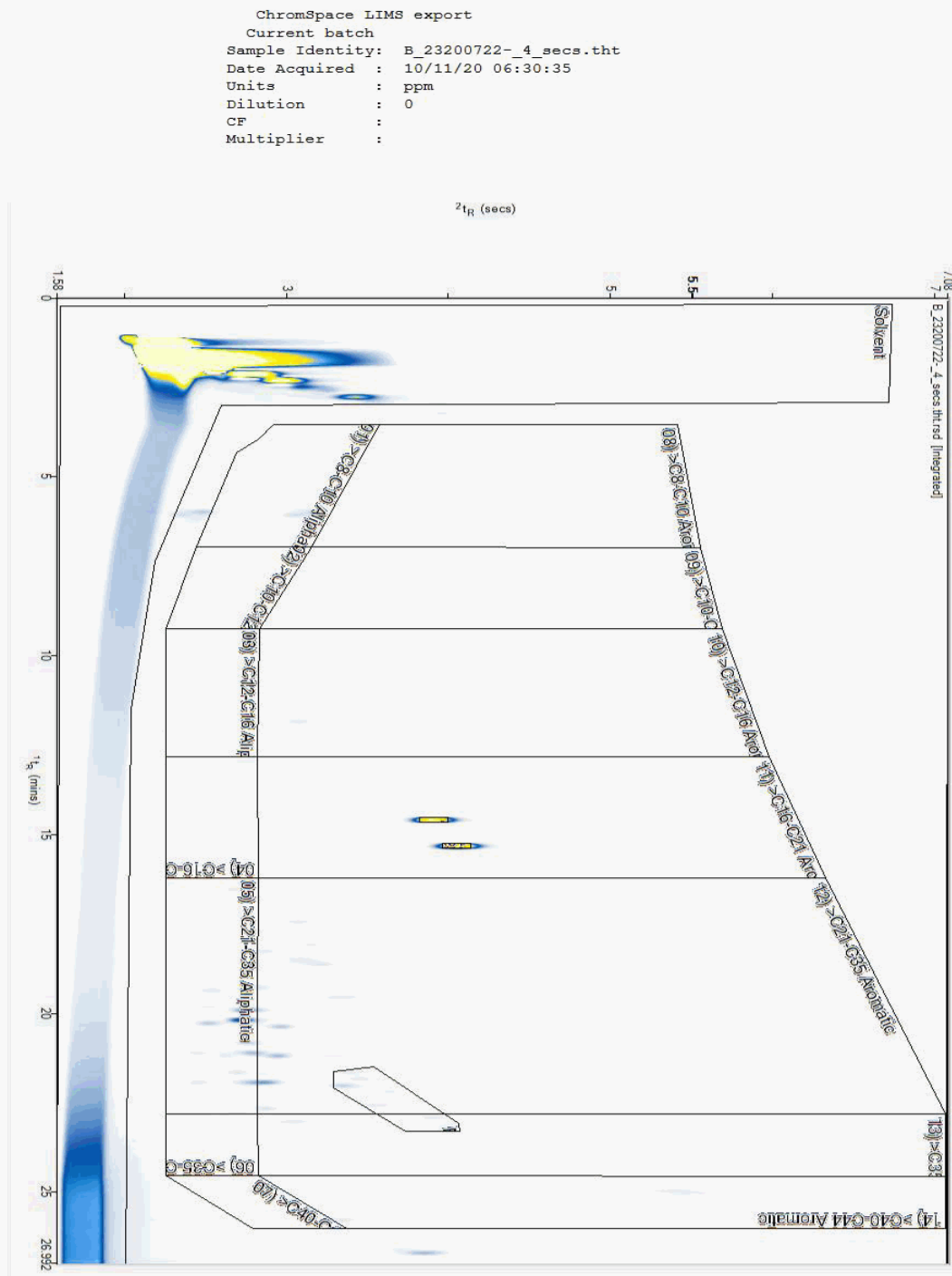
Report Number: 579753
Superseded Report: 576206

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23200722
Sample ID : TP221

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

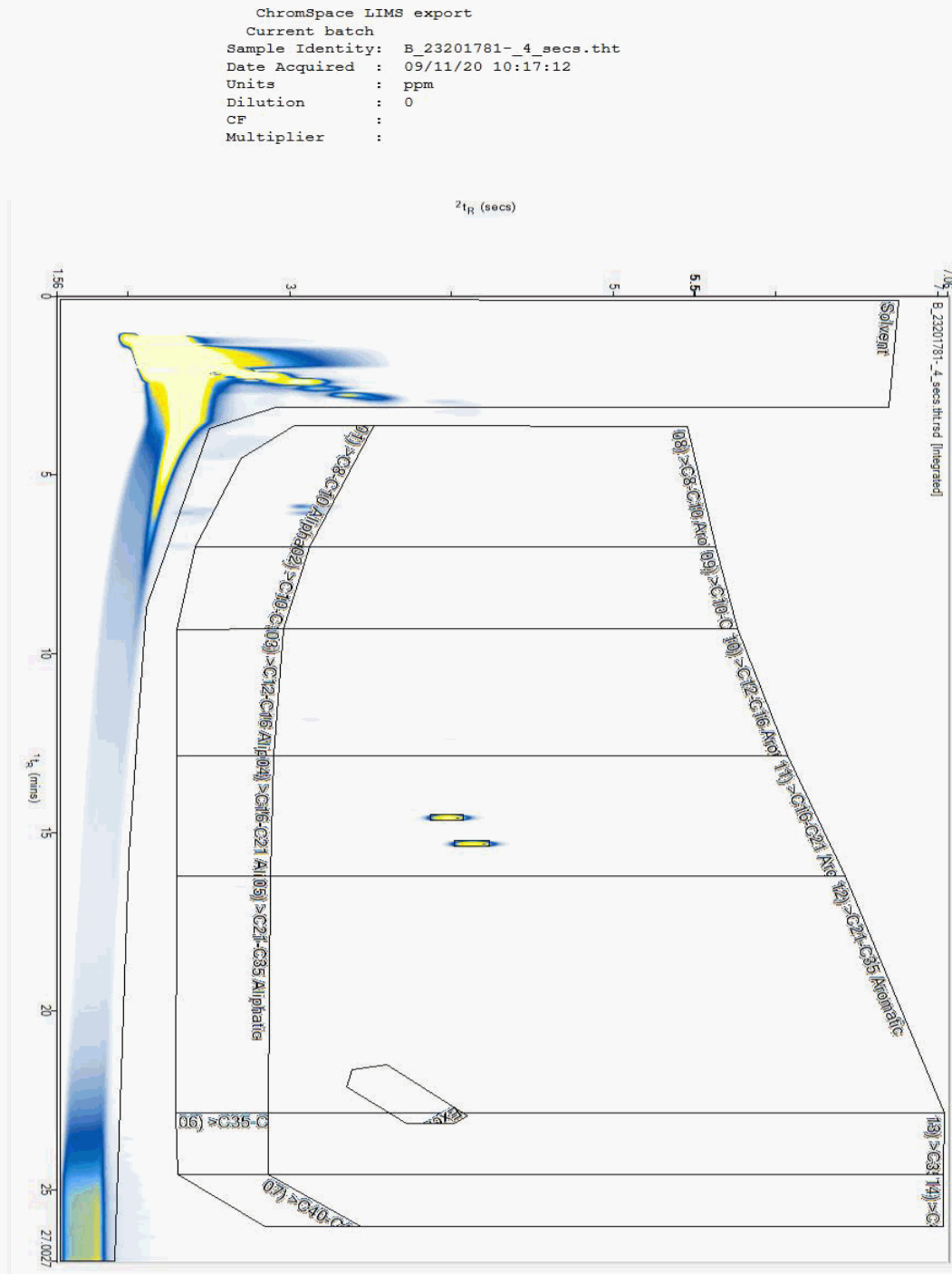
SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23201781
Sample ID : TP221

Depth : 1.90 - 2.00





CERTIFICATE OF ANALYSIS

Validated

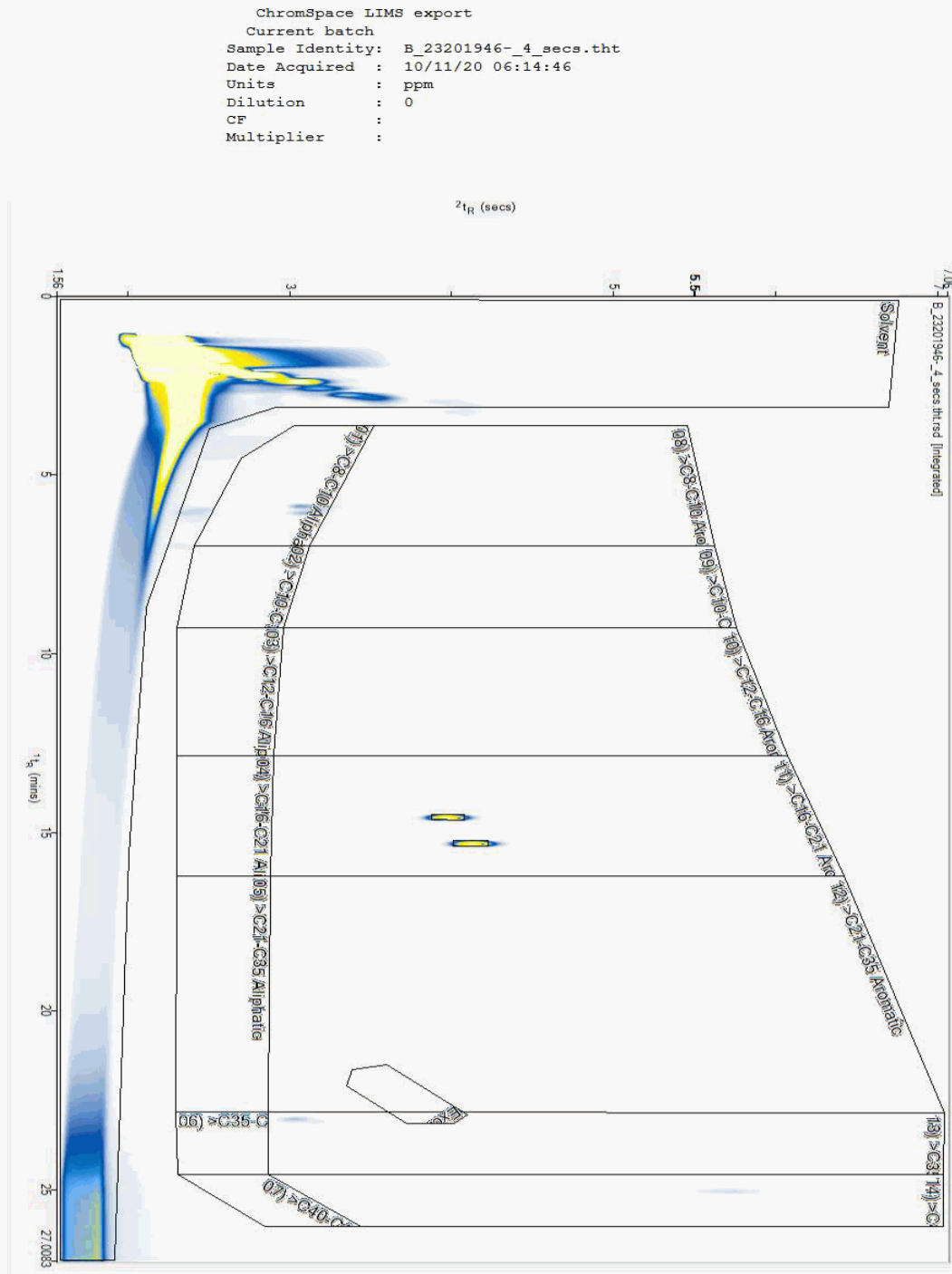
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Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23201946
Sample ID : TP222

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

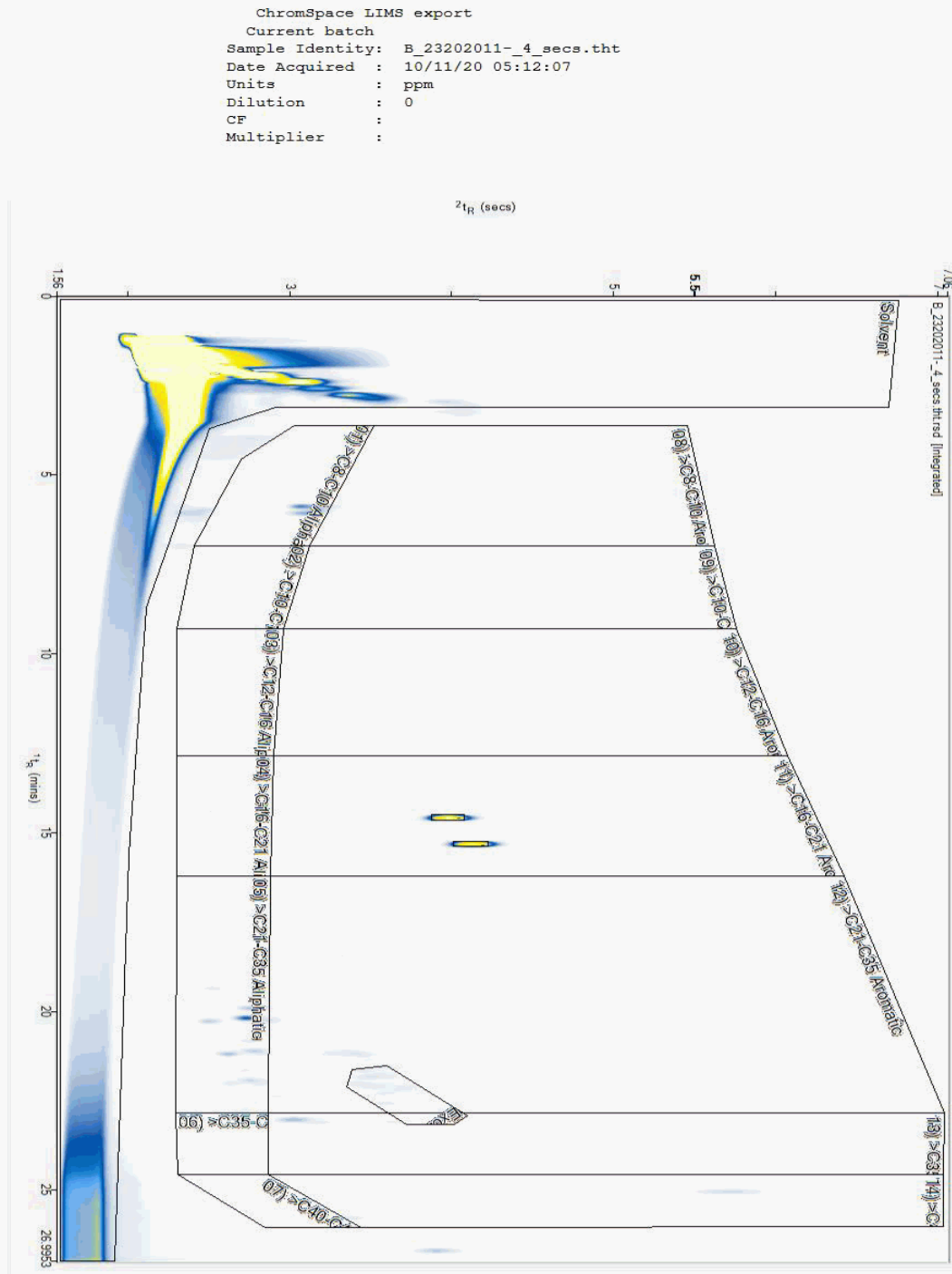
Report Number: 579753
Superseded Report: 576206

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23202011
Sample ID : TP222

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

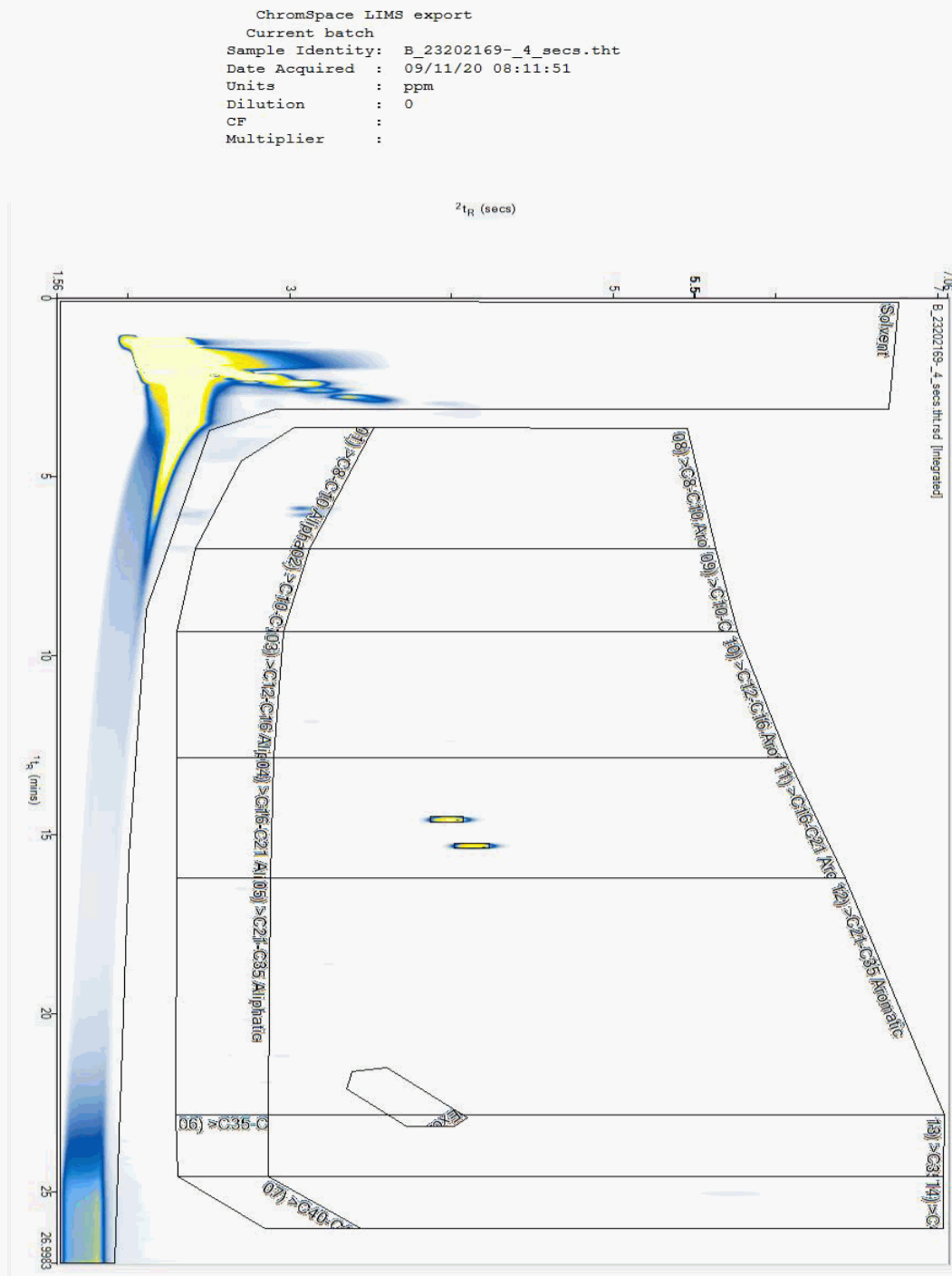
Report Number: 579753
Superseded Report: 576206

Chromatogram

Analysis: EPH CWG GC (S)

Sample No : 23202169
Sample ID : TP220

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

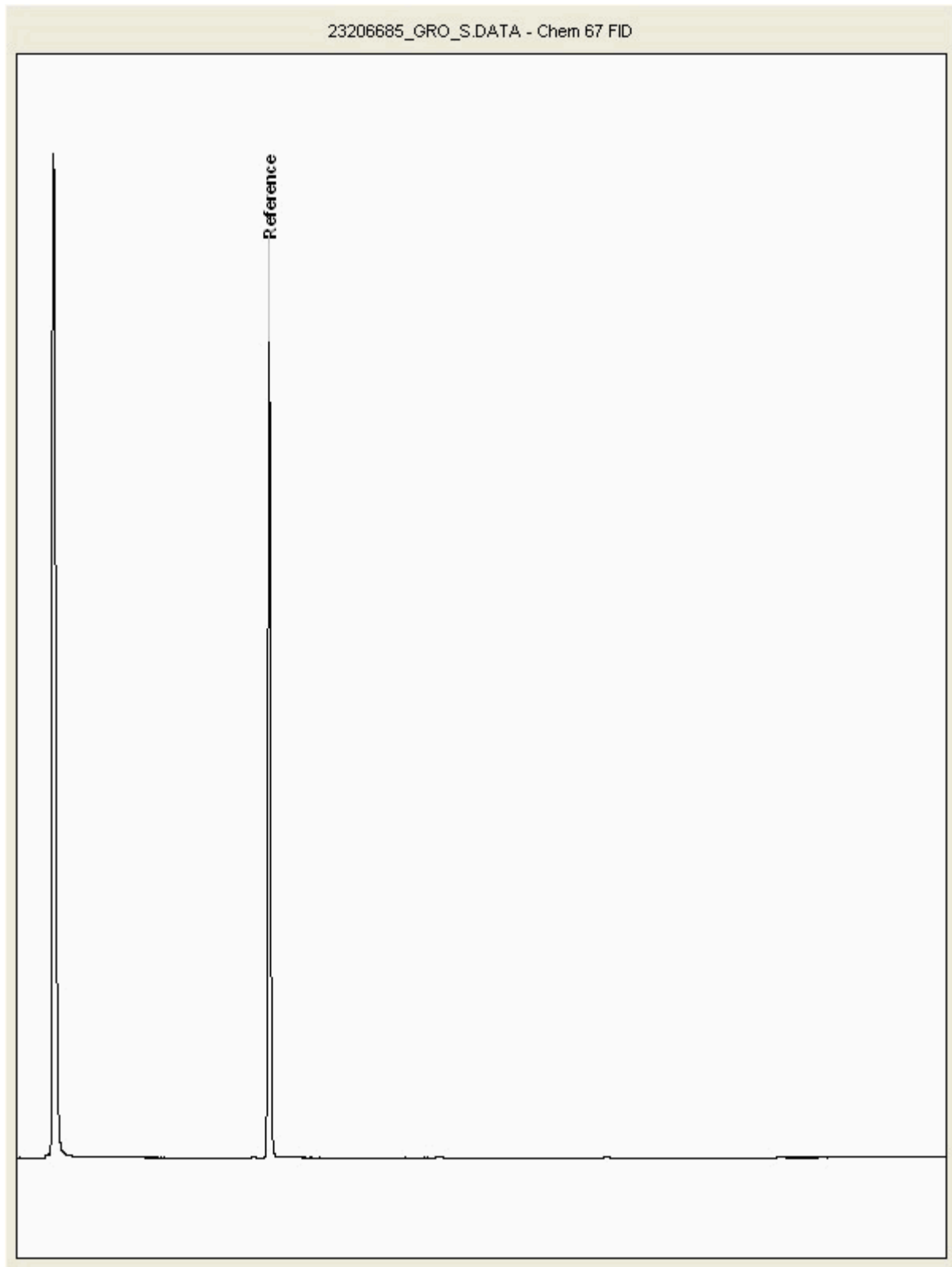
SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23206685
Sample ID : TP221

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

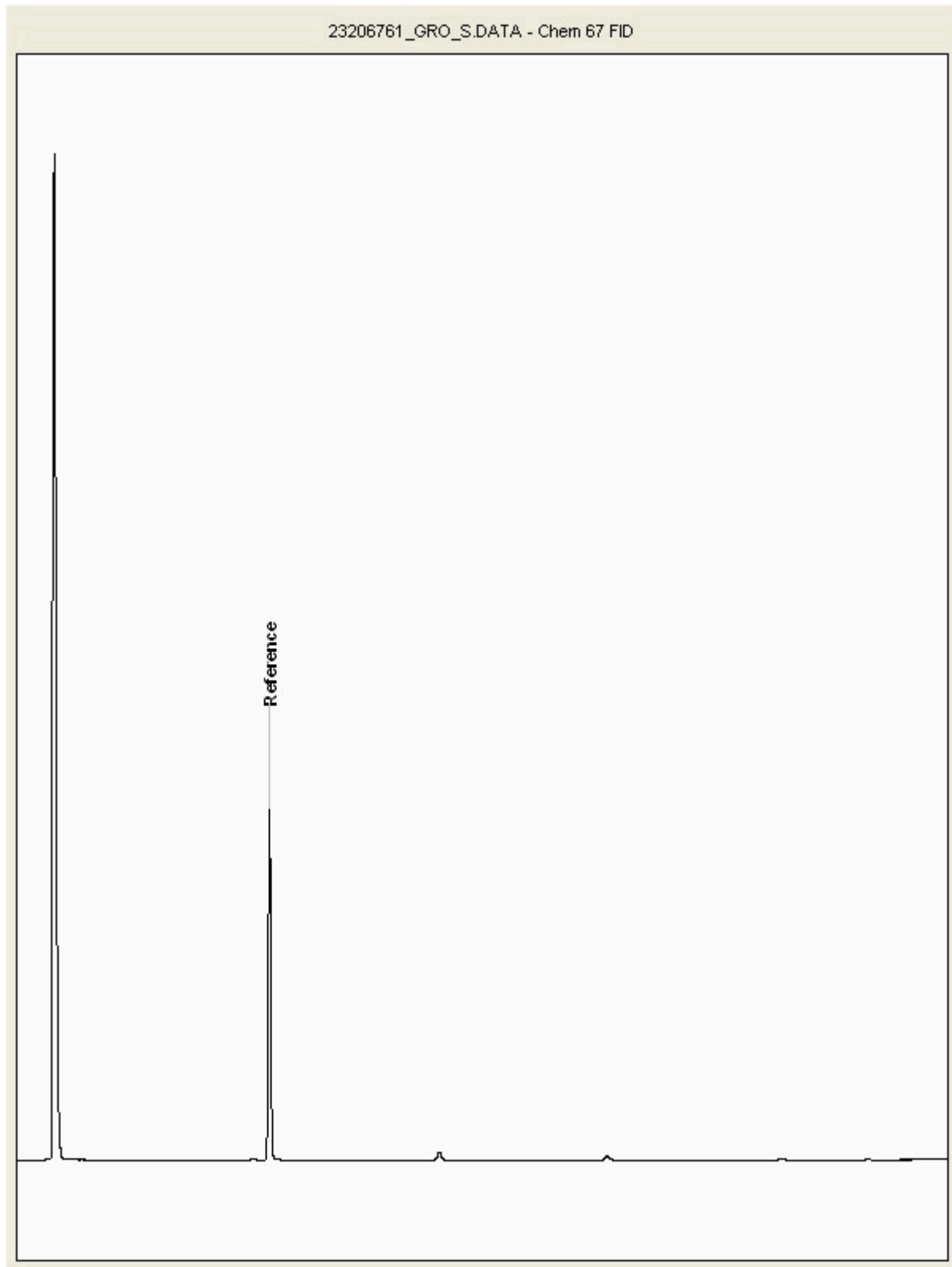
Report Number: 579753
Superseded Report: 576206

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23206761
Sample ID : TP222

Depth : 1.40 - 1.50





CERTIFICATE OF ANALYSIS

Validated

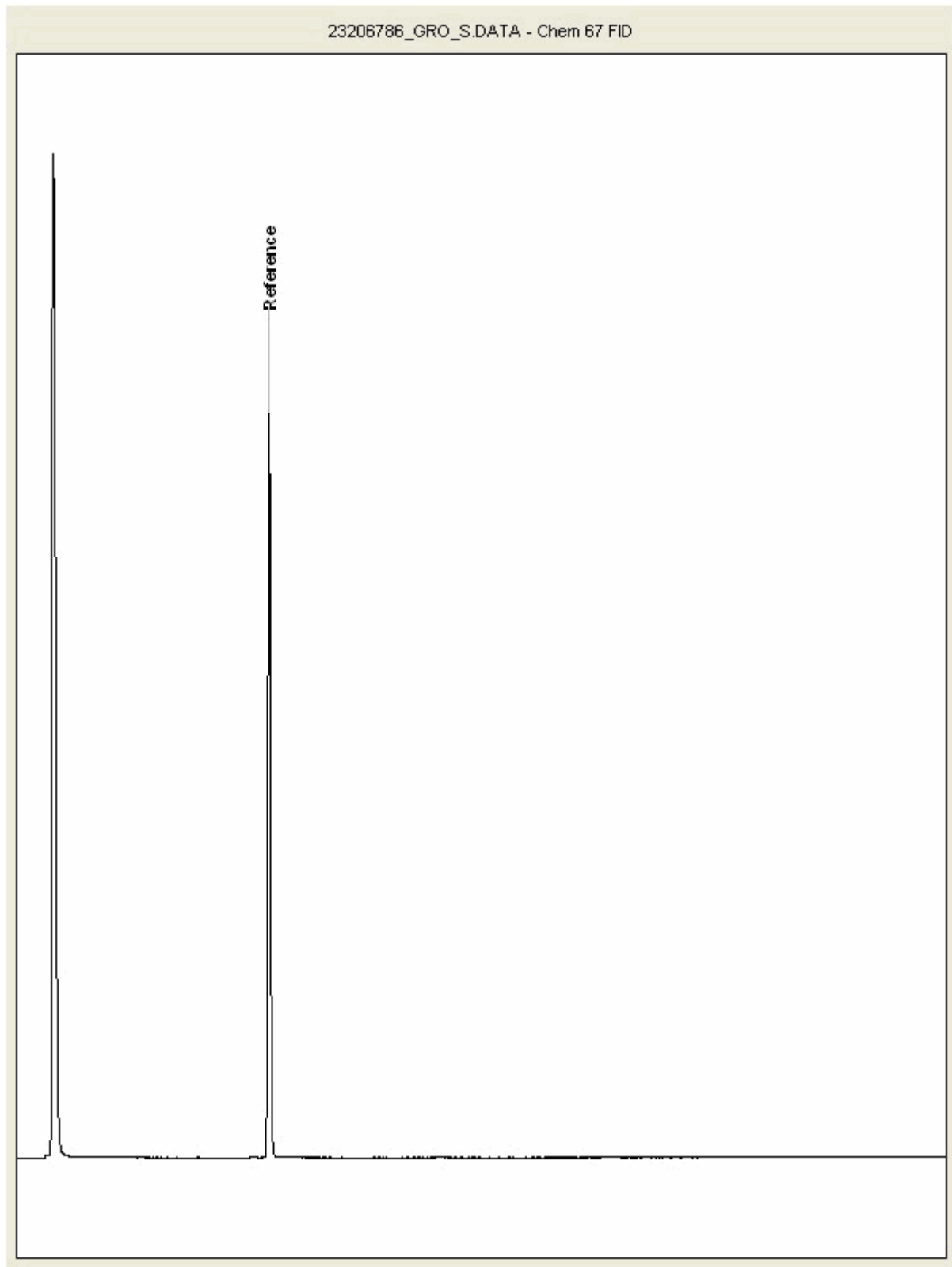
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Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23206786
Sample ID : TP220

Depth : 1.90 - 2.00





CERTIFICATE OF ANALYSIS

Validated

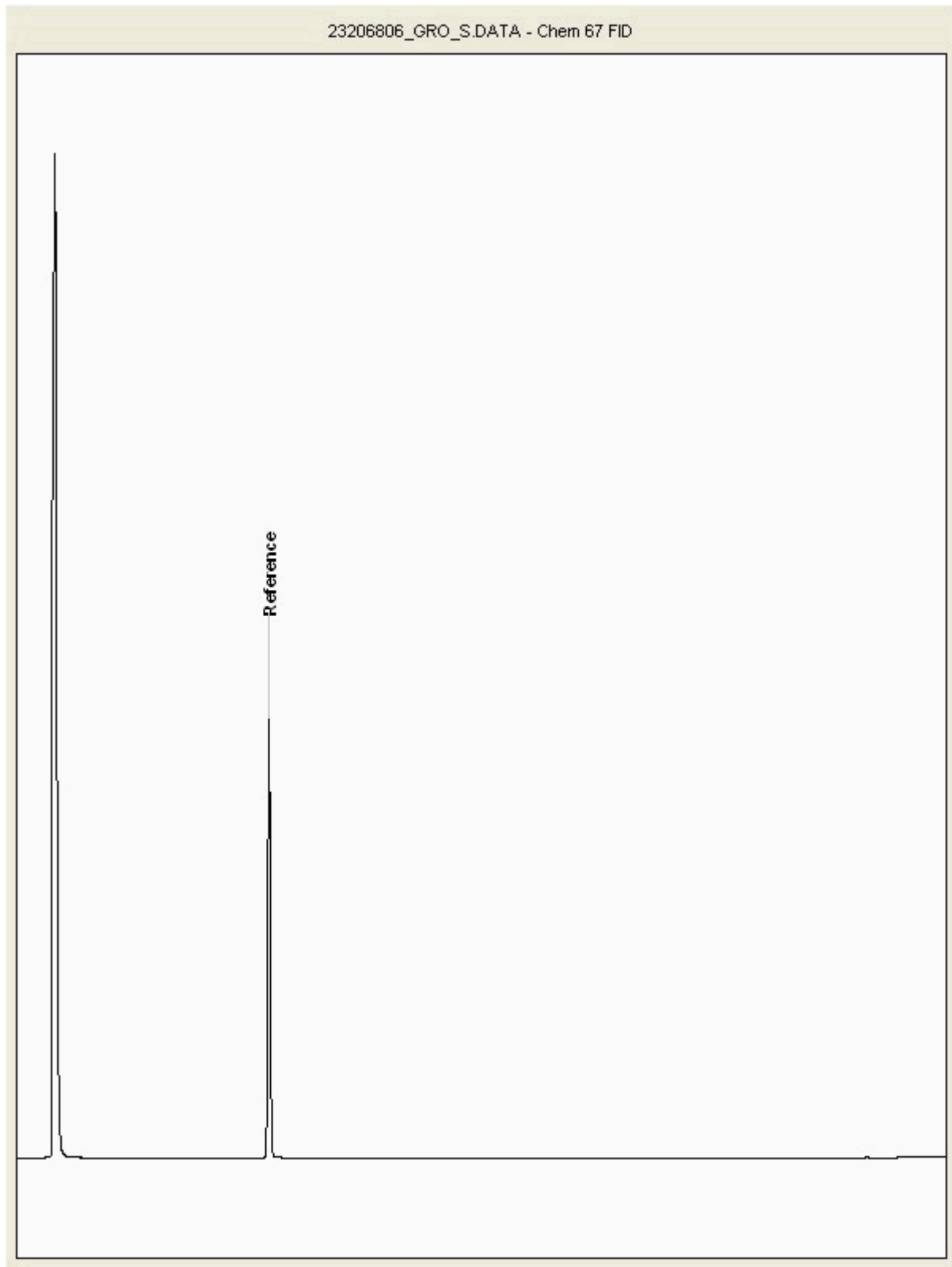
SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23206806
Sample ID : TP222

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

Validated

SDG: 201106-115
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 579753
Superseded Report: 576206

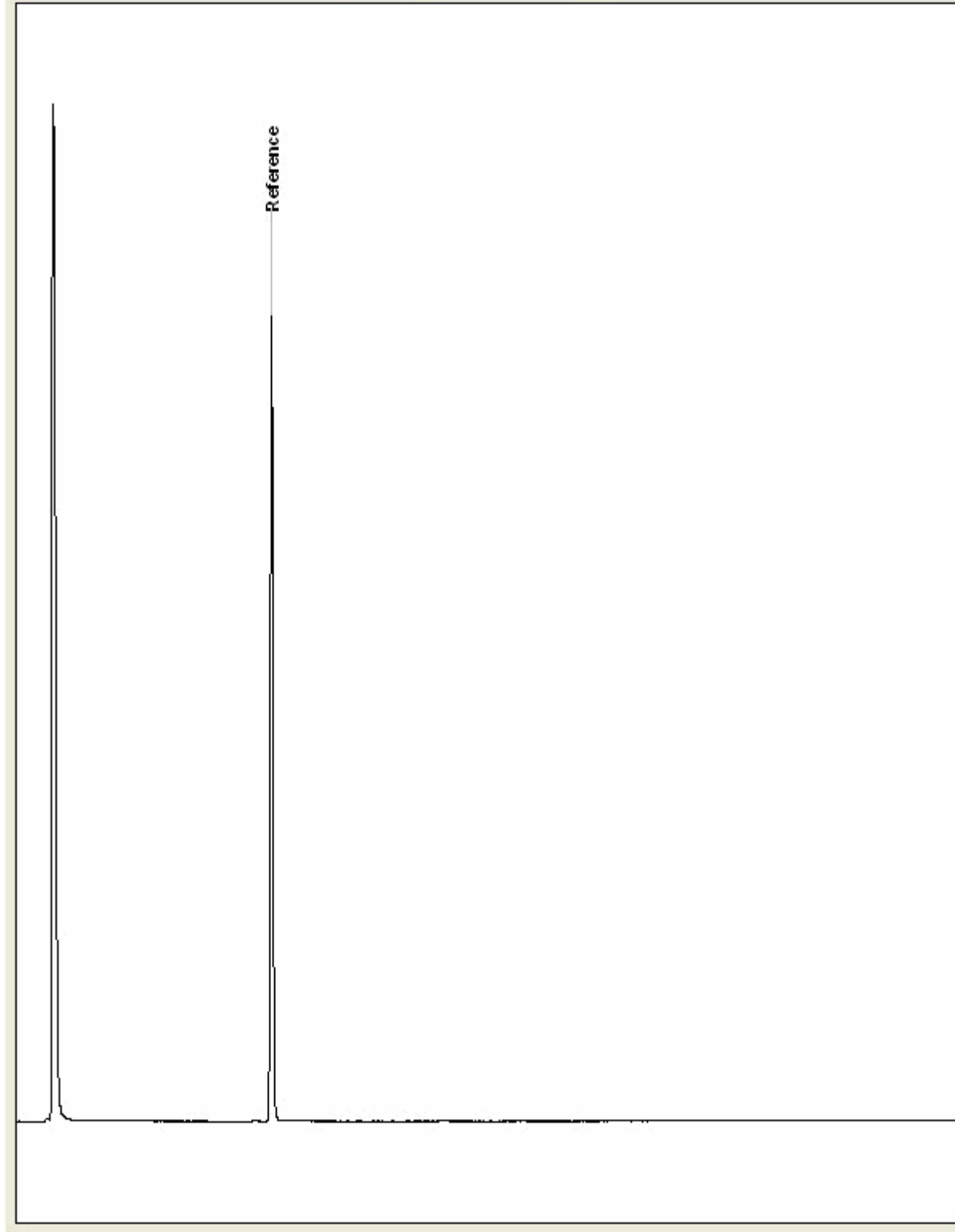
Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23206894
Sample ID : TP221

Depth : 1.90 - 2.00

23206894_GRO_S.DATA - Chem 67 FID





CERTIFICATE OF ANALYSIS

Validated

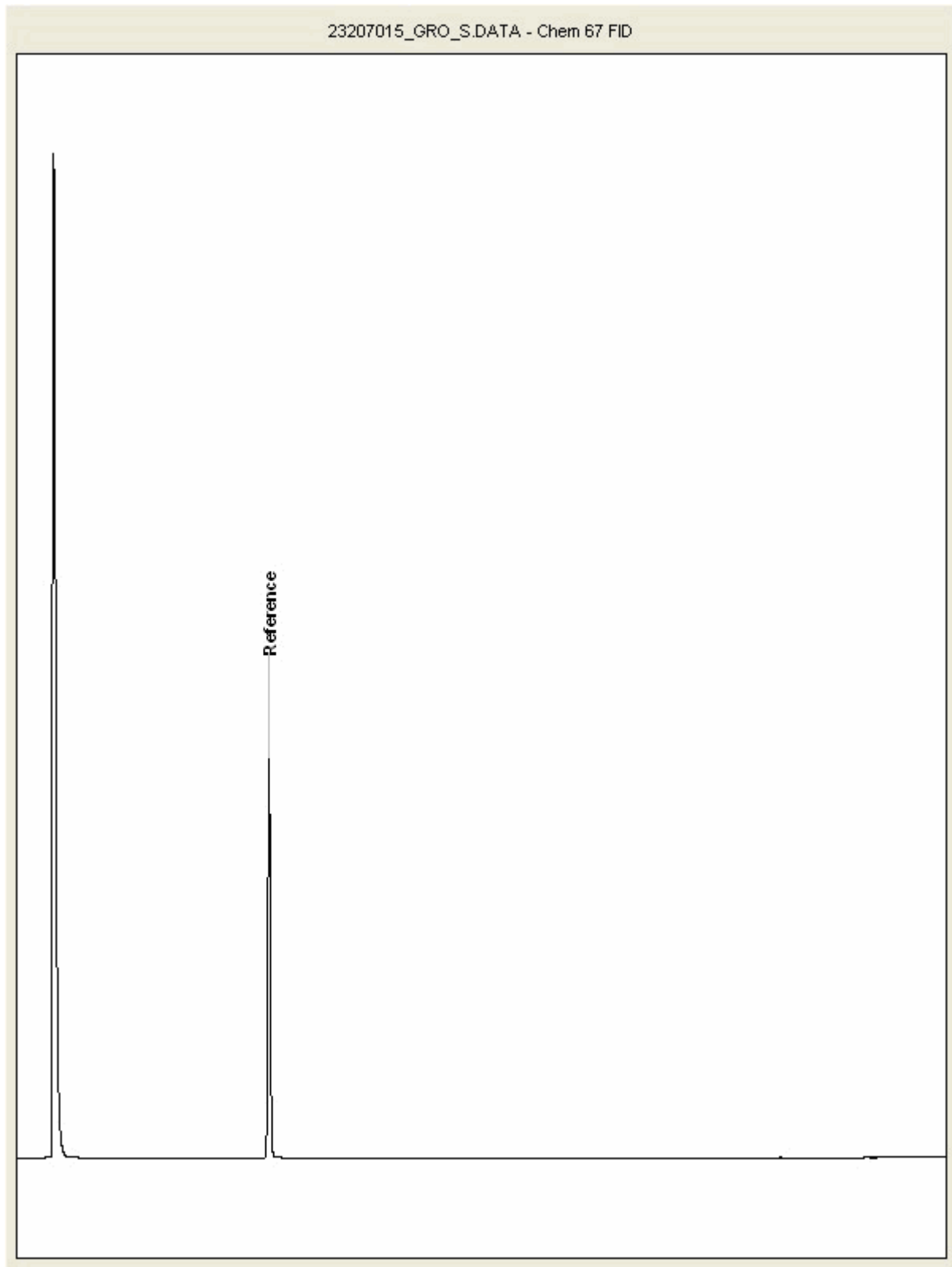
SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 23207015
Sample ID : TP220

Depth : 0.40 - 0.50





CERTIFICATE OF ANALYSIS

SDG:	201106-115	Client Reference:	2020WW102	Report Number:	579753
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	576206

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.



Irish Drilling Limited
Old Galway Road
Loughrea
Co. Galway

Attention: Dympna Darcy

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

CERTIFICATE OF ANALYSIS

Date of report Generation:	19 December 2020
Customer:	Irish Drilling Limited
Sample Delivery Group (SDG):	201211-78
Your Reference:	2020WW102
Location:	Arklow Bank
Report No:	580876

We received 1 sample on Friday December 11, 2020 and 1 of these samples were scheduled for analysis which was completed on Saturday December 19, 2020. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	201211-78	Client Reference:	2020WW102	Report Number:	580876
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23412694	BH202	EW1	0.00 - 0.00	09/12/2020

Only received samples which have had analysis scheduled will be shown on the following pages.



CERTIFICATE OF ANALYSIS

Validated

SDG:	201211-78	Client Reference:	2020WW102	Report Number:	580876
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Results Legend X Test N No Determination Possible Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other	Lab Sample No(s)		23412694				
	Customer Sample Reference		BH202				
	AGS Reference		EW1				
	Depth (m)		0.00 - 0.00				
	Container		250ml Amber GL P.T/E/PE	250ml BOD (ALE212)	500ml Plastic (ALE208)	H2SO4 (ALE244)	Vial (ALE237)
	Sample Type		GW	GW	GW	GW	GW
Phosphate by Kone (w)	All	NDPs: 0 Tests: 1			X		
Suspended Solids	All	NDPs: 0 Tests: 1			X		
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 1	X				
Total Dissolved Solids	All	NDPs: 0 Tests: 1			X		
TPH CWG (W)	All	NDPs: 0 Tests: 1	X				
VOC MS (W)	All	NDPs: 0 Tests: 1					X



CERTIFICATE OF ANALYSIS

Validated

SDG:	201211-78	Client Reference:	2020WW102	Report Number:	580876
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Results Legend		Customer Sample Ref.	BH202				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 09/12/2020 11/12/2020 201211-78 23412694 EW1				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Suspended solids, Total	<2 mg/l	TM022	23300	#			
Alkalinity, Total as CaCO3	<2 mg/l	TM043	484	#			
BOD, unfiltered	<1 mg/l	TM045	5.26	#			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#			
COD, unfiltered	<7 mg/l	TM107	1040	#			
Dissolved solids, Total (meter)	<5 mg/l	TM123	473	#			
Chromium, Trivalent (Low)	<0.003 mg/l	TM152	<0.003				
Antimony (diss.filt)	<1 µg/l	TM152	<1	2 #			
Arsenic (diss.filt)	<0.5 µg/l	TM152	<0.5	2 #			
Barium (diss.filt)	<0.2 µg/l	TM152	2750	2 #			
Cadmium (diss.filt)	<0.08 µg/l	TM152	0.499	2 #			
Chromium (diss.filt)	<1 µg/l	TM152	<1	2 #			
Copper (diss.filt)	<0.3 µg/l	TM152	3.01	2 #			
Lead (diss.filt)	<0.2 µg/l	TM152	0.533	2 #			
Manganese (diss.filt)	<3 µg/l	TM152	22.7	2 #			
Molybdenum (diss.filt)	<3 µg/l	TM152	<3	2 #			
Nickel (diss.filt)	<0.4 µg/l	TM152	1.57	2 #			
Selenium (diss.filt)	<1 µg/l	TM152	1.25	2 #			
Zinc (diss.filt)	<1 µg/l	TM152	509	2 #			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	25.2	2 #			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	14.4	2 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	2	2 #			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	86.4	2 #			
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.109	2 #			
Mineral oil >C10 C40 (aq)	<100 µg/l	TM172	984				
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01	2 #			
Sulphate	<2 mg/l	TM184	29.9	#			
Phosphate (Ortho as P)	<0.02 mg/l	TM184	<0.02	#			
Nitrate as NO3	<0.3 mg/l	TM184	58.7				
PCB congener 28	<0.015 µg/l	TM197	<0.03				
PCB congener 52	<0.015 µg/l	TM197	<0.03				
PCB congener 101	<0.015 µg/l	TM197	<0.03				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend		Customer Sample Ref.	BH202				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 09/12/2020 11/12/2020 201211-78 23412694 EW1				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4+5@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176	<10 #				
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #				
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #				
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176	<10 #				
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176	<10 #				
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176	<10 #				
2,4-Dichlorophenol (aq)	<1 µg/l	TM176	<10 #				
2,4-Dimethylphenol (aq)	<1 µg/l	TM176	<10 #				
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176	<10 #				
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176	<10 #				
2-Chloronaphthalene (aq)	<1 µg/l	TM176	<10 #				
2-Chlorophenol (aq)	<1 µg/l	TM176	<10 #				
2-Methylnaphthalene (aq)	<1 µg/l	TM176	<10 #				
2-Methylphenol (aq)	<1 µg/l	TM176	<10 #				
2-Nitroaniline (aq)	<1 µg/l	TM176	<10 #				
2-Nitrophenol (aq)	<1 µg/l	TM176	<10 #				
3-Nitroaniline (aq)	<1 µg/l	TM176	<10 #				
4-Bromophenylphenylether (aq)	<1 µg/l	TM176	<10 #				
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176	<10 #				
4-Chloroaniline (aq)	<1 µg/l	TM176	<10 #				
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176	<10 #				
4-Methylphenol (aq)	<1 µg/l	TM176	<10 #				
4-Nitroaniline (aq)	<1 µg/l	TM176	<10 #				
4-Nitrophenol (aq)	<1 µg/l	TM176	<10 #				
Azobenzene (aq)	<1 µg/l	TM176	<10 #				
Acenaphthylene (aq)	<1 µg/l	TM176	<10 #				
Acenaphthene (aq)	<1 µg/l	TM176	<10 #				
Anthracene (aq)	<1 µg/l	TM176	<10 #				
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176	<10 #				
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176	<10 #				
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176	<20 #				
Butylbenzyl phthalate (aq)	<1 µg/l	TM176	<10 #				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.					
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
dis.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery							
(F)	Trigger breach confirmed							
1-4&5@	Sample deviation (see appendix)							
			Depth (m)	0.00 - 0.00				
			Sample Type	Ground Water (GW)				
			Date Sampled	09/12/2020				
			Sampled Time	.				
			Date Received	11/12/2020				
			SDG Ref	201211-78				
			Lab Sample No.(s)	23412694				
			AGS Reference	EW1				
Component	LOD/Units	Method						
Benzo(a)anthracene (aq)	<1 µg/l	TM176	<10 #					
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176	<10 #					
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176	<10 #					
Benzo(a)pyrene (aq)	<1 µg/l	TM176	<10 #					
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176	<10 #					
Carbazole (aq)	<1 µg/l	TM176	<10 #					
Chrysene (aq)	<1 µg/l	TM176	<10 #					
Dibenzofuran (aq)	<1 µg/l	TM176	<10 #					
n-Dibutyl phthalate (aq)	<1 µg/l	TM176	<10 #					
Diethyl phthalate (aq)	<1 µg/l	TM176	<10 #					
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176	<10 #					
Dimethyl phthalate (aq)	<1 µg/l	TM176	<10 #					
n-Dioctyl phthalate (aq)	<5 µg/l	TM176	<50 #					
Fluoranthene (aq)	<1 µg/l	TM176	<10 #					
Fluorene (aq)	<1 µg/l	TM176	<10 #					
Hexachlorobenzene (aq)	<1 µg/l	TM176	<10 #					
Hexachlorobutadiene (aq)	<1 µg/l	TM176	<10 #					
Pentachlorophenol (aq)	<1 µg/l	TM176	<10					
Phenol (aq)	<1 µg/l	TM176	<10					
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176	<10 #					
Hexachloroethane (aq)	<1 µg/l	TM176	<10 #					
Nitrobenzene (aq)	<1 µg/l	TM176	<10 #					
Naphthalene (aq)	<1 µg/l	TM176	<10 #					
Isophorone (aq)	<1 µg/l	TM176	<10 #					
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176	<10					
Phenanthrene (aq)	<1 µg/l	TM176	<10 #					
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176	<10 #					
Pyrene (aq)	<1 µg/l	TM176	<10 #					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow BankClient Reference: 2020WW102
Order Number: 9028Report Number: 580876
Superseded Report:

TPH CWG (W)

Results Legend		Customer Sample Ref.	BH202				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 09/12/2020 11/12/2020 201211-78 23412694 EW1				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4*\$@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM245	110				
GRO >C5-C12	<50 µg/l	TM245	<50 #				
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #				
Benzene	<7 µg/l	TM245	<7 #				
Toluene	<4 µg/l	TM245	<4 #				
Ethylbenzene	<5 µg/l	TM245	<5 #				
m,p-Xylene	<8 µg/l	TM245	<8 #				
o-Xylene	<3 µg/l	TM245	<3 #				
Sum of detected Xylenes	<11 µg/l	TM245	<11				
Sum of detected BTEX	<28 µg/l	TM245	<28				
Aliphatics >C5-C6	<10 µg/l	TM245	<10				
Aliphatics >C6-C8	<10 µg/l	TM245	<10				
Aliphatics >C8-C10	<10 µg/l	TM245	<10				
Aliphatics >C10-C12	<10 µg/l	TM245	<10				
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<20				
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<20				
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	697				
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	697				
Aromatics >EC5-EC7	<10 µg/l	TM245	<10				
Aromatics >EC7-EC8	<10 µg/l	TM245	<10				
Aromatics >EC8-EC10	<10 µg/l	TM245	<10				
Aromatics >EC10-EC12	<10 µg/l	TM245	<10				
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<20				
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<20				
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	59				
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	59				
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	756				
Aliphatics >C16-C35 Aqueous	<10 µg/l	TM174	697				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.	BH202				
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.00 - 0.00 Ground Water (GW) 09/12/2020 11/12/2020 201211-78 23412694 EW1				
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery						
(F)	Trigger breach confirmed						
1-4&@	Sample deviation (see appendix)						
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM208	107				
Toluene-d8**	%	TM208	97.3				
4-Bromofluorobenzene**	%	TM208	95.4				
Dichlorodifluoromethane	<1 µg/l	TM208	<1 #				
Chloromethane	<1 µg/l	TM208	<1 #				
Vinyl chloride	<1 µg/l	TM208	<1 #				
Bromomethane	<1 µg/l	TM208	<1 #				
Chloroethane	<1 µg/l	TM208	<1 #				
Trichlorofluoromethane	<1 µg/l	TM208	<1 #				
1,1-Dichloroethene	<1 µg/l	TM208	<1 #				
Carbon disulphide	<1 µg/l	TM208	<1 #				
Dichloromethane	<3 µg/l	TM208	<3 #				
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #				
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #				
1,1-Dichloroethane	<1 µg/l	TM208	<1 #				
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1 #				
2,2-Dichloropropane	<1 µg/l	TM208	<1 #				
Bromochloromethane	<1 µg/l	TM208	<1 #				
Chloroform	<1 µg/l	TM208	<1 #				
1,1,1-Trichloroethane	<1 µg/l	TM208	<1 #				
1,1-Dichloropropene	<1 µg/l	TM208	<1 #				
Carbontetrachloride	<1 µg/l	TM208	<1 #				
1,2-Dichloroethane	<1 µg/l	TM208	<1 #				
Benzene	<1 µg/l	TM208	<1 #				
Trichloroethene	<1 µg/l	TM208	<1 #				
1,2-Dichloropropane	<1 µg/l	TM208	<1 #				
Dibromomethane	<1 µg/l	TM208	<1 #				
Bromodichloromethane	<1 µg/l	TM208	<1 #				
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1 #				
Toluene	<1 µg/l	TM208	<1 #				
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1 #				
1,1,2-Trichloroethane	<1 µg/l	TM208	<1 #				



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

VOC MS (W)

Results Legend		Customer Sample Ref.						
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	BH202					
M	mCERTS accredited.		0.00 - 0.00					
aq	Aqueous / settled sample.		Ground Water (GW)					
dis.filt	Dissolved / filtered sample.		09/12/2020					
tot.unfilt	Total / unfiltered sample.		11/12/2020					
+	Subcontracted - refer to subcontractor report for accreditation status.		201211-78					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery		23412694					
(F)	Trigger breach confirmed		EW1					
1-4+5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
1,3-Dichloropropane	<1 µg/l	TM208	<1 #					
Tetrachloroethene	<1 µg/l	TM208	<1 #					
Dibromochloromethane	<1 µg/l	TM208	<1 #					
1,2-Dibromoethane	<1 µg/l	TM208	<1 #					
Chlorobenzene	<1 µg/l	TM208	<1 #					
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1 #					
Ethylbenzene	<1 µg/l	TM208	<1 #					
m,p-Xylene	<1 µg/l	TM208	<1 #					
o-Xylene	<1 µg/l	TM208	<1 #					
Styrene	<1 µg/l	TM208	<1 #					
Bromoform	<1 µg/l	TM208	<1 #					
Isopropylbenzene	<1 µg/l	TM208	<1 #					
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1 #					
1,2,3-Trichloropropane	<1 µg/l	TM208	<1 #					
Bromobenzene	<1 µg/l	TM208	<1 #					
Propylbenzene	<1 µg/l	TM208	<1 #					
2-Chlorotoluene	<1 µg/l	TM208	<1 #					
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1 #					
4-Chlorotoluene	<1 µg/l	TM208	<1 #					
tert-Butylbenzene	<1 µg/l	TM208	<1 #					
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1 #					
sec-Butylbenzene	<1 µg/l	TM208	<1 #					
4-iso-Propyltoluene	<1 µg/l	TM208	<1 #					
1,3-Dichlorobenzene	<1 µg/l	TM208	<1 #					
1,4-Dichlorobenzene	<1 µg/l	TM208	<1 #					
n-Butylbenzene	<1 µg/l	TM208	<1 #					
1,2-Dichlorobenzene	<1 µg/l	TM208	<1 #					
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1 #					
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1 #					
Hexachlorobutadiene	<1 µg/l	TM208	<1 #					
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #					
Naphthalene	<1 µg/l	TM208	<1 #					



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM331		Low Level Hexavalent Chromium

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden (Method codes TM) or ALS Environmental Aberdeen (Method codes S).



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23412694
Customer Sample Ref.	BH202
AGS Ref.	EW1
Depth	0.00 - 0.00
Type	Ground Water

Alkalinity as CaCO ₃	18-Dec-2020
Ammoniacal Nitrogen	18-Dec-2020
Anions by ion Chromatography	17-Dec-2020
Anions by Kone (w)	17-Dec-2020
BOD True Total	17-Dec-2020
Chromium III	17-Dec-2020
COD Unfiltered	18-Dec-2020
Dissolved Metals by ICP-MS	17-Dec-2020
EPH CWG (Aliphatic) Aqueous GC (W)	18-Dec-2020
EPH CWG (Aromatic) Aqueous GC (W)	18-Dec-2020
GRO by GC-FID (W)	15-Dec-2020
Low Level Hexavalent Chromium (w)	14-Dec-2020
Mercury Dissolved	14-Dec-2020
Mineral Oil C10-40 Aqueous (W)	17-Dec-2020
Nitrite by Kone (w)	16-Dec-2020
PCB Congeners - Aqueous (W)	19-Dec-2020
Phosphate by Kone (w)	16-Dec-2020
Suspended Solids	14-Dec-2020
SVOC MS (W) - Aqueous	18-Dec-2020
Total Dissolved Solids	11-Dec-2020
TPH CWG (W)	18-Dec-2020
VOC MS (W)	16-Dec-2020



CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

Chromatogram

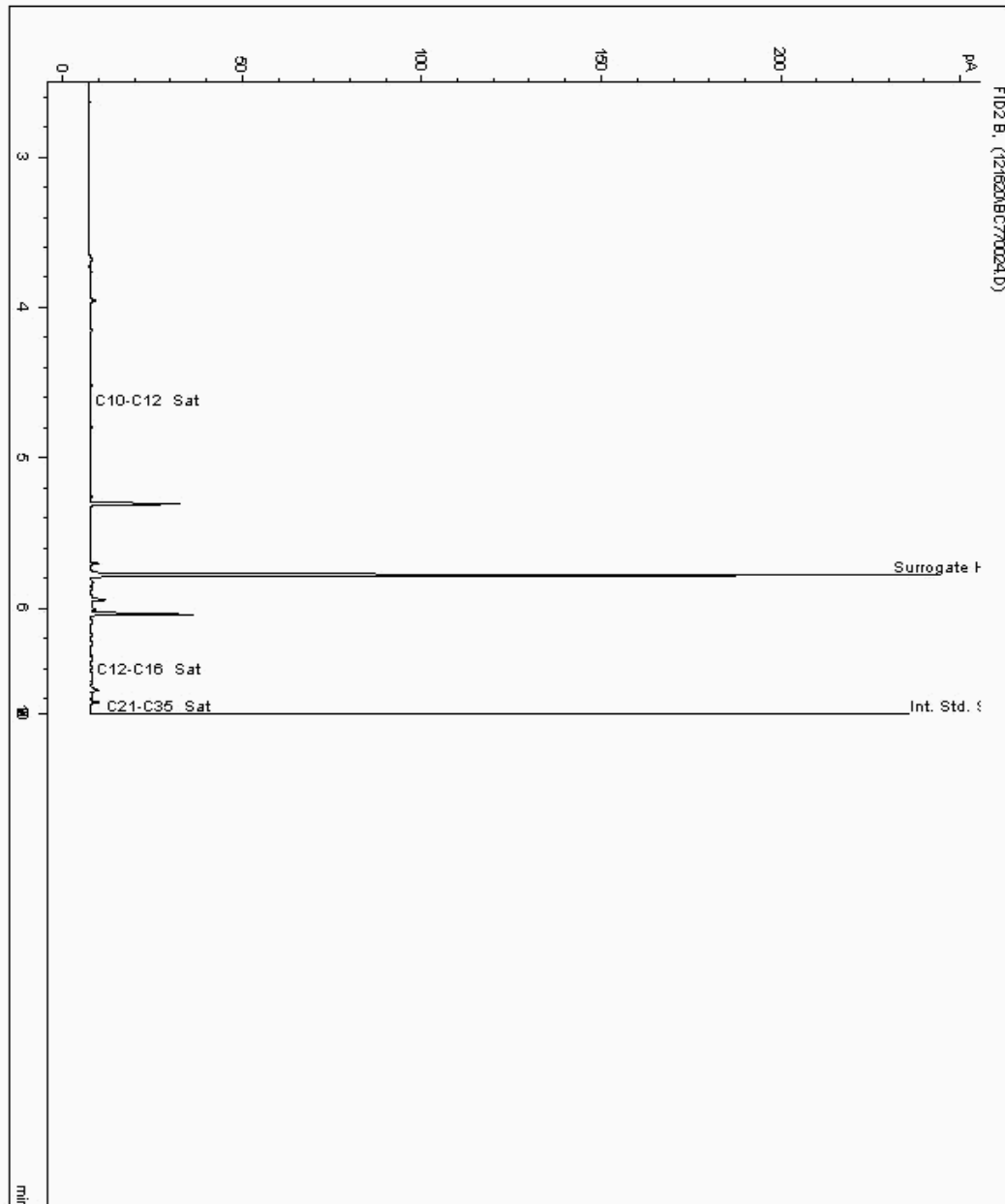
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 23413414
Sample ID : BH202

Depth : 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21965047-
Date Acquired : 12/17/2020 8:28:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050





CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

Report Number: 580876
Superseded Report:

Chromatogram

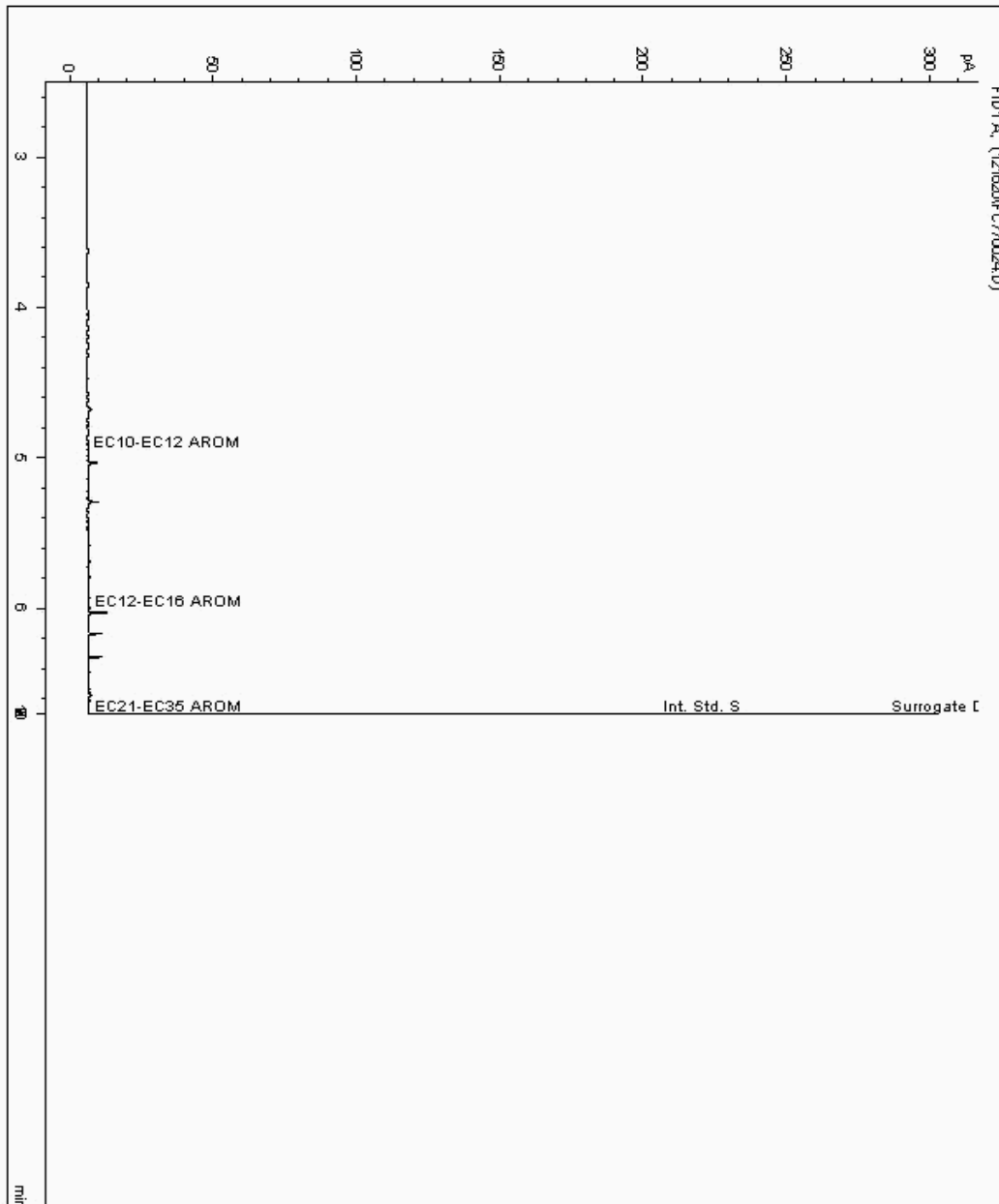
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 23413414
Sample ID : BH202

Depth : 0.00 - 0.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 21965048-
Date Acquired : 12/17/2020 8:28:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.050





CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

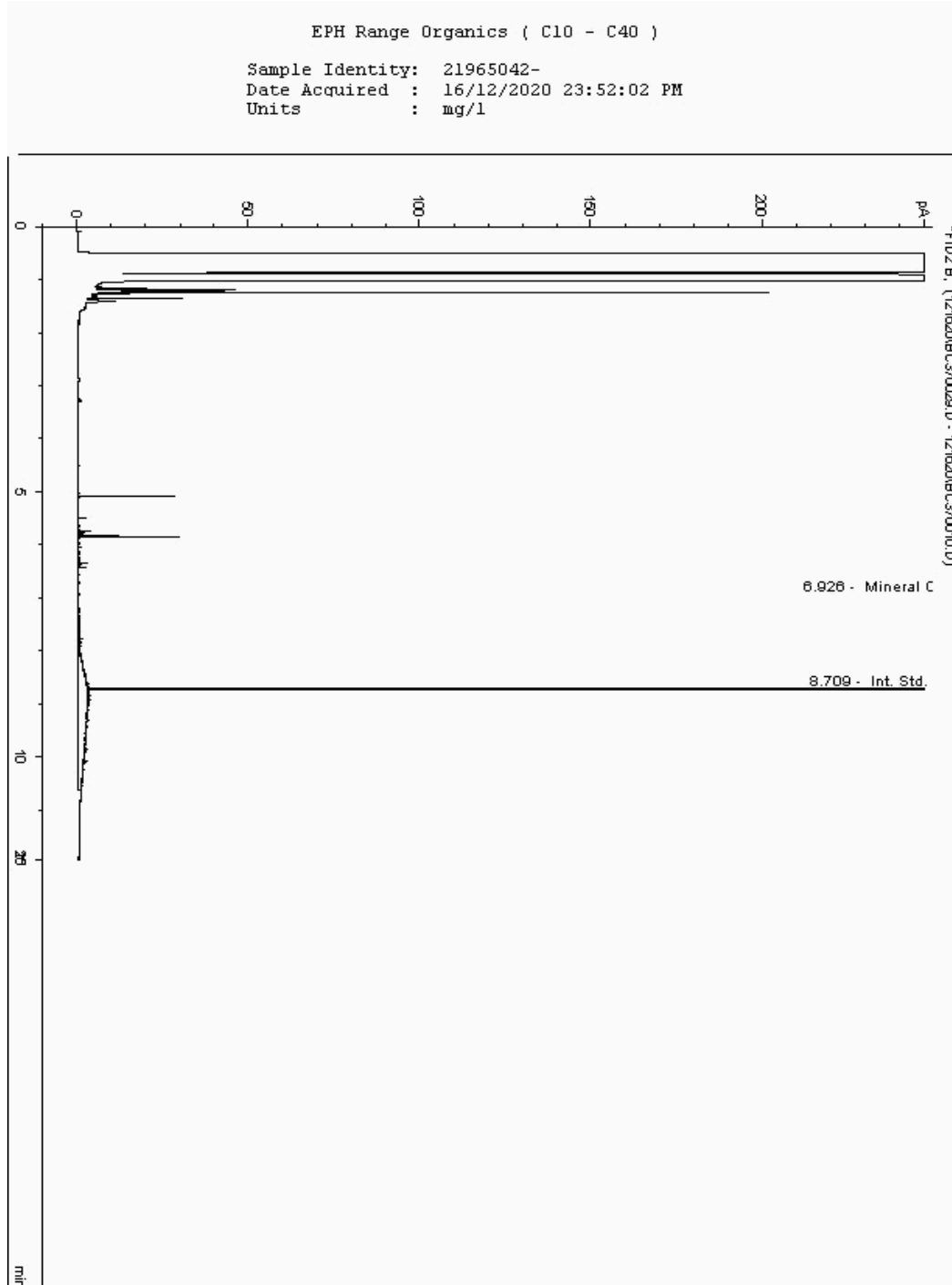
Report Number: 580876
Superseded Report:

Chromatogram

Analysis: Mineral Oil C10-40 Aqueous (W)

Sample No : 23413414
Sample ID : BH202

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

Validated

SDG: 201211-78
Location: Arklow Bank

Client Reference: 2020WW102
Order Number: 9028

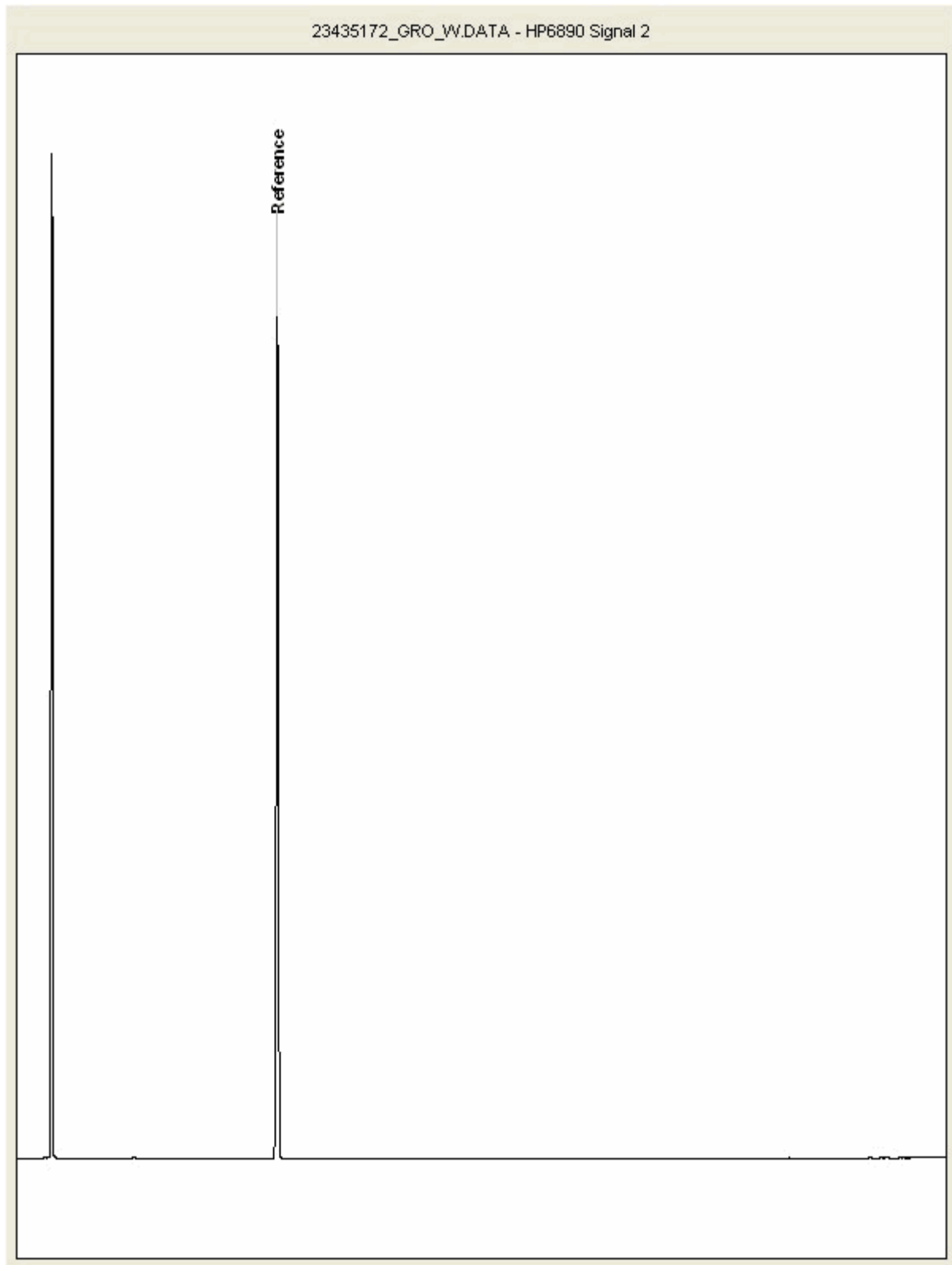
Report Number: 580876
Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 23435172
Sample ID : BH202

Depth : 0.00 - 0.00





CERTIFICATE OF ANALYSIS

SDG:	201211-78	Client Reference:	2020WW102	Report Number:	580876
Location:	Arklow Bank	Order Number:	9028	Superseded Report:	

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Appendix 8 Photographs (Trial Pits)

Irish Drilling Ltd: Trial Pit Photos:



Figure 1 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP201(1).JPG



Figure 4 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP202(2).JPG



Figure 2 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP201(2).JPG



Figure 5 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP203(1).JPG



Figure 3 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP202(1).JPG



Figure 6 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP203(2).JPG

Irish Drilling Ltd: Trial Pit Photos:



Figure 7 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP207(1).JPG



Figure 10 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP209(2).JPG



Figure 11 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP210(1).JPG



Figure 8 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP207(2).JPG



Figure 9 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP209(1).JPG



Figure 12 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP210(2).JPG

Irish Drilling Ltd: Trial Pit Photos:



Figure 13 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP220(1).JPG



Figure 16 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP221(1).JPG



Figure 14 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP220(2).JPG



Figure 17 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP221(2).JPG



Figure 15 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP220(3).JPG



Figure 18 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP221(3).JPG



Figure 19 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP222(1).JPG



Figure 20 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP222(2).JPG



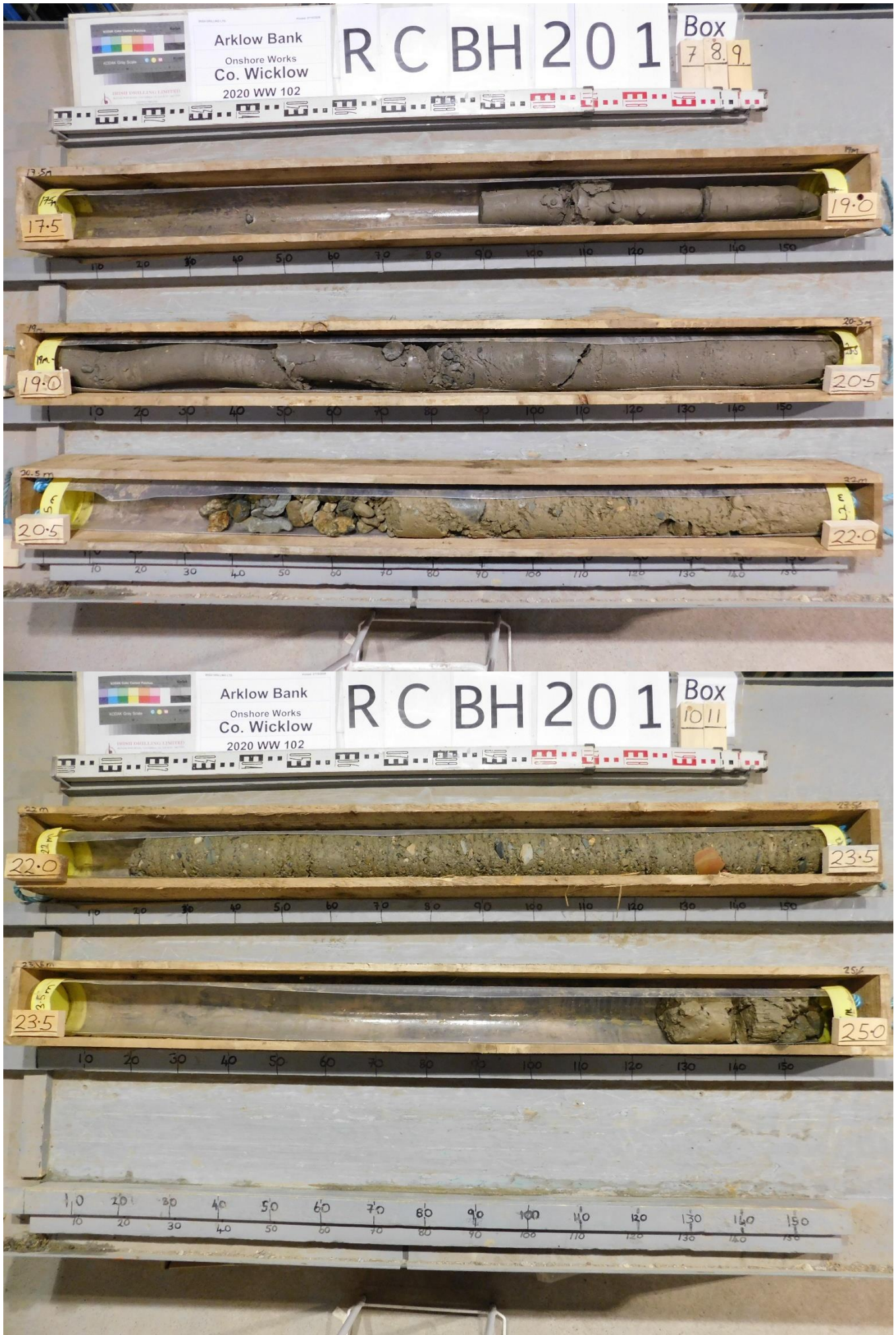
Figure 21 H:\2020-WW-102 Arklow Bank\Arklow Bank Tp Photos\TP222(3).JPG

Appendix 9 Photographs (Rotary Core)

Irish Drilling Ltd: Core Photos:



Irish Drilling Ltd: Core Photos:



Irish Drilling Ltd: Core Photos:



Appendix 10 ‘As-Built’ Drawings



Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (Cable Route)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Overview)	



Client :		SURE PARTNERS LIMITED (SPL)
Project :		ARKLOW BANK WIND PARK (Cable Route)
Date :	23-11-2020	Scale : not to scale
Description :		I.D.L (AS BUILT)
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Overview)



LEGEND

TRIAL PIT



BOREHOLE (CP+RC)
CP- CABLE PERCUSSIVE
RC- ROTARY CORE



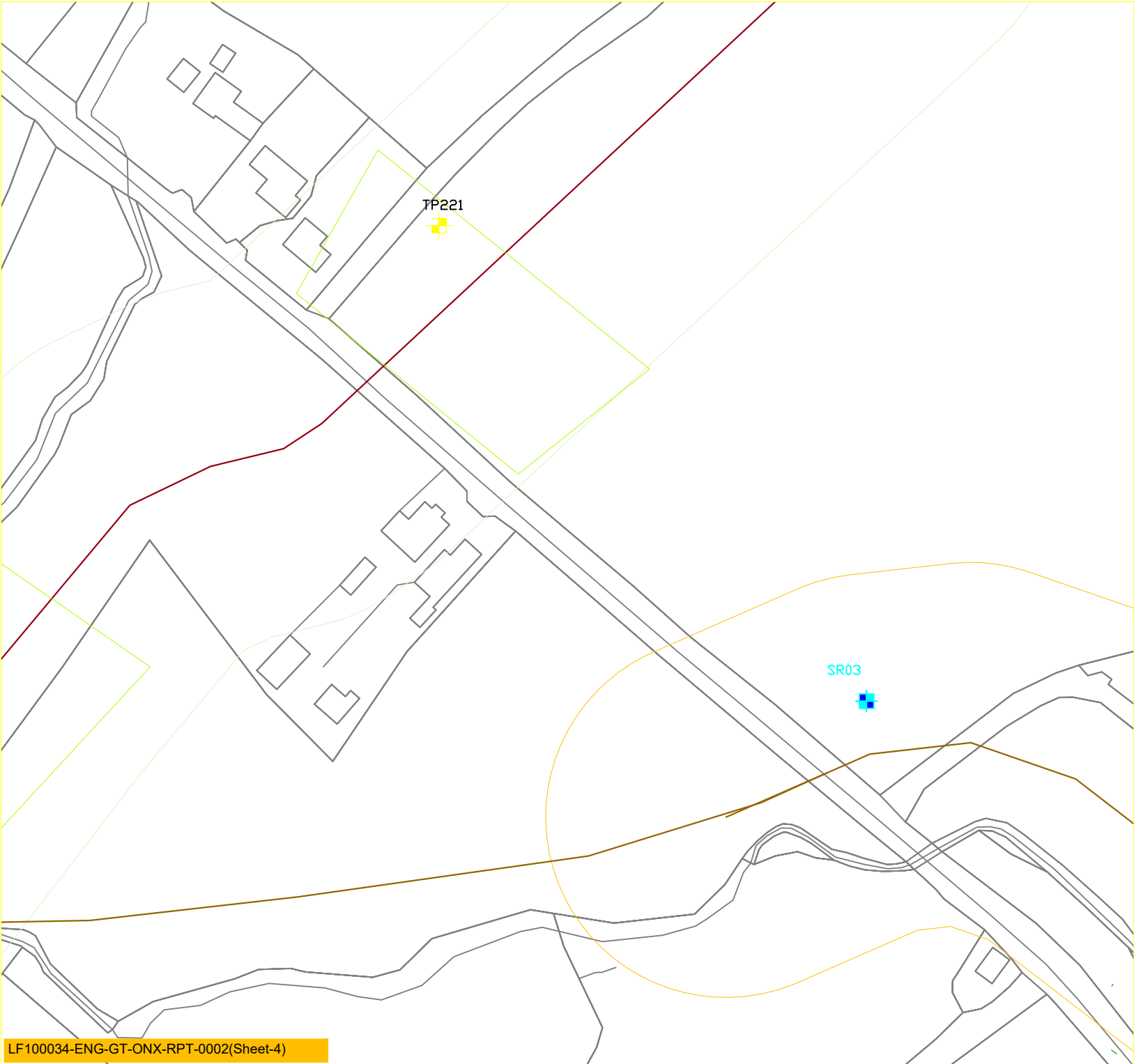
SOIL RESISTIVITY



SR02



Client :		SURE PARTNERS LIMITED (SPL)
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)
Date :	23-11-2020	Scale : not to scale
Description :		I.D.L (AS BUILT)
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-3)



LEGEND

- TRIAL PIT 
- BOREHOLE (CP+RC) 
CP- CABLE PERCUSSIVE
RC- ROTARY CORE
- SOIL RESISTIVITY 

Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-4)	



LEGEND

TRIAL PIT



BOREHOLE (CP+RC)
CP- CABLE PERCUSSIVE
RC- ROTARY CORE



SOIL RESISTIVITY



TP222



Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-5)	



TP220

BH206(CP+RC)

LEGEND

TRIAL PIT



BOREHOLE (CP+RC)
CP- CABLE PERCUSSIVE
RC- ROTARY CORE

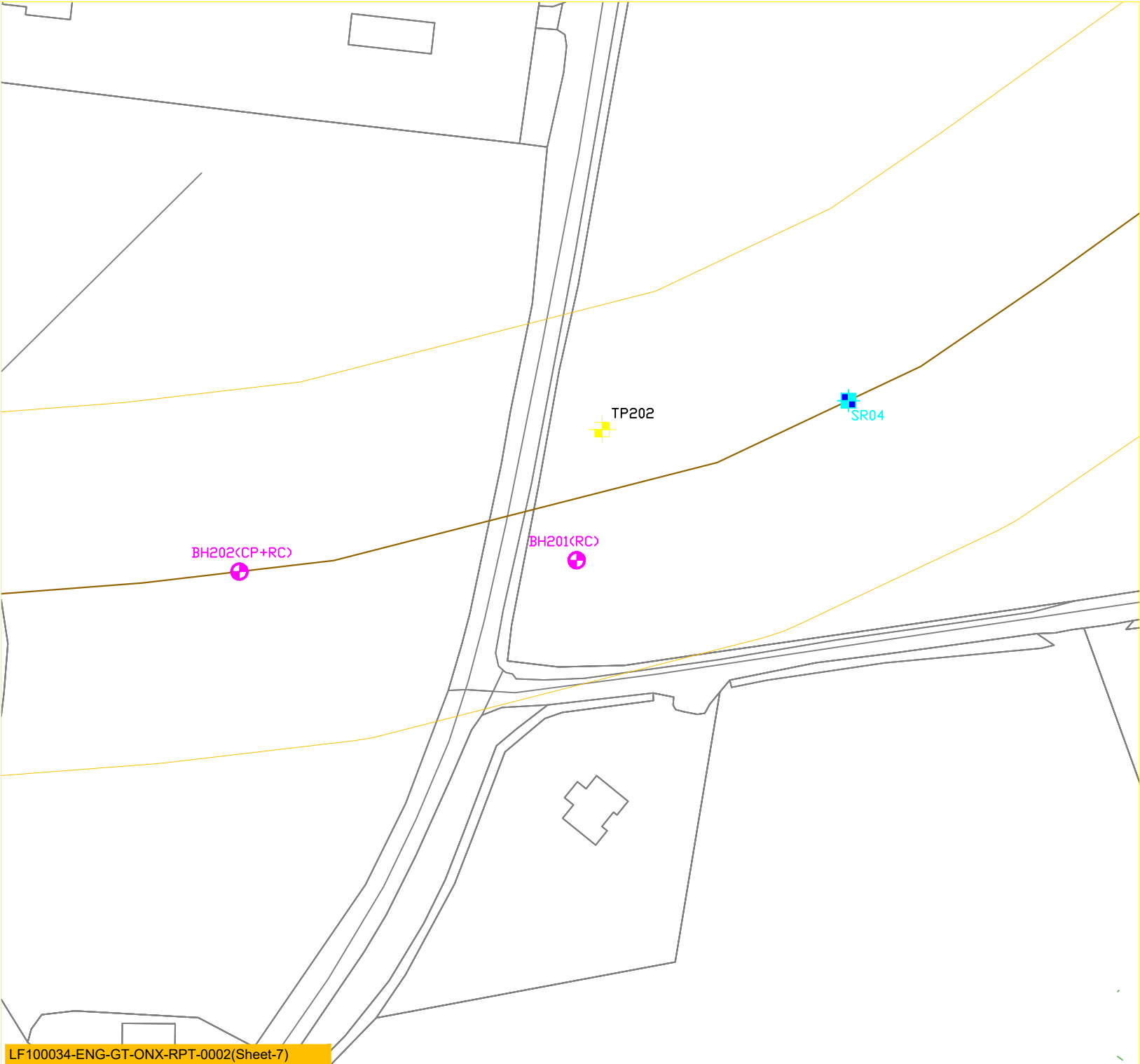


SOIL RESISTIVITY



1

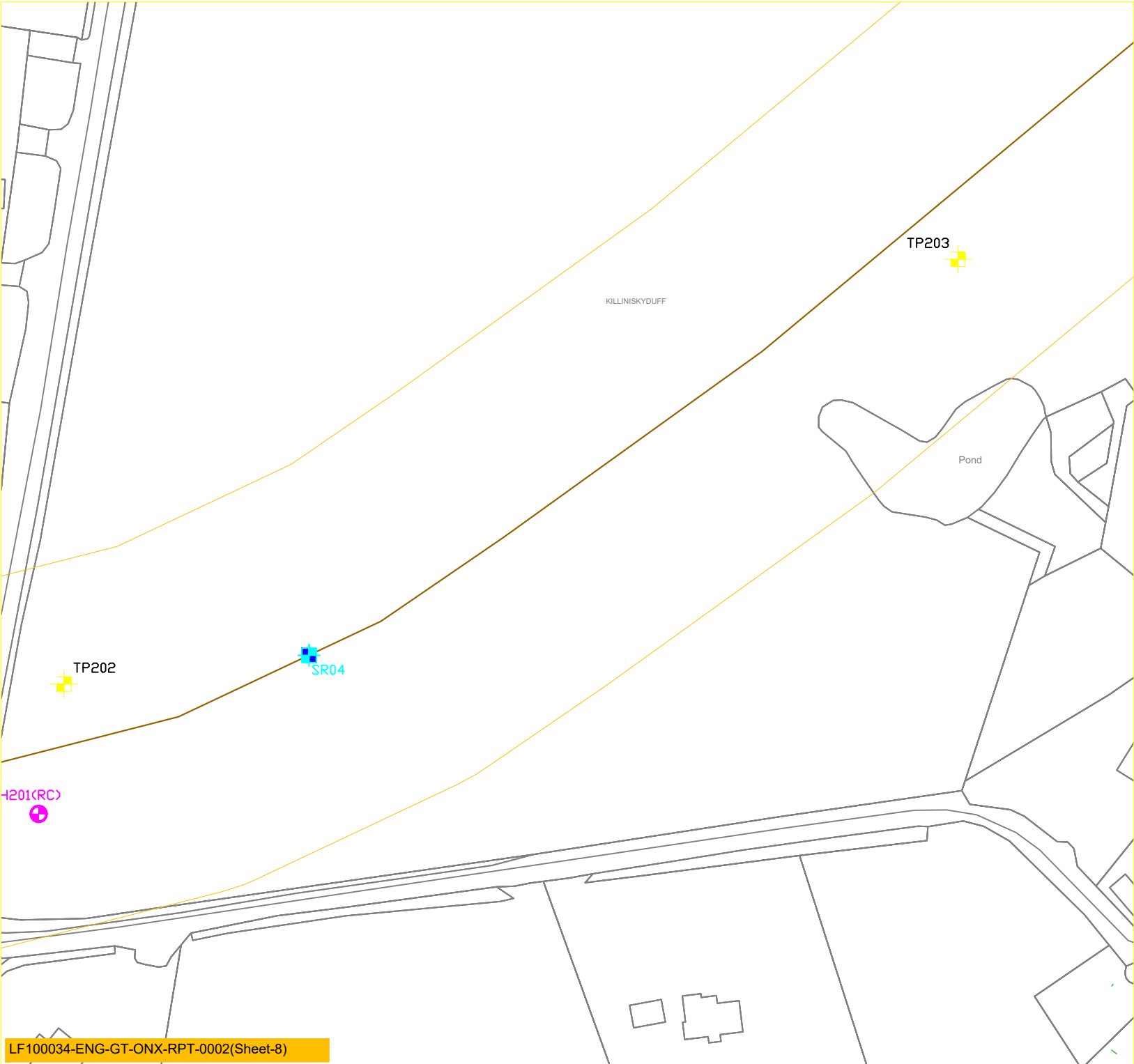
Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-6)	



LEGEND

- TRIAL PIT
- BOREHOLE (CP+RC)
- CP- CABLE PERCUSSIVE
- RC- ROTARY CORE
- SOIL RESISTIVITY

Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :	LF100034-ENG-GT-ONX-RPT-0002(Sheet-7)		



LEGEND

TRIAL PIT



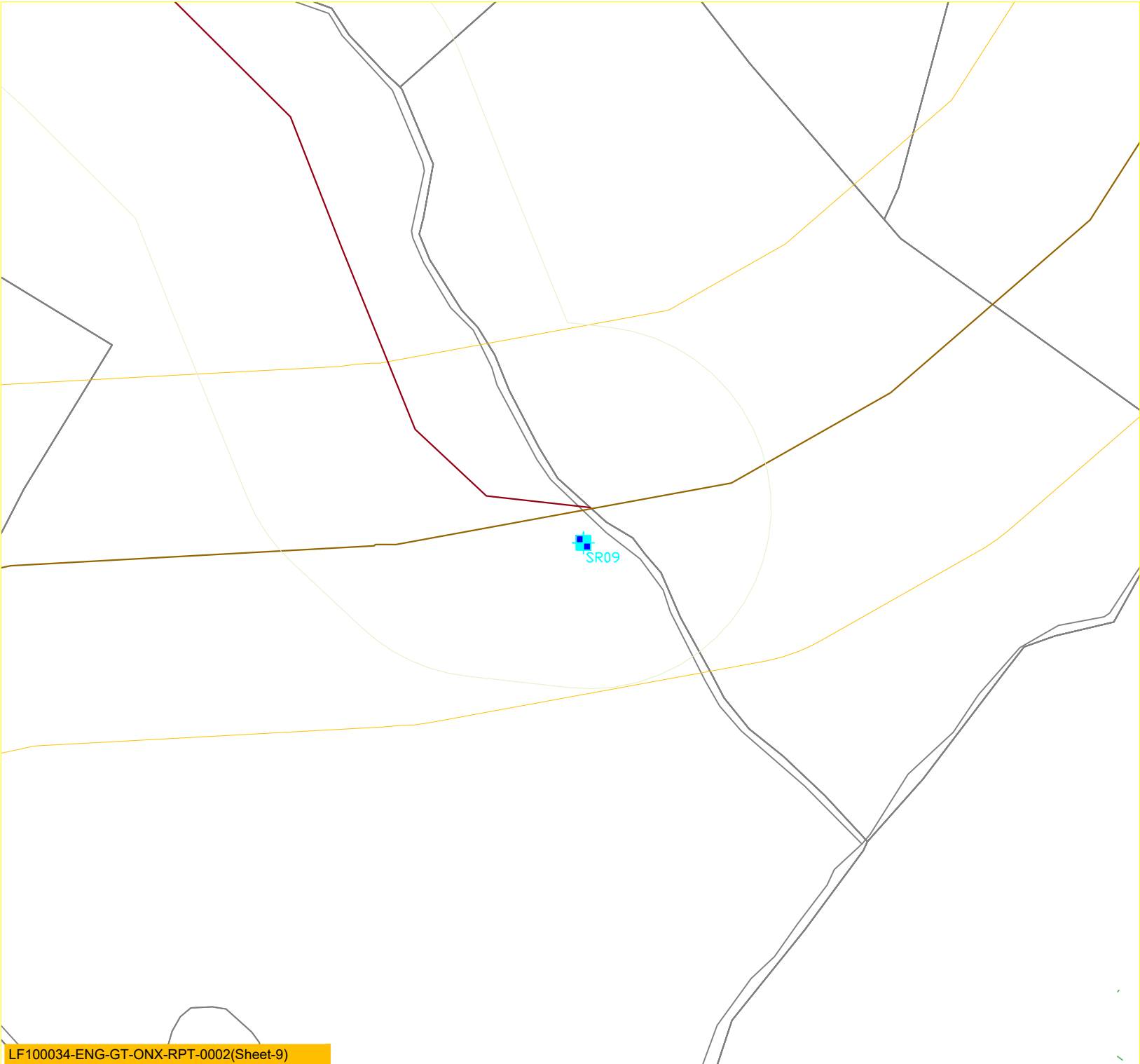
BOREHOLE (CP+RC)
CP- CABLE PERCUSSIVE
RC- ROTARY CORE



SOIL RESISTIVITY



Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-8)	



LEGEND

TRIAL PIT



BOREHOLE (CP+RC)

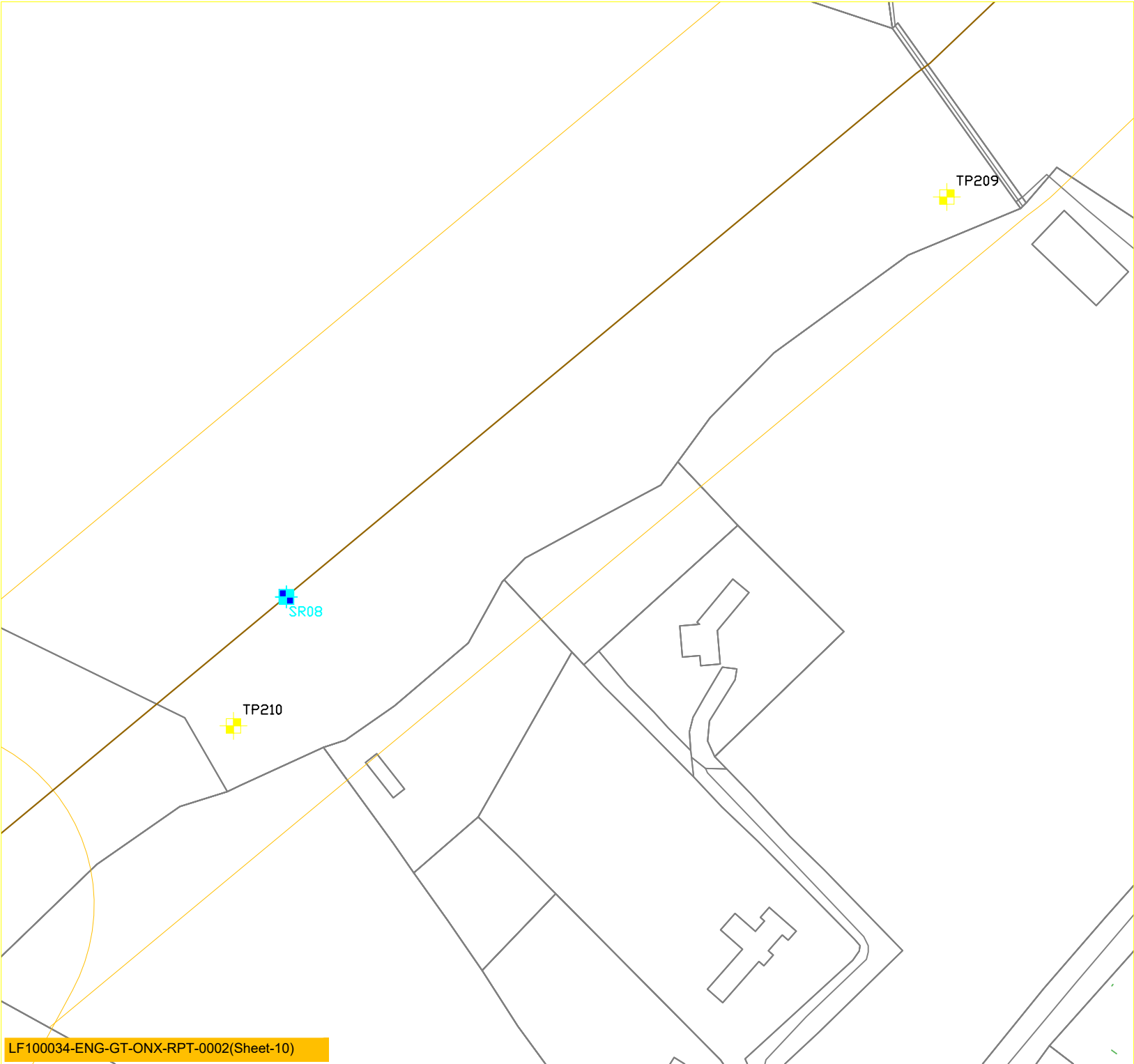
CP- CABLE PERCUSSIVE
RC- ROTARY CORE



SOIL RESISTIVITY



Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-9)	



LEGEND

- TRIAL PIT
- BOREHOLE (CP+RC)
CP- CABLE PERCUSSIVE
RC- ROTARY CORE
- SOIL RESISTIVITY

Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-10)	



LEGEND

TRIAL PIT



BOREHOLE (CP+RC)

CP- CABLE PERCUSSIVE
RC- ROTARY CORE



SOIL RESISTIVITY



1

Client :		SURE PARTNERS LIMITED (SPL)	
Project :		ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	23-11-2020	Scale :	not to scale
Description :		I.D.L (AS BUILT)	
Drawing Number :		LF100034-ENG-GT-ONX-RPT-0002(Sheet-11)	



LEGEND

TRIAL PIT



BOREHOLE (CP+RC)

CP- CABLE PERCUSSIVE
RC- ROTARY CORE



SOIL RESISTIVITY



1

Client :	
SURE PARTNERS LIMITED (SPL)	
Project :	
ARKLOW BANK WIND PARK (CABLE ROUTE)	
Date :	Scale :
23-11-2020	not to scale
Description :	
I.D.L (AS BUILT)	
Drawing Number :	LF100034-ENG-GT-ONX-RPT-0002(Sheet-12)

Appendix 11 Digital Data