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RON HULL JNR LIMITED

GRANGE MILL LANE VARIATION OF PERMIT

RISK ASSESSMENT FOR EMISSIONS TO WATER

SEPTEMBER 2024

wardell armstrong

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RON HULL JNR LIMITED

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RISK ASSESSMENT FOR EMISSIONS TO WATER

SEPTEMBER 2024

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APPROVED BY:

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APPENDICES

1 INTRODUCTION

1.1 Background

1.1.1 Ron Hull Jnr Ltd operate a metal recycling site at Grange Mill Lane in Sheffield. The site is currently permitted as an installation for shredding of metal. The environmental permit also allows the site to accept, dismantle and sort waste electrical and electronic waste, dismantle end of life vehicles and sort, grade, shear and crush general scrap metal wastes.

1.1.2 The site is currently permitted to accept hazardous waste in the form of lead acid batteries. However, a wider range of hazardous waste was accepted in the past, namely:

16 01 04* end of life vehicles
16 01 07* oil filters
20 01 23* discarded equipment containing CFCs
20 01 35* discarded electrical equipment containing hazardous components.

1.1.3 At some point these wastes have been removed from the permit, though the extant conditions, for example in table S1.1 and S1.3, still relate to the proper management of these wastes.

1.1.4 In order to offer the best service to their clients Ron Hull Jnr are seeking to reinstate these wastes and at the same time establish a waste transfer station to manage a range of non-hazardous wastes. They are also seeking to add a limited number of new hazardous wastes to their permit that are related to their existing end of life vehicle (ELV) and waste electrical and electronic equipment (WEEE) activities.

1.1.5 There is no intention to increase the quantity of waste handled on site and the annual limits in the permit will remain unchanged. The intention is only to accept a wider range of wastes.

1.2 Need for Risk Assessment

1.2.1 The Environment Agency has identified that a number of non-hazardous wastes would be stored outside in purpose built bays with impermeable surfacing and sealed drainage. Because rainfall may come into contact with these wastes there is potential for contamination to leach from them and be carried off site.

1.2.2 This report identifies the potential source, pathways and receptors and describes the measures in place to prevent an impact on the receptors. Section 3 provides some

figures to quantify the potential impacts. It is shown that the risk of contamination from the site impacting the receiving water is insignificant.

2 SOURCE, PATHWAYS AND RECEPTORS

2.1 Source

2.1.1 Although some hazardous wastes are stored on site all hazardous wastes would be stored in appropriate containers in buildings or under cover, to prevent emissions to water. Where necessary (for example liquid wastes) they will be provided with bunds or drip trays around the containers to contain any leaks or spills. There is therefore no pathway for hazardous wastes to enter the site drainage.

2.1.2 Currently some metal wastes are stored outside. There is a small potential for metals to leach from these materials. There is also a small potential for surface contamination, such as oils, to be present and wash from these wastes.

2.1.3 Following variation of the permit some other non-hazardous wastes may be stored in the external bays. These are likely to include construction and demolition waste but may also include some slags or similar wastes from metal production. Most of these materials will be generally inert nature and have a low potential for leaching. However, some wastes may release metals. There is some potential for organic materials to be present, for example in wastes from combustion processes.

2.1.4 Overall, the risks to the environment are considered to be similar to those of the existing site activities with a potential for a small quantity of contamination to leach from non-hazardous wastes and enter site drainage.

2.2 Pathways

2.2.1 In order to protect groundwater and surface water the site has impermeable surfacing throughout, with concrete surfacing for all waste storage areas. Any water present in the bays will be directed to the sealed drainage system. Water collects in a manifold that runs along the southwest side of the site. This drains through a silt trap and two interceptors before reaching the sump, from where it is pumped to the sewer outlet on the northeast of the site, adjacent to Grange Mill Lane.

2.2.2 The manifold can contain 228m^3 of water, with additional storage on the floor of the site. In the event of a fire or a major spill the pump can be switched off and water would be contained on site for testing, before being either released to sewer (where acceptable) or pumped out by tanker and taken to a permitted site for disposal.

2.2.3 Measures are therefore in place to prevent emissions to surface water or groundwater. Any drainage water from waste storage areas will be directed via the silt trap and interceptors to foul sewer.

2.2.4 Discharges to sewer take place in line with a trade effluent consent issued by Yorkshire Water (Appendix 1). It is understood that this will be directed to the Blackburn Meadows Sewage Treatment Works.

2.3 Sewage Treatment

2.3.1 Blackburn Meadows Sewage Treatment works is one of the largest in the UK, serving a population of over 800,000 people. The sewage works includes filters and activated sludge tanks to clean the water. Recent investments at the site have sought to reduce emissions of ammoniacal nitrogen and phosphorus to the receiving water. The sewage works is therefore considered to provide a high standard of treatment. Due to the size of the sewage works there will also be considerable dilution before the water reaches any receptor.

2.4 Receptor

2.4.1 The Environment Agency have specifically requested that an assessment is made of the impact of discharges via the sewer. The receptor in this case would be the River Don. The sewage treatment works discharges treated water into the River at a rate of 4.25m^3/S.

3 RISK CONTROL MEASURES

3.1 Control of Emissions to Water

3.1.1 The following measures are in place to protect surface water and groundwater.

3.1.2 All hazardous waste will be stored in containers, in buildings or under weatherproof cover.

3.1.3 Fridges will be stored upright and managed to as to prevent damage and avoid leaks.

3.1.4 End of life vehicles will be depolluted using purpose designed equipment to limit the risk of spillage. Liquids will be transferred to bunded containers.

3.1.5 Waste storage areas will be provided with impermeable pavement draining to the sealed drainage system.

3.1.6 The sealed drainage system directs water via a silt trap and interceptors to the foul sewer.

3.1.7 All surfacing, drains and waste storage areas will be subject to regular inspection and will be repaired as necessary to ensure containment.

3.1.8 The silt trap and interceptors will be checked on a regular basis and emptied as necessary to prevent oil and suspended solids entering the sewer.

3.1.9 In the event of a fire or major spillage pumping to sewer will cease and contaminated water will be held in the manifold. This has capacity to hold 228m^3 of water. The falls in the yard mean that any additional water would be held within the yard. This will allow checks to be made before the water is released to sewer or tankered off site as appropriate.

3.1.10 A sample point is provided where the water discharges from site into the public sewer. This is sampled by both Ron Hull Jnr and Yorkshire Water to ensure compliance with the trade effluent consent. Continuous flow monitoring is provided.

3.2 Sewage Treatment

3.2.1 The sewage treatment works serves a population of over 800,000 people and treats up to 368,000m^3 of water a day. The main treatment includes activated sludge. Although it dates from the 1880s the water treatment works has had regular investment to ensure a continued high standard of treatment with tens of millions of pounds invested in major upgrades between 2012 and 2016 and in 2023.

3.2.2 The sewage treatment plant discharges water to the River Don at a rate of 4.25m^3/S (based on a dry weather flow of 368,000 cubic metres a day)[1]. Releases from the Grange Mill Lane site to the river will therefore undergo both secondary treatment and massive dilution before being released into the environment.

[1] Yorkshire Water -, Yorkshire Water - Wastewater treatment services, https://una.city/nbs/sheffield/blackburn-meadows-wastewater-treatment-plant-upgrade

4 RISK ASSESSMENT

4.1 Test 1 and Test 2

4.1.1 The trade effluent consent for the site allows the release of up to 100m^3 of water per day. Water can be released to sewer at a maximum rate of 4 litres a second.

4.1.2 Due to the need to produce an assessment quickly an initial assessment has been carried out based on the discharge consent. That is, it has been assumed that water is discharged at a rate of 4 litres a second and with pollutants at the concentration set as the consent limit.

4.1.3 In fact, water discharge will be dependent on rainfall and for much of the year it is likely that the discharge to sewer will be less than 4l/S. This discharge rate is likely only to be reached for an extended period on particularly wet days.

4.1.4 Similarly, actual concentrations of chemicals in emissions from the site are likely to be well below the consented limit, which is set as a maximum.

4.1.5 Table 4.1, below sets out a comparison between the emission limit from the site into the sewer with the EQS at the river, following treatment via the sewage treatment works.

4.1.6 River flow used for test two was based on the dry weather flow taken from the monitoring point at Sheffield Hadfields. The National River Flow Archive provides a Q95 of 1.19m^3/S and a mean river flow of 5.096m^3 /S for the River Don at this point.[2]

4.1.7 This will greatly overestimate the impact of the site as during dry weather, when the river flow is at its lowest, there will be little or no water discharged from the site . All the results in Table 4.1 are calculated based on a flow of 4l/S , i.e., the maximum possible discharge, which would only occur where there was significant rainfall and therefore the flow in the River Don would likely be higher.

4.1.8 Two rounds of monitoring are available for 2024. Where no limit is set in the trade effluent consent the higher result from these two monitoring rounds has been used in the assessment. The monitoring results have been made available as Appendix 2.

[2] NRFA Station Data for 27006 - Don at Sheffield Hadfields (ceh.ac.uk)

	Table 4.1 Test 1 and Test 2 at Emission Limits							
Parameter	**Consent Limit mg/l**	**Sewage reduction factor**	**Following Treatment mg/l**	**Following dilution via sewerage system (divide by 1062.5) µg/l**	**EQS Annual average µg/l**	**Test 1 (Emission <10% of the EQS)**	**Process Contribution**	**Test 2 (PC<4% of EQS)**
Ammonia as nitrogen	110	0.08	8.8	8.282	600	Yes/Pass	-	-
Copper	1	0.21	0.21	0.198	1	No, 19.76%	0.1544	No, 15.44%
Lead	1	0.17	0.17	0.16	1.2	No, 13.33%	0.1250	No, 10.42%
Nickel	1	0.76	0.76	0.715	4	No, 17.88%	0.5588	No, 13.97%
Zinc	3	0.33	0.99	0.932	10.9	Yes/ Pass	-	-
Boron	20	1	20	18.824	2000	Yes/Pass	-	-

	Table 4.1 Test 1 and Test 2 at Emission Limits							
Parameter	**Monitored Level µg/l**	**Sewage reduction factor**	**Following Treatment mg/l**	**Following dilution via sewerage system (divide by 1062.5) µg/l**	**EQS Annual average µg/l**	**Test 1 (Emission <10% of the EQS)**		**Test 2 (PC<4% of EQS)**
Fluourene	0.2	1*	0.2	0.00018	none		-	-
Naphthalene	0.72	0.98	0.706	0.00067	2	Yes/Pass	-	-
Phenanthrene	0.39	1*	0.39	0.00037	none		-	-
Fluoranthene	0.5	0.73	0.365	0.00034	0.0063	Yes/Pass	-	-
Pyrene	0.51	1*	0.51	0.00048	none		-	-
Cadmium	0.3	0.89	0.267	0.00025	0.08	Yes/Pass	-	-
Mercury	0.17	1	0.17	0.00016	0.07 (MAC)	Yes/Pass	-	-

* The Environment Agency has not provided sewage reduction factors for these chemicals. The sewage reduction factors for other PAH vary between 0.69 and 1. Therefore a worst case of no reduction has been applied.

4.2 Discussion

4.2.1 Although the stage 1 and stage 2 tests show exceedances, this absolute worst case assessment shows levels that are only slightly above 10% of the EQS.

4.2.2 Assuming that background levels are 50% of the EQS because the river at this point is within an urban area, (in line with EA guidance for instances when background data is not available) then the predicted environmental concentration would remain within the EQS given these predicted levels.

4.2.3 In reality the levels of contamination that reach the river will be significantly less than that predicted.

4.2.4 Firstly, due to the Environment Agency allowing just ten days for the assessment, the levels have been assessed as though the discharge were occurring right at the limit of the trade effluent consent.

4.2.5 The discharge is monitored and actual results from two monitoring rounds during 2024 show that the site is well within their discharge consent levels. See Table 4.2.

4.2.6 In addition, the maximum possible flow rate was used in the calculations to provide a worst case. Flow monitoring shows that typically the quantity of water pumped to the sewer is well within this level (see Appendix 3).

Table S4.2 Monitoring Results

Parameter	Trade Effluent Limit mg/l	Results for Feb 24 mg/l	Results for July 24 mg/l
Ammonia as nitrogen	110	93	5.9
Settleable solids	500	94	20
Cadmium	No limit	0.0003	0.00012
Copper	1	0.0038	0.003
Lead	1	0.0048	0.0011
Mercury	No limit	0.00017	0.00006
Nickel	1	0.046	0.025

Table S4.2 Monitoring Results			
Parameter	**Trade Effluent Limit mg/l**	**Results for Feb 24 mg/l**	**Results for July 24 mg/l**
Zinc	3	0.019	0.024
Boron	20	-	-

4.2.7 It can be seen that the actual levels of metals released from the site are well within the levels set in the trade effluent consent. Even if the varied waste types increased emissions by an order of magnitude (which is not expected) the levels would remain well within the consented limit. The actual impact on the river is therefore considered to be insignificant.

4.2.8 In addition, the assessment is based on worst case emissions from the site reaching the river during a period of dry weather flow. This is highly unlikely to occur. During periods of dry weather there will be no emissions to sewer because no rain will be falling on the site. Discharges at or close to the discharge consent limit will only happen when there is significant rainfall as the discharge relates to rainwater run-off and site drainage. If the mean river flow were to be used in the assessment rather than the Q95 then all parameters would pass at stage 2.

4.2.9 The EQS for lead, copper and nickel (the parameters where slight exceedances are seen) are set for bioavailable metals. In the absence of more detailed information all copper, lead and nickel has been treated in the assessment as though it was all available for uptake by living organisms. In reality only a proportion of the total metal in the discharge is likely to be bioavailable.

4.2.10 The trade effluent consent does not set limits for any organics. Monitoring results from 19th July indicate that all organics monitored in July 2024 were below the limit of detection and therefore would be unlikely to impact the River.

4.2.11 In February 2024 some low levels of PAH were detected. These figures have been assessed and are included in Table 4.1 along with mercury and cadmium.

5 CONCLUSION

5.1.1 The Environment Agency has requested an assessment of emissions from the site which are discharged to sewer. This is because a wider range of waste materials is to be stored at the site. It is considered that the additional wastes, including construction and demolition wastes and wastes from processing of metals, are likely to leach similar pollutants to the scrap metal wastes that are currently permitted.

5.1.2 The site has a number of systems in place to prevent pollution of water. Suitable storage is provided for all hazardous waste so that there can be no leaching of pollutants from this source. Some metals or other pollutants may leach from non-hazardous waste stored on impermeable surfacing within the sealed drainage system.

5.1.3 A silt trap and interceptor remove solids and oils before water leaves the site.

5.1.4 A monitoring point is in place for emissions to sewer, allowing sampling to demonstrate compliance with the trade effluent consent. Recent monitoring shows that emissions from the site are well within the TEC limits.

5.1.5 To provide a robust worst case, test 1 and test 2 of the Environment Agency's risk assessment process were applied based on emissions from the site at the limit of the trade effluent consent. This showed that most parameters would screen out and would not require further assessment.

5.1.6 Nickel, lead and copper showed results slightly above the screening criteria. However, it is considered that emissions of these metals will be acceptable because:

- EQS relate to bioavailable metals but figures for total metals were used;
- Actual emissions are known to be much lower than the trade effluent limit used in the assessment in terms of concentrations and flow; and
- The EA approach to screening requires the Q95 flow to be used, however, this relates to low flow during dry weather, when there would be no emissions from the site.

5.1.7 Emissions to sewer from the site are not expected to cause any significant risk to water quality in the River Don.

APPENDICES

YORKSHIRE WATER SERVICES LTD

The Water Industry Act 1991 (here called "the Act")

NOTICE OF A DIRECTION

varying the Conditions attached to a Consent
to discharge trade effluent into a public sewer

To: Mettalis Recycling Limited
8 Grange Mill Lane
Sheffield
S9 1HW

By a Consent No. Y/4486/17C, Dated 27th January 2017 Yorkshire Water Services Ltd (here called ' YWS ') consented, subject to certain Conditions, to the discharge of trade effluent (here called "the effluent") into the public sewer from the premises (here called "the premises") now known as

8 Grange Mill Lane
Sheffield
S9 1HW

YWS, gives notice of its Direction pursuant to Section 124 of the Act, which shall take effect on 20th February 2020 that the Conditions attached to the said Consent and any Directions previously issued in respect of the said Consent shall be varied :-

i) by revoking the Conditions attached thereto, and

ii) by replacing the same with the following Conditions set out in the attached Direction Registration Number: Y/4745/19D

The owner or occupier of the premises may appeal against the attached Direction to the Water Services Regulatory Authority at the Office of Water Services Centre City Tower 7 Hill Street Birmingham B5 4UA. Any such appeal must be made within two months of YWS giving notice of the Direction, or at any time if the Water Services Regulatory Authority gives written permission.

DATED this 12th day of December 2019

Signed: .....

YWS Authorised Signatory

I/We: .....

have received the Notice and Direction, of which this is a copy

Dated: .....

Signed: .....

Print Name: .....

DIRECTION

YWS in the exercise of its powers under the Act, hereby GIVES ITS CONSENT to the discharge of trade effluent from the premises into the YWS public sewers, SUBJECT TO THE FOLLOWING CONDITIONS AND NOT OTHERWISE.

1. Communication with the Sewer

(1) The public sewer into which the effluent may be discharged is marked 'Z' on the attached plan.

(2) The effluent shall be discharged to enter only into the public sewer shown on the attached plan, at the point so shown marked 'X'. No connection for the discharge of effluent shall be made to the connecting pipe between such point and any measurement facilities referred to in the following Condition without the prior approval in writing of YWS.

2. Inspection and Measurement

(1) There shall be provided and maintained at all times at your expense at the point shown or otherwise indicated and marked as 'Y' on the said plan an inspection chamber or manhole or sample tap such as will enable a person readily and safely to take at any time samples of what is passing into the said sewer from the premises, and that chamber or manhole shall be a minimum size of 1,200 millimetres internal diameter for pre-cast concrete sections or 1,200 millimetres x 800 millimetres for engineering brickwork construction or such other suitable sampling facility to be constructed and maintained to the satisfaction of YWS,

(2) There shall be provided, operated and maintained in good accurate working order and in a manner consistent with good operating practice, at all times, at your expense;

(a) a meter in such a position and of such specification as shall be approved by YWS such as will measure and provide a continuous record of the quantity and rate of discharge of any trade effluent being discharged from the premises into the said sewer and following the written request of YWS to have the accuracy of the meter independently tested by an agreed body,

(b) Equipment in such position and of such specification as shall be approved by YWS as will provide for a flow proportional sample as will enable the nature and composition of constituents as set out in these conditions of any trade effluent being discharged from the premises into the said sewer to be ascertained and to provide as may be from time to time required by YWS such samples from such equipment as will enable the nature and composition of constituents as set out in these conditions of any trade effluent being discharged from the premises into the said sewer to be ascertained,

(3) You shall allow YWS a right of access without notice for the purpose of inspecting, testing and reading any such meter and equipment and any other equipment required under Condition 5(3) below and for obtaining any sample of the effluent.

3. Information to be Given

(1) You shall supply to YWS all information reasonably requested for the control of the effluent and for the assessing of the charges in accordance with Condition 8.

(2) You shall keep a continuous record of the volume and rate of discharge of any effluent discharged from the premises into the said sewer and a record of the nature and quantity of any chemicals used to ensure compliance with the terms of this consent and copies of such records shall be submitted to YWS within fourteen days of a written demand from YWS. The originals of all such records shall be retained by you for a period of six years.

(3) You shall provide written documentation within 12 months from the date of this consent and every 12 months thereafter that the flow measurement and any other equipment have been independently tested and where appropriate calibrated to ensure that they are in good working order and operating to all relevant specifications.

4. Discharge Quantity and Rate

The quantity of the effluent discharged shall not exceed 100 cubic metres in any period of twenty-four hours.

The rate of discharge of the effluent shall not exceed 4 litres per second.

5. Nature of the Effluent

(1) Subject to the provisions of Conditions 5(2), 5(3) and 6 below, the effluent shall not contain any substance or be of a character other than as listed in the attached Schedule of Conditions and any such substance or character shall not be in a proportion greater than that there stated.

(2) No sample of the effluent taken from the point specified in 2.(1) shall contain prescribed substances in concentrations above background.

(3) There shall be provided, operated and maintained at all times at your expense, such equipment and/or systems including but not limited to chemical dosing as shall be approved by YWS, as will prevent the effluent, either alone or in combination with any matter in any sewer or receiving sewage treatment works vested in and/or under the control of YWS from giving rise to any obnoxious, poisonous or inflammable gases or otherwise a statutory nuisance as defined by the Environmental Protection Act 1990 in such sewer or sewage treatment works which would be deleterious to such sewer or to the processes in use at such sewage treatment works or to the disposal of sludges produced by such sewage treatment works.

6. Matter to be Excluded

Save as permitted by this Direction the effluent shall not contain:

(1) Any matter likely to injure any public sewer or any sewer or drain communicating with a public sewer, or to interfere with the free flow of its contents, or to affect prejudicially the treatment and disposal of its contents; or

(2) Any matter which, either alone or in combination with the contents of any public sewer or any sewer or drain communicating with a public sewer, is dangerous, or the cause of a nuisance, or prejudicial to health; or

(3) Any petroleum spirit. For this purpose 'petroleum spirit' means any such:-

(a) crude petroleum; or

(b) oil made from petroleum, or from coal, shale, peat or other bituminous substances; or

(c) product of petroleum or mixture containing petroleum,

as when tested in the manner prescribed by or under the Petroleum (Consolidation) Act 1928 gives off an inflammable vapour at a temperature of less than 22.7 degrees Celsius.

7. Notification of Changed Effluent

You shall give to YWS prior written notice of any change in the process or the process materials or any other circumstances likely to alter the constituents of the effluent as set out in Condition 5 and the Schedule of Conditions. In such circumstances, no substance of which YWS has not had previous notice of may be discharged unless and until YWS has agreed to accept the substance at a limit imposed by YWS which shall then deemed to be incorporated in the said Schedule by agreement and shall not prejudice the right of YWS to serve a Direction earlier than two years from the date of such incorporation.

8. Charges

(1) Payment for the treatment and disposal of the effluent and the costs of sampling and analysis of the same for control purposes shall be made to YWS by way of charges determined separately as stated below for the effluent discharged.

(2) The charge under (1) above shall be calculated in accordance with the Yorkshire Water Services Limited Charges Schemes as from time to time amended.

(3) The charge shall be payable by any person who is or was the occupier of the premises during the period of discharge of the effluent or at the date payment is due.

SCHEDULE OF CONDITIONS

1 The temperature of the effluent shall not exceed 43.3 degrees Celsius at the time of discharge.

2 The pH value of the effluent shall not be less than 6 nor more than 10 at the approved measuring point.

3 Settled Chemical Oxygen Demand shall not exceed 2500 milligrammes per litre.

4 Total load of Settled Chemical Oxygen Demand discharged in twenty-four hours shall not exceed 87.5 kilogrammes.

5 Total Ammonia (as N) shall not exceed 110 milligrammes per litre.

6 Total load of Ammonia (as N) discharged in twenty-four hours shall not exceed 2.45 kilogrammes.

7 Settleable Solids shall not exceed 500 milligrammes per litre.

8 Total load of Settleable Solids discharged in twenty-four hours shall not exceed 17.5 kilogrammes.

9 Total Copper (as Cu) shall not exceed 1 milligrammes per litre.

10 Total load of Copper (as Cu) discharged in twenty-four hours shall not exceed 0.0175 kilogrammes.

11 Total Lead (as Pb) shall not exceed 1 milligrammes per litre.

12 Total load of Lead (as Pb) discharged in twenty-four hours shall not exceed 0.0175 kilogrammes.

13 Total Nickel (as Ni) shall not exceed 1 milligrammes per litre.

14 Total load of Nickel (as Ni) discharged in twenty-four hours shall not exceed 0.0175 kilogrammes.

15 Total Zinc (as Zn) shall not exceed 3 milligrammes per litre.

16 Total load of Zinc (as Zn) discharged in twenty-four hours shall not exceed 0.105 kilogrammes.

17 Total Boran (as B) shall not exceed 20 milligrammes per litre.

18 Total load of Boran (as B) discharged in twenty-four hours shall not exceed 0.7 kilogrammes.

NOTES

1. Any person aggrieved by any condition contained in this Consent may appeal to the Water Services Regulatory Authority.

2. Compliance with these Conditions shall be ascertained by reference to the approved methods of analyses used, applied or adopted by YWS as from time to time amended.

3. For purposes of Condition 5 prescribed substances shall be taken as being those substances that are included in Schedule 1 of 'The Trade Effluents (Prescribed Processes and Substances) Regulations 1989' Statutory Instrument Number 1156 or any amendment or addition to the same.

4. For purposes of Condition 5 background shall assume the same meaning as defined in 'The Trade Effluent (Prescribed Processes and Substances) Regulations 1989' Statutory Instrument Number 1156 or any amendment or addition to the same.

5. Occupiers are reminded of their duty under the Health and Safety at Work etc Act 1974 to ensure that inspection and sampling of the effluent can be undertaken without risk to health or safety.

6. Entry to the premises by Officers of YWS for the purpose of inspecting and sampling the effluent is authorised under the Water Industry Act 1991.

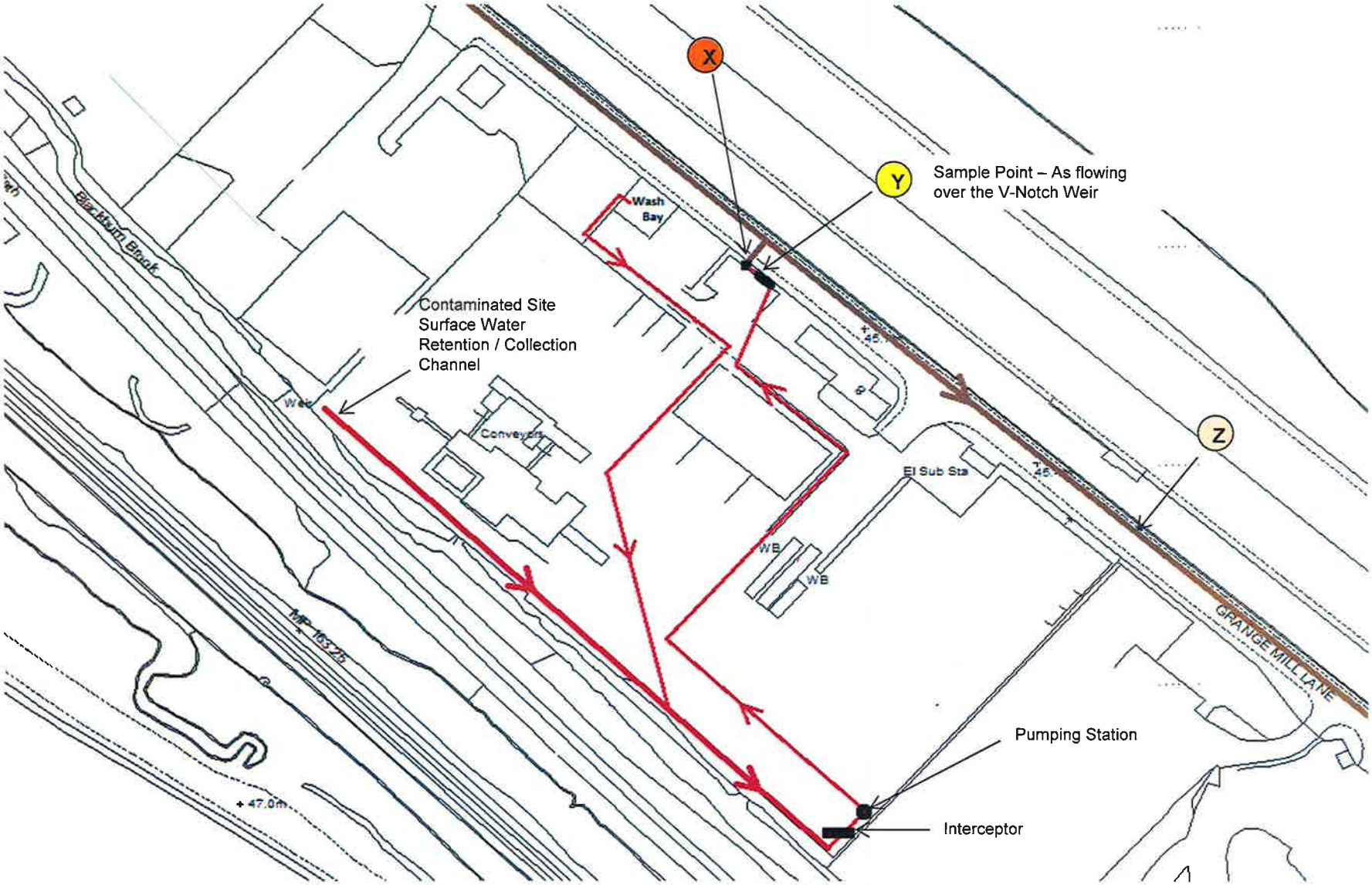
7. If any condition of the Direction is contravened the occupier of the premises may be guilty of an offence and liable to conviction by a Magistrates' Court to a fine not exceeding the statutory maximum or on conviction by a Crown Court to an unlimited fine.


Mettalis
SHEFFIELD
(01709)
560200

Mettalis Recycling Limited – URN:3390651

8, Grange Mill Lane, Sheffield S9 1HW – Vehicle Wash & Contaminated Site Surface Water Outlet

Key: Trade Effluent (Y) Sample Point (X) Connection to Sewer (Z) Public Sewer



UKAS TESTING
4041

Environmental Science

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e: Martin.Booth@ronhull.co.uk

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Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-002121

Project / Site name:	GML Consent to Discharge	**Samples received on:**	07/02/2024
Your job number:	RHGML-WATER-DT-06-24	**Samples instructed on/ Analysis started on:**	07/02/2024
Your order number:		**Analysis completed by:**	15/02/2024
Report Issue Number:	1	**Report issued on:**	16/02/2024
Samples Analysed:	1 water sample		

Signed:

Joanna Szwagrzak
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

UKAS TESTING
4041

Analytical i2 Environmental Science

Analytical Report Number: 24-002121
Project / Site name: GML Consent to Discharge

Lab Sample Number				112541
Sample Reference				RHGML-Water-DT-06-24
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/02/2024
Time Taken				0830
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
General Inorganics				
pH (L099)	pH Units	N/A	ISO 17025	8
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	93000
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	280
Total Suspended Solids (L004B)	mg/l	2	ISO 17025	94
Speciated PAHs				
Naphthalene	µg/l	0.01	ISO 17025	0.72
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	0.2
Phenanthrene	µg/l	0.01	ISO 17025	0.39
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	0.5
Pyrene	µg/l	0.01	ISO 17025	0.51
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01
Dibenzo(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01
Total PAH				
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	2.32
Heavy Metals / Metalloids				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	3.8
Lead (dissolved)	µg/l	0.2	ISO 17025	4.8
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.17
Nickel (dissolved)	µg/l	0.5	ISO 17025	46
Zinc (dissolved)	µg/l	0.5	ISO 17025	19
Boron (dissolved)	µg/l	10	ISO 17025	400
Petroleum Hydrocarbons				
TPH - Aliphatic >C5 - C6 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH - Aliphatic >C6 - C8 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH - Aliphatic >C8 - C10 HS_1D_AL	µg/l	1	ISO 17025	< 1.0
TPH - Aliphatic >C10 - C12 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aliphatic >C12 - C16 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aliphatic >C16 - C21 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aliphatic >C21 - C35 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aliphatic >C5 - C35 HS+EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aliphatic >C35 - C40 EH_1D_AL_#1_#2_MS	µg/l	10	NONE	< 10

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Analytical i2 Environmental Science

Analytical Report Number: 24-002121
Project / Site name: GML Consent to Discharge

Lab Sample Number				112541
Sample Reference				RHGML-Water-DT-06-24
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/02/2024
Time Taken				0830
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
TPH - Aromatic >EC5 - EC7 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH - Aromatic >EC7 - EC8 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH - Aromatic >EC8 - EC10 HS_1D_AR	µg/l	1	ISO 17025	< 1.0
TPH - Aromatic >EC10 - EC12 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aromatic >EC12 - EC16 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aromatic >EC16 - EC21 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aromatic >EC21 - EC35 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aromatic >EC5 - EC35 HS+EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH - Aromatic >EC35 - EC40 EH_1D_AR_#1_#2_MS	µg/l	10	NONE	< 10
TPH (>C5 - C10) HS_1D_TOTAL	µg/l	10	NONE	< 10
TPH Total >C5 - C40 HS+EH_1D_TOTAL_#1_#2_MS	µg/l	10	NONE	< 10
TPH (C10 - C40) EH_1D_TOTAL_#1_#2_MS	µg/l	10	NONE	< 10
VOCs				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0
Benzene	µg/l	3	ISO 17025	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0
SVOCs				
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.050
PCBs by GC-MS				
PCB Congener 28	µg/l	0.02	NONE	0.14
PCB Congener 52	µg/l	0.02	NONE	< 0.02
PCB Congener 101	µg/l	0.02	NONE	< 0.02
PCB Congener 118	µg/l	0.02	NONE	< 0.02
PCB Congener 138	µg/l	0.02	NONE	< 0.02
PCB Congener 153	µg/l	0.02	NONE	< 0.02
PCB Congener 180	µg/l	0.02	NONE	< 0.02
Total ICES-7 PCBs	µg/l	0.14	NONE	< 0.14

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

UKAS TESTING
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Analytical i2 Environmental Science

Analytical Report Number : 24-002121
Project / Site name: GML Consent to Discharge

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Suspended Solids in water	Determined gravimetrically with GFC filtration papers	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004B	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L028B	W	NONE
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW, PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Chemical Oxygen Demand in water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065	W	ISO 17025
Total petroleum hydrocarbons with carbon banding by GC-MS/GC-MS HS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L070B/L088	W	ISO 17025
Total petroleum hydrocarbons by GC-MS/GC-MS HS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS HS	In-house method	L070B/L088	W	NONE
BTEX and/or Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA 8260	L073B	W	ISO 17025
pH at 20°C in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method	L099	W	ISO 17025
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAH) in leachate by extraction in dichloromethane followed by GC-MS	In-house method based on USEPA 8270	L102B	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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Environmental Science

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e: reception@i2analytical.com

Analytical Report Number : 24-031797

Project / Site name:	GML Consent to Discharge	**Samples received on:**	19/07/2024
Your job number:	RHGML WATER DT 40 24	**Samples instructed on/ Analysis started on:**	19/07/2024
Your order number:	RHGML WATER DT 40 24	**Analysis completed by:**	26/07/2024
Report Issue Number:	1	**Report issued on:**	26/07/2024
Samples Analysed:	1 water sample		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical i2 Environmental Science

Analytical Report Number: 24-031797
Project / Site name: GML Consent to Discharge

Your Order No: RHGML WATER DT 40 24

Lab Sample Number				262844
Sample Reference				RHGML Water DT 40 24
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/02/2024
Time Taken				1215
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
General Inorganics				
pH (L099)	pH Units	N/A	ISO 17025	7.2
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	5900
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	85
Total Suspended Solids (L004B)	mg/l	2	ISO 17025	20
Speciated PAHs				
Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01
Total PAH				
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16
Heavy Metals / Metalloids				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.12
Copper (dissolved)	µg/l	0.5	ISO 17025	3
Lead (dissolved)	µg/l	0.2	ISO 17025	1.1
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.06
Nickel (dissolved)	µg/l	0.5	ISO 17025	25
Zinc (dissolved)	µg/l	0.5	ISO 17025	24
Boron (dissolved)	µg/l	10	ISO 17025	350

Analytical Report Number: 24-031797
Project / Site name: GML Consent to Discharge

Your Order No: RHGML WATER DT 40 24

Lab Sample Number				262844
Sample Reference				RHGML Water DT 40 24
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				05/02/2024
Time Taken				1215
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Petroleum Hydrocarbons				
TPH - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0
TPH - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0
TPH - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	µg/l	1	ISO 17025	< 1.0
TPH - Aliphatic >EC10 - EC12 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10
TPH - Aliphatic >EC12 - EC16 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10
TPH - Aliphatic >EC16 - EC21 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10
TPH - Aliphatic >EC21 - EC35 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10
TPH - Aliphatic >EC5 - EC35 $_{HS+EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10
TPH - Aliphatic >EC35 - EC40 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10
TPH - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0
TPH - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0
TPH - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0
TPH - Aromatic >EC10 - EC12 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10
TPH - Aromatic >EC12 - EC16 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10
TPH - Aromatic >EC16 - EC21 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10
TPH - Aromatic >EC21 - EC35 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10
TPH - Aromatic >EC5 - EC35 $_{HS+EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10
TPH - Aromatic >EC35 - EC40 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10
TPH (>EC5 - EC10) $_{HS\_1D\_TOTAL}$	µg/l	10	NONE	< 10
TPH Total >EC5 - EC40 $_{HS+EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
TPH (EC10 - EC40) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
VOCs				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0
Benzene	µg/l	3	ISO 17025	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0
SVOCs				
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05
PCBs by GC-MS				
PCB Congener 28	µg/l	0.02	NONE	< 0.02
PCB Congener 52	µg/l	0.02	NONE	< 0.02
PCB Congener 101	µg/l	0.02	NONE	< 0.02
PCB Congener 118	µg/l	0.02	NONE	< 0.02
PCB Congener 138	µg/l	0.02	NONE	< 0.02
PCB Congener 153	µg/l	0.02	NONE	< 0.02
PCB Congener 180	µg/l	0.02	NONE	< 0.02
Total ICES-7 PCBs	µg/l	0.14	NONE	< 0.14

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 24-031797
Project / Site name: GML Consent to Discharge

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Suspended Solids in water	Determined gravimetrically with GFC filtration papers	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004B	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L028B	W	NONE
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW, PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Chemical Oxygen Demand in water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065	W	ISO 17025
Total petroleum hydrocarbons with carbon banding by GC-MS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L070B	W	NONE
Total petroleum hydrocarbons by GC-MS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS	In-house method	L070B	W	NONE
BTEX and/or Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA 8260	L073B	W	ISO 17025
Total petroleum hydrocarbons by GC-MS HS in water	Determination of total petroleum hydrocarbons in water by GC-MS HS	In-house method	L088B	W	ISO 17025
pH at 20°C in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method	L099	W	ISO 17025
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAH) in leachate by extraction in dichloromethane followed by GC-MS	In-house method based on USEPA 8270	L102B	W	ISO 17025

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Analytical i2 Environmental Science

Analytical Report Number : 24-031797
Project / Site name: GML Consent to Discharge

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

Sample Deviation Report

Analytical Report Number : 24-031797

Project / Site name: GML Consent to Discharge

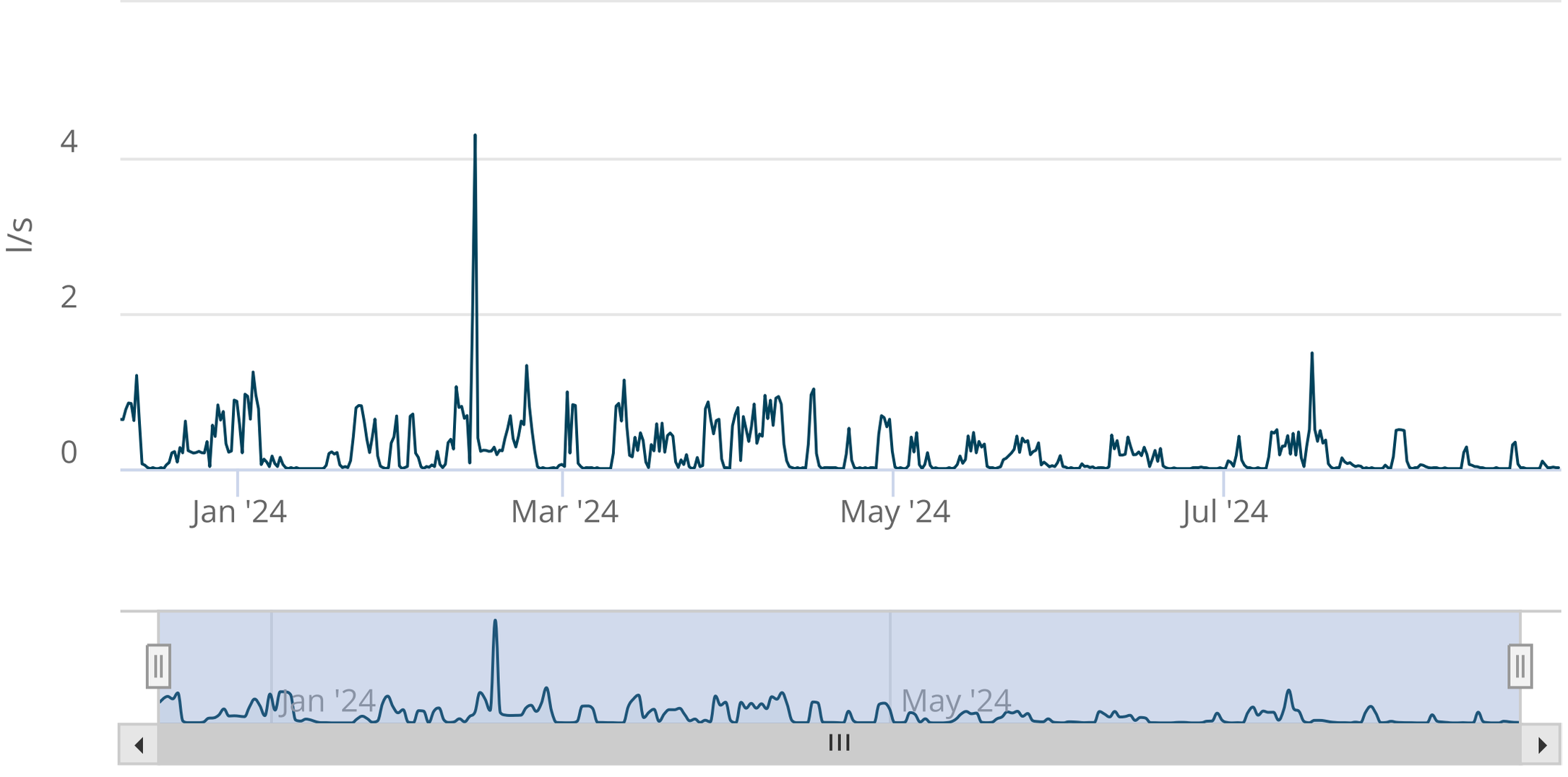
This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
RHGML Water DT 40 24	N/A	W	262844	c	Ammoniacal Nitrogen as N in water	L082B	c
RHGML Water DT 40 24	N/A	W	262844	c	BTEX and/or Volatile organic compounds in water	L073B	c
RHGML Water DT 40 24	N/A	W	262844	c	Chemical Oxygen Demand in water (Total)	L065	c
RHGML Water DT 40 24	N/A	W	262844	c	Metals in water by ICP-MS (dissolved)	L012B	c
RHGML Water DT 40 24	N/A	W	262844	c	Metals in water by ICP-OES (dissolved)	L039B	c
RHGML Water DT 40 24	N/A	W	262844	c	PCB's By GC-MS in water	L028B	c
RHGML Water DT 40 24	N/A	W	262844	c	Speciated PAHs and/or Semi-volatile organic compounds in water	L102B	c
RHGML Water DT 40 24	N/A	W	262844	c	Suspended Solids in water	L004B	c
RHGML Water DT 40 24	N/A	W	262844	c	Total petroleum hydrocarbons by GC-MS HS in water	L088B	c
RHGML Water DT 40 24	N/A	W	262844	c	Total petroleum hydrocarbons by GC-MS in water	L070B	c
RHGML Water DT 40 24	N/A	W	262844	c	Total petroleum hydrocarbons with carbon banding by GC-MS in water	L070B	c
RHGML Water DT 40 24	N/A	W	262844	c	pH at 20°C in water (automated)	L099	c

Raw Data

Zoom 1m 3m 6m YTD 1y **All**



— **EMS:Ron Hull:Sheffield, Mill Lane:Trade Effluent:TBX-02007132 Flow Rate**

wardell-armstrong.com

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