BORD NA MÓNA – MONETTIA BOG

Surface Water Monitoring Summary

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SURFACE WATER MONITORING SUMMARY

Document status

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Prepared by:	Prepared for:
RPS	Bord na Móna

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1 INTRODUCTION

This report has been prepared for Bord na Móna in response to a Request for Information (RFI) received from the Environmental Protection Agency (EPA or 'the Agency') on 18th November 2022, in relation to surface water monitoring at Monettia Bog, Ballinvally, Co. Offaly (hereafter referred to as the site).

The RFI sought records (including laboratory reports) and interpretation of all surface water monitoring undertaken by RPS at the site since January 2022. This report includes the results of all updated surface water monitoring (field and lab data) completed by RPS and Bord na Móna to April 2023 (Q2 2023), and an interpretation of the existing hydrological conditions at the site.

The site forms part of the Boora Group Integrated Pollution Control (IPC) licensed bog unit (IPC Reg. No. P0500-01) and has been subject to ongoing monitoring and assessment of associated surface waters for over 20 years.

Bord na Móna are in regular consultation with the EPA concerning the site which is currently the subject of ongoing remediation efforts. The site is currently at 'Stage 2 Corrective Action and Feasibility' of the EPA's Contaminated Land and Groundwater Risk Assessment process. The site's subsurface (soil and groundwater) is impacted by Light Non-Aqueous Phase Liquid (LNAPL) from an historic diesel release. Previous site investigations and monitoring have identified associated dissolved phase hydrocarbon impacts to the underlying shallow sand and gravel aquifer within the central area of the site.

This report should be considered in combination with those previously submitted to the Agency, including:

- Detailed Site Assessment Report, 18th May 2022, RPS Reference: IE000335Rp0002;
- Quantitative Risk Assessment Report, 29th August 2022, RPS Reference: IE000335Rp0003;
- Quarterly Groundwater Monitoring Reports produced by RPS in 2022 and 2023, RPS Reference: IE000335Rp0004; and,
- Previous Surface Water Monitoring Reports produced by RPS, RPS Reference: IE000335Rp0006.

2 SITE BACKGROUND

The Bord na Móna owned Monettia Bog facility is located in Ballinvally, Co. Offaly, approximately 8.2 kilometres (km) south of Tullamore Town. The Offaly / Laois County boundary lies approximately 350m southwest of the site. The site investigation study area of approx. 5.5 hectares (ha) is located on the northwest perimeter of Monettia Bog facility, which has a total approx. area of 682ha, extending approx. 2.5km to the south and 2.3km to the east of the site.

Bord na Móna were notified by Offaly County Council in December 2021 of hydrocarbon impacts to the Clodiagh River, downstream of the site. Upon investigation of potential sources by Bord na Móna and EPA, it was confirmed that hydrocarbons had migrated from the site via the existing buried and surface drains. Bord na Móna undertook immediate measures to remove the existing pathway to surface waters (e.g., disconnect existing pipework and block drains) and also implemented downstream measures including deploying adsorbent boom at outfall locations. Weekly visual inspections of watercourses on and off-site have been ongoing since January 2022. No impacts (i.e., hydrocarbon sheen) have been observed to date, apart from sheen in the isolated (no inlet/outlet) drain approximately 20m west of the workshop building and hardstand. The source of this sheen is likely a combination of surface runoff from the hardstanding (machinery operations, HGV movements) and seepage of impacted groundwater.

Groundwater remediation efforts have been ongoing at the site since October 2022 to reduce the volume of available free product (diesel source) from the water table in the central portion of the site. An automated total fluids pumping system (with off-site treatment) has been in operation since early March 2023. The recovered pumped product-groundwater mix is temporarily stored on site (bunded storage tank) prior to regular removal for off-site treatment at a licensed facility. No fuel or known hazardous chemicals are stored on the site.

RPS conduct monthly groundwater monitoring at the site. Dissolved phase groundwater impacts are assessed quarterly with reports submitted to the Agency. Since RPS involvement in January 2022 there has been no evidence of migration of impacted groundwater to surface waters at the western site boundary. The nearest impacted monitoring well location is approx. 95m east of the site boundary drain.

Bord na Móna ceased operations at the facility in late 2022 and the site is currently in a decommissioning phase. The former workshop building is leased by a 3rd party for use in timber truss assembly.

The site consists of an equipment maintenance workshop, a milled peat tippler transfer station, a rail maintenance building, an inactive refuelling area (3 no. above ground storage tanks), a materials storage shed, a weighbridge, uncovered peat/aggregate storage bays, internal roads and a staff parking area. A disused Bord na Móna railway network extends southeast from the works area into Monettia Bog. The site is also used to temporarily store disused peat harvesting equipment.

Commercial peat harvesting has taken place in some form at the site since the mid 1970's. Bord na Móna ceased commercial peat harvesting operations at Monettia Bog in 2020, with remaining stocks of milled peat expected to be transferred off-site by the end of September 2022.

Agricultural land (rough pasture) adjoins the site to the west, north, northeast and southwest, with the peatland to the south and southeast. Ten No. (10) one-off residential dwellings are located within a 500m radius of the site, situated along the local roads L2002 and L2006 to the north and west. The site topography is relatively flat with a gradual fall to the southwest and elevation is between 80m and 82m above ordnance datum (mAOD).

A series of open drainage channels lie circa (c.) 75m south of the workshop and extend a further c. 320m to the south. Surface water runoff drains north-northeast and northwest via these channels, entering a boundary drain c. 50m west of the workshop. This boundary drain flows to the northwest corner of the site from where it enters a buried culvert and flows west to the Clodiagh River, c. 280m west of the site. The Clodiagh River flows in a general northwest direction and is a tributary to the Brosna River.

3 HYDROLOGICAL SETTING

The regional hydrology has been determined using Geological Survey Ireland (GSI) online Spatial Resources and the EPA's online map viewer.

3.1 Surface Water Catchment

The site is located in the Clodiagh(Tullamore)_SC_010 Water Framework Directive (WFD) sub-catchment within the Lower Shannon WFD Catchment (Hydrometric Area: 25A).

The site is situated in the Clodiagh(Tullamore)_020 (EPA Code: IE_SH_25C060300) WFD River Sub Basin, therefore, surface water at the site is expected to flow west towards the Clodiagh(Tullamore)_020 river waterbody. This river continues north of the site where it eventually joins the Brosna and Lower Shannon which flow towards Lough Derg and the Lower Shannon Estuary (west of Limerick).

The surface waterbodies discussed in this section are displayed in **Figure 3-1**. According to the EPA database, the closest surface waterbody is the Clodiagh River c. 280m west of the site boundary. The outfall location to the Clodiagh River is located at SW102, detailed in **Table 5.1** and **Figure 5-1**.

3.2 Surface Water Quality

The Clodiagh (Tullamore) at EPA Gorteen Bridge monitoring station (RS25C060300) is located approximately 0.8km down-gradient (northwest) of the site. The Water Framework Directive Status (2016-2021) for the Clodiagh (Tullamore) is 'Good' and considered 'Not at Risk' of not achieving WFD objectives.

Q-Values are used by the EPA to express biological water quality, based on changes in the macro invertebrate communities of riffle areas brought about by organic pollution. The higher the pollution level in a watercourse, the lower the Q-value as summarised in **Table 3.1**. The EPA Q-Value for the Clodiagh (Tullamore) at Gorteen Bridge monitoring station is displayed in **Table 3.2**.

Table 3.1: EPA Biological Q-Value Ratings

Quality Ratings (Q)	Status	Water Quality
Q5, Q4-5	High	Unpolluted
Q4	Good	Unpolluted
Q3-4	Moderate	Slightly Polluted
Q3, Q2-3	Poor	Moderately Polluted
Q2, Q1-2, Q1	Bad	Seriously Polluted

Table 3.2: Historic EPA Q-Value Range for Stations on the Clodiagh (Tullamore) 1978-2021

Year	'78	'82	'84	'87	'93	'96	'99	'02	'05	'11	'14	'17	'21
Clodiagh (Tullamore)	5	5	5	4-5	5	4-5	4-5	4-5	4-5	4	4-5	4-5	4-5

The EPA water quality results show that the Clodiagh (Tullamore) has been of 'High' status (unpolluted) from 1978 until 2021, with the exception of 2011 where status was considered 'Good'.

3.3 Site Observations

A series of open drainage channels lie approximately 75m south of the workshop and extend a further c. 320m to the south. Surface water runoff drains north-northeast and northwest via these channels, entering a boundary drain c. 50m west of the workshop. This boundary drain flows to the northwest corner of the site from where it enters a buried culvert and flows west to an outfall at the Clodiagh River, c.280m west of the site. The Clodiagh River flows in a general northwest direction and is a tributary to the Brosna River.

An oil/water interceptor is located at the southeast of the site, on the west side of the 3 no. disused diesel AST's. The outflow pipe from this interceptor runs approximately west across the site to a concrete manhole chamber c.50m to the west. This then discharges to an open drainage channel c.20m west of the workshop building. A section of the buried piping leading from the interceptor was removed, and the outflow from this

drainage channel was blocked by Bord na Móna in January 2022, preventing further migration of contaminants via this pathway to the boundary drain.

3.4 Flooding

The Office of Public Works (OPW) flood mapping website shows that the site does not reside within river or coastal flood zones. Similarly, the site does not reside in any rainfall (pluvial) flood zones. Furthermore, no past flood events or historic flood zones have been mapped by the OPW on the site.

According to the OPW, the Clodiagh River is indicated to have a Low (1-in-a-1000 chance of occurring) to High (1-in-a-10 chance of occurring) probability of flooding, however, this is localised to 20m from the riverbank and does not include the site.

From reviewing all available data, it is concluded that the site is an appropriate development within this area, and there are no flooding or surface water management issues related to the site.

3.5 Designated Sites

Designated sites refer to National Heritage Areas (NHAs) and proposed National Heritage Areas (pNHA) that are deemed to be of national ecological importance and are afforded protection under the Wildlife (Amendment) Act 2000. European designated sites include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

The National and European designated sites within 5km of the site are summarised in **Table 3.3** and displayed in **Figure 3-2**.

Table 3.3: Designated Sites

Name	Code	Features of Interest	Hydraulic Connectivity
European			
River Barrow and River Nore SAC	002162	• Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Reefs [1170] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • European dry heaths [4030] • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] • Petrifying springs with tufa formation (Cratoneurion) [7220] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096]	This SAC is located c. 3.9km upgradient of the site, in a hydrologically separate sub-catchment, and therefore hydraulic connectivity to the site is not anticipated.

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Name	Code	Features of Interest	Hydraulic Connectivity
		• Lampetra fluviatilis (River Lamprey) [1099] • Alosa fallax fallax (Twaite Shad) [1103] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355] • Trichomanes speciosum (Killarney Fern) [1421] • Margaritifera durrovensis (Nore Pearl Mussel) [1990]	
Charleville Wood SAC	000571	• Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	This SAC is located c. 5.7km northwest of the site, in the same sub-catchment, the Clodiagh River flows through the SAC and therefore potential hydraulic connectivity exists.
National			
Hawkswood Bog NHA	002355	• Peatlands [4]	Surface feature and therefore not hydraulically connected to the site.
Screggan Bog NHA	000921	• Peatlands [4]	Surface feature and therefore not hydraulically connected to the site.
Annaghmore Lough Fen (Offaly)	000413	-	Surface feature and therefore not hydraulically connected to the site.
Clonad Wood	000574	-	Surface feature and therefore not hydraulically connected to the site.

The River Barrow and River Nore Special Area of Conservation (SAC) lies c. 3.9km to the southeast of the site. The Charleville Wood SAC is located c. 5.7km northwest of the site. Potential hydrologic connectivity exists between the site and Charleville Wood SAC via the Clodiagh River.

Legend

- Study
- Inferred Red Line Boundary
- WFD River Waterbodies

Data Source: World Imagery, Environmental Protection Agency

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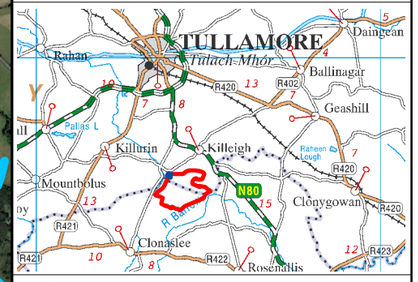
Kilometres



Client

Bord na Móna

Monettia Bog

Title

Figure 3.1:
Surface Waterbodies

West Pier
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Co Dublin, Ireland.

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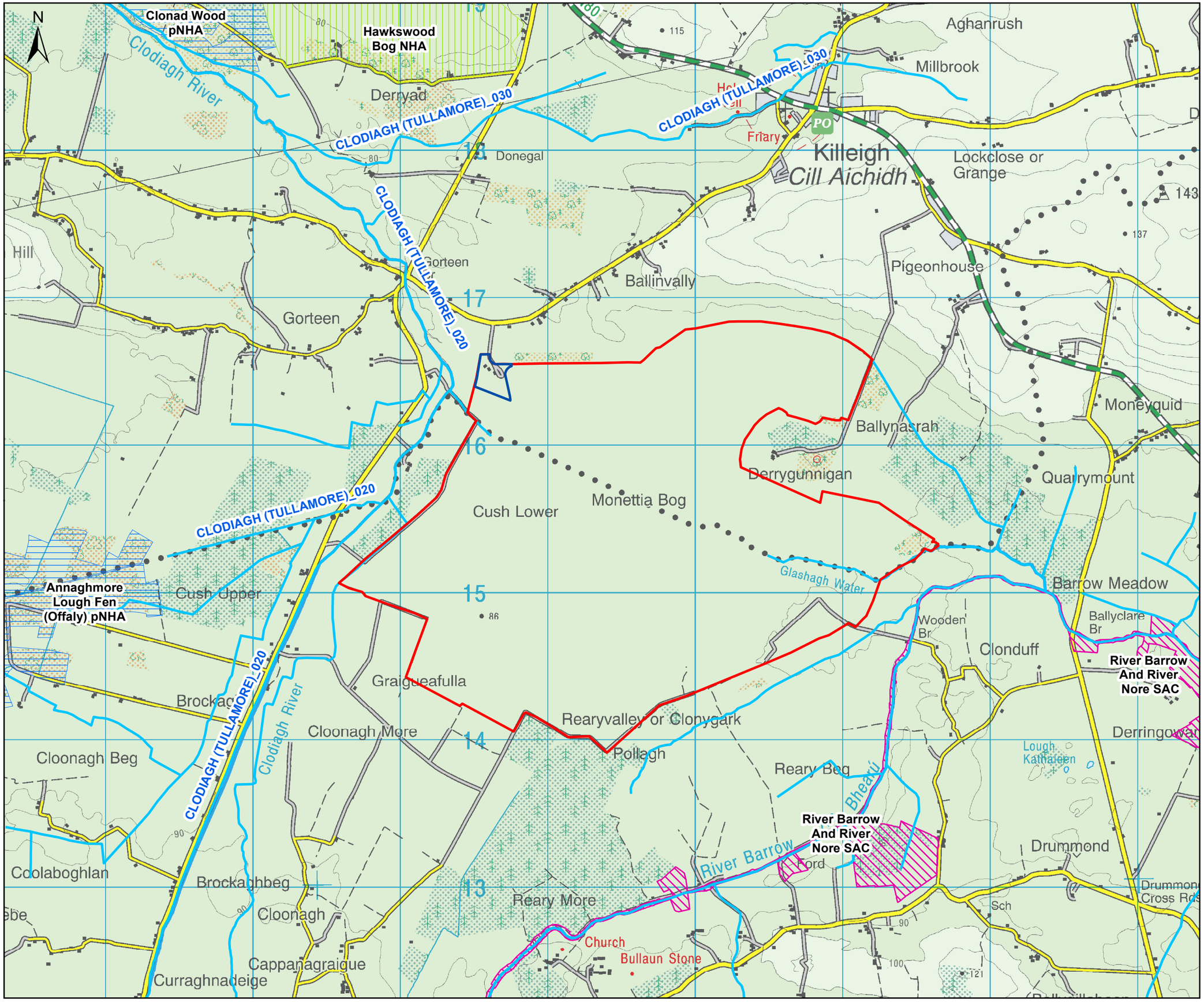
Issue Details

File Identifier:
IE000335-RPS-00-XX-DR-Z-AG-0005

Status:	**Rev:**	**Model File Identifier:**
S0	P01	

Drawn: MK	**Date:** 18/05/2022
Checked: EH	**Scale:** 1:24,000 (A3)
Approved: PC	**Projection:** ITM



Legend

- Study Area
- Inferred Red Line Boundary
- Watercourses
- SAC
- NHA
- pNHA

Data Source: NPWS, OSi

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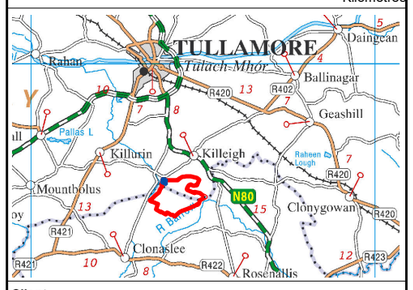
Kilometres



Client

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Figure 3.2: Designated Sites

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Issue Details

File Identifier: IE000335-RPS-00-XX-DR-Z-AG-0008		
Status: S0	**Rev:** P02	**Model File Identifier:**
Drawn: NR		**Date:** 18/04/2023
Checked: EH		**Scale:** 1:24,000 (A3)
Approved: PC		**Projection:** ITM

4 SURFACE WATER LEGISLATION

4.1 Directive 2008/105/EC Setting Environmental Quality Standards in the Field of Water Policy

The directive sets Environmental Quality Standards (EQSs) for priority substances and eight other pollutants. These substances include the metals (cadmium, lead, mercury and nickel, and their compounds), benzene, polyaromatic hydrocarbons (PAH), and several pesticides.

The EQSs in Directive 2008/105/EC are limits on the concentration of pollutants in water. The stated thresholds must not be exceeded if a good chemical status is to be met. The EQSs are different for:

- Inland surface waters (rivers and lakes); and,
- Other surface waters (transitional, coastal and territorial waters).

European Union countries must ensure compliance with the EQSs. They must also take measures to ensure that the concentrations of substances that tend to accumulate in sediment and/or water do not increase significantly.

There have been two amendments to the Directive, these include:

- S.I. No. 386 of 2015: European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015; and,
- S.I. No. 77 of 2019: European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019.

5 SURFACE WATER SAMPLING AND RESULTS

RPS have conducted three (3 no.) surface water (SW) monitoring events, with samples taken on 12th February, 1st March, and 13th April 2022, from the four (4 no.) monitoring locations identified in **Figure 5-1** and detailed in **Table 5.1**.

Bord na Móna have conducted five (5 No.) SW monitoring events with samples taken on 29th November 2022, 15th December 2022, 31st January 2022, 22nd February 2023 and 18th April 2023 from the same four (4 no.) monitoring locations.

The schedule of surface water monitoring events are detailed in **Table 5.2**.

Table 5.1: Surface Water Monitoring Locations

ID Ref.	Location Description	Coordinates (ITM)
SW101	**Clodiagh** (Tullamore) **River** at Gorteen Bridge, located approximately 800m **down-gradient** (northwest) of the site. Sample point at northwest (downstream) side of L2002 road bridge. Sample point located approx. 600m downstream from the site discharge point (SW102).	E633970, N717202
SW102	**Clodiagh** (Tullamore) **River** at site outfall (concrete culvert), located approx. 300m **down-gradient** (west) of the site. Sample point located on east bank immediately downstream of concrete culvert discharge point.	E634209, N716629
SW103	**Clodiagh** (Tullamore) **River**, located approx. 2.3km **up-gradient** (southwest) of the site in Cush Upper, Co. Laoise. Sample point located approx. 20m upstream (south) of existing L6007 road bridge.	E633087, N714618
SW201	**Site boundary drain** (western boundary), located at northwest corner of site. Sample point located approx. 70m northwest of workshop building, immediately upstream of entry to culvert. On-site drains and retention ponds discharge directly to this un-named stream.	E634476, N716631

Table 5.2: Surface Water Monitoring Events

ID Ref.	12/02/2022	01/03/2022	13/04/2022	29/11/2022	15/12/2022	31/01/2023	22/02/2023	18/04/2023
SW101								
SW102								
SW103								
SW201								

Key:

Monitoring undertaken by RPS

Monitoring undertaken by Bord na Móna

N

Clodiagh River Downstream

SW101

CLODIAGH (TULLAMORE)_020

Gorteen Br

Gorteen

17

Site Boundary Drain

Clodiagh River Outfall

SW102

SW201

CLODIAGH (TULLAMORE)_020

16

Cush Lower

Mor

Cush Upper

CLODIAGH (TULLAMORE)_020

15

86

Clodiagh River Upstream

SW103

Legend

- Inferred Red Line Boundary
- Study Area
- SW Monitoring Locations
- Watercourses

Data Source: OSi, EPA

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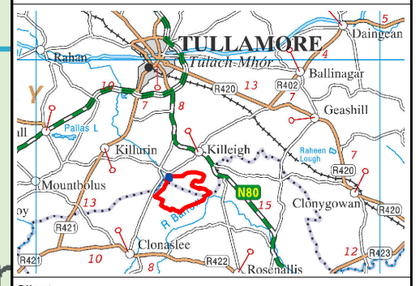
Kilometres



Client

Bord na Móna

Monettia Bog

Title

Figure 5.1:
Surface Water Monitoring Locations

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Issue Details

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5.1 RPS Surface Water Sampling

Surface water samples taken by RPS were sent to Element in Deeside, UK for analysis. The accreditations and approvals for this facility can be found on Element's website (https://www.element.com/locations/europe/deeside).

Surface water samples were submitted for analysis to Element in Deeside, UK (accredited laboratory) for the following parameters:

- Extractable Petroleum Hydrocarbons (EPHs);
- Gasoline Range Organics (GROs);
- Volatile Organic Compounds (VOCs) and Tentatively Identified Compounds (TICs);
- Semi Volatile Organic Compounds (SVOCs) and TICs;
- Metals (Dissolved Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Vanadium and Zinc);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- pH;
- Conductivity;
- Chemical Oxygen Demand (COD);
- Total Suspended Solids; and,
- Turbidity.

The surface water samples were taken in accordance with industry best practice and RPS' standard sampling protocol. The appropriate PPE (i.e. gloves) were used throughout sampling. Samples were collected in laboratory supplied containers and stored in chilled cool boxes following sampling and during transit to the laboratory. A rigorous chain of custody procedure was used during the sampling and transport of samples.

5.2 Bord na Móna Surface Water Sampling

Surface water samples taken by Bord na Móna were sent to Complete Laboratory Solutions (CLS), Galway, Ireland. The accreditations and approvals for this facility can be found on CLS's website (https://cls.ie/services/).

The surface water samples submitted by Bord na Móna were analysed for the following parameters:

- Extractable Petroleum Hydrocarbons (EPHs) (C8-C40, Diesel Range and Lube Oil);
- Petrol Range Organics (PRO) (C5-C12)
- Volatile Organic Compounds (VOCs) and Tentatively Identified Compounds (TICs);
- Semi Volatile Organic Compounds (SVOCs) and TICs;
- Metals (Dissolved Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium (total, III and hexavalent), Copper, Lead, Mercury, Nickel, Selenium, Vanadium and Zinc);
- Polycyclic Aromatic Hydrocarbons (PAHs) – Total 16;
- pH;
- Conductivity;
- Chemical Oxygen Demand (COD);
- Suspended Solids; and,
- Turbidity.

5.3 Generic Quantitative Risk Assessment

The surface water results were screened against the applicable 2019 Environmental Quality Standards (EQS) for inland water bodies.

Surface water samples submitted by RPS were sent to Element for analysis and surface water samples submitted by Bord na Móna were sent to CLS for analysis. The laboratory certificates are provided in **Appendix A** and the screened surface water results are displayed in **Appendix B**.

Laboratory analysis of samples taken from all locations to date including the Clodiagh River (downstream of the site at Gorteen Bridge) have not exceeded the 2015 EQS for analytes including dissolved metals, PAHs, VOCs, semi-volatile organics (SVOCs), GRO/PRO and EPH.

5.4 Results

5.4.1 February 2022

Surface waters from SW101 (Gorteen Bridge) taken on 17th February 2022 were analysed by Element.

Dissolved barium and boron concentrations were detected in SW101, there are no surface water Environmental Quality Standards for inland surface waters for these parameters. All other metals were below the laboratory Limit of Detection (LoD).

PAH concentrations were below the laboratory LoD.

GRO and EPH concentrations in SW101 were below the laboratory LoD.

VOC and SVOC concentrations in SW101 were below the laboratory LoD.

5.4.2 March 2022

Surface waters from SW201 (Boundary Drain) taken on 1st March 2022 were analysed by Element.

Dissolved barium concentrations were detected in SW101, there are no surface water Environmental Quality Standards for inland surface waters for this parameter. All other metals were below the laboratory Limit of Detection (LoD).

PAH concentrations were below the laboratory LoD.

GRO and EPH concentrations in SW201 were below the laboratory LoD.

VOC and SVOC concentrations in SW201 were below the laboratory LoD.

5.4.3 April 2022

Surface waters from SW101 (Clodiagh - Downstream), SW102 (Clodiagh - Outfall), SW103 (Clodigh - Upstream) and SW201 (Site Boundary Drain) taken on 13th April 2022 were analysed by Element.

Dissolved barium concentrations were detected at SW101, SW102, SW103 and SW201, and dissolved boron concentrations were detected in SW102 and SW201. There are no surface water Environmental Quality Standards for inland surface waters for these parameters. All other metals were below the laboratory Limit of Detection (LoD).

PAH concentrations were below the laboratory LoD.

GRO and EPH concentrations in SW101, SW102, SW103 and SW201 were below the laboratory LoD.

VOC and SVOC concentrations in SW101, SW102, SW103 and SW201 were below the laboratory LoD.

5.4.4 November 2022

Surface waters from SW101, SW103 and SW201 taken on 29th November 2022 were analysed by CLS.

Dissolved arsenic concentrations were detected in SW101 and SW201, dissolved barium concentrations were detected in SW101, SW103 and SW201, dissolved boron concentrations were detected in SW101 and SW201

and dissolved selenium concentrations were detected in SW101. There are no surface water EQS for inland surface waters for these parameters.

Dissolved nickel concentrations were detected in SW101, SW103 and SW201, however, the concentrations were below the SW EQS.

All other metals were below the laboratory LoD.

PAH concentrations were below the laboratory LoD.

PRO was detected in SW201 (44ug/l). EPH concentrations were detected in SW101 (66ug/l), SW103 (34ug/l) and SW201 (58ug/l). There are no surface water Environmental Quality Standards for inland surface waters for these parameters.

VOC and SVOC concentrations in SW101, SW103 and SW201 were below the laboratory LoD.

5.4.5 December 2022

Surface waters from SW101, SW103 and SW201 taken on 15th December 2022 were analysed by CLS.

Dissolved arsenic concentrations were detected in SW101 and SW201, dissolved barium concentrations were detected in SW101, SW103 and SW201, dissolved boron concentrations were detected in SW101 and SW201, dissolved selenium concentrations were detected in SW101 and SW201 and dissolved zinc concentrations were detected in SW101 and SW201. There are no surface water Environmental Quality Standards for inland surface waters for these parameters.

Dissolved nickel concentrations were detected in SW101 and SW201, however, the concentrations were below the SW EQS.

All other metals were below the laboratory Limit of Detection (LoD).

PAH concentrations were below the laboratory LoD.

PRO concentrations were below the laboratory LoD.

EPH concentrations were detected in SW101 (189ug/l), SW103 (153ug/l) and SW201 (158ug/l). There are no surface water EQS for inland surface waters for these parameters.

Dichloromethane (VOC) concentrations were detected in SW101 (1.57ug/l), SW103 (1.95ug/l) and SW201 (1.99ug/l), however, these concentrations are below the SW EQS (20ug/l). All other VOC concentrations in SW101, SW103 and SW201 were below the laboratory LoD.

SVOC concentrations in SW101, SW103 and SW201 were below the laboratory LoD.

5.4.6 January 2023

Surface water samples were collected at SW101, SW102, SW103 and SW201 by Bord na Móna on 31st January 2023, and submitted to CLS for analysis.

Dissolved arsenic concentrations were detected in SW101, SW102 and SW201, dissolved barium concentrations were detected in SW101, SW102, SW103 and SW201, dissolved boron concentrations were detected in SW101, SW102 and SW201 and dissolved selenium concentrations were detected in SW102 and SW201. There are no surface water EQS for inland surface waters for these dissolved metals.

Dissolved nickel concentrations were detected in SW101, SW102 and SW201, however, the concentrations were below the SW EQS.

All other dissolved metals were below the laboratory LoD.

PAH concentrations were below the laboratory LoD.

PRO (C5-C12) concentrations were below the laboratory LoD of 10ug/l.

EPH concentrations were detected in SW101 (20ug/l), SW102 (18ug/l), SW103 (18ug/l) and SW201 (31ug/l). There are no surface water EQS for inland surface waters for these parameters.

VOC and SVOC concentrations in SW101, SW102, SW103 and SW201 were below the laboratory LoD.

5.4.7 February 2023

Surface waters from SW101, SW102, SW103 and SW201 taken on 22nd February 2023 by Bord na Móna were analysed by CLS.

Dissolved arsenic was detected above the LoD in SW201 (1ug/l), dissolved barium was detected above the LoD in SW101 (157ug/l), SW102 (149ug/l), SW103 (152ug/l) and SW201 (194ug/l), dissolved boron was detected above the LoD at SW101 (11ug/l), SW102 (11ug/l) and SW201 (18ug/l), total dissolved chromium was detected in SW102 (1ug/l), and dissolved selenium was detected in SW201 (1ug/l). There are no surface water EQS for inland surface waters for these parameters.

Dissolved nickel was detected in SW101, SW102 and SW201, however, the reported concentrations were below the SW EQS of 20ug/l.

All other metals were below the laboratory Limit of Detection (LoD).

There were no detections reported for PAHs above the laboratory LoD at SW101 and SW201. Naphthalene was detected at SW102 (0.012ug/l) and SW103 (0.013µg/l); these values are below the SW EQS for naphthalene (2.4µg/l).

PRO concentrations were below the laboratory LoD at SW101 and SW103. PRO was detected at SW102 and SW201 at 13 and 16µg/L, respectively. There is no SW EQS value for PRO.

EPH concentrations were detected in SW101 (33ug/l), SW102 (37ug/l), SW103 (36ug/l) and SW201 (43ug/l). There are no surface water Environmental Quality Standards for inland surface waters for these parameters.

VOC and SVOC concentrations in SW101, SW102, SW103 and SW201 were below the laboratory LoD.

5.4.8 March 2023

Samples were taken by Bord na Móna over three consecutive days in early March 2023 at the request of the Agency, in order to further assess the potential for hydrocarbon impacts, i.e., EPH (C8-C40). Samples were submitted to CLS laboratories for EPH analysis only. The results of this monitoring are displayed in Table 5.3.

Table 5.3: EPH Concentrations in March 2023 (µg/l)

Date	SW101	SW102	SW103	SW201
01/03/2023	65	45	69	73
02/03/2023	50	81	92	79
03/03/2023	49	60	56	63

5.4.9 April 2023

Surface waters from SW101, SW102, SW103 and SW201 taken on 18th April 2023 by Bord na Móna were analysed by CLS.

Dissolved arsenic was detected above the LoD in SW201 (1ug/l), dissolved barium was detected above the LoD in SW101 (199ug/l), SW102 (165ug/l), SW103 (187ug/l) and SW201 (211ug/l), dissolved boron was detected above the LoD at SW101 (15ug/l), SW102 (14ug/l) and SW201 (20ug/l), and dissolved selenium was detected in SW201 (1ug/l). There are no surface water EQS for inland surface waters for these parameters.

Dissolved nickel was detected in SW101, SW102 and SW201, however, the reported concentrations were below the SW EQS of 20ug/l.

All other metals were below the laboratory Limit of Detection (LoD).

Naphthalene was detected at SW101 (0.021ug/l), SW102 (0.012ug/l), SW103 (0.010µg/l) and SW201 (0.011ug/l); these values are below the SW EQS for naphthalene (2.4µg/l). All other PAH concentrations were below the laboratory LoD.

PRO concentrations were below the laboratory LoD at SW102, SW103 and SW201. PRO was detected at SW101 (10µg/L). There is no SW EQS value for PRO.

EPH concentrations were detected in SW101 (52ug/l), SW102 (78ug/l), SW103 (31ug/l) and SW201 (63ug/l). There are no surface water Environmental Quality Standards for inland surface waters for these parameters.

VOC and SVOC concentrations in SW101, SW102, SW103 and SW201 were below the laboratory LoD.

5.5 Discussion

The laboratory results reported detections (i.e., values above the analytical LOD [10µg/l]) of hydrocarbon related compounds, specifically EPH in January, February and April 2023 in all four monitoring locations, and PAHs in April 2023 at all four monitoring locations. Other hydrocarbon related compounds e.g., PAHs, VOCs (including BTEX) and SVOCs were below the limit of detection in April 2023.

The Surface Water Regulations, 2019 (S.I. No. 77/2019) EQS for priority hazardous substances in surface waters does not include a total petroleum hydrocarbon value, equivalent to EPH (C8-C40), PRO (C5-C12), or GRO (C4-C12) carbon ranges. EQS values are included in the 2019 Regulations for specific PAH compounds (e.g., naphthalene), however as there were no significant detections of PAH these are not relevant in this case.

The Quality of Salmonid Waters Regulations, 1988 (S.I. No. 293/1988) includes reference to petroleum hydrocarbons, stating that; *'Petroleum products must not be present in such quantities that they: form visible film face on the surface of the water or form coatings on the beds of watercourses and lakes'.* Monitoring and inspections undertaken to date have not observed a visible hydrocarbon sheen at any of the monitoring points.

The laboratory (CLS, Galway) which conducted the hydrocarbon analysis was asked to further interpret the results from February and March 2023 and stated the following in relation to the concentrations detected; *'the hydrocarbon levels are extremely low, in the parts per billion (ppb) range, and no evidence of fuels known to us including diesel are evident due to the low levels of detection'.*

It is RPS experience that in typical pollution cases where surface waters are impacted by hydrocarbons (e.g., diesel spill) EPH values in waters sampled are often in the hundreds of parts per million (ppm) for a period of time following the release. Concentrations reported to date for downgradient surface water monitoring points have been at least two orders of magnitude below this range.

It is noted that the Clodiagh River runs parallel to the L2006 local road, and the Gorteen Bridge sampling point is immediately downstream of the intersection of the L2006 and L2002 local roads. The Transport Infrastructure Ireland (TII) 2015 publication *Road Drainage and the Water Environment*[1] details concentrations of typical pollutants including specific and Total PAHs observed in road runoff. A mean value is provided for Total PAHs of 7.52µg/l. There were no significant detections for Total PAHs in surface water results to date above the lab LOD of 0.17µg/l.

Reported values above the LoD were noted for dissolved metals including arsenic, barium, boron, nickel and selenium. Dissolved barium concentrations downgradient of the site ranged from 165µg/l to 211µg/l, with an up-gradient value of 199µg/l. There is no EQS for barium. The presence of elevated levels of barium at both up- and down-stream locations relative to the site are indicative of naturally occurring, or other diffuse sources.

Reported values for boron ranged from below the laboratory LoD to 20µg/l. The LoD for boron is 10µg/l and there is no applicable EQS. There are numerous sources of boron in surface waters, both natural (e.g., rock and soil weathering) and anthropogenic (e.g., wastewater treatment plants). These detections of dissolved barium and boron on their own are not indicative of impacts from a hydrocarbon source.

To date RPS have not observed any visual impacts to surface waters either on-site or off-site. During steady rainfall where significant surface water run-off was visible, there was no sheen or evidence of hydrocarbons at site outfall points.

Groundwater quality within the central area of the site has been identified as having a concentrated LNAPL layer and confirmed dissolved-phase hydrocarbon impacts, including significantly elevated concentrations reported for BTEX, EPH, GRO and PAHs. The results of surface water quality monitoring at the nearest downgradient point to the groundwater plume (SW201, Site Boundary Drain) have not reported significantly elevated concentrations for hydrocarbons to date.

5.6 EPH Trend

The trend of reported Extractable Petroleum Hydrocarbons (EPH) (C8-C40) concentrations at SW101, SW102, SW103 and SW201 from December 2022 to April 2023 is provided in **Figure 5-2**. Slightly elevated

[1] Transport Infrastructure Ireland (TII) (2015) *Road Drainage and the Water Environment*, Report No. DN-DNG-03065, March 2015.

concentrations were reported for EPH during the December 2022 sampling event, at locations both upgradient and downgradient of the site. These detections are likely associated with stormwater runoff from heavy rainfall events (e.g., road runoff). It is likely that low level detections of petroleum hydrocarbons will persist in the Clodiagh River between monitoring points SW101 (downstream at Gorteen Bridge) and SW103 (upstream) of the site for the foreseeable future, due to its proximity to the local road network.

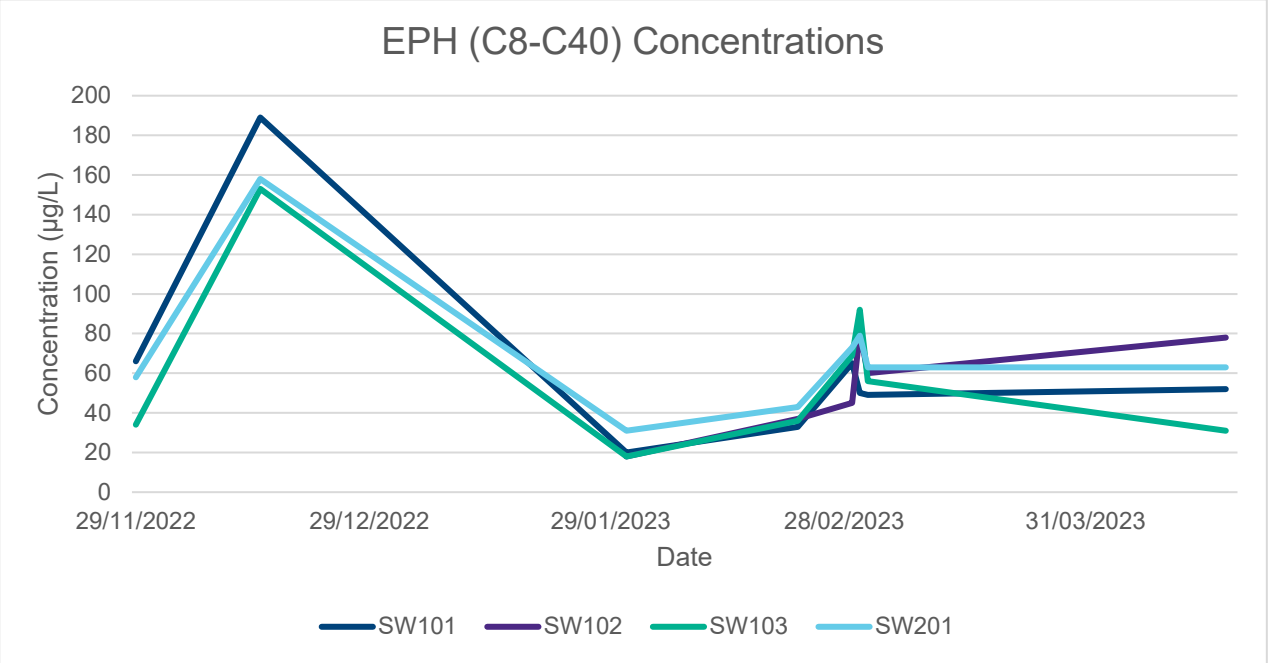

Figure 5-2: EPH Trends (November 2022 to March 2023)

6 CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) provides a representation of the biological, physical and chemical processes that create a pollutant linkage from the Source through the environmental media Pathway to a Receptor, a Source-Pathway-Receptor (SPR) linkage. The development of a CSM supports the identification and assessment of pollutant linkages and is revised as a project develops and more information is obtained.

The CSM in relation to hydrological receptors at the site is summarised in **Table 6.1**.

Table 6.1: Potential SPR Linkages Assessment

Source	Pathway	Receptor	Assessment
Leak from former Fuel Tanks and Associated Pipes	Surface Water Run-Off	Clodiagh River Surface Waterbody	The Clodiagh River is c. 280m west of the site, however, local drainage ditches are likely to intercept surface water and provide natural attenuation before encountering the Clodiagh River. There were no detections of PAHs and VOCs (including BTEX) in the down-gradient surface water monitoring location (SW101).
		Protected Areas	The River Barrow and River Nore SAC is up-gradient of the site and water from the site is not anticipated to impact this waterbody. The Charleville Wood SAC is down-gradient of the site and is likely hydrologically connected to the site. The distance to the Designated Site will allow for sufficient dilution of surface waters prior to it reaching the SAC.
Accidental Spills and Leaks from on-site Vehicles	Surface Water Run-Off	Clodiagh River Surface Waterbody	Volumes of potentially hazardous substances from on-site vehicles is expected to be minimal as refuelling activities will be of low volumes and undertaken on hardstanding areas with controls in place, thus limiting the source. There were no detections of PAHs and VOCs (including BTEX) in the down-gradient surface water monitoring location (SW101).
		Protected Areas	

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

RPS were requested by Bord na Móna to undertake a review of surface water monitoring carried out between February 2022 and April 2023, and provide a summary report, to include the results of all monitoring events within this period. An interpretation of the existing hydrological conditions at the site and an assessment of potential ecological impacts to the Clodiagh River has also been carried out.

RPS undertook surface water sampling on three separate occasions between 17th February and 13th April 2022, at 4 No. monitoring locations (3 downgradient, 1 upgradient). Bord na Móna conducted five (5 No.) surface water monitoring events with samples taken on 29th November 2022, 15th December 2022, 31st January 2023, 22nd February 2023 and 18th April 2023.

EPH (C8-C40) concentrations have consistently been detected above the lab LoD at all locations since November 2022, with the greatest concentrations recorded in December 2022. The concentrations of EPH reported to date are considered very low, and as such cannot be attributed to a particular hydrocarbon (e.g., diesel). The reported values for petroleum hydrocarbons are not indicative of a significant active pollution source or recent release.

PRO (C5-C12) concentrations above the lab LoD were reported at SW101 in December 2022, and at SW101 April 2023 (upgradient location). The reported concentrations for PRO are considered very low.

There were no exceedances of the applicable EQS for the range of analytes tested.

To date RPS have not observed any visual impacts to surface waters from hydrocarbons (or other sources) either on-site or off-site.

The potential for hydrologic connectivity between the site and Charleville Wood SAC c. 5.7km northwest, via the Clodiagh River was identified. No potential impacts to this SAC or protected species were identified based on the current surface water monitoring data and site activities.

No flooding or surface water management issues were identified relating to the site.

7.2 Recommendations

It is recommended that additional surface water monitoring events be carried out at quarterly intervals, for a further 6-month period, at the 4 No. existing monitoring points. Reporting requirements and further surface water monitoring beyond this period should be discussed with the Agency.

As the contaminant of potential concern on the site is an LNAPL groundwater plume related to an historic diesel release, it is recommended to include analysis via ‘total petroleum hydrocarbons criteria working group (TPHCWG)’ to the current suite. This will enable a direct comparison between groundwater and surface water quality and allow for more detailed risk assessments to be carried out, should they be required in the future.

The additional parameters and test methods should remain as per previous events, with close attention paid to any significant changes in EPH trends.

Regular visual inspections of the on-site drains, interceptors, and boundary stream should continue, with inspection records maintained.

Operations at the leased Bord na Móna workshop building on-site should be regularly inspected to ensure any potentially hazardous fuels or chemicals are stored in an appropriate manner.

Consideration should be given to completing an Appropriate Assessment for the ongoing groundwater remediation project at the site, given the identified downstream connectivity to Charleville Wood SAC.

8 REFERENCES

RPS Group, 2022. Bórd na Móna – Monettia Bog. Quantitative Risk Assessment Report. IE000335Rp0003.

RPS Group, 2022. Bórd na Móna – Monettia Bog. Detailed Site Assessment Report. IE000335Rp0002.

RPS Group, 2022. Monettia Bog, Co. Offaly Remediation Assessment Report. IE000335Rp0004.

RPS Group, November 2022. Bórd na Móna – Monettia Bog Surface Water Monitoring Summary IE000335Rp0006.

RPS Group, April 2023. Bórd na Móna – Monettia Bog Surface Water Monitoring Summary IE000335Rp0006.

S.I. No. 386 of 2015: European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015.

S.I. No. 77 of 2019: European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019.

Appendix A
Laboratory Certificates

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781
W: www.element.com

RPS
Lyrr 2, IDA Business and Tech Park
Galway
Ireland
H91 H9CK

Attention :	Eoin Hurst
Date :	8th March, 2022
Your reference :	IE000335
Our reference :	Test Report 22/3378 Batch 1
Location :	Monettia Bog
Date samples received :	1st March, 2022
Status :	Final report
Issue :	1

One sample was received for analysis on 1st March, 2022 and was scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/3378

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-5										LOD/LOR	Units	Method No.
Sample ID	SW201												
Depth													
COC No / misc													
Containers	V HN P G												
Sample Date	25/02/2022 11:40												
Sample Type	Surface Water												
Batch Number	1												
Date of Receipt	01/03/2022												
Dissolved Arsenic #	<2.5										<2.5	ug/l	TM30/PM14
Dissolved Barium #	66										<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5										<0.5	ug/l	TM30/PM14
Dissolved Boron	<12										<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5										<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	<1.5										<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7										<7	ug/l	TM30/PM14
Dissolved Lead #	<5										<5	ug/l	TM30/PM14
Dissolved Mercury #	<1										<1	ug/l	TM30/PM14
Dissolved Nickel #	<2										<2	ug/l	TM30/PM14
Dissolved Selenium #	<3										<3	ug/l	TM30/PM14
Dissolved Vanadium #	<1.5										<1.5	ug/l	TM30/PM14
Dissolved Zinc #	<3										<3	ug/l	TM30/PM14
PAH MS													
Naphthalene #	<0.1										<0.1	ug/l	TM4/PM30
Acenaphthylene #	<0.005										<0.005	ug/l	TM4/PM30
Acenaphthene #	<0.005										<0.005	ug/l	TM4/PM30
Fluorene #	<0.005										<0.005	ug/l	TM4/PM30
Phenanthrene #	<0.005										<0.005	ug/l	TM4/PM30
Anthracene #	<0.005										<0.005	ug/l	TM4/PM30
Fluoranthene #	<0.005										<0.005	ug/l	TM4/PM30
Pyrene #	<0.005										<0.005	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.005										<0.005	ug/l	TM4/PM30
Chrysene #	<0.005										<0.005	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.008										<0.008	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.005										<0.005	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.005										<0.005	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.005										<0.005	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.005										<0.005	ug/l	TM4/PM30
PAH 16 Total #	<0.173										<0.173	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.008										<0.008	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.008										<0.008	ug/l	TM4/PM30
PAH Surrogate % Recovery	83										<0	%	TM4/PM30
VOC TICs	ND											None	TM15/PM10
SVOC TICs	ND											None	TM16/PM30
GRO (>C4-C8) #	<10										<10	ug/l	TM36/PM12
GRO (>C8-C12) #	<10										<10	ug/l	TM36/PM12
GRO (>C4-C12) #	<10										<10	ug/l	TM36/PM12
EPH (C8-C40) #	<10										<10	ug/l	TM5/PM30

Element Materials Technology

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/3378

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-5										LOD/LOR	Units	Method No.
Sample ID	SW201												
Depth													
COC No / misc													
Containers	V HN P G												
Sample Date	25/02/2022 11:40												
Sample Type	Surface Water												
Batch Number	1												
Date of Receipt	01/03/2022												
Hexavalent Chromium	<6										<6	ug/l	TM38/PM0
Total Dissolved Chromium III	<6										<6	ug/l	TM0/PM0
COD (Settled) #	52										<7	mg/l	TM57/PM0
Electrical Conductivity @25C #	373										<2	uS/cm	TM76/PM0
pH #	8.26										<0.01	pH units	TM73/PM0
Total Suspended Solids #	22										<10	mg/l	TM37/PM0
Turbidity	10.0										<0.1	NTU	TM34/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/3378

SVOC Report : **Liquid**

EMT Sample No.	1-5												
Sample ID	SW201												
Depth													
COC No / misc													
Containers	V HN P G												
Sample Date	25/02/2022 11:40												
Sample Type	Surface Water												
Batch Number	1												
Date of Receipt	01/03/2022												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<1										<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5										<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5										<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5										<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1										<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5										<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1										<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5										<0.5	ug/l	TM16/PM30
4-Methylphenol	<1										<1	ug/l	TM16/PM30
4-Nitrophenol	<10										<10	ug/l	TM16/PM30
Pentachlorophenol	<1										<1	ug/l	TM16/PM30
Phenol	<1										<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<1+										<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1										<1	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5										<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1										<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5										<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1										<1	ug/l	TM16/PM30
Diethyl phthalate #	<1										<1	ug/l	TM16/PM30
Dimethyl phthalate	<1										<1	ug/l	TM16/PM30
Other SVOCs													
1,2-Dichlorobenzene #	<1										<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1										<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1										<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1										<1	ug/l	TM16/PM30
2-Nitroaniline	<1										<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5										<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1										<1	ug/l	TM16/PM30
3-Nitroaniline	<1										<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1										<1	ug/l	TM16/PM30
4-Chloroaniline	<1										<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1										<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5										<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5										<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5										<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1										<1	ug/l	TM16/PM30
Carbazole #	<0.5										<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5										<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1										<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1										<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1										<1	ug/l	TM16/PM30
Hexachloroethane #	<1										<1	ug/l	TM16/PM30
Isophorone #	<0.5										<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5										<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1										<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	109										<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	112										<0	%	TM16/PM30

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

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/3378

VOC Report : **Liquid**

EMT Sample No.	1-5										LOD/LOR	Units	Method No.
Sample ID	SW201												
Depth													
COC No / misc													
Containers	V HN P G												
Sample Date	25/02/2022 11:40												
Sample Type	Surface Water												
Batch Number	1												
Date of Receipt	01/03/2022												
VOC MS													
Dichlorodifluoromethane	<2										<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1										<0.1	ug/l	TM15/PM10
Chloromethane #	<3										<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1										<0.1	ug/l	TM15/PM10
Bromomethane	<1										<1	ug/l	TM15/PM10
Chloroethane #	<3										<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3										<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3										<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3										<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3										<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3										<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3										<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1										<1	ug/l	TM15/PM10
Bromochloromethane #	<2										<2	ug/l	TM15/PM10
Chloroform #	<2										<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2										<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3										<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2										<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2										<2	ug/l	TM15/PM10
Benzene #	<0.5										<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3										<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2										<2	ug/l	TM15/PM10
Dibromomethane #	<3										<3	ug/l	TM15/PM10
Bromodichloromethane #	<2										<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2										<2	ug/l	TM15/PM10
Toluene #	<5										<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2										<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2										<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3										<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2										<2	ug/l	TM15/PM10
Dibromochloromethane #	<2										<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2										<2	ug/l	TM15/PM10
Chlorobenzene #	<2										<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2										<2	ug/l	TM15/PM10
Ethylbenzene #	<1										<1	ug/l	TM15/PM10
m/p-Xylene #	<2										<2	ug/l	TM15/PM10
o-Xylene #	<1										<1	ug/l	TM15/PM10
Styrene	<2										<2	ug/l	TM15/PM10
Bromoform #	<2										<2	ug/l	TM15/PM10
Isopropylbenzene #	<3										<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4										<4	ug/l	TM15/PM10
Bromobenzene #	<2										<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3										<3	ug/l	TM15/PM10
Propylbenzene #	<3										<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3										<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3										<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3										<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3										<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3										<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3										<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3										<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3										<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3										<3	ug/l	TM15/PM10
n-Butylbenzene #	<3										<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3										<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2										<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3										<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3										<3	ug/l	TM15/PM10
Naphthalene	<2										<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3										<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	101										<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	108										<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/3378						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/3378

SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

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

EMT Job No: 22/3378

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			

EMT Job No: 22/3378

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM34	Turbidity by 2100P Turbidity Meter. complies with EPA 180.1 1993	PM0	No preparation is required.				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM37	Modified methods - TSS: USEPA 160.2 (1985), EN872:2005 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS.	PM0	No preparation is required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

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RPS
West Pier Business Campus
Dun Laoghaire
Co Dublin
Ireland

Attention :	Matthew King
Date :	2nd March, 2022
Your reference :	IE000335
Our reference :	Test Report 22/2826 Batch 1
Location :	Monettia Bog
Date samples received :	21st February, 2022
Status :	Final Report
Issue :	1

Six samples were received for analysis on 21st February, 2022 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Matthew King
EMT Job No: 22/2826

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, HN=$HN0_3$

EMT Sample No.	1-5	6-10	11-15	16-20	21-25	26-30					LOD/LOR	Units	Method No.
Sample ID	MW102	MW105	MW106	MW107	MW108	SW101							
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	17/02/2022 09:30	17/02/2022 11:00	17/02/2022 11:50	17/02/2022 12:30	17/02/2022 13:00	17/02/2022 13:30							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022							
Dissolved Arsenic #	<250.0 AC	6.3	<2.5	<2.5	<2.5	<2.5					<2.5	ug/l	TM30/PM14
Dissolved Barium #	2123 AC	266	163	145	137	96					<3	ug/l	TM30/PM14
Dissolved Beryllium	<50.0 AC	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM30/PM14
Dissolved Boron	<1200 AC	14	12	16	30	18					<12	ug/l	TM30/PM14
Dissolved Cadmium #	<50.0 AC	<0.5	<0.5	<0.5	<0.5	<0.5					<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	<150.0 AC	<1.5	<1.5	2.7	<1.5	<1.5					<1.5	ug/l	TM30/PM14
Dissolved Copper #	<700 AC	<7	23	<7	<7	<7					<7	ug/l	TM30/PM14
Dissolved Lead #	<500 AC	<5	<5	<5	<5	<5					<5	ug/l	TM30/PM14
Dissolved Mercury #	<100 AC	<1	<1	<1	<1	<1					<1	ug/l	TM30/PM14
Dissolved Nickel #	<200 AC	<2	42	<2	<2	<2					<2	ug/l	TM30/PM14
Dissolved Selenium #	<300 AC	<3	<3	<3	<3	<3					<3	ug/l	TM30/PM14
Dissolved Vanadium #	<150.0 AC	<1.5	3.0	<1.5	<1.5	<1.5					<1.5	ug/l	TM30/PM14
Dissolved Zinc #	<300 AC	8	21	10	8	<3					<3	ug/l	TM30/PM14
PAH MS													
Naphthalene #	NDP	269.4 AD	983.0 AD	0.3	2.3	<0.1					<0.1	ug/l	TM4/PM30
Acenaphthylene #	NDP	42.080 AD	136.448 AD	0.060	0.217	<0.005					<0.005	ug/l	TM4/PM30
Acenaphthene #	NDP	47.943 AD	155.754 AD	0.072	0.297	<0.005					<0.005	ug/l	TM4/PM30
Fluorene #	NDP	104.899 AD	304.454 AD	0.149	0.494	<0.005					<0.005	ug/l	TM4/PM30
Phenanthrene #	NDP	254.829 AD	768.577 AD	0.280	0.769	<0.005					<0.005	ug/l	TM4/PM30
Anthracene #	NDP	3.314 AD	5.545 AD	0.011	0.028	<0.005					<0.005	ug/l	TM4/PM30
Fluoranthene #	NDP	12.828 AD	<1.000 AD	0.007	0.028	<0.005					<0.005	ug/l	TM4/PM30
Pyrene #	NDP	63.322 AD	189.855 AD	0.061	0.101	<0.005					<0.005	ug/l	TM4/PM30
Benzo(a)anthracene #	NDP	<1.000 AD	<1.000 AD	<0.005	<0.005	<0.005					<0.005	ug/l	TM4/PM30
Chrysene #	NDP	4.484 AD	14.596 AD	<0.005	<0.005	<0.005					<0.005	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	NDP	<1.600 AD	1.752 AD	<0.008	<0.008	<0.008					<0.008	ug/l	TM4/PM30
Benzo(a)pyrene #	NDP	1.041 AD	1.209 AD	<0.005	<0.005	<0.005					<0.005	ug/l	TM4/PM30
Indeno(123cd)pyrene #	NDP	<1.000 AD	<1.000 AD	<0.005	<0.005	<0.005					<0.005	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	NDP	<1.000 AD	<1.000 AD	<0.005	<0.005	<0.005					<0.005	ug/l	TM4/PM30
Benzo(ghi)perylene #	NDP	<1.000 AD	<1.000 AD	<0.005	<0.005	<0.005					<0.005	ug/l	TM4/PM30
PAH 16 Total #	NDP	804.140 AD	2561.190 AD	0.940	4.234	<0.173					<0.173	ug/l	TM4/PM30
Benzo(b)fluoranthene	NDP	<1.600 AD	<1.600 AD	<0.008	<0.008	<0.008					<0.008	ug/l	TM4/PM30
Benzo(k)fluoranthene	NDP	<1.600 AD	<1.600 AD	<0.008	<0.008	<0.008					<0.008	ug/l	TM4/PM30
PAH Surrogate % Recovery	NDP	118 AD	81 AD	43	78	85					<0	%	TM4/PM30
VOC TICs	See Attached	See Attached	See Attached	ND	ND	ND						None	TM15/PM10
SVOC TICs	NDP	See Attached	See Attached	ND	ND	ND						None	TM16/PM30
GRO (>C4-C8) #	20498	364	1159	<10	<10	<10					<10	ug/l	TM36/PM12
GRO (>C8-C12) #	65275	5114	13293	113	720	<10					<10	ug/l	TM36/PM12
GRO (>C4-C12) #	85773	5478	14452	113	720	<10					<10	ug/l	TM36/PM12
EPH (C8-C40) #	NDP	1431920 SV	5323300 AA	1450	2400	<10					<10	ug/l	TM5/PM30

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Matthew King
EMT Job No: 22/2826

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-5	6-10	11-15	16-20	21-25	26-30					LOD/LOR	Units	Method No.
Sample ID	MW102	MW105	MW106	MW107	MW108	SW101							
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	17/02/2022 09:30	17/02/2022 11:00	17/02/2022 11:50	17/02/2022 12:30	17/02/2022 13:00	17/02/2022 13:30							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022							
Hexavalent Chromium	NDP	NDP	NDP	NDP	NDP	NDP					<6	ug/l	TM38/PM0
Total Dissolved Chromium III	NDP	NDP	NDP	NDP	NDP	NDP					<6	ug/l	TM0/PM0
COD (Settled) #	-	-	-	-	-	40					<7	mg/l	TM57/PM0
Electrical Conductivity @25C #	<2	773	939	875	926	304					<2	uS/cm	TM76/PM0
pH #	7.60	7.45	7.19	7.37	7.30	7.95					<0.01	pH units	TM73/PM0
Total Suspended Solids #	-	-	-	-	-	<10					<10	mg/l	TM37/PM0
Turbidity	-	-	-	-	-	5.8					<0.1	NTU	TM34/PM0

Please see attached notes for all abbreviations and acronyms

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

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Matthew King
EMT Job No: 22/2826

SVOC Report : **Liquid**

EMT Sample No.	1-5	6-10	11-15	16-20	21-25	26-30							
Sample ID	MW102	MW105	MW106	MW107	MW108	SW101							
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	17/02/2022 09:30	17/02/2022 11:00	17/02/2022 11:50	17/02/2022 12:30	17/02/2022 13:00	17/02/2022 13:30							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022					LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
2-Methylphenol #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2-Nitrophenol	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
4-Methylphenol	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
4-Nitrophenol	NDP	<500 AB	<20000 AE	<10	<10	<10					<10	ug/l	TM16/PM30
Pentachlorophenol	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Phenol	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
2-Methylnaphthalene #	NDP	1832 AB	8618 AE	3	8	<1					<1	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	NDP	<250 AB	<10000 AE	<5	<5	<5					<5	ug/l	TM16/PM30
Butylbenzyl phthalate	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	NDP	<75.0 AB	<3000.0 AE	<1.5	<1.5	<1.5					<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Diethyl phthalate #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Dimethyl phthalate	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Other SVOCs													
1,2-Dichlorobenzene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
2-Nitroaniline	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
3-Nitroaniline	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
4-Chloroaniline	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
4-Nitroaniline	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Azobenzene #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Carbazole #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Dibenzofuran #	NDP	51.9 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Hexachlorobutadiene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Hexachloroethane #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Isophorone #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	NDP	<25.0 AB	<1000.0 AE	<0.5	<0.5	<0.5					<0.5	ug/l	TM16/PM30
Nitrobenzene #	NDP	<50 AB	<2000 AE	<1	<1	<1					<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	NDP	116 AB	133 SV AE	102	109	107					<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	NDP	120 AB	141 SV AE	116	120	113					<0	%	TM16/PM30

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Matthew King
EMT Job No: 22/2826

VOC Report : **Liquid**

EMT Sample No.	1-5	6-10	11-15	16-20	21-25	26-30					LOD/LOR	Units	Method No.
Sample ID	MW102	MW105	MW106	MW107	MW108	SW101							
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G	V HN P G							
Sample Date	17/02/2022 09:30	17/02/2022 11:00	17/02/2022 11:50	17/02/2022 12:30	17/02/2022 13:00	17/02/2022 13:30							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022	21/02/2022							
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	0.3	<0.1	<0.1	<0.1					<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Benzene #	204.0	115.9	142.8	<0.5	<0.5	<0.5					<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Toluene #	861	251	655	<5	<5	<5					<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Ethylbenzene #	769	206	319	<1	4	<1					<1	ug/l	TM15/PM10
m/p-Xylene #	>>2594	713	1129	<2	15	<2					<2	ug/l	TM15/PM10
o-Xylene #	>>1201	383	547	<1	9	<1					<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Isopropylbenzene #	145	37	57	<3	<3	<3					<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4					<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Propylbenzene #	349	79	142	<3	4	<3					<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	>>1714	196	394	<3	9	<3					<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	>>6336	836	>>1632	<3	44	<3					<3	ug/l	TM15/PM10
sec-Butylbenzene #	237	25	52	<3	<3	<3					<3	ug/l	TM15/PM10
4-Isopropyltoluene #	159	18	38	<3	<3	<3					<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
n-Butylbenzene #	349	37	95	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	91	103	104	106	106	113					<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	71	102	94	105	106	110					<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/2826
Sample number: 1
Sample identity: MW102
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: VOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
108-87-2	Cyclohexane, methyl-	4.675	91	759
1678-91-7	Cyclohexane, ethyl-	5.661	95	568
15869-93-9	Octane, 3,5-dimethyl-	6.465	81	412
611-14-3	Benzene, 1-ethyl-2-methyl-	6.697 - 6.850	87,94	2517
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	7.430	95	589
874-41-9	Benzene, 1-ethyl-2,4-dimethyl-	7.482	95	433
767-58-8	Indan, 1-methyl-	7.561	94	464
2958-76-1	Naphthalene, decahydro-2-methyl-	7.650	95	534
112-40-3	Dodecane	7.870	90	525
824-90-8	1-Phenyl-1-butene	7.954	93	865
56253-64-6	Benzene, (2-methyl-1-butenyl)-	8.193	89	423

Job number: 22/2826
Sample number: 6
Sample identity: MW105
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: VOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
611-14-3	Benzene, 1-ethyl-2-methyl-	6.697 - 6.850	94,94	1115
99-87-6	p-Cymene	7.061	90	280
527-84-4	o-Cymene	7.430 - 7.482	95,95	544
767-58-8	Indan, 1-methyl-	7.561	94	253
2958-76-1	Naphthalene, decahydro-2-methyl-	7.650	94	313
95-93-2	Benzene, 1,2,4,5-tetramethyl-	7.688 - 7.722	95,95	334
112-40-3	Dodecane	7.870	90	384
824-90-8	1-Phenyl-1-butene	7.954	91	634
119-64-2	Naphthalene, 1,2,3,4-tetrahydro-	8.050	97	242
6682-71-9	1H-Indene, 2,3-dihydro-4,7-dimethyl-	8.090 - 8.145	93,95	238
16608-68-7	2-Butene, 3-chloro-1-phenyl-, (Z)-	8.199	92	352

Job number: 22/2826
Sample number: 11
Sample identity: MW106
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: VOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
611-14-3	Benzene, 1-ethyl-2-methyl-	6.695 - 6.848	94,94	1806
527-84-4	o-Cymene	7.059 - 7.483	91,95	805
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	7.430	95	485
767-58-8	Indan, 1-methyl-	7.561	94	379
2958-76-1	Naphthalene, decahydro-2-methyl-	7.651	95	505
527-53-7	Benzene, 1,2,3,5-tetramethyl-	7.718	95	311
112-40-3	Dodecane	7.870	92	675
874-35-1	1H-Indene, 2,3-dihydro-5-methyl-	7.954	90	1085
119-64-2	Naphthalene, 1,2,3,4-tetrahydro-	8.050	97	384
53172-84-2	Benzene, (1-methyl-1-butenyl)-	8.091 - 8.118	90,93	471
16608-68-7	2-Butene, 3-chloro-1-phenyl-, (Z)-	8.193	92	636

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/2826
Sample number: 10
Sample identity: MW105
Sample depth:
Sample Type: Ground Water
Units: ug/l

Method: SVOC
Matrix: Liquid

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2809-64-5	Naphthalene, 1,2,3,4-tetrahydro-5-methyl-	7.434	97	103
544-76-3	Hexadecane	9.494	96	113
629-78-7	Heptadecane	9.995 - 12.620	95,96,97,98	362
629-92-5	Nonadecane	10.917	97	121
112-95-8	Eicosane	11.340	96	101

All solid results are expressed on a dry weight basis unless stated otherwise.

Job number: 22/2826
Method: SVOC
Sample number: 15
Matrix: Liquid
Sample identity: MW106
Sample depth:
Sample Type: Ground Water
Units: ug/l

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
526-73-8	Benzene, 1,2,3-trimethyl-	5.073	95	1999
112-40-3	Dodecane	7.040	96	1454
2809-64-5	Naphthalene, 1,2,3,4-tetrahydro-5-methyl-	7.441	97	2729
629-50-5	Tridecane	7.750	95	1556
13065-07-1	Naphthalene, 1,2,3,4-tetrahydro-2,7-dimethyl-	7.819	93	1950
629-59-4	Tetradecane	8.387	97	1927
629-62-9	Pentadecane	8.966	95	2821
544-76-3	Hexadecane	9.501	97	2462
629-78-7	Heptadecane	9.995	98	3084
55045-11-9	Tridecane, 5-propyl-	10.048	93	2139
593-45-3	Octadecane	10.470	93	2348
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	10.539	96	1821
629-92-5	Nonadecane	10.917	97	2989
112-95-8	Eicosane	11.347 - 11.763	98,98	3775

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: RPS

Reference: IE000335

Location: Monettia Bog

Contact: Matthew King

Matrix : Liquid

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Method No.	NDP Reason
22/2826	1	MW102		1-5	TM4/PM30	Solvent dissolves - no layer visible to extract
22/2826	1	MW102		1-5	TM16/PM30	Solvent dissolves - no layer visible to extract
22/2826	1	MW102		1-5	TM5/PM30	Solvent dissolves - no layer visible to extract
22/2826	1	MW102		1-5	TM38/PM0	Sample unsuitable for this test
22/2826	1	MW102		1-5	TM0/PM0	Sample unsuitable for this test
22/2826	1	MW105		6-10	TM38/PM0	Sample unsuitable for this test
22/2826	1	MW105		6-10	TM0/PM0	Sample unsuitable for this test
22/2826	1	MW106		11-15	TM38/PM0	Sample unsuitable for this test
22/2826	1	MW106		11-15	TM0/PM0	Sample unsuitable for this test
22/2826	1	MW107		16-20	TM38/PM0	Sample unsuitable for this test
22/2826	1	MW107		16-20	TM0/PM0	Sample unsuitable for this test
22/2826	1	MW108		21-25	TM38/PM0	Sample unsuitable for this test
22/2826	1	MW108		21-25	TM0/PM0	Sample unsuitable for this test
22/2826	1	SW101		26-30	TM38/PM0	Sample unsuitable for this test
22/2826	1	SW101		26-30	TM0/PM0	Sample unsuitable for this test

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Matthew King

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/2826						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/2826

SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x7 Dilution
AB	x50 Dilution
AC	x100 Dilution
AD	x200 Dilution
AE	x2000 Dilution

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/2826

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			

EMT Job No: 22/2826

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM34	Turbidity by 2100P Turbidity Meter. complies with EPA 180.1 1993	PM0	No preparation is required.				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM37	Modified methods - TSS: USEPA 160.2 (1985), EN872:2005 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS.	PM0	No preparation is required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

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Galway
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Attention :	Eoin Hurst
Date :	3rd May, 2022
Your reference :	IE000335
Our reference :	Test Report 22/6185 Batch 1
Location :	Monettia Bog
Date samples received :	14th April, 2022
Status :	Final Report
Issue :	1

Four samples were received for analysis on 14th April, 2022 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/6185

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-5	6-10	11-15	16-20							LOD/LOR	Units	Method No.
Sample ID	SW101	SW102	SW103	SW201									
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G									
Sample Date	13/04/2022 13:30	13/04/2022 12:30	13/04/2022 13:00	13/04/2022 12:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	14/04/2022	14/04/2022	14/04/2022	14/04/2022									
Dissolved Arsenic #	<2.5	<2.5	<2.5	<2.5							<2.5	ug/l	TM30/PM14
Dissolved Barium #	162	182	158	191							<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Dissolved Boron	<12	15	<12	17							<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7	<7	<7							<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5	<5	<5							<5	ug/l	TM30/PM14
Dissolved Mercury #	<1	<1	<1	<1							<1	ug/l	TM30/PM14
Dissolved Nickel #	<2	<2	<2	<2							<2	ug/l	TM30/PM14
Dissolved Selenium #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
Dissolved Vanadium #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM30/PM14
Dissolved Zinc #	<3	<3	<3	<3							<3	ug/l	TM30/PM14
PAH MS													
Naphthalene #	<0.1	<0.1	<0.1	<0.1							<0.1	ug/l	TM4/PM30
Acenaphthylene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Acenaphthene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Fluorene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Phenanthrene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Anthracene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Fluoranthene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Pyrene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Chrysene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.008	<0.008	<0.008	<0.008							<0.008	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.005	<0.005	<0.005	<0.005							<0.005	ug/l	TM4/PM30
PAH 16 Total #	<0.173	<0.173	<0.173	<0.173							<0.173	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.008	<0.008	<0.008	<0.008							<0.008	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.008	<0.008	<0.008	<0.008							<0.008	ug/l	TM4/PM30
PAH Surrogate % Recovery	77	83	76	80							<0	%	TM4/PM30
VOC TICs	ND	ND	ND	ND								None	TM15/PM10
SVOC TICs	ND	ND	ND	ND								None	TM16/PM30
GRO (>C4-C8) #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
GRO (>C8-C12) #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
GRO (>C4-C12) #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
EPH (C8-C40) #	<10	<10	<10	<10							<10	ug/l	TM5/PM30

Element Materials Technology

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/6185

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

EMT Sample No.	1-5	6-10	11-15	16-20							LOD/LOR	Units	Method No.
Sample ID	SW101	SW102	SW103	SW201									
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G									
Sample Date	13/04/2022 13:30	13/04/2022 12:30	13/04/2022 13:00	13/04/2022 12:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	14/04/2022	14/04/2022	14/04/2022	14/04/2022									
Hexavalent Chromium	<6	<6	<6	<6							<6	ug/l	TM38/PM0
Total Dissolved Chromium III	<6	<6	<6	<6							<6	ug/l	TM0/PM0
COD (Settled) #	26	34	<7	37							<7	mg/l	TM57/PM0
Electrical Conductivity @25C #	531	714	270	703							<2	uS/cm	TM76/PM0
pH #	8.26	8.17	8.72	8.20							<0.01	pH units	TM73/PM0
Total Suspended Solids #	<10	<10	<10	<10							<10	mg/l	TM37/PM0
Turbidity	2.9	2.8	1.4	3.8							<0.1	NTU	TM34/PM0

Please see attached notes for all abbreviations and acronyms

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

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/6185

SVOC Report : **Liquid**

EMT Sample No.	1-5	6-10	11-15	16-20							LOD/LOR	Units	Method No.
Sample ID	SW101	SW102	SW103	SW201									
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G	V HN P G									
Sample Date	13/04/2022 13:30	13/04/2022 12:30	13/04/2022 13:00	13/04/2022 12:00									
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1	1									
Date of Receipt	14/04/2022	14/04/2022	14/04/2022	14/04/2022									
SVOC MS													
Phenols													
2-Chlorophenol #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10							<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5	<5	<5	<5							<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Other SVOCs													
1,2-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1							<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	139 SV	135 SV	139 SV	136 SV							<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	140 SV	135 SV	140 SV	139 SV							<0	%	TM16/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst
EMT Job No: 22/6185

VOC Report : **Liquid**

EMT Sample No.	1-5	6-10	11-15	16-20								
Sample ID	SW101	SW102	SW103	SW201								
Depth										Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V HN P G	V HN P G	V HN P G	V HN P G								
Sample Date	13/04/2022 13:30	13/04/2022 12:30	13/04/2022 13:00	13/04/2022 12:00								
Sample Type	Surface Water	Surface Water	Surface Water	Surface Water								
Batch Number	1	1	1	1								
Date of Receipt	14/04/2022	14/04/2022	14/04/2022	14/04/2022								
VOC MS										LOD/LOR	Units	Method No.
Dichlorodifluoromethane	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1						<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1						<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5						<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2+	<2+	<2+	<2+						<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5						<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1						<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1						<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4						<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3						<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2						<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3						<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	125	124	124	123						<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	111	109	109	108						<0	%	TM15/PM10

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: RPS
Reference: IE000335
Location: Monettia Bog
Contact: Eoin Hurst

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/6185						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 22/6185

SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

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

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

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

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

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

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

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

Measurement Uncertainty

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

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

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

EMT Job No: 22/6185

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified	Yes			

EMT Job No: 22/6185

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM34	Turbidity by 2100P Turbidity Meter. complies with EPA 180.1 1993	PM0	No preparation is required.				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM37	Modified methods - TSS: USEPA 160.2 (1985), EN872:2005 and APHA SMEWW 2540D:1999 22nd Edition; VSS: USEPA 1684 (Jan 2001), USEPA 160.4 (1971) and SMEWW 2540E:1999 22nd Edition. Gravimetric determination of Total Suspended Solids (TSS) and Volatile Suspended Solids (VSS). Sample is filtered through a 1.5um pore size glass fibre filter and the resulting residue is dried and weighed at 105°C for TSS and 550°C for VSS.	PM0	No preparation is required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.				
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1 (1982). Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 505912
Date of Receipt : 29/11/2022
Start Date of Analysis : 30/11/2022
Date of Report : 21/12/2022
Order Number : Pending
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1556511	Monnettia drain 29-11-22	Suspended Solids	I,R	17	mg/l
		Turbidity	I,R	3.3	N.T.U.
		pH	I,R	7.3	pH Units
		Conductivity @ 25 C	I,R	376	uS/cm
		SVOC TICs (GEO94)	S	See attached excel file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Barium, dissolved	I,R	82	ug/l
		Boron, dissolved	I,R	15	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	44	ug/l
		VOC + TIC (HS, GEO76)	S	See attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	See attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	58 **Unknown Pattern	ug/l
		COD(settled)	I,R	22	mg/l
		PAH 16 (non-DW)	S	<0.010	ug/l
		VOC suite - (non-DW)	S	See attached excel file	ug/l

Complete Laboratory Solutions,
Ros Muc, Connemara,
Co. Galway

Complete Laboratory Solutions (Medpharma),
Unit 3A & Unit 8,
Small Business Park,
Tuam Road, Galway.

Symbol Reference - I:17025 accredited; S:Subcontracted; R:Analysis carried out in Ros Muc; M:Analysis carried out in MedPharma; F:Field test; O:Tested outside hold time.

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1556512	U/S Monnettia 29-11-22	COD(settled)	I,R	22	mg/l
		VOC suite - (non-DW)	S	See attached excel file	ug/l
		PAH 16 (non-DW)	S	<0.010	ug/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	34 **Unknown Pattern	ug/l
		Boron, dissolved	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached excel file	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		Chromium III	S	<0.03	mg/l
		SVOCs (W) (GEO94)	S	See attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		Barium, dissolved	I,R	143	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Arsenic, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Turbidity	I,R	4.0	N.T.U.
		Conductivity @ 25 C	I,R	242	uS/cm
		Chromium hexavalent in water	S	<0.003	mg/l
		Copper, dissolved	I,R	<1	ug/l
		Chromium, total	I,R	1	ug/l
		SVOC TICs (GEO94)	S	See attached excel file	ug/l
		pH	I,R	7.9	pH Units
		Suspended Solids	I,R	<2	mg/l

Complete Laboratory Solutions,
Ros Muc, Connemara,
Co. Galway

Complete Laboratory Solutions (Medpharma),
Unit 3A & Unit 8,
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Tuam Road, Galway.

Symbol Reference - I:17025 accredited; S:Subcontracted; R:Analysis carried out in Ros Muc; M:Analysis carried out in MedPharma; F:Field test; O:Tested outside hold time.

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1556513	D/S Monnettia 29-11-22	Suspended Solids	I,R	<2	mg/l
		Turbidity	I,R	3.4	N.T.U.
		pH	I,R	7.6	pH Units
		Conductivity @ 25 C	I,R	477	uS/cm
		SVOC TICs (GEO94)	S	See attached excel file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Barium, dissolved	I,R	131	ug/l
		Boron, dissolved	I,R	13	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	See attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	66 **Unknown Pattern	ug/l
		COD(settled)	I,R	29	mg/l
		PAH 16 (non-DW)	S	<0.010	ug/l
		VOC suite - (non-DW)	S	See attached excel file	ug/l

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 108T

Approved by:

Ann Marie Nee

AnnMarie Nee
Environmental Services Administrator

See below for test specifications and accreditation status.
This report only relates to items tested and shall not be reproduced but in full with the permission of CLS.
est. is an estimated count.
CLS will test food, water and swabs samples within 24 hours of receipt.
Where samples have been taken by the Client, results apply to the samples as received.

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Symbol Reference - I:17025 accredited; S:Subcontracted; R:Analysis carried out in Ros Muc; M:Analysis carried out in MedPharma; F:Field test; O:Tested outside hold time.

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes
Chromium, total	ICP-MS CLS129	+/- 8.38 %	Yes	No	Yes
Copper, dissolved	ICP-MS CLS 129	+/- 11.28 %	Yes	No	Yes
Lead, dissolved	ICP-MS CLS129	+/-20@100ug/l	Yes	No	Yes
Chromium, dissolved	ICP-MS CLS 129	+/- 8.38 %	Yes	No	Yes
Nickel, dissolved	ICP-MS CLS129	+/- 7.91 %	Yes	No	Yes
Cadmium, dissolved	ICP-MS CLS129	+/- 10.42 %	Yes	No	Yes
Arsenic, dissolved	ICP-MS CLS129	+/- 9.34 %	Yes	No	Yes
Mercury, dissolved	ICP-MS CLS 129	+/- 27.72 %	Yes	No	Yes
Selenium, dissolved	ICP-MS CLS129	+/-0.9@5ug/l	Yes	No	Yes
Zinc, dissolved	ICP-MS CLS 129	+/- 9.38 %	Yes	No	Yes
Barium, dissolved	ICP-MS CLS129	+/-33@250ug/l	Yes	No	Yes
Boron, dissolved	ICP-MS CLS129	+/-15@200ug/l	Yes	No	Yes
PRO Water (C5-C12) by GC-FID	CLS 148	+/- 29.7ug/l @ 200ug/l	Yes	No	Yes
Beryllium, dissolved	ICP-MS CLS129	+/- 11.67 %	Yes	No	Yes
Vanadium, dissolved	ICP-MS CLS 129	+/- 11.72 %	Yes	No	Yes
Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	CLS 147	+/- 26.37@200ug/l	Yes	No	Yes
COD(settled)	CLS 52	+/- 4.48 %	Yes	No	Yes

*Analysis carried out in a GMP approved, FDA inspected facility (MedPharma site only).
**Laboratory Analysis, Sampling, Food Safety Monitoring and Analysts on Contract are all ISO 9001 certified.

Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1556511	Monnettia drain 29-11-22	Good condition	29/11/2022
1556512	U/S Monnettia 29-11-22	Good condition	29/11/2022
1556513	D/S Monnettia 29-11-22	Good condition	29/11/2022

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 507694
Date of Receipt : 15/12/2022
Start Date of Analysis : 16/12/2022
Date of Report : 12/01/2023
Order Number : Pending
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1564140	Monnettia drain 15.12.2022	Suspended Solids	I,R	4	mg/l
		Turbidity	I,R	3.1	N.T.U.
		pH	I,R	7.3	pH Units
		Conductivity @ 25 C	I,R	659	uS/cm
		SVOC TICs (GEO94)	S	See attached excel file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	79	ug/l
		Barium, dissolved	I,R	171	ug/l
		Boron, dissolved	I,R	20	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	See attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	158 **Unknown Pattern	ug/l
		COD(settled)	I,R	78	mg/l
		PAH 16 (non-DW)	S	See attached excel file	ug/l
		VOC suite - (non-DW)	S	See attached excel file	ug/l

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1564141	U/S Monnettia 15.12.2022	COD(settled)	I,R	<10	mg/l
		VOC suite - (non-DW)	S	See attached excel file	ug/l
		PAH 16 (non-DW)	S	See attached excel file	ug/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	153 **Unknown Pattern	ug/l
		Boron, dissolved	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached excel file	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		Chromium III	S	<0.03	mg/l
		SVOCs (W) (GEO94)	S	See attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		Barium, dissolved	I,R	178	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Zinc, dissolved	I,R	14	ug/l
		Arsenic, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Turbidity	I,R	3.9	N.T.U.
		Conductivity @ 25 C	I,R	314	uS/cm
		Chromium hexavalent in water	S	<0.003	mg/l
		Copper, dissolved	I,R	<1	ug/l
		Chromium, total	I,R	<0.6	ug/l
		SVOC TICs (GEO94)	S	See attached excel file 9-Octadecenamide, (Z) 102.4	ug/l
		pH	I,R	8.1	pH Units
		Suspended Solids	I,R	2	mg/l

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1564142	D/S Monnettia 15.12.2022	Suspended Solids	I,R	4	mg/l
		Turbidity	I,R	6.5	N.T.U.
		pH	I,R	7.8	pH Units
		Conductivity @ 25 C	I,R	591	uS/cm
		SVOC TICs (GEO94)	S	See attached excel file 9-Octadecenamide, (Z)-84.3	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	11	ug/l
		Barium, dissolved	I,R	161	ug/l
		Boron, dissolved	I,R	14	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	See attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	189 **Unknown Pattern	ug/l
		COD(settled)	I,R	26	mg/l
		PAH 16 (non-DW)	S	See attached excel file	ug/l
		VOC suite - (non-DW)	S	See attached excel file	ug/l

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 108T

Approved by:

Ann Marie Nee

AnnMarie Nee
Environmental Services Administrator

See below for test specifications and accreditation status.

est. is an estimated count.
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Where samples have been taken by the Client, results apply to the samples as received.

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes
Chromium, total	ICP-MS CLS129	+/- 8.38 %	Yes	No	Yes
Copper, dissolved	ICP-MS CLS 129	+/- 11.28 %	Yes	No	Yes
Lead, dissolved	ICP-MS CLS129	+/-20@100ug/l	Yes	No	Yes
Chromium, dissolved	ICP-MS CLS 129	+/- 8.38 %	Yes	No	Yes
Nickel, dissolved	ICP-MS CLS129	+/- 7.91 %	Yes	No	Yes
Cadmium, dissolved	ICP-MS CLS129	+/- 10.42 %	Yes	No	Yes
Arsenic, dissolved	ICP-MS CLS129	+/- 9.34 %	Yes	No	Yes
Mercury, dissolved	ICP-MS CLS 129	+/- 27.72 %	Yes	No	Yes
Selenium, dissolved	ICP-MS CLS129	+/-0.9@5ug/l	Yes	No	Yes
Zinc, dissolved	ICP-MS CLS 129	+/- 9.38 %	Yes	No	Yes
Barium, dissolved	ICP-MS CLS129	+/-33@250ug/l	Yes	No	Yes
Boron, dissolved	ICP-MS CLS129	+/-15@200ug/l	Yes	No	Yes
PRO Water (C5-C12) by GC-FID	CLS 148	+/- 29.7ug/l @ 200ug/l	Yes	No	Yes
Beryllium, dissolved	ICP-MS CLS129	+/- 11.67 %	Yes	No	Yes
Vanadium, dissolved	ICP-MS CLS 129	+/- 11.72 %	Yes	No	Yes
Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	CLS 147	+/- 26.37@200ug/l	Yes	No	Yes
COD(settled)	CLS 52	+/- 4.48 %	Yes	No	Yes

*Analysis carried out in a GMP approved, FDA inspected facility (MedPharma site only).
**Laboratory Analysis, Sampling, Food Safety Monitoring and Analysts on Contract are all ISO 9001 certified.

Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1564140	Monnettia drain 15.12.2022	Good condition	15/12/2022
1564141	U/S Monnettia 15.12.2022	Good condition	15/12/2022
1564142	D/S Monnettia 15.12.2022	Good condition	15/12/2022

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 510639
Date of Receipt : 31/01/2023
Start Date of Analysis : 31/01/2023
Date of Report : 21/02/2023
Order Number :
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1576789	SW-101 D/S Monettia 31-01-23	Suspended Solids	I,R	3	mg/l
		Turbidity	I,R	2.1	N.T.U.
		pH	I,R	7.8	pH Units
		Conductivity @ 25 C	I,R	540	uS/cm
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.05	ug/l
		Nickel, dissolved	I,R	1	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Barium, dissolved	I,R	138	ug/l
		Boron, dissolved	I,R	11	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	See attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	20 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		COD(settled)	I,R	14	mg/l
		PAH 16 (non-DW) GEO81	S	<0.020	ug/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

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1576797	SW-102 Monettia Outfall 31-01-23	VOC suite - (non-DW)	S	Please see attached excel file	ug/l
		COD(settled)	I,R	21	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	18 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		Barium, dissolved	I,R	141	ug/l
		Boron, dissolved	I,R	11	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		pH	I,R	7.8	pH Units
		Conductivity @ 25 C	I,R	545	uS/cm
		Suspended Solids	I,R	<2	mg/l
		Turbidity	I,R	1.6	N.T.U.

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1576798	SW-103 U/S Monettia 31-01-23	Turbidity	I,R	1.1	N.T.U.
		Suspended Solids	I,R	<2	mg/l
		Conductivity @ 25 C	I,R	551	uS/cm
		pH	I,R	8.1	pH Units
		Chromium hexavalent in water	S	<0.003	mg/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Chromium, total	I,R	<0.6	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	<0.5	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Arsenic, dissolved	I,R	<0.5	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Boron, dissolved	I,R	<10	ug/l
		Barium, dissolved	I,R	145	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Chromium III	S	<0.03	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	18 **Unknown Pattern	ug/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		COD(settled)	I,R	12	mg/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

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1576799	SW-201 Monettia boundary drain 31-01-23	VOC suite - (non-DW)	S	Please see attached excel file	ug/l
		COD(settled)	I,R	31	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	31 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		Barium, dissolved	I,R	153	ug/l
		Boron, dissolved	I,R	16	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		pH	I,R	7.5	pH Units
		Conductivity @ 25 C	I,R	672	uS/cm
		Suspended Solids	I,R	3	mg/l
		Turbidity	I,R	1.6	N.T.U.

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Tuam Road, Galway.

Symbol Reference - I:17025 accredited; S:Subcontracted; R:Analysis carried out in Ros Muc; M:Analysis carried out in MedPharma; F:Field test; O:Tested outside hold time.

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1576800	SW-25 31-01-23	Turbidity	I,R	1.4	N.T.U.
		Suspended Solids	I,R	3	mg/l
		Conductivity @ 25 C	I,R	658	uS/cm
		pH	I,R	7.5	pH Units
		Chromium hexavalent in water	S	<0.003	mg/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Chromium, total	I,R	<0.6	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Boron, dissolved	I,R	16	ug/l
		Barium, dissolved	I,R	151	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Chromium III	S	<0.03	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	46 **Unknown Pattern	ug/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		COD(settled)	I,R	37	mg/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

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1576801	Top Drain Monettia 31-01-23	VOC suite - (non-DW)	S	Please see attached excel file	ug/l
		COD(settled)	I,R	36	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	17 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		Barium, dissolved	I,R	155	ug/l
		Boron, dissolved	I,R	19	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	7	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Chromium, total	I,R	1	ug/l
		Copper, dissolved	I,R	<1	ug/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		pH	I,R	7.5	pH Units
		Conductivity @ 25 C	I,R	663	uS/cm
		Suspended Solids	I,R	2	mg/l
		Turbidity	I,R	1.6	N.T.U.

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1576802	Middle Drain Monettia 31-01-23	Turbidity	I,R	3.1	N.T.U.
		Suspended Solids	I,R	<2	mg/l
		Conductivity @ 25 C	I,R	554	uS/cm
		pH	I,R	7.1	pH Units
		Chromium hexavalent in water	S	<0.003	mg/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Chromium, total	I,R	1	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Arsenic, dissolved	I,R	2	ug/l
		Zinc, dissolved	I,R	6	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Boron, dissolved	I,R	12	ug/l
		Barium, dissolved	I,R	94	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Chromium III	S	<0.03	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	18 **Unknown Pattern	ug/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		COD(settled)	I,R	71	mg/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

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1576803	Silt Pond A Monettia 31-01-23	VOC suite - (non-DW)	S	Please see attached excel file	ug/l
		COD(settled)	I,R	41	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	17 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		Barium, dissolved	I,R	45	ug/l
		Boron, dissolved	I,R	16	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Arsenic, dissolved	I,R	2	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Nickel, dissolved	I,R	1	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		pH	I,R	7.3	pH Units
		Conductivity @ 25 C	I,R	435	uS/cm
		Suspended Solids	I,R	<2	mg/l
		Turbidity	I,R	1.5	N.T.U.

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1576804	Silt Pond B Monettia 31-01-23	Turbidity	I,R	1.3	N.T.U.
		Suspended Solids	I,R	<2	mg/l
		Conductivity @ 25 C	I,R	421	uS/cm
		pH	I,R	7.3	pH Units
		Chromium hexavalent in water	S	<0.003	mg/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Chromium, total	I,R	<0.6	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Arsenic, dissolved	I,R	2	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Boron, dissolved	I,R	15	ug/l
		Barium, dissolved	I,R	45	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Chromium III	S	<0.03	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	44 **Unknown Pattern	ug/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		COD(settled)	I,R	42	mg/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

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1576805	Silt Pond C Monettia 31-01-23	VOC suite - (non-DW)	S	Please see attached excel file	ug/l
		COD(settled)	I,R	39	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	24 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	See attached PDF file	ug/l
		Barium, dissolved	I,R	160	ug/l
		Boron, dissolved	I,R	18	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		SVOC TICs (GEO94)	S	See attached PDF file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		pH	I,R	7.5	pH Units
		Conductivity @ 25 C	I,R	667	uS/cm
		Suspended Solids	I,R	4	mg/l
		Turbidity	I,R	1.5	N.T.U.

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 108T

Approved by:

AnnMarie Nee
Environmental Services Administrator

See below for test specifications and accreditation status.
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est. is an estimated count.
CLS will test food, water and swabs samples within 24 hours of receipt.
Where samples have been taken by the Client, results apply to the samples as received.

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes
Chromium, total	ICP-MS CLS129	+/- 8.38 %	Yes	No	Yes
Copper, dissolved	ICP-MS CLS 129	+/- 11.28 %	Yes	No	Yes
Lead, dissolved	ICP-MS CLS129	+/-20@100ug/l	Yes	No	Yes
Chromium, dissolved	ICP-MS CLS 129	+/- 8.38 %	Yes	No	Yes
Nickel, dissolved	ICP-MS CLS129	+/- 7.91 %	Yes	No	Yes
Cadmium, dissolved	ICP-MS CLS129	+/- 10.42 %	Yes	No	Yes
Arsenic, dissolved	ICP-MS CLS129	+/- 9.34 %	Yes	No	Yes
Mercury, dissolved	ICP-MS CLS 129	+/- 27.72 %	Yes	No	Yes
Selenium, dissolved	ICP-MS CLS129	+/-0.9@5ug/l	Yes	No	Yes
Zinc, dissolved	ICP-MS CLS 129	+/- 9.38 %	Yes	No	Yes
Barium, dissolved	ICP-MS CLS129	+/-33@250ug/l	Yes	No	Yes
Boron, dissolved	ICP-MS CLS129	+/-15@200ug/l	Yes	No	Yes
PRO Water (C5-C12) by GC-FID	CLS 148	+/- 29.7ug/l @ 200ug/l	Yes	No	Yes
Beryllium, dissolved	ICP-MS CLS129	+/- 11.67 %	Yes	No	Yes
Vanadium, dissolved	ICP-MS CLS 129	+/- 11.72 %	Yes	No	Yes
Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	CLS 147	+/- 26.37@200ug/l	Yes	No	Yes
COD(settled)	CLS 52	+/- 4.48 %	Yes	No	Yes

*Analysis carried out in a GMP approved, FDA inspected facility (MedPharma site only).
**Laboratory Analysis, Sampling, Food Safety Monitoring and Analysts on Contract are all ISO 9001 certified.

Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1576789	SW-101 D/S Monettia 31-01-23	Good condition	31/01/2023
1576797	SW-102 Monettia Outfall 31-01-23	Good condition	31/01/2023
1576798	SW-103 U/S Monettia 31-01-23	Good condition	31/01/2023
1576799	SW-201 Monettia boundry drain 31-01-23	Good condition	31/01/2023
1576800	SW-25 31-01-23	Good condition	31/01/2023
1576801	Top Drain Monettia 31-01-23	Good condition	31/01/2023
1576802	Middle Drain Monettia 31-01-23	Good condition	31/01/2023
1576803	Silt Pond A Monettia 31-01-23	Good condition	31/01/2023
1576804	Silt Pond B Monettia 31-01-23	Good condition	31/01/2023
1576805	Silt Pond C Monettia 31-01-23	Good condition	31/01/2023

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 517917
Date of Receipt : 18/04/2023
Start Date of Analysis : 18/04/2023
Date of Report : 08/05/2023
Order Number : 3118810
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1604331	SW-102 Monettia Outfall	Suspended Solids	I,R	<2	mg/l
		Turbidity	I,R	2.4	N.T.U.
		pH	I,R	7.9	pH Units
		Conductivity @ 25 C	I,R	526	uS/cm
		SVOC TICs (GEO94)	S	Please see attached excel file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	1	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	<0.5	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Barium, dissolved	I,R	165	ug/l
		Boron, dissolved	I,R	14	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	Please see attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	78 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		COD(settled)	I,R	38	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

Approved by:

AnnMarie Nee
Environmental

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes
Chromium, total	ICP-MS CLS129	+/- 8.38 %	Yes	No	Yes
Copper, dissolved	ICP-MS CLS 129	+/- 11.28 %	Yes	No	Yes
Lead, dissolved	ICP-MS CLS129	+/-20@100ug/l	Yes	No	Yes
Chromium, dissolved	ICP-MS CLS 129	+/- 8.38 %	Yes	No	Yes
Nickel, dissolved	ICP-MS CLS129	+/- 7.91 %	Yes	No	Yes
Cadmium, dissolved	ICP-MS CLS129	+/- 10.42 %	Yes	No	Yes
Arsenic, dissolved	ICP-MS CLS129	+/- 9.34 %	Yes	No	Yes
Mercury, dissolved	ICP-MS CLS 129	+/- 27.72 %	Yes	No	Yes
Selenium, dissolved	ICP-MS CLS129	+/-0.9@5ug/l	Yes	No	Yes
Zinc, dissolved	ICP-MS CLS 129	+/- 9.38 %	Yes	No	Yes
Barium, dissolved	ICP-MS CLS129	+/-33@250ug/l	Yes	No	Yes
Boron, dissolved	ICP-MS CLS129	+/-15@200ug/l	Yes	No	Yes
PRO Water (C5-C12) by GC-FID	CLS 148	+/- 29.7ug/l @ 200ug/l	Yes	No	Yes
Beryllium, dissolved	ICP-MS CLS129	+/- 11.67 %	Yes	No	Yes
Vanadium, dissolved	ICP-MS CLS 129	+/- 11.72 %	Yes	No	Yes
Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	CLS 147	+/- 26.37@200ug/l	Yes	No	Yes
COD(settled)	CLS 52	+/- 4.48 %	Yes	No	Yes

*Analysis carried out in a GMP approved, FDA inspected facility (MedPharma site only).
**Laboratory Analysis, Sampling, Food Safety Monitoring and Analysts on Contract are all ISO 9001 certified.

Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1604331	SW-102 Monettia Outfall	Good condition	18/04/2023

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 517918
Date of Receipt : 18/04/2023
Start Date of Analysis : 18/04/2023
Date of Report : 08/05/2023
Order Number : 3118810 ** LS18, Mountdillon, SW118 Blackwater 7 d
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1604332	SW-103 U/S Monettia	Suspended Solids	I,R	<2	mg/l
		Turbidity	I,R	1.3	N.T.U.
		pH	I,R	8.2	pH Units
		Conductivity @ 25 C	I,R	265	uS/cm
		SVOC TICs (GEO94)	S	Please see attached excel file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	<0.5	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	<0.5	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	<0.5	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Barium, dissolved	I,R	187	ug/l
		Boron, dissolved	I,R	<10	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	Please see attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	31 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		COD(settled)	I,R	28	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

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Approved by: Ann Marie Nee

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes
Chromium, total	ICP-MS CLS129	+/- 8.38 %	Yes	No	Yes
Copper, dissolved	ICP-MS CLS 129	+/- 11.28 %	Yes	No	Yes
Lead, dissolved	ICP-MS CLS129	+/-20@100ug/l	Yes	No	Yes
Chromium, dissolved	ICP-MS CLS 129	+/- 8.38 %	Yes	No	Yes
Nickel, dissolved	ICP-MS CLS129	+/- 7.91 %	Yes	No	Yes
Cadmium, dissolved	ICP-MS CLS129	+/- 10.42 %	Yes	No	Yes
Arsenic, dissolved	ICP-MS CLS129	+/- 9.34 %	Yes	No	Yes
Mercury, dissolved	ICP-MS CLS 129	+/- 27.72 %	Yes	No	Yes
Selenium, dissolved	ICP-MS CLS129	+/-0.9@5ug/l	Yes	No	Yes
Zinc, dissolved	ICP-MS CLS 129	+/- 9.38 %	Yes	No	Yes
Barium, dissolved	ICP-MS CLS129	+/-33@250ug/l	Yes	No	Yes
Boron, dissolved	ICP-MS CLS129	+/-15@200ug/l	Yes	No	Yes
PRO Water (C5-C12) by GC-FID	CLS 148	+/- 29.7ug/l @ 200ug/l	Yes	No	Yes
Beryllium, dissolved	ICP-MS CLS129	+/- 11.67 %	Yes	No	Yes
Vanadium, dissolved	ICP-MS CLS 129	+/- 11.72 %	Yes	No	Yes
Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	CLS 147	+/- 26.37@200ug/l	Yes	No	Yes
COD(settled)	CLS 52	+/- 4.48 %	Yes	No	Yes

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Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1604332	SW-103 U/S Monettia	Good condition	18/04/2023

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 517919
Date of Receipt : 18/04/2023
Start Date of Analysis : 18/04/2023
Date of Report : 08/05/2023
Order Number : 3118810 **
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1604333	SW-201 Monettia boundary drain	Suspended Solids	I,R	<2	mg/l
		Turbidity	I,R	2.9	N.T.U.
		pH	I,R	7.9	pH Units
		Conductivity @ 25 C	I,R	591	uS/cm
		SVOC TICs (GEO94)	S	Please see attached excel file	ug/l
		Chromium hexavalent in water	S	<0.003	mg/l
		Chromium, total	I,R	<0.6	ug/l
		Copper, dissolved	I,R	<1	ug/l
		Lead, dissolved	I,R	<0.5	ug/l
		Chromium, dissolved	I,R	<0.5	ug/l
		Nickel, dissolved	I,R	2	ug/l
		Cadmium, dissolved	I,R	<0.5	ug/l
		Arsenic, dissolved	I,R	1	ug/l
		Mercury, dissolved	I,R	<0.05	ug/l
		Selenium, dissolved	I,R	1	ug/l
		Zinc, dissolved	I,R	<5	ug/l
		Barium, dissolved	I,R	211	ug/l
		Boron, dissolved	I,R	20	ug/l
		PRO Water (C5-C12) by GC-FID	I,R	<10	ug/l
		VOC + TIC (HS, GEO76)	S	Please see attached excel file	ug/l
		Beryllium, dissolved	I,R	<0.5	ug/l
		Vanadium, dissolved	I,R	<0.5	ug/l
		SVOCs (W) (GEO94)	S	Please see attached excel file	ug/l
		Chromium III	S	<0.03	mg/l
		Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	I,R	63 **Unknown Pattern	ug/l
		Chromium, total (in water)	S	<0.002	mg/l
		COD(settled)	I,R	63	mg/l
		PAH 16 (non-DW) GEO81	S	Please see attached excel file	ug/l
		VOC suite - (non-DW)	S	Please see attached excel file	ug/l

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Approved by: Ann Marie Nee

AnnMarie Nee
Environmental

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Services Administrator

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes
Chromium, total	ICP-MS CLS129	+/- 8.38 %	Yes	No	Yes
Copper, dissolved	ICP-MS CLS 129	+/- 11.28 %	Yes	No	Yes
Lead, dissolved	ICP-MS CLS129	+/-20@100ug/l	Yes	No	Yes
Chromium, dissolved	ICP-MS CLS 129	+/- 8.38 %	Yes	No	Yes
Nickel, dissolved	ICP-MS CLS129	+/- 7.91 %	Yes	No	Yes
Cadmium, dissolved	ICP-MS CLS129	+/- 10.42 %	Yes	No	Yes
Arsenic, dissolved	ICP-MS CLS129	+/- 9.34 %	Yes	No	Yes
Mercury, dissolved	ICP-MS CLS 129	+/- 27.72 %	Yes	No	Yes
Selenium, dissolved	ICP-MS CLS129	+/-0.9@5ug/l	Yes	No	Yes
Zinc, dissolved	ICP-MS CLS 129	+/- 9.38 %	Yes	No	Yes
Barium, dissolved	ICP-MS CLS129	+/-33@250ug/l	Yes	No	Yes
Boron, dissolved	ICP-MS CLS129	+/-15@200ug/l	Yes	No	Yes
PRO Water (C5-C12) by GC-FID	CLS 148	+/- 29.7ug/l @ 200ug/l	Yes	No	Yes
Beryllium, dissolved	ICP-MS CLS129	+/- 11.67 %	Yes	No	Yes
Vanadium, dissolved	ICP-MS CLS 129	+/- 11.72 %	Yes	No	Yes
Extractable Hydrocarbons Water (C8-C40, Diesel Range and Lube Oil) by GC-FID	CLS 147	+/- 26.37@200ug/l	Yes	No	Yes
COD(settled)	CLS 52	+/- 4.48 %	Yes	No	Yes

*Analysis carried out in a GMP approved, FDA inspected facility (MedPharma site only).
**Laboratory Analysis, Sampling, Food Safety Monitoring and Analysts on Contract are all ISO 9001 certified.

Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1604333	SW-201 Monettia boundary drain	Good condition	18/04/2023

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 521452
Date of Receipt : 23/05/2023
Start Date of Analysis : 23/05/2023
Date of Report : 29/05/2023
Order Number : 3118810 **
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1616760	SW-101 D/S Monettia	Suspended Solids	I,R	6	mg/l
		Turbidity	I,R	3.4	N.T.U.
		pH	I,R	7.9	pH Units
		Conductivity @ 25 C	I,R	487	uS/cm
1616762	SW-102 Monettia Outfall	Turbidity	I,R	4.0	N.T.U.
		Conductivity @ 25 C	I,R	552	uS/cm
		pH	I,R	7.9	pH Units
		Suspended Solids	I,R	<2	mg/l
1616765	SW-103 U/S Monettia	Suspended Solids	I,R	<2	mg/l
		pH	I,R	8.1	pH Units
		Conductivity @ 25 C	I,R	252	uS/cm
		Turbidity	I,R	1.6	N.T.U.
1616766	SW-201 Monettia boundary drain	pH	I,R	7.8	pH Units
		Conductivity @ 25 C	I,R	760	uS/cm
		Suspended Solids	I,R	3	mg/l
		Turbidity	I,R	3.3	N.T.U.

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 108T

Approved by:

AnnMarie Nee
Environmental
Services Administrator

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes

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Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1616760	SW-101 D/S Monettia	Good condition	23/05/2023
1616762	SW-102 Monettia Outfall	Good condition	23/05/2023
1616765	SW-103 U/S Monettia	Good condition	23/05/2023
1616766	SW-201 Monettia boundary drain	Good condition	23/05/2023

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CERTIFICATE OF ANALYSIS

Client : Stephen Stapleton, Compliance Officer
Bord na Móna (Derrinlough, Castletown, Blackwater
Blackwater Works, Blackwater,
Shannonbridge, Athlone,
Co. Westmeath

Report No. : 525275
Date of Receipt : 29/06/2023
Start Date of Analysis : 29/06/2023
Date of Report : 06/07/2023
Order Number : 3120058
Sample taken by : Client

Lab No	Sample Description	Test	Ref.	Result	Units
1630305	SW-101 D/S Monettia	Suspended Solids	I,R	<2	mg/l
		Turbidity	I,R	2.8	N.T.U.
		pH	I,R	7.9	pH Units
		Conductivity @ 25 C	I,R	417	uS/cm
1630306	SW-102 Monettia Discharge Point	Turbidity	I,R	3.8	N.T.U.
		Conductivity @ 25 C	I,R	451	uS/cm
		pH	I,R	8.0	pH Units
		Suspended Solids	I,R	3	mg/l
1630307	SW-103 U/S Monettia	Suspended Solids	I,R	3	mg/l
		pH	I,R	8.1	pH Units
		Conductivity @ 25 C	I,R	212	uS/cm
		Turbidity	I,R	2.8	N.T.U.
1630308	SW-201 Monettia boundary drain	pH	I,R	7.8	pH Units
		Conductivity @ 25 C	I,R	702	uS/cm
		Suspended Solids	I,R	2	mg/l
		Turbidity	I,R	2.8	N.T.U.

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 108T

Approved by:

AnnMarie Nee
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Services Administrator

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In-House Test	Specification	Expanded Measurement of Uncertainty	17025	GMP/FDA*	ISO**
Suspended Solids	CLS 13	+/- 20.84 %	Yes	No	Yes
Turbidity	CLS 30	+/- 22.03 %	Yes	No	Yes
pH	CLS 26	+/- 0.133 pH units	Yes	No	Yes
Conductivity @ 25 C	CLS 67	+/- 4.92 %	Yes	No	Yes

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Lab No	Sample ID	Sample Condition on Receipt	Sampling Date
1630305	SW-101 D/S Monettia	Good condition	29/06/2023
1630306	SW-102 Monettia Discharge Point	Good condition	29/06/2023
1630307	SW-103 U/S Monettia	Good condition	29/06/2023
1630308	SW-201 Monettia boundary drain	Good condition	29/06/2023

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SVOC Tentatively Identified Compounds (TIC) Report

Sample Name	SW-101 Monettia D/S	**Method GEO94**	**Semi Volatile Organic Compounds**
Acq. Method File	SVOC_PJS_TestB	**Acq. Method Path**	D:\MassHunter\GCMS\2\methods\
Acq. Date-Time	28/04/2023 16:01:53	**Acq. Operator**	KB/PJS/RM
Instrument Name	MSD-V	**Dil.**	5

1604330

Note: Estimated concentration assumes a response equivalent to the internal standard response for d14-p-Terphenyl. Units are ug/L

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SVOC Tentatively Identified Compounds (TIC) Report

Sample Name	SW-102 Monettia Outfall	**Method GEO94**	**Semi Volatile Organic Compounds**
Acq. Method File	SVOC_PJS_TestB	**Acq. Method Path**	D:\MassHunter\GCMS\2\methods\
Acq. Date-Time	28/04/2023 16:29:52	**Acq. Operator**	KB/PJS/RM
Instrument Name	MSD-V	**Dil.**	5

1604331

Note: Estimated concentration assumes a response equivalent to the internal standard response for d14-p-Terphenyl. Units are ug/L

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SVOC Tentatively Identified Compounds (TIC) Report

Sample Name	SW-103 U/S Monettia	**Method GEO94**	**Semi Volatile Organic Compounds**
Acq. Method File	SVOC_PJS_TestB	**Acq. Method Path**	D:\MassHunter\GCMS\2\methods\
Acq. Date-Time	28/04/2023 18:21:13	**Acq. Operator**	KB/PJS/RM
Instrument Name	MSD-V	**Dil.**	5

1604332

Note: Estimated concentration assumes a response equivalent to the internal standard response for d14-p-Terphenyl. Units are ug/L

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SVOC Tentatively Identified Compounds (TIC) Report

Sample Name SW-201 Monettia boundary drain

Method GEO94 Semi Volatile Organic Compounds

Acq. Method File	SVOC_PJS_TestB	**Acq. Method Path**	D:\MassHunter\GCMS\2\methods\
Acq. Date-Time	28/04/2023 18:49:00	**Acq. Operator**	KB/PJS/RM
Instrument Name	MSD-V	**Dil.**	5

1604333

Note: Estimated concentration assumes a response equivalent to the internal standard response for d14-p-Terphenyl. Units are ug/L

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Appendix B
Surface Water Screening

SURFACE WATER QUALITY RESULTS

Monitoring location	Units	LOD	SW AA EQS (2019) Inland Surface Waters	Gorteen Bridge	Boundary Drain	Gorteen Bridge	Outfall	Upstream	Boundary Drain	Upstream*	Boundary Drain	Downstream*	Upstream*	Boundary Drain	Downstream*	Downstream*	Outfall	Upstream*	Boundary Drain	Downstream*	Outfall	Upstream*	Boundary Drain	Downstream*	Outfall	Upstream*	Boundary Drain
Date				17/02/2022	01/03/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	29/11/2022	29/11/2022	29/11/2022	15/12/2022	15/12/2022	15/12/2022	31/01/2023	31/01/2023	31/01/2023	31/01/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Sample ID				SW101	SW201	SW101	SW102	SW103	SW201	SW103	SW201	SW101	SW103	SW201	SW101	SW101	SW102	SW103	SW201	SW101	SW102	SW103	SW201	SW101	SW102	SW103	SW201
Sample type				Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Element Report Reference				22/2826	22/3378	22/6185	22/6185	22/6185	22/6185	505912	505912	505912	1564141	1564140	1564142	1576789	1576797	1576798	1576799	1586048	1586049	1586050	1586056	1604331	1604331	1604331	1604331
Dissolved Arsenic	ug/l	<2.5	-	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<0.5	1	1	<0.5	1	1	1	1	<0.5	1	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	1
Dissolved Barium	ug/l	<3	-	96	66	162	182	158	191	143	82	131	178	171	161	138	141	145	153	157	149	152	194	199	165	187	211
Dissolved Beryllium	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Boron	ug/l	<12	-	18	<12	<12	15	<12	17	<10	15	13	<10	20	14	11	11	<10	16	11	11	<10	18	15	14	<10	20
Dissolved Cadmium	ug/l	<0.5	0.08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Dissolved Chromium	ug/l	<1.5	-	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<0.5	<0.5	<0.5	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	1	<0.6	<0.6	<0.5	<0.5	<0.5	<0.5
Dissolved Copper	ug/l	<7	-	<7	<7	<7	<7	<7	<7	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dissolved Lead	ug/l	<5	7.2	<5	<5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Mercury	ug/l	<1	0.07	<1	<1	<1	<1	<1	<1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dissolved Nickel	ug/l	<2	20	<2	<2	<2	<2	<2	<2	1	2	2	<0.5	2	2	1	2	<0.5	2	1	1	<0.5	2	1	1	<0.5	2
Dissolved Selenium	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<0.5	<0.5	1	<0.5	1	1	<5	1	<0.5	1	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	1
Dissolved Vanadium	ug/l	<1.5	-	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Zinc	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<5	<5	<5	14	79	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
PAHs																											
Acenaphthene	ug/l	<1	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Acenaphthylene	ug/l	<0.5	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Anthracene	ug/l	<0.5	0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Benzo(a)anthracene	ug/l	<0.5	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Benzo(a)pyrene	ug/l	<1	0.00017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Benzo(b)fluoranthene	ug/l	<0.008	0.03	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Benzo(bk)fluoranthene	ug/l	<1	0.03	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	ug/l	<0.5	0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Benzo(k)fluoranthene	ug/l	<0.008	0.03	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chrysene	ug/l	<0.5	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Dibenzo(ah)anthracene	ug/l	<0.5	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Fluoranthene	ug/l	<0.5	0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Fluorene	ug/l	<0.5	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Indeno(123cd)pyrene	ug/l	<1	0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Naphthalene	ug/l	<1	2.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.012	0.013	<0.020	0.021	0.012	0.01	0.011
PAH 16 Total	ug/l	<0.173	-	<0.173	<0.173	<0.173	<0.173	<0.173	<0.173	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.012	0.013	<0.020	0.021	0.012	0.01	0.011
PAH Surrogate % Recovery	%	<0	-	85	83	77	83	76	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	ug/l	<0.5	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Pyrene	ug/l	<0.5	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
VOC TICs	-	None	-	ND	ND	ND	ND	ND	ND	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached
SVOC TICs	-	None	-	ND	ND	ND	ND	ND	ND	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached	See Attached
GRO (>C4-C8)	ug/l	<10	-	<10	<10	<10	<10	<10	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRO (>C8-C12)	ug/l	<10	-	<10	<10	<10	<10	<10	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GRO (>C4-C12)	ug/l	<10	-	<10	<10	<10	<10	<10	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRO (C5-C-12)	ug/l	<10	-	-	-	-	-	-	-	<10	44	<10	<10	<10	<10	<10	<10	<10	<10	<10	13	<10	16	10	<10	<10	<10
EPH (C8-C40)	ug/l	<10	-	<10	<10	<10	<10	<10	<10	34	58	66	153	158	189	20	18	18	31	33	37	36	43	52	78	31	63
Hexavalent Chromium	ug/l	<6	-	NDP	<6	<6	<6	<6	<6	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Total Dissolved Chromium III	ug/l	<6	-	NDP	<6	<6	<6	<6	<6	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
COD (Settled)	mg/l	<7	-	40	52	26	34	<7	37	22	22	29	<10	78	26	14	21	12	31	15	15	11	34	38	38	28	63
Electrical Conductivity @25C	uS/cm	<2	-	-	373	531	714	270	703	242	376	477	314	659	591	540	545	551	672	455	513	234	715	471	526	265	591
pH	pH units	<0.01	-	-	8.26	8.26	8.17	8.72	8.20	7.9	7.3	7.6	8.1	3.3	7.8	7.8	7.8	8.1	7.5	7.8	7.8	8	7.8	8.0	7.9	8.2	7.9
Total Suspended Solids	mg/l	<10	-	<10	22	<10	<10	<10	<10	<2	17	<2	2	4	4	3	<2	<2	3	<2	<2	<2	<2	<2	<2	<2	<2
Turbidity	NTU	<0.1	-	5.8	10	2.9	2.8	1.4	3.8	4	3.3	3.4	3.9	3.1	6.5	2.1	1.6	1.1	1.6	2.8	3.4	2.1	4	2.1	2.4	1.3	2.9
SVOCs																											
Phenols																											
2-Chlorophenol	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2-Methylphenol	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2-Nitrophenol	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2,4-Dichlorophenol	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2,4-Dimethylphenol	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2,4,5-Trichlorophenol	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2,4,6-Trichlorophenol	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
4-Chloro-3-methylphenol	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
4-Methylphenol	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
4-Nitrophenol	ug/l	<10	-	<10	<10	<10	<10	<10	<10	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Pentachlorophenol	ug/l	<1	0.007	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Phenol	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
PAHs																											
2-Chloronaphthalene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2-Methylnaphthalene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Phthalates																											
Bis(2-ethylhexyl) phthalate	ug/l	<5	1.3	<5	<5	<5	<5	<5	<5	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Butylbenzyl phthalate	ug/l	<1	-	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Di-n-butyl phthalate	ug/l	<1.5	-	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Di-n-Octyl phthalate	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Diethyl phthalate	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Dimethyl phthalate	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Other SVOCs																											
1,2-Dichlorobenzene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,2,4-Trichlorobenzene	ug/l	<1	0.4	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,3-Dichlorobenzene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
1,4-Dichlorobenzene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2-Nitroaniline	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
2,4-Dinitrotoluene	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
2,6-Dinitrotoluene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
3-Nitroaniline	ug/l	<1	-	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Bromophenylphenylether	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
4-Chloroaniline	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
4-Chlorophenylphenylether	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
4-Nitroaniline	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Azobenzene	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-chloroethoxy)methane	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Bis(2-chloroethyl)ether	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Carbazole	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Dibenzofuran	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hexachlorobenzene	ug/l	<1	0.05	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hexachlorobutadiene	ug/l	<1	0.6	<1	<1	<1	<1	<1	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hexachlorocyclopentadiene	ug/l	<1	0.02	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Isophorone	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
N-nitrosodi-n-propylamine	ug/l	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Nitrobenzene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Surrogate Recovery 2-Fluorobiphenyl	%	<0	-	107	109	139SV	135SV	139SV	136SV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surrogate Recovery p-Terphenyl-d14	%	<0	-	113	112	140SV	135SV	140SV	139SV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SURFACE WATER QUALITY RESULTS

Monitoring location	Units	LOD	SW AA EQS (2019) Inland Surface Waters	Gorteen Bridge	Boundary Drain	Gorteen Bridge	Outfall	Upstream	Boundary Drain	Upstream*	Boundary Drain	Downstream*	Upstream*	Boundary Drain	Downstream*	Downstream*	Outfall	Upstream*	Boundary Drain	Downstream*	Outfall	Upstream*	Boundary Drain	Downstream*	Outfall	Upstream*	Boundary Drain
Date				17/02/2022	01/03/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	29/11/2022	29/11/2022	29/11/2022	15/12/2022	15/12/2022	15/12/2022	31/01/2023	31/01/2023	31/01/2023	31/01/2023	22/02/2023	22/02/2023	22/02/2023	22/02/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Sample ID				SW101	SW201	SW101	SW102	SW103	SW201	SW103	SW201	SW101	SW103	SW201	SW101	SW101	SW102	SW103	SW201	SW101	SW102	SW103	SW201	SW101	SW102	SW103	SW201
Sample type				Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Element Report Reference				22/2826	22/3378	22/6185	22/6185	22/6185	22/6185	505912	505912	505912	1564141	1564140	1564142	1576789	1576797	1576798	1576799	1586048	1586049	1586050	1586056	1604331	1604331	1604331	1604331
VOCs																											
1,1,1,2-Tetrachloroethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,1-Trichloroethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2,2-Tetrachloroethane	ug/l	<4	-	<4	<4	<4	<4	<4	<4	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1,2-Trichloroethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethane	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethene (1,1 DCE)	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloropropene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,3-Trichlorobenzene	ug/l	<3	0.4	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,3-Trichloropropane	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,4-Trichlorobenzene	ug/l	<3	0.4	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2,4-Trimethylbenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dibromo-3-chloropropane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
1,2-Dibromoethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichlorobenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichloroethane	ug/l	<2	10	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dichloropropane	ug/l	<2	-	<2	<2	<2+	<2+	<2+	<2+	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,3,5-Trimethylbenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,3-Dichlorobenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,3-Dichloropropane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,4-Dichlorobenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
2,2-Dichloropropane	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
2-Chlorotoluene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
4-Chlorotoluene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
4-Isopropyltoluene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	ug/l	<0.5	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromobenzene	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromochloromethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromodichloromethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromoform	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Bromomethane	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Carbon tetrachloride	ug/l	<2	12	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chlorobenzene	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroethane	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroform	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chloromethane	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
cis-1-2-Dichloroethene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
cis-1-3-Dichloropropene	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromochloromethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Dibromomethane	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Dichlorodifluoromethane	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Dichloromethane (DCM)	ug/l	<5	20	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	1.95	1.99	1.57	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Ethylbenzene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Hexachlorobutadiene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Isopropylbenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
m/p-Xylene	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Methyl Tertiary Butyl Ether	ug/l	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Naphthalene	ug/l	<2	2.4	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
n-Butylbenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
o-Xylene	ug/l	<1	-	<1	<1	<1	<1	<1	<1	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Propylbenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
sec-Butylbenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Styrene	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Surrogate Recovery 4-Bromofluorobenzene	%	<0	-	110	108	111	109	109	108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surrogate Recovery Toluene D8	%	<0	-	113	101	125	124	124	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene (PCE)	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Toluene	ug/l	<5	-	<5	<5	<5	<5	<5	<5	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1-2-Dichloroethene	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1-3-Dichloropropene	ug/l	<2	-	<2	<2	<2	<2	<2	<2	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene (TCE)	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Trichlorofluoromethane	ug/l	<3	-	<3	<3	<3	<3	<3	<3	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Vinyl Chloride	ug/l	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500

Legend

Directive 2008/105/EC Setting Environmental Quality Standards in the Field of Water Policy

NDP - No Determination Possible

Below Laboratory Detection Limit

* Surface Water Sampling undertaken by Bord na Móna