Caulmert Limited

Engineering, Environmental & Planning Consultancy Services

Knottingley Waste to Resource Facility

FCC Recycling (UK) Limited

Environmental Permit Variation Application

H1 Surface Water Pollution Risk Assessment

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H1 Surface Water Pollution Risk Assessment

TABLE OF CONTENTS

DRAWINGS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

1.1 Background

1.1.1 Caulmert Limited is appointed by FCC Recycling (UK) Limited (a wholly owned subsidiary of FCC Environment (UK) Limited) to prepare an environmental permit variation application to vary the existing permit reference EPR/JP3547JL to allow proposed liquid discharges from their facility at Weeland Road, Knottingley, West Yorkshire, WF11 8DZ (i.e., Knottingley Waste to Resource Facility), located at National Grid reference SE 51227 23757 (site entrance).

1.1.2 FCC Recycling (UK) Limited (the operator) proposes adding new activities to the existing permit, comprising physico-chemical and biological treatment of landfill leachate and other aqueous wastes imported to site. The treatment process will involve two reverse osmosis (RO) plants, a biological treatment plant, and an ammonia recovery unit, including ultrafiltration and nanofiltration, to facilitate the treatment of non-hazardous leachate to remove organic and inorganic substances with the resultant treated effluent discharged to sewer or surface water where appropriate.

1.1.3 The leachate and aqueous waste treatment activities will be a self-contained treatment operation carried out within fully bunded areas at the facility. A summary of the treatment is presented as follows:

- Two reverse osmosis plants will each treat approximately 350 tonnes of imported leachate daily. The permeate from the treatment will be discharged to the River Aire and the concentrate from the RO process will be subsequently treated by an ammonia stripping plant to recover ammonia, and the remainder of the concentrate will undergo biological treatment, and where necessary followed by ultrafiltration and nanofiltration before discharge to the sewer. There will be a point source emissions to surface water for the permeate from the RO plants (to be combined with uncontaminated site surface water runoff) via the proposed discharge point 'SW1' (see sampling and emission point plan drawing 5827-CAU-XX-XX-DR-V-1805). The current point of discharge to sewer will be used to discharge effluent from the ammonia recovery and biological treatment processes (permitted by the Trade Effluent Consent currently in place at the site (YW/973/93C).

- An ammonia recovery unit will pre-treat approximately 200 tonnes of landfill leachate, leachate concentrate from the RO installation, and similar ammonia-rich wastes daily prior to biological treatment. The process will involve thermal stripping of ammonia and scrubbing of the liberated ammonia and a concentration stage to generate a recovered ammonia solution which will be stored prior to transfer from site.

- The biological treatment plant, which includes an ultrafiltration component (and may also include nanofiltration and activated carbon filtration components) will process approximately 300 tonnes per day of concentrate arising from the RO plants together with directly received wastes. After initial biological treatment and ultrafiltration, the effluent will undergo further treatment (polishing) if necessary (using nanofiltration and/or carbon

filtration) to produce effluent that may be discharged to sewer under the Trade Effluent Consent for the facility or transferred off-site to a permitted waste management facility. The biological treatment processes employed are nitrification and de-nitrification, supported by ultrafiltration and nanofiltration if necessary and provision is made for dewatering of excess biomass using a decanter centrifuge.

1.2 Objectives and Scope

1.2.1 Given that it is necessary for an application to vary the Environmental Permit, it is necessary to undertake a H1 assessment following the Environment Agency's guidance 'Surface water Pollution Risk Assessment for your Environmental Permits'[1]

1.2.2 The operator proposes to install treatment facility comprising two 3-step Reverse Osmosis (RO) Plants, which will be used to treat imported landfill leachate. It is proposed to discharge permeate from the RO plants direct to surface water (River Aire) at discharge point SW1. In the context of RO, permeate refers to the treated ('clean') water that passes through the RO semi-permeable membrane under pressure after the feed water is treated. The assessment of the permeate with regard to discharge is presented in **Section 3**.

1.2.3 The concentrate (solute) from the RO plants will undergo further treatment at an ammonia recovery unit followed by biological treatment on site prior to either removal and disposal off site, or discharge to the sewer. The assessment of concentrate (post biological treatment) with regard to discharge of the treated effluent is presented in **Section 4**.

1.3 Reliability of Information

1.3.1 This report has been compiled from a number of sources. Caulmert is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time. Consequently, there is a potential for further information to become available, which may change this report's conclusion and for which Caulmert cannot be responsible.

[1] Environment Agency Surface water pollution risk assessment web based guidance accessed 10/12/2025 https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit

2.0 DATA ASSESSMENT

2.1 Stage 1: Identify pollutants released from your plant

2.1.1 The H1 assessment is based on substances that are present in the raw leachate (as imported to the site) which will be treated in the RO plants (with the permeate direct discharge to surface water) and the concentrate from the RO treatment further treated in an ammonia recovery unit followed by a biological treatment process (with the treated effluent discharge to sewer).

2.1.2 The proposed treatment facilities at the Knottingley site will be similar in scale and operations to the treatment capabilities of the RO Plant at the Dogsthorpe facility which is operated by FCC. The leachate which is received at the Dogsthorpe facility for RO treatment is tested for a wide range of substances. A chemical database of the chemical testing of raw leachate, concentrate and permeate for the RO treatment at Dogsthorpe is provided by FCC for the period between 2021 and 2025. The chemical testing database includes a wide range of organic and inorganic substances. A list of the substances analysed in the liquids (leachate and permeate) is presented at Appendix 1. The analyses comprise a list of substances analysed in the raw leachate which were not recorded above the analytical limit of detection (LoD) (Table A1); a list of substances recorded in the raw leachate which were recorded above the analytical LoD (Table A2) and a list of substances recorded in the permeate which were recorded above the analytical LoD (Table A3) and therefore assessed further in the H1 assessment.

2.1.3 The raw leachate (Dogsthorpe facility) has been analysed for a significantly wide suite of substances, the majority of which have not been recorded above the analytical LoD in the raw leachate. The substances which have been recorded above the analytical LoD in the chemical testing of the concentrate, identify the substances which are present in the raw leachate. There are significantly fewer substances which have been recorded above the analytical LoD in the permeate, and this demonstrate the effectiveness of the removal of the substances by the RO plant.

2.1.4 The concentrate arising from the RO plants together with directly received wastes, will be treated in the ammonia recovery unit and biological treatment prior to disposal of the treated effluent to sewer. A chemical database of the substances tested in the effluent treated by biological treatment at the Marstonvale facility is provided by FCC for the period between 2024 and 2025 (23 datasets). Lists of the substances analysed in the liquid effluent is presented at Appendix 1. The analyses comprises a list of substances analysed in the effluent although not detected above the analytical LoD (Table A4), substances recorded above the analytical LoD in the effluent in few (one or two) samples and therefore not included in the H1 assessment (Table A5) and substances recorded above the analytical LoD in the effluent (Table A6) and therefore assessed further in the H1 assessment.

2.1.5 The analytical datasets are presented at Appendix 2 (Dogsthorpe) and Appendix 3 (Marstonvale).

2.2 Pollutants released in the permeate discharge to the River Aire

2.2.1 The substances recorded in the permeate above the analytical LoD from the Dogsthorpe RO plant recorded in the samples tested between 2021 and 2025 are presented below:

Metals	pH and major ions	Other substances
Arsenic	pH	*Ammoniacal Nitrogen*
Cadmium	Alkalinity as CaCO3	Adsorbable organic halogen (AOX)
Chromium	*Chloride*	Biochemical oxygen demand
Copper	Potassium	Cresols
Iron	Sodium	Cyanide (Total)
Zinc	*Sulphate*	Dimethylphenols
	Sulphide as S	Nitrate
	Conductivity	Nitrite
		Phosphate (Total) as P
		Suspended Solids
		Total Organic Carbon
		Volatile Suspended Solids

2.2.2 The substances highlighted in *italics* are the substances which have been applied in the H1 assessment calculations for the permeate discharge to surface water; these include ammoniacal nitrogen, chloride, sulphate, arsenic, cadmium, chromium, copper, iron, zinc, and phosphate.

2.2.3 The substances that were recorded in the permeate and are considered not necessary to be included in the H1 assessment calculations, as they are not used in classification of the status of water bodies (rivers) and/or do not have an Environmental Quality Standard to assess the data, or recorded in approximately <10% of samples tested are summarised below. The minimum concentrations (or values) referenced below are the concentrations (or values) which were recorded above the LoD, as many of the substances were frequently not recorded above the LoD.

- pH – was recorded in the permeate between 6.2pH and 8.8pH, and average of 6.7pH (i.e considered to be within a neutral range for surface water quality).

- Alkalinity – was recorded in the permeate at a concentration in a range between 252mg/l and 1210mg/l and an average of 647mg/l. Alkalinity is not used for the classification the status of water bodies (rivers).

- Conductivity – was recorded in the permeate at a value in a range between 475µS/cm and 2860 µS/cm and an average of 1220 µS/cm. Conductivity is not used for the classification the status of water bodies (rivers).

- Sulphide – was recorded above the LoD in the permeate in 6 out of 24 samples, at a concentration in a range between 0.02mg/l and 3.22mg/l and an average of 0.62mg/l.

- Sodium - was recorded in the permeate at a concentration in a range between 150mg/l and 887mg/l and an average of 334mg/l.

- Potassium - was recorded above the LoD in the permeate in 9 out of 24 samples, at a concentration in a range between 1mg/l and 5mg/l and an average of 1.78mg/l.

- Biochemical oxygen demand (BOD) - was recorded above the LoD in the permeate in 7 out of 52 samples, between 1mg/l and 7.3mg/l and an average of 2.35mg/l. BOD is not used for the classification the status of water bodies (rivers).

- Adsorbable organic halogens (AOX) - was recorded in the permeate at a concentration range between 13µg/l and 4320µg/l (up to 2023 the maximum was 138 µg/l) and an average of 374µg/l. However, inorganic halides or other substances can interfere with the adsorption process, leading to inaccurate AOX measurements (false positives). The samples were also tested for a broad suite of volatile organic compounds (VOC), which included organic halogens, and no VOCs were recorded in the permeate (and leachate) above the analytical LoD.

- Creosols – were recorded in the permeate above the LoD in two out of 18 samples above the analytical LoD (<0.05mg/l) at 0.37mg/l and 0.61mg/l.

- Cyanide - was recorded in the permeate above the LoD in one out of 18 samples above the analytical LoD (<0.02mg/l) at 0.03mg/l. Given that cyanide was recorded only marginally above the LoD and in only one sample, it is considered this parameter is not consistently present in the discharge and not considered in the H1 assessment.

- Nitrate - was recorded in the permeate above the LoD in 9 out of 44 samples between 0.2mg/l and 1.2mg/l and an average of 0.5mg/l. A 50 mg/l limit in the EC Nitrates Directive is set to protect water quality by preventing nitrates from agricultural sources from polluting ground and surface waters. Nitrate is not used for the classification the status of water bodies (rivers).

- Nitrite - was recorded above the LoD in the permeate in two out of 24 samples above the analytical LoD at 0.01mg/l and 0.09mg/l. Nitrite is not used for the classification the status of water bodies (rivers).

- Suspended Solids – were recorded above the LoD in the permeate in 6 out of 24 samples, at a concentration in a range between 6mg/l and 10mg/l and an average of 7.25mg/l. Suspended soils is not used for the classification the status of water bodies (rivers).

- Total Organic Carbon - was recorded in the permeate at a concentration in a range between 0.28mg/l and 0.77mg/l and an average of 0.56mg/l.

- Volatile Suspended Solids - were recorded above the LoD in the permeate in 8 out of 24 samples, at a concentration range between 6mg/l and 87mg/l and an average of 23mg/l. Volatile suspended solids represent the undissolved organic matter in a water sample.

The analyses is for organic matter and not VOCs. The samples were tested for a broad suite of VOCs, and no VOCs were recorded in the permeate above the analytical LoD.

2.2.4 The RO Plant at FCC-operated Dogsthorpe site is of a similar size to the proposed plant at Knottingley. The source of leachate treated at Dogsthorpe (and therefore chemical composition) is expected to be similar to the leachate treated at Knottingley and therefore it is expected that the treatment effectiveness of the RO Plants will be similar. Therefore, the permeate data provided by FCC from the Dogsthorpe facility is considered suitable for the H1 calculation assessment for Knottingley. The assessment for proposed discharge of the RO permeate to the River Aire is presented in **Section 3**.

2.3 Pollutants released in the effluent discharge to the sewer

2.3.1 The substances recorded in the effluent above the analytical LoD from the Marstonvale facility biological treatment plant in the samples tested between 2024 and 2025 are presented below:

Metals	**pH and major ions**	**Other substances**
Arsenic	pH	*Ammoniacal Nitrogen*
Cadmium	Alkalinity as CaCO3	Adsorbable organic halogen (AOX)
Chromium	*Chloride*	Chemical Oxygen demand
Copper	Potassium	Biochemical oxygen demand
Iron	Sodium	*Cyanide (Total)*
Lead	Magnesium	Nitrate and Nitrite
Nickel	Sulphur	*Phosphorous (Total) as P*
Zinc	Sulphide	Suspended Solids
	Conductivity	Volatile Suspended Solids
		MCPP (Mecoprop)
		Non-volatile matter Light Petroleum Extract (i.e. water-insoluble fat, oil and grease)

2.3.2 The substances highlighted in *italics* are the substances which have been applied in the H1 assessment calculations for the effluent discharge to sewer; these include ammoniacal nitrogen, chloride, cyanide, arsenic, cadmium, chromium, copper, iron, lead, nickel, zinc, phosphorous, and Mecoprop.

2.3.3 With regard to the substances that were recorded in the effluent and are considered not necessary to be included in the H1 assessment calculations, as they are not used in classification the status of water bodies (rivers) and/or do not have an Environmental Quality Standard to assess the data, or recorded in approximately <10% of samples tested. These parameters are summarised below. The minimum concentrations (or values) summarised below are the concentrations (or values) which were recorded above the LoD.

- pH – was recorded in the effluent between 7.4pH and 8.5pH, and average of 7.9pH. In the current Trade Effluent Consent for the Site (Appendix 4) the discharge limits are not less that 6pH or more than 9pH. The pH is recorded in the effluent is within this range.

- Alkalinity – was recorded in the effluent at a concentration in a range between 252mg/l and 1210mg/l and an average of 647mg/l. Alkalinity is not used for the classification the status of water bodies (rivers).

- Conductivity – was recorded in the effluent value in a range between 13100µS/cm and 24500 µS/cm and an average of 18709 µS/cm. Conductivity is not used for the classification the status of water bodies (rivers).

- Total Sulphur – was recorded in the effluent above the LoD at a concentration in a range between 153mg/l and 1830mg/l and an average of 939mg/l.

- Sulphide – was recorded in the effluent above the LoD at a concentration in a range between 0.02mg/l and 0.74mg/l and an average of 0.35mg/l.

- Sodium - was recorded in the effluent at a concentration in a range between 2400mg/l and 4610mg/l and an average of 3556mg/l.

- Potassium - was recorded in the effluent at a concentration in a range between 529mg/l and 1120mg/l and an average of 832mg/l.

- Magnesium - was recorded in the effluent at a concentration in a range between 74mg/l and 124mg/l and an average of 105mg/l.

- Biochemical oxygen demand (BOD) - was recorded in the effluent at a concentration in a range between 1.8mg/l and 13.5mg/l and an average of 3.36mg/l. BOD is not used for the classification the status of water bodies (rivers).

- Chemical oxygen demand (COD) - was recorded in the effluent at a concentration in a range between 652mg/l and 3210mg/l and an average of 1195mg/l. In the current Trade Effluent Consent for the Site (Appendix 4) the COD shall not exceed 10,000mg/l. The COD in the effluent are below this concentration.

- Adsorbable organic halogens (AOX) - were recorded in the effluent in a concentration in a range between 414µg/l and 25400µg/l and an average of 3151µg/l. However, inorganic halides or other substances can interfere with the adsorption process, leading to inaccurate AOX measurements (false positives). The samples were tested for a broad suite of volatile organic compounds (VOC), which included organic halogens, and no VOCs were recorded in the effluent above the analytical LoD.

- Nitrate – was recorded in the effluent above the LoD between 245mg/l and 1320mg/l and an average of 857mg/l. A 50 mg/l limit in the EC Nitrates Directive is set to protect water quality by preventing nitrates from agricultural sources from polluting ground and surface waters. Nitrate is not used for the classification the status of water bodies (rivers).

- Nitrite - was recorded in the effluent above the LoD in 18 out of 23 samples above the analytical LoD at between 0.1mg/l and 566mg/l. However, this maximum concentration

appears to be an outlier, the next highest concentration is 0.45mg/l. The average (excluding the outlier) is 0.21mg/l. Nitrite is not used for the classification the status of water bodies (rivers).

- Suspended Solids – were recorded in the effluent above the LoD in 16 out of 23 samples, at a concentration in a range between 6mg/l and 69mg/l and an average of 24.4mg/l. In the current Trade Effluent Consent for the Site (Appendix 4) the suspended solids shall not exceed 500mg/l. The suspended solids in the effluent are below this concentration.

- Volatile Suspended Solids - was recorded in the effluent above the LoD in 15 out of 23 samples, at a concentration in a range between 5mg/l and 1350mg/l and an average of 127mg/l. Volatile suspended solids represent the undissolved organic matter in a water sample. The analyses is for organic matter and not VOCs. The samples were tested for a broad suite of VOCs, and no VOCs were recorded in the effluent above the analytical LoD.

- Non-volatile matter (NVM) Light Petroleum Extract – the analyses is for the determination of water-insoluble fat, oil and grease. NVM was recorded in the effluent above the LoD in 9 out of 23 samples, at a concentration range between 7mg/l and 49mg/l and an average of 18.2mg/l. The samples were tested for a broad suite of VOC, and no VOCs were recorded above the analytical LoD

2.3.4 The Marstonvale facility biological treatment plant is of a similar size to the proposed plant at Knottingley. The source of leachate treated at Marstonvale (and therefore chemical composition) is expected to be similar to the leachate treated at Knottingley and therefore it is expected that the treatment effectiveness of the biological treatment plant will similar. Therefore the effluent data provided by FCC from the Marstonvale facility is consider suitable for the H1 assessment calculations for Knottingley. The assessment for proposed discharge of the effluent for the biological treatment to the sewer is presented in Section 4.

2.4 Receiving surface water body

2.4.1 The direct discharge of the permeate is to the River Aire (at emission point **SW1**, NGR SE 51236 23988). The indirect discharge of the effluent to the River Aire is via a sewer at the facility and the effluent from the sewer is discharge to and treated at the Sutton Wastewater Treatment Works (WwTW), Sutton Lane, Knottingley, West Yorkshire, WF11 9ND approximately 2.0km north west of the Site at National Grid Reference SE 50100 25600. It is understood that the discharge outfall from the Sutton WwTW is located at Byram cum Sutton at approximately National Grid reference SE 48238 25310, which is approximately 3.3km north west of the Site and upstream in the River Aire. The location of the Site, Sutton WwTW, discharge points and the river gauging station at Beal are shown in **Figure 1**.

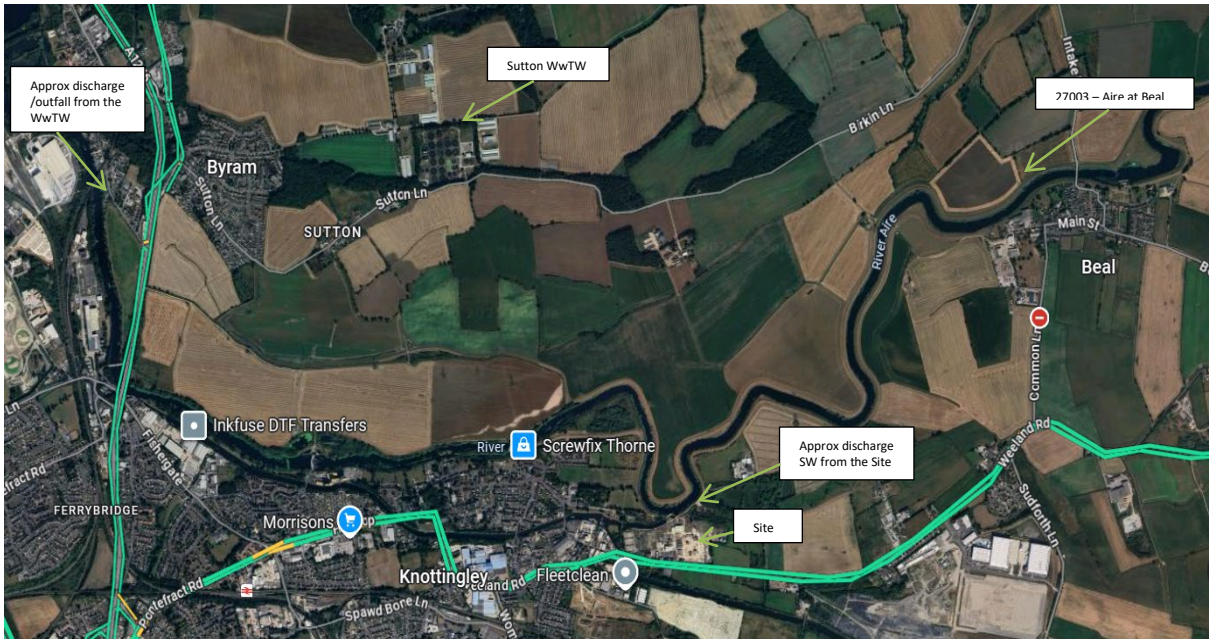


Figure 1: Location of the Site, Sutton WwTW, discharge points and the River Aire gauging stations at Beal

2.4.2 The river flow data from nearest river gauging station were used within the assessment. The nearest upstream gauging station located on the River Aire is prior to the confluence between the River Calder joining the River Aire and therefore is considered that the data from this gauging station are not representative of the likely flow rate in the river at the point of discharge from the Site or the discharge from the Sutton WwTW. The nearest downstream river gauging station is at Beal (approximately 2.6km downstream).

2.4.3 The river flow data used that has been used in the assessment that is considered to represent the river flow conditions at the point of discharge is from the data at Gauging Station 27003 – Site at Beal (National Grid reference SE 53040 25471), which is approximately 2.6km north east and downstream of the Site. The Q95 flow data from the at Gauging Station 27003 – Site at Beal is taken from the National River Flow Archive[2]. Q95 (the 5 percentile river flow rate) is the flow in cubic metres per second which is equalled or exceeded for 95% of the flow record (rate equalled or exceeded for 95% of the year). The Q95 flow rate is a significant low flow parameter particularly relevant in the assessment of river water quality consent conditions. The data is summarised as the follows:

- Gauging Station 27003 – Aire at Beal
- Mean Flow: 37.89 m^3/s
- 95% Exceedance (Q95): 9.656 m^3/s
- 70% Exceedance (Q70): 16.8 m3/s

[2] National River Archive Gauging Station Information – accessed 11/12/2025; NRFA station data for 27003 - Aire at Beal

3.0 DISCHARGE OF THE PERMEATE TO THE RIVER AIRE

3.1 Stage 2: Data on the pollutants (permeate)

3.1.1 As presented in **Section 2**, the substances which are applied in the H1 assessment calculations for the permeate discharge to surface water include ammoniacal nitrogen, chloride, sulphate, arsenic, cadmium, chromium, copper, iron, zinc, and phosphate (data from the Dogsthorpe facility). Theses paraments assessed to be present within RO plant discharge are presented in **Table 1**. The sample count information includes the number of samples in which the parameter was not recorded above the LoD that recorded (referred to as the number and ND in then brackets).

Table 1: Parameters assessed to be present within the RO plant discharge (data from the Dogsthorpe facility)

Parameter	Sample Count	Concentration (µg/l)		EQS-AA (µg/l)
		Average	Maximum	
Ammoniacal Nitrogen[1]	52	1270	4000	620
Chloride[2]	52 (32 – ND)	2600	13000	250000
Sulphate[2]	27 (21 – ND)	5300	10000	400000
Arsenic	46 (32 – ND)	4	20	50
Cadmium[3]	24 (20 – ND)	0.08	0.2	0.09
Chromium	52 (46 – ND)	2.5	4	4.7
Copper[4]	24 (13 – ND)	7	48	1.0
Iron	24 (14 – ND)	17	70	1000
Zinc[4,5]	52 (9 – ND)	22.4	227	13.8
Phosphate	52 (38 – ND)	34.6	170	113

ND = non-detected above the LoD (the number of samples ND)
1 – there is no EQS value for ammoniacal nitrogen. The equivalent value is calculated for ammoniacal nitrogen from the ammonia (based on stoichiometry) and assuming Type 3 river hardness and moderate water quality (using at ammonia EQS 1100µg/l, which based on stoichiometry is the equivalent of 620µg/l ammoniacal nitrogen)
2 - non-statutory EQS values
3 – based on Class 3: hardness 50 to < 100 mg (i.e. mid-range)
4 - Bioavailable EQS
5 – the EQS is 10.9µg/l plus ambient background concentration. There is no background concentration value for the River Aire, and therefore the background concentration for the River Ouse – Humber (2.9µg/l) is applied.

3.1.2 The following provides a summary of the analytical data of the substances that are used in the H1 assessment calculations for the discharge of permeate to the River Aire.

- Ammoniacal nitrogen concentrations recorded in the permeate are an average of 1.27 mg/l and a maximum of 4 mg/l. The average concentration of this parameter recorded in the raw leachate is 805 mg/l and a maximum concentration of 1520 mg/l. This implies that the treatment of the leachate in the RO plant, removes a percentage of ammoniacal nitrogen between approximately between 99.7% and 99.8%.

- Chloride concentrations recorded in the permeate are an average concentration of 2.6 mg/l and a maximum concentration of 13 mg/l. Chloride is frequently recorded below

the analytical LoD (<1 mg/l) in the permeate (32 out of 52 samples). The concentrations in the raw leachate recorded an average concentration of 1317 mg/l and maximum concentrations of 2110 mg/l. This implies the treatment of the leachate in the RO plant removes a percentage of chloride of between approximately between 99.4% and 99.8%.

- Sulphate concentrations recorded in the permeate are an average concentration of 5.3 mg/l and a maximum concentration of 10 mg/l. Sulphate is frequently recorded below the analytical LoD (<3 mg/l) in the permeate (21 out of 27 samples). The concentrations recorded in the raw leachate record an average concentration of 647 mg/l and maximum concentrations of 2600 mg/l. This implies the treatment of the leachate in the RO plant removes a percentage of chloride of between approximately between 99.2% and 99.6%.

- Arsenic concentrations recorded in the permeate are an average concentration of 0.004 mg/l and a maximum concentration of 0.02 mg/l. Arsenic is frequently recorded below the analytical LoD (<0.001 mg/l) in the permeate (32 out of 46 samples). The maximum concentration recorded in the permeate was 0.003 mg/l. The average and maximum concentrations recorded in the leachate were 0.096 mg/l and 0.259 mg/l, respectively. This implies a removal percentage of between approximately 92.3% and 95.9% in the RO plant.

- Cadmium concentrations recorded in the permeate are an average concentration of 0.00008 mg/l and a maximum concentration of 0.0002 mg/l. Cadmium is frequently recorded below the analytical LoD (<0.001 mg/l) in the permeate (32 out of 46 samples). The average and maximum concentrations recorded in the leachate were 0.001 mg/l and 0.0028 mg/l, respectively. This implies a removal percentage of between approximately 99.2% and 99.9%in the RO plant.

- Chromium concentrations recorded in the permeate are an average concentration of 0.0025 mg/l and a maximum concentration of 0.004 mg/l. Chromium is frequently recorded below the analytical LoD (<0.001 mg/l) in the permeate (46 out of 52 samples). The average and maximum concentrations recorded in the leachate were 0.165 mg/l and 0.265 mg/l, respectively. This implies a removal percentage of approximately 98.5% in the RO plant.

- Copper concentrations recorded in the permeate are an average concentration of 0.007 mg/l and a maximum concentration of 0.048 mg/l. Copper is frequently recorded below the analytical LoD (<0.001 mg/l) in the permeate (13 out of 24 samples). The average and maximum concentrations in the leachate were 0.024 mg/l and 0.053 mg/l, respectively. This implies a removal percentage of between approximately 10% and 71% in the RO plant.

- Iron concentrations recorded in the permeate are an average concentration of 0.017 mg/l and a maximum concentration of 0.07 mg/l. Iron is frequently recorded below the analytical LoD (<0.01 mg/l) in the permeate (14 out of 24 samples). The average and

maximum concentrations in the leachate were 4.75 mg/l and 9.59 mg/l, respectively. This implies a removal percentage of approximately between 96.5% and 99.3% in the RO plant.

- Zinc concentrations recorded in the permeate are an average concentration of 0.0224 mg/l and a maximum concentration of 0.227 mg/l. Zinc is occasionally recorded below the analytical LoD (<0.002 mg/l) in the permeate (9 out of 52 samples). The average and maximum concentrations in the leachate were 0.08 mg/l and 0.48 mg/l, respectively. This implies a removal percentage of approximately between 53% and 72% in the RO plant.

- Phosphate concentrations recorded in the permeate are an average concentration of 0.0346 mg/l and a maximum concentration of 0.17 mg/l. Phosphate is occasionally recorded below the analytical LoD (<0.01 mg/l) in the permeate (38 out of 52 samples). The average and maximum concentration recorded in the raw leachate is 13 mg/l and 55.5mg/l, respectively. This implies a removal percentage of approximately 99.7% in the RO plant.

3.1.3 Given the number of samples in the dataset, the average concentration for each parameter is used in the H1 assessment and compared with the EQS Annual average (AA)/mean. The average concentrations are only calculated based on the concentrations that have been recorded above the LoD. The datasets for the majority of the parameters were recorded below the LoD, and therefore the average concentrations are considered to be conservative concentrations.

3.2 Stage 3: Test 1 Part A Freshwater screening test 1: does the concentration of the substance in the discharge exceed 10 percent of the EQS?

3.2.1 This screening test assesses whether the concentrations of the discharged substances exceed 10 percent of the EQS, irrelevant to the quality and flow rate of the receiving body of water and therefore only assesses the quality of the discharged effluent (RO permeate). The H1 calculation sheets are presented at Appendix 5. The results are summarised in **Table 2**.

Table 2: Test 1 Release Concentration (RC) discharge (permeate from the RO Plant) compared with 10% of the EQS

Parameter	RC $_{corr}$ (µg/l) – concentration in the permeate	Environmental Quality Standard Annual Average (EQS-AA)	10% EQS (µg/l)	RC_{corr} > 10% EQS?
Ammoniacal Nitrogen	1270	620	62	FAIL
Chloride	2600	250000	25000	PASS
Sulphate	5300	400000	40000	PASS
Arsenic	4	50	5	PASS
Cadmium	0.08	0.09	0.009	FAIL
Chromium	2.5	4.7	0.47	FAIL
Copper	7	1.0	0.1	FAIL
Iron	17	1000	100	PASS

Zinc	22.4	13.8	1.38	FAIL
Phosphate	34.6	113	11.3	FAIL

3.2.2 The parameters chloride, sulphate, arsenic and iron pass this screening stage of testing and are therefore not carried forward in the assessment. All the other parameters (ammoniacal nitrogen, cadmium, chromium, copper, zinc and phosphate) exceed 10% of the EQS and therefore have been taken forward to Test 2. The calculation sheets for the H1 assessment are presented at Appendix 5.

3.2.3 The EQS values for parameters copper and zinc are determined as a bioavailable concentration standard and therefore are not directly comparable to recorded concentrations. For example, the predicated non-effect concentrations (PNEC) associated with bioavailability, which are likely to be greater than the EQS, could be determined for the receiving watercourse, although no water quality testing data is available to determine the PNEC.

3.3 Stage 3: Test 2: Does the process contribution (PC) exceed 4 percent of the EQS

3.3.1 The discharge of the RO permeate from the Site is directly to the River Aire (emission point SW1). The nearest river gauging station downstream of the site is at Beal (number 27003).

3.3.2 Following the assessment methodology of Test 2 – Surface Water Discharges, the process contributions released to the River Aire was calculated as follow:

$$PC = \frac{(EFR * RCcorr)}{(EFR + RFR)} \quad (1)$$

Where:
PC = process contribution (µg/l)
EFR = effluent flow rate (m^3/s) – 0.012m^3/sec (based on ~1000m^3/day and the RO operated 24 hours, 7 day week)
RC_{corr} = release concentration (equivalent of the RO permeate discharge) (µg/l)
RFR= river flow rate (m^3/s) – based on Q95 for the River Aire at Beal - 9.656m^3/sec

3.3.3 The proposed discharge is direct to the River Aire adjacent to the Site (emission point SW1), The Q95 for the River Aire gauging station at Beal is reported as 9.656 m^3/s. The Q95 flow is a significant low flow parameter particularly relevant in the assessment of river water quality consent conditions. The proposed discharge is assessed at approximately 1000 m^3/day the RO plant is operated 24 hours /day over 7 day week), although the expected daily maximum could be less at 600 m^3/day and an expected average of 500 m^3/day. Applying 1000m^3/day is therefore a more conservative assessment.

3.3.4 Process contributions (PC) of all the parameters carried through which failed Test 1 are assessed using the effluent flow rate. The results of Test 2 are summarised in **Table 3**.

Table 3: Test 2 – Assessment of the Process Contribution (PC) and compared with 4 percent of the EQS (permeate from the RO Plant)

Parameter	RC corr (µg/l)	PC (µg/l)	EQS (µg/l)	4% EQS (µg/l)	PC> 4% EQS
Ammoniacal Nitrogen	1270	2	620	25	PASS
Chloride	2600	3.113	250000	10000	PASS
Sulphate	5300	6.345	400000	16000	PASS
Arsenic	4	0.00479	50	2	PASS
Cadmium	0.08	0.00010	0.09	0.00	PASS
Chromium	2.5	0.00299	4.7	0.19	PASS
Copper	7	0.00838	1.0	0.04	PASS
Iron	17	0.02035	1000	40	PASS
Zinc	22.4	0.02682	13.8	1	PASS
Phosphate	34.6	0.04142	113	4.52	PASS

3.3.5 The results of Test 2 determined that all the parameters passed. The calculation sheets for the H1 assessment are presented at Appendix 5.

3.4 Stage 3: Test 3: Does your discharge increase the concentration of the pollutant in the river downstream of the discharge by more than 10% of the pollutant's EQS value.

3.4.1 In Test 3, the Predicted Environmental Concentration (PEC) in the river downstream of the discharge is calculated by adding the process contribution (PC) to the background concentrations (BC). However, given that each of the parameters passed Test 2, this assessment is not necessary.

3.5 Stage 3: Test 4: Check whether the PEC is higher than the EQS.

3.5.1 This test compares the PEC to the EQS concentration, rather than 10% of the EQS which is used in Test 3. However, given that each of the parameters passed Test 2, this assessment is not necessary.

3.6 Stage 3: Water Impact: Significant Loads

3.6.1 For priority hazardous substances, an additional assessment is necessary. The only priority substance recorded in the RO permeate was cadmium. This screening test assesses whether the annual load for the substance in question exceeds the annual significant load limit, which is the total mass of the substance realised across a single year. Based on the average concentration of cadmium in the RO permeate is 0.08µg/l (0.00008mg/l), this equates to a loading of 0.00003kg/per year and significantly below the load limit of 5kg per year.

4.0 DISCHARGE OF THE TREATED EFFLUENT TO SEWER

4.1 Stage 2: Data on the pollutants (effluent)

4.1.1 As stated in **Section 2**, the concentrate arising from the RO plants together with directly received wastes, will be treated in the ammonia recovery unit and biological treatment prior to disposal to sewer.

4.1.2 The site currently has a Trade Effluent Consent of effluent to sewer, which limits the discharge of treated effluent to 400 m^3/day. A copy of the Trade Effluent Consents are presented at Appendix 2. There are few parameters listed in the current Trade Effluent Consent. The parameters pH, COD and settled solids are addressed in Section 2 (regarding parameters to be included in the H1 assessment). The Trade Effluent Consent also includes a limit for ammonia of 50mg/l. The chemical testing data of the effluent from the biological treatment plan (Marstonvale) does not include ammonia, although does include ammoniacal nitrogen. Data for ammonia and ammoniacal nitrogen are not directly interchangeable. Ammoniacal nitrogen includes the total amount of nitrogen in a sample present as both 'unionized' ammonia (NH_3) and the 'ionized' ammonium ion (NH_4^+). Therefore, a general assessment of the concentration of ammonia can be determined by stoichiometry to covert to the concentration to ammoniacal nitrogen, which for the Trade Effluent Consent would be the equivalent concentration of approximately 41mg/l of ammoniacal nitrogen (50mg/l of ammonia). Although the average concentration of ammoniacal nitrogen recorded in the effluent was 0.44mg/l, substantially less that the Trade Effluent Consent limit, ammoniacal nitrogen is included in the H1 calculation assessment.

4.1.3 As presented in **Section 2**, the substances which are applied in the H1 assessment for the effluent discharge to sewer include; include ammoniacal nitrogen, chloride, cyanide, arsenic, cadmium, chromium, copper, iron, lead, nickel, zinc, phosphorous and Mecoprop. The parameters assessed to be present in the effluent from the biological treatment plan discharge (data from the Marstonvale facility) are presented in **Table 4**. The sample count information includes the number of samples in which the parameter was not recorded above the LoD that recorded (referred to as the number and ND in then brackets).

Table 4: Parameters assessed to be present within the biological treatment effluent discharge (data from the Marstonvale facility)

Parameter	Sample Count	Concentration (µg/l)		EQS-AA (µg/l)
		Average	Maximum	
Ammoniacal Nitrogen[1]	23	440	1900	620
Chloride[2]	23	2164	2880	250000
Sulphate[2,3]	27	323250	1300000	400000
Arsenic	23	57	149	50
Cadmium[4]	23 (3 – ND)	0.45	1.16	0.09
Chromium	23 (46 – ND)	106	189	4.7
Copper[5]	23 (10 – ND)	14.2	22	1.0
Iron	23 (14 – ND)	997	1520	1000

Parameter	Sample Count	Concentration (µg/l)		EQS-AA (µg/l)
		Average	Maximum	
Lead	23 (21 – ND)	7.6	11.9	1.2
Nickel	23	152	235	4
Zinc[5,6]	23	22.4	227	13.8
Phosphorous[7]	23	7750	18000	148
Mecoprop	23 (19 – ND)	50.3	82.8	18

ND = non-detected above the LoD (the number of samples ND)
1 – there is no EQS value for ammoniacal nitrogen. The equivalent value is calculated for ammoniacal nitrogen from the ammonia (based on stoichiometry) and assuming Type 3 river hardness and moderate water quality (using at ammonia EQS 1100µg/l, which based on stoichiometry is the equivalent of 620µg/l ammoniacal nitrogen)
2 - non-statutory EQS values
3 – The analytical data for biological treatment (Marstonvale) does not include sulphate (sulphide and sulphur area included). Therefore conservatively 50% of the concentration of sulphate recorded in the leachate is assumed for the purpose of the assessment .
4 – based on Class 3: hardness of 50 to < 100 mg (i.e. mid-range)
5 - Bioavailable EQS
6 – the EQS is 10.9µg/l plus ambient background concentration. There is no background concentration value for the River Aire, and therefore the background concentration for the River Ouse – Humber (2.9µg/l) is applied.
7 = EQS determined from Water Framework Directive 2015 Table 5 - Phosphorus Standards in Rivers, for good/moderate water quality, with an alkalinity of 50mg/l and elevation of 10m aOD

4.1.4 The following provides a summary of the analytical data of the substances that are used in the H1 assessment for the discharge of effluent to the sewer.

- Ammoniacal nitrogen concentrations in the effluent are recorded at an average of 0.44 mg/l and maximum of 1.9mg/l. The average concentration of this parameter in the raw leachate is 868 mg/l and a maximum concentration of 1500 mg/l.

- Chloride concentrations in the effluent are recorded at an average concentration of 2164 mg/l and a maximum concentration of 2880 mg/l. The concentrations in the raw leachate record an average concentration of 1935 mg/l and maximum concentrations of 3080 mg/l.

- Cyanide concentrations in the effluent are recorded at an average concentration of 0.24 mg/l and a maximum concentration of 4.18 mg/l. Cyanide was not tested in leachate for biological treatment.

- Arsenic concentrations in the effluent recorded an average concentration of 0.057 mg/l and a maximum concentration of 149 mg/l. The average and maximum concentrations recorded in the leachate were 0.058 mg/l and 0.147 mg/l, respectively.

- Cadmium concentrations in the effluent recorded an average concentration of 0.00045 mg/l and a maximum concentration of 0.00116 mg/l. The average and maximum concentrations recorded in the leachate were 0.0017 mg/l and 0.0189 mg/l, respectively.

- Chromium concentrations in the effluent recorded an average concentration of 0.106 mg/l and a maximum concentration of 0.189 mg/l. The average and maximum concentrations recorded in the leachate were 0.238 mg/l and 0.707 mg/l, respectively.

- Copper concentrations in the effluent recorded an average concentration of 0.014 mg/l and a maximum concentration of 0.022 mg/l. The average and maximum concentrations in the leachate were 0.102 mg/l and 0.227 mg/l, respectively.

- Iron concentrations in the effluent recorded an average concentration of 0.99 mg/l and a maximum concentration of 1.52 mg/l. Iron was not tested in leachate for biological treatment.

- Lead concentrations in the effluent recorded an average concentration of 0.0077 mg/l and a maximum concentration of 0.0119 mg/l. The average and maximum concentrations in the leachate were 0.01 mg/l and 0.073 mg/l, respectively.

- Nickel concentrations in the effluent recorded an average concentration of 0.152 mg/l and a maximum concentration of 0.235 mg/l. The average and maximum concentrations in the leachate were 0.186 mg/l and 0.475 mg/l, respectively.

- Zinc concentrations in the effluent recorded an average concentration of 0.087 mg/l and a maximum concentration of 0.169 mg/l. The average and maximum concentrations in the leachate were 0.164 mg/l and 1.14 mg/l, respectively.

- Phosporus concentrations in the effluent recorded an average concentration of 7.74 mg/l and a maximum concentration of 18.0 mg/l. The average and maximum concentration recorded in the leachate is 15.3 mg/l and 91.4mg/l, respectively.

- Mecoprop concentrations in the effluent recorded an average concentration of 0.05 mg/l and a maximum concentration of 0.083 mg/l. The average and maximum concentration recorded in the raw leachate is 0.084 mg/l and 0.274mg/l, respectively.

4.1.5 Given the number of samples in the dataset (23, except sulphate which is 27), the average concentration for each parameter is used in the assessment and compared with the EQS Annual average (AA)/mean. The average concentration is only calculated based on the concentrations recorded above the LoD.

4.2 Calculate the concentration of pollutant in the discharge when discharging to a sewer

4.2.1 The sewerage treatment works will remove a proportion of the pollutant from the effluent prior to the discharge to the river. This is considered as part of the assessment to calculate the concentration of the pollutant discharged to the river via the sewer and sewerage works.

4.2.2 The amount of each pollutant which will be removed by a sewerage works is known as the Sewerage Treatment Reduction Factor (STRF). The STRF has been calculated for each individual pollutants. The concentration of the pollutant after sewerage treatment is

determined by the concentration of the pollutant in the discharge released to the sewer (based on an average) multiplied by the STRF. The STRF (the percentage removal rate of substance by activated sludge plant) are presented on the surface water pollution risk assessment web based guidance[3]. A Summary of parameters included in the assessment and the corrected Release Concentration (RC_{corr}) are presented in Table 5.

Table 5: The Release Concentration value (RC_{corr}) for the effluent determined from the Sewerage Treatment Reduction Factor (STRF)

Parameter	Average concentration (µg/l) in the effluent	Sewerage Treatment Reduction Factor (STRF)	Proportion of the pollutant remaining in activated sludge	RC_{corr} concentration µg/l
Ammoniacal Nitrogen	440	92	0.08	35.2
Chloride	2164	0	1	2164
Sulphate (no STRF - assumed 0)	323250	0	1	323250
Arsenic	57	11	0.89	50.73
Cadmium	0.45	11	0.89	0.4005
Chromium	106	84	0.16	16.96
Copper	14.2	79	0.21	2.982
Iron	997	23	0.77	767.69
Lead	7.6	83	0.17	1.292
Nickel	152	24	0.76	115.52
Zinc	22.4	67	0.33	7.392
Phosphorous	7750	20	0.800	6200
Mecoprop	50.3	0	1.000	50.3

4.3 Stage 3: Test 1 Part A Freshwater screening test 1: does the concentration of the substance in the discharge exceed 10 percent of the EQS?

4.3.1 This screening test assesses whether the concentrations of the discharged substances exceed 10 percent of the EQS, irrelevant to the quality and flow rate of the receiving body of water and therefore only assesses the quality of the discharged effluent (effluent from the biological treatment).

4.3.2 As the discharge is to sewer, as STRF is applied to the concentration of each substance discharged. The STRF is an Environment Agency defined multiplier to simulate the impact on the concentration from treatment at a sewerage treatment works. The resulting concentration after the STRF has been applied is hereafter referred to as the corrected release concentration (RC_{corr}). The values and the results of Test 1 are presented in **Table 6**.

[3] Sewage treatment reduction factors

Table 6: Test 1 - Release concentration discharge (effluent from the biological treatment Plant) compared with 10% of the EQS

Parameter	RC corr (µg/l)	Environmental Quality Standard Annual Average (EQS-AA)	10% EQS (µg/l)	RC_{corr} > 10% EQS?	RC>10 %EQS
Ammoniacal Nitrogen	440	35.20	620	62	PASS
Chloride	2164	2164.00	250000	25000	PASS
Sulphate (no STRF - assumed 0)	323250	323250.00	400000	40000	FAIL
Arsenic	57	50.73	50	5	FAIL
Cadmium	0.45	0.40	0.09	0.009	FAIL
Chromium	106	16.96	4.7	0.47	FAIL
Copper	14.2	2.98	1	0.1	FAIL
Iron	997	767.69	1000	100	FAIL
Lead	7.6	1.29	1.2	0.12	FAIL
Nickel	152	115.52	4	0.4	FAIL
Zinc	22.4	7.39	13.8	1.38	FAIL
Phosphorous	7750	6200.00	148	14.8	FAIL
Mecoprop	50.3	50.30	18	1.8	FAIL

4.3.3 The parameters ammoniacal nitrogen and chloride pass this Test 1 screening stage of testing and are therefore not carried forward in the assessment. All the other parameters (sulphate, arsenic, cadmium, chromium, copper, iron, lead, nickel, zinc, phosphorous and mecoprop) exceed 10% of the EQS and therefore have been taken forward to Test 2. The calculation sheets for the H1 assessment are presented at Appendix 6.

4.3.4 The EQS values for parameters copper and zinc are determined as a bioavailable concentration standard and therefore are not directly comparable to recorded concentrations. For example, the predicated non-effect concentrations (PNEC) associated with bioavailability, which are likely to be greater than the EQS, could be determined for the receiving watercourse, although no water quality testing data is available to determine the PNEC.

4.4 Stage 3: Test 2: Does the process contribution (PC) exceed 4 percent of the EQS

4.4.1 The discharge of the effluent from the Site to the sewer and via the Sutton WwTW (National Grid Reference SE 50100 25600) and understood that the discharge outfall from the Sutton WwTW is located at Byram cum Sutton (approximately National Grid reference SE 48238 25310). The nearest river gauging station downstream of the site is at Beal (number 27003).

4.4.2 Following the assessment methodology of Test 2 – Surface Water Discharges, the process contributions released to the River Aire was calculated as follow:

$$PC = \frac{(EFR * RCcorr)}{(EFR + RFR)} \quad (1)$$

Where:
PC = process contribution (µg/l)
EFR = effluent flow rate (m^3/s) – 0.012m^3/sec (based on ~1000m^3/day)
RC_{corr} = release concentration (equivalent of the RO permeate discharge) (µg/l)
RFR= river flow rate (m^3/s) – based on Q95 for the River Aire at Beal - 9.656m^3/sec

4.4.3 The proposed discharge is to sewer and therefore to the Sutton WwTW prior to discharge to the River Aire. The Q95 for the River Aire gauging station at Beal is reported as 9.656 m^3/s. The Q95 flow is a significant low flow parameter particularly relevant in the assessment of river water quality consent conditions. The proposed discharge is assessed at 1000 m^3/day from the biological treatment plant. However, it is likely to be less than this volume and the biological treatment plant is treating the RO concentrate (not total fluids). Applying 1000m^3/day is therefore a more conservative assessment.

4.4.4 Process contributions (PC) of all the parameters carried through which failed Test 1 are assessed using the effluent flow rate. The results of Test 2 are summarised in **Table 7**.

Table 7: Test 2 – Assessment of the Process Contribution and compared with 4 percent of the EQS (effluent from the biological treatment plant)

Parameter	RC corr (µg/l)	PC	EQS	4% EQS	PC> 4% EQS
Sulphate	323250	387	400000	16000	PASS
Arsenic	50.73	0.06073	50.0	2.0	PASS
Cadmium	0.4	0.00048	0.09	0.0036	PASS
Chromium	16.96	0.02030	4.7	0.188	PASS
Copper	2.98	0.00357	1.0	0.04	PASS
Iron	767.69	0.91908	1000	40	PASS
Lead	1.29	0.00155	1.2	0.048	PASS
Nickel	115.52	0.13830	4.0	0.16	PASS
Zinc	7.39	0.00885	13.8	0.552	PASS
Phosphorous	6200	7.42267	148.0	5.92	FAIL
Mecoprop	50.3	0.06022	18.0	0.72	PASS

4.4.5 The results of Test 2 determined ammoniacal nitrogen and copper failed that test and the remaining parameters pass this stage of testing. Ammoniacal nitrogen and copper are taken forward to stage 3 of testing. The calculation sheets for the H1 assessment are presented at Appendix 6.

4.5 Stage 3: Test 3: Does your discharge increase the concentration of the pollutant in the river downstream of the discharge by more than 10% of the pollutant's EQS value.

4.5.1 In Test 3, the Predicted Environmental Concentration (PEC) in the river downstream of the discharge is calculated by adding the process contribution (PC) to the background concentrations (BC). Only phosphorous failed Test 2 and has therefore been assessed in test 3. The results of Test 2 are summarised in **Table 8**.

Table 8: Test 3 - Assessment whether the discharge increases the concentration of the pollutant in the river downstream of the discharge by more than 10% of the EQS value (effluent from the biological treatment plant)

Parameter	RC corr (mg/l)	PC (mg/l)	BC (mg/l)	PEC (mg/l)	PEC-BC	10% of EQS (mg/l)	(PEC-BC) >10% EQS?
Phosphorous	6200	7.42	74	81.4	7.42	14.8	PASS

4.5.2 Phosphorus passes the Test 3 screening stage.

4.6 Stage 3: Test 4: Check whether the PEC is higher than the EQS.

4.6.1 This test compares the PEC to the EQS concentration, rather than 10% of the EQS which is used in Test 3. Given that most of the parameters passed Test 2 and phosphorus passes Test 3, this assessment is not necessary.

4.7 Stage 3: Water Impact: Significant Loads

4.7.1 For priority hazardous substances, an additional assessment is required. The only priority substance recorded in the RO permeate was cadmium. This screening test assesses whether the annual load for the substance in question exceeds the annual significant load limit, which is the total mass of the substance realised across a single year. Based on the average concentration of cadmium in the biological effluent is 0.45µg/l (0.00045mg/l), this equates to a loading of 0.000164kg/per year and significant below the load limit of 5kg per year.

5.0 SUMMARY AND CONCLUSION

5.1.1 Caulmert Limited is appointed by FCC Recycling (UK) Limited (the Operator) to prepare an environmental permit variation application to vary the existing permit ref. EPR/JP3547JL to allow a proposed liquid discharges from their facility at Weeland Road, Knottingley, West Yorkshire, WF11 8DZ.

5.1.2 The Operator proposes adding new activities to the existing permit, comprising physico-chemical and biological treatment of landfill leachate and other aqueous wastes imported to site. The treatment process will involve two reverse osmosis (RO) plants, a biological treatment plant, and an ammonia recovery unit, including ultrafiltration and nanofiltration, to facilitate the treatment of non-hazardous leachate to remove organic and inorganic substances with the resultant treated effluent discharged to sewer or surface water where appropriate.

5.1.3 The H1 assessment is based on substances that are present in the raw leachate (as imported to the site) which will be treated in the RO plants (with the permeate direct discharge to surface water) and the concentrate from the RO treatment further treated in an ammonia recovery unit followed by a biological treatment process (with the treated effluent discharge to sewer). The discharge to sewer (indirect discharge) will be further treated at Sutton WwTW operated by Yorkshire Water. There is an existing trade effluent consent at the facility for the discharge of treated effluent.

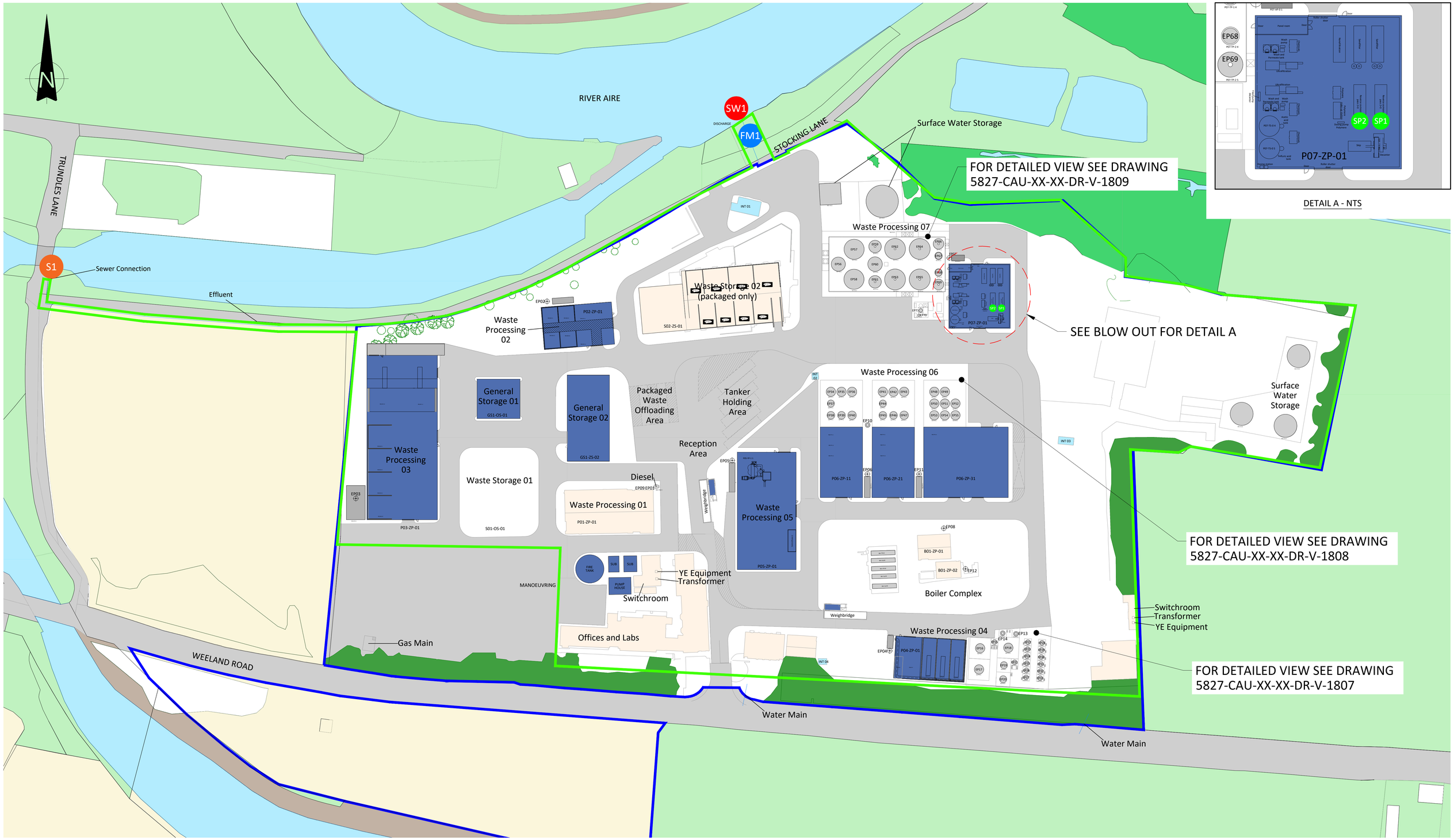
5.1.4 The proposed treatment facilities at the Knottingley site will be similar in scale and operations to the treatment capabilities of the RO Plant at the Dogsthorpe facility and the biological treatment plant at Marstonvale. A database of the chemical testing of raw leachate, concentrate and permeate for the RO treatment at Dogsthorpe and the leachate and effluent for the biological treatment plant at Marstonvale is provided by FCC for the period between 2021 and 2025 and 2024 to 2025, respectively. The chemical testing database includes a wide range of organic and inorganic substances.

5.1.5 The permeate (Dogsthorpe facility) and effluent (Marstonvale facility) were reviewed to assess and identify pollutants that may be released from the treatment plant, therefore post treatment discharge. Following the review of the data, certain substances that were recorded in the permeate and the effluent are considered not suitable to be included in the H1 assessment, as the substances are not used in classification of the status of water bodies (rivers) and/or do not have an Environmental Quality Standard to assess the data, or recorded in few sample tested. The substances which are applied in the H1 calculation assessment for the permeate discharge to surface water include ammoniacal nitrogen, chloride, sulphate, arsenic, cadmium, chromium, copper, iron, zinc, and phosphate (data from the Dogsthorpe facility). The substances which are applied in the H1 calculation assessment for the effluent discharge to sewer include ammoniacal nitrogen, chloride, cyanide, arsenic, cadmium, chromium, copper, iron, lead, nickel, zinc, phosphorous, and Mecoprop (data from the Marstonvale facility).

5.1.6 All parameters passed the surface water assessment and therefore this assessment has demonstrated that the discharge of the permeate to the River Aire and the effluent to the sewerage system are acceptable with respect to the surface water pollution assessment methodology.

DRAWINGS

Sampling and Emissions Point Plan **5827-CAU-XX-XX-DR-V-1805**



NOTES

1. DO NOT SCALE FROM THIS DRAWING, WORK FROM FIGURED DIMENSIONS ONLY. ALL DIMENSIONS ARE IN METRES AND ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALIST DRAWINGS AND SPECIFICATIONS.

LEGEND

- OWNERSHIP BOUNDARY
- PERMIT BOUNDARY
- BUILDINGS
- SW1 SURFACE WATER MONITORING
- S1 FOUL WATER MONITORING
- SP SAMPLING POINTS
- FM FLOW METER

REV	MODIFICATIONS	BY	RE	AP	DATE
P03	EP NUMBERS ADDED	EJD	JC	AS	17.12.25
P02	PERMIT BOUNDARY AMENDED	EJD	JC	AS	06.08.25
P01	ISSUED FOR INFORMATION	EJD	JC	AS	10.07.25

CLIENT: FCC Environment

PROJECT: KNOTTINGLEY WASTE TO RESOURCE FACILITY

TITLE: SAMPLING AND EMISSION POINT PLAN

PURPOSE OF ISSUE	STATUS
FOR INFORMATION	S2

DESIGNED BY	DRAWN BY	REVIEWED BY	AUTHORISED BY
EJD	EJD	JC	AS

DATE	SCALE @ A1	JOB REF:	REVISION
10.07.2025	1:750	5827	P03

DRAWING NUMBER: 5827-CAU-XX-XX-DR-V-1805

Caulmert engineering environmental planning

Registered Office: InTec, Parc Menai, Bangor, Gwynedd, LL57 4FG Company Registered No: 06716319

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APPENDIX 1

Substances analysed in the liquids (leachate, permeate and effluent)

Table A1: Suite of chemical testing of raw leachate at Dogsthrope facility – substances analysed although not detected above the analytical detection limit (2021 to 2023)		
1,1,1,2-Tetrachloroethane	Chloroethane	n-butylbenzene
1,1,1-Trichloroethane	Chloroform	n-propylbenzene
1,1,2,2-Tetrachloroethane	Chloromethane	o,p-DDD
1,1,2-Trichloroethane	Chlorpyralid	o,p-DDE
1,1-Dichloroethane	Chlorpyriphos	o,p-DDT
1,1-Dichloroethene	Chlorpyriphos-methyl	p,p-DDD
1,1-Dichloropropene	Chlorthalonil	p,p-DDE
1,2,3,4-Tetrachlorobenzene	cis-1,2-dichloroethene	p,p-DDT
1,2,3-Trichlorobenzene	cis-1,3-dichloropropene	Parathion-ethyl
1,2,3-Trichloropropane	cis-chlordane	Parathion-methyl
1,2,4-Trichlorobenzene	cis-permethrin	PCB 28
1,2,4-Trimethylbenzene	Diazinon	PCB 52
1,2-Dibromo-3-chloropropane	Dibromochloromethane	PCB101
1,2-Dibromoethane	Dibromomethane	PCB118
1,2-Dichlorobenzene	Dibutyl Tin	PCB138
1,2-Dichloroethane	Dicamba	PCB153
1,2-Dichloropropane	Dichlobenil	PCB180
1,3,5-Trimethylbenzene	Dichlorodifluoromethane	Pendimethalin
1,3-Dichlorobenzene	Dichlorvos	Pentachlorobenzene
1,3-Dichloropropane	Dieldrin	Pentachlorophenol (PCP)
1,4-Dichlorobenzene	Dimethoate	Phosalone
2,2-Dichloropropane	Endosulfan II	Phosphamidon
2,3,6-TBA	Endosulfan sulphate	Pirimiphos-ethyl
2,4,5-T	Endosulphan-alpha	Pirimiphos-methyl
2,4-D	Endrin	p-iso propyl toluene
2,4-DB	Endrin Ketone	Propetamphos
2,4-Dinitrophenol	Ethion	Propyzamide
2-Chlorotoluene	Etrimphos	sec-butyl benzene
4,6-Dinitro-2-methylphenol	Fenitrothion	Silvex
4-Chlorotoluene	Fenthion	Styrene
Aldrin	Fluroxypyr	Tecnazene
Azinphos-ethyl	HCH-alpha	tert-butylbenzene
Azinphos-methyl	HCH-beta	Tetrachloroethene
Benazolin	HCH-delta	TPH Total Petroleum
Benzene	HCH-gamma	Hydrocarbons
Bromobenzene	Heptachlor	trans-1,2-dichloroethene
Bromochloromethane	Heptachlor Epoxide	trans-1,3-dichloropropene
Bromodichloromethane	Hexachlorobenzene	trans-permethrin
Bromoform	Hexachlorobutadiene	Triadimefon
Bromomethane	Ioxynil	Triallate
Bromoxynil	Isodrin	Triazaphos
Carbon Tetrachloride	iso-propyl benzene	Tributyl Tin
Carbophenothion	Malathion	Trichlopyr
Chlordane-gamma	Methacriphos	Trichloroethene
Chlorfenvinphos	Methoxychlor	Trichlorofluoromethane
Chlorobenzene	Mevinphos	Trifluralin
		Triphenyltin
		Vinyl Chloride

Table A2: Suite of chemical testing of the raw leachate at Dogsthrope facility – substances analysed detected in the raw leachate above the analytical LoD (2021 to 2023)		
1,3,5-Trichlorobenzene	Dimethylphenols	pH
Alkalinity as CaCO3	Ethylbenzene	Phenol
Ammoniacal Nitrogen	Iron (Dissolved)	Phosphate
AOX	Lead (Dissolved)	Potassium (Dissolved)
Arsenic (Dissolved)	m & p xylene	Sodium (Dissolved)
Bentazone	Magnesium (Dissolved)	Sulphate as SO4 (Dissolved)
BOD	Manganese (Dissolved)	Sulphide as S
Cadmium (Dissolved)	MCPA	Suspended Solids
Calcium (Dissolved)	MCPB	Toluene
Chloride	Mecoprop	Total Organic Carbon
Chromium (Dissolved)	Mercury (Dissolved)	Total Oxidised Nitrogen
COD	MTBE	Total Phenols
Conductivity (uScm-1)	Napthalene	Trimethylphenols (mg/l)
Copper (Dissolved)	Nickel (Dissolved)	Volatile Suspended Solids
Cresols	Nitrate as N	Xylenes, Total
Cyanide (Total)	Nitrite as N	Zinc (Dissolved)
Dichloroprop	o-xylene	

Table A3: Suite of chemical testing of the permeate at Dogsthrope facility – substances analysed detected above the analytical LoD (2021 to 2025)		
Alkalinity as CaCO3	Copper (Dissolved)	Potassium (Dissolved)
Ammoniacal Nitrogen	Cresols	Sodium (Dissolved)
AOX	Cyanide (Total)	Sulphate as SO4 (Dissolved)
Arsenic (Dissolved)	Dimethylphenols	Sulphide as S
BOD	Iron (Dissolved)	Suspended Solids
Cadmium (Dissolved)	Nitrite as N	Total Organic Carbon
Chloride	pH	Volatile Suspended Solids
Chromium (Dissolved)	Phosphate (Total) as P	Zinc (Dissolved)
Conductivity		

Table A4: Suite of chemical testing of the effluent at Marstonvale facility – substances analysed although not detected above the analytical LoD (2024 to 2025)		
Chromium (VI) as Cr	Parathion-methyl	1,2-Dichloroethane
1,3,5-trichlorobenzene	Pirimiphos-methyl	Trichloroethene
1,2,3-trichlorobenzene	Fenitrothion	1,2-Dichloropropane
Dichlobenil	Malathion	Dibromomethane
1,2,3,4-Tetrachlorobenzene	Chlorpyrifos	Bromodichloromethane
Pentachlorobenzene	Fenthion	Cis-1,3-dichloropropene
Tecnazene	Pirimiphos-ethyl	Toluene
Trifluralin	Parathion	Trans-1,3-dichloropropene
HCH-alpha	Chlorfenvinphos	1,1,2-trichloroethane
HCH-beta	Ethion	Tetrachloroethene
HCH-gamma	Triazophos	1,3-dichloropropane
Propyzamide	Carbophenothion	Dibromochloromethane
Chlorthalonil	Phosalone	1,2-dibromoethane
Triallate	Azinphos-methyl	Chlorobenzene
Delta-HCH	Azinphos ethyl	Ethyl Benzene
Heptachlor	Simazine	1,1,1,2-tetrachloroethane
Aldrin	Atrazine	m,p-xylene
Triadimefon	Propazine	o-xylene
Pendimethalin	Trietazine	Styrene
Heptachlor Epoxide	Terbutylazine	Bromoform
Chlordane-gamma	Ametryn	Isopropylbenzene
Isodrin	Prometryn	1,1,2,2-tetrachloroethane
o,p-DDE	Pentachlorophenol	n-propylbenzene
cis-Chlordane	PCB101	Bromobenzene
Endosulphan-alpha	PCB118	1,2,3-trichloropropane
Dieldrin	PCB153	2-chlorotoluene
o,p'-DDD	PCB138	1,3,5-trimethylbenzene
Endrin (ng/l)	PCB180	4-chlorotoluene
Endosulfan II	Dimethylphenols (mg/l)	tert-butylbenzene
p,p-DDD	Trimethylphenols	1,2,4-trimethylbenzene
o,p-DDT	Dichlorodifluoromethane	sec-butylbenzene
Endosulphan Sulphate	Chloromethane	p-isopropyltoluene
p,p-DDT	Vinyl Chloride	1,3-dichlorobenzene
Endrin ketone	Bromomethane	1,4 Dichlorobenzene
Methoxychlor	Chloroethane	n-butylbenzene
cis-Permethrin	Trichlorofluoromethane	1,2-dichlorobenzene
trans-Permethrin	1,1-Dichloroethene	1,2-dibromo-3-chloropropane
Dichlorvos	Trans-1,2-dichloroethene	1,2,4-Trichlorobenzene
Mevinphos	1,1-Dichloroethane	Hexachlorobutadiene
Propetamphos	MTBE	Naphthalene
Dimethoate	2,2-Dichloropropane	1,2,3-trichlorobenzene
Diazinon	Bromochloromethane	Dibutyl Tin
phosfamidon	Chloroform	Tributyl Tin
Etrimphos	1,1,1-Trichloroethane	Triphenyltin
Chlorpyriphos-methyl	Carbon Tetrachloride	
	1,1-Dichloropropene	
	Benzene	

Table A5: Suite of chemical testing of the effluent at Marstonvale facility – substances recorded above the analytical LoD in the effluent on one or two samples (2024 to 2025) and not included in the assessment	
Recorded in one sample	*Recorded in two samples*
Hexachlorobenzene* p,p-DDE* methacriphos Terbutryn PCB 28 PCB 52 Phenol* Cresols* Total Phenols*	Cis-1,2-dichloroethene
* Record in one samples collected on 28/10/25, and not recorded on the following occasion 05/11/25	

Table A6: Suite of chemical testing of the effluent at Marstonvale facility – substances recorded above the analytical LoD in the effluent (2024 to 2025)		
Ammoniacal Nitrogen Conductivity pH (Lab) Suspended Solids Suspended Solids - Volatile Chloride Nitrite Nitrate Sulphide Cyanide (Total)	COD Alkalinity BOD AOX Arsenic (Diss) Chromium (Diss) Copper (Diss) Lead (Diss) Nickel (Diss) Zinc (Diss)	Cadmium Iron (Diss) Magnesium (Diss) Potassium (Diss) Total Sulphur (Diss) Sodium (Diss) Phosphorus as P (Total) MCPP (Mecoprop) NVM Light Petroleum Extract

APPENDIX 2

The analytical datasets from the Dogsthorpe RO Plant (permeate)

Leachate data for Dogsthorpe

Parameter																																							
1,1,1,2-Tetrachloroethane (ug/l)							<1									<1																							
1,1,1-Trichloroethane (ug/l)							<1									<1																							
1,1,2,2-Tetrachloroethane (ug/l)							<1									<1																							
1,1,2-Trichloroethane (ug/l)							<1									<1																							
1,1-Dichloroethane (ug/l)							<1									<1																							
1,1-Dichloroethene (ug/l)							<1									<1																							
1,1-Dichloropropene (ug/l)							<1									<1																							
1,2,3,4-Tetrachlorobenzene (ug/l)							<0.05									<0.20																							
1,2,3-Trichlorobenzene (ug/l)							<5									<5																							
1,2,3-Trichloropropane (ug/l)							<1									<1																							
1,2,4-Trichlorobenzene (ug/l)							<5									<5																							
1,2,4-Trimethylbenzene (ug/l)							<1									<1																							
1,2-Dibromo-3-chloropropane (ug/l)							<5									<5																							
1,2-Dibromoethane (ug/l)							<1									<1																							
1,2-Dichlorobenzene (ug/l)							<5									<5																							
1,2-Dichloroethane (ug/l)							<1									<1																							
1,2-Dichloropropane (ug/l)							<1									<1																							
1,3,5-Trichlorobenzene (ug/l)							<0.05									<0.20																							
1,3,5-Trimethylbenzene (ug/l)							<1									<0.6																							
1,3-Dichlorobenzene (ug/l)							<1									<1																							
1,3-Dichloropropane (ug/l)							<1									<1																							
1,4-Dichlorobenzene (ug/l)							<1									<1																							
2,2-Dichloropropane (ug/l)							<1									<1																							
2,3,6-TBA (ug/l)		<10					<10		<10		<10			<10		<10			<10		<10			<10			<10		<10	<10	<10	<10	<10		<10				<10	<10
2,4,5-T (ug/l)		<15					<15		<15		<15			<15		<15			<15		<15			<15			<15		<15	<15	<15	<15	<15		<15				<15	<15
2,4-D (ug/l)		<15					<15		<15		<15			<15		<15			<15		<15			<15			<15		<15	<15	<15	<15	<15		<15				<15	<15
2,4-DB (ug/l)		<20					<20		<20		<20			<20		<20			<20		<20			<20			<20		<20	<20	<20	<20	<20		<20				<20	<20
2,4-Dinitrophenol (ug/l)		<25.0					<25.0		<25.0		<25.0			<25.0		<25.0			<25.0		<25.0			<25.0			<25.0		<25.0									<25.0	<25.0
2-Chlorotoluene (ug/l)							<1									<1																							
4,6-Dinitro-2-methylphenol (ug/l)		<20.0					<20.0		<20.0		<20.0			<20.0		<20.0			<20.0		<20.0			<20.0			<20.0		<20.0	<20.0	<20.0	<20.0	<20.0		<20.0				<20.0	<20.0
4-Chlorotoluene (ug/l)							<1									<1																							
Aldrin (ug/l)							<0.05									<0.20																							
Alkalinity as CaCO3 (mg/l)	3600	3550	4130	3830	4530	4580	5630	16800	4070	3250	4520	3480	3660	4370	4120	2790	3850	3880	2880	4690	2860	4300	4430	4340	4510	4250	3740	5030	5000	1830	1270	1190	1450	1570	1260	2220	1400	1610	1450	1540	7470
Ammoniacal Nitrogen (mg/l)	1100	1060	969	832	955	1160	1100	1160	1070	1050	1170	1200	799	1100	1040	862	1190	1120	860	1050	999	955	1070	978	934	1020	805	1010	978	190	79.4	96.1	101	130	81.1	111	104	190	146	139	1520
AOX (ug/l)																																									
Arsenic (Dissolved) (mg/l)		0.059					0.088		0.044		0.095	0.102	0.069	0.126	0.102	0.067	0.069	0.059	0.069	0.206	0.075	0.058	0.108	0.155	0.085	0.045	0.06	0.093	0.134	0.005	<0.010	0.004	<0.010	0.003	0.003	<0.010	<0.010	<0.010	<0.010	<0.010	0.026
Azinphos-ethyl (ug/l)							<0.05									<0.20																							
Azinphos-methyl (ug/l)							<0.05									<0.2																							
Benazolin (ug/l)		<20					<20		<20		<20			<20		<20			<20		<20			<20			<20		<20	<20	<20	<20	<20		<20				<20	<20
Bentazone (ug/l)		<10					<10		<10		<10			<10		<10			<10		<10			<10			<10		<10	<10	<10	<10	<10		<10				<10	<10
Benzene (ug/l)							1									<1																							
BOD (5 Day) (mg/l)	100	437	278	187	142	101	68.6	71.4	2.3	21.1	>22.4	26.8	26.7	22.6	22.1	24.5	26	25.2	26.7	27.5	>28	>44.8	>112	84.8	127	69	63.9	121	120	23.3	14.1	17.3	39.4	58	39.4	71.3	42.9	<4	41.8	>74.7	<40
Bromobenzene (ug/l)							<1									<1																							
Bromochloromethane (ug/l)							<1									<1																							
Bromodichloromethane (ug/l)							<1									<1																							
Bromoform (ug/l)							<1									<1																							
Bromomethane (ug/l)							<5									<5																							
Bromoxynil (ug/l)		<15					<15		<15		<15			<15		<15			<15		<15			<15			<15		<15	<15	<15	<15	<15		<15				<15	<15
Cadmium (Dissolved) (mg/l)	<0.00020	0.00081	0.00153	0.00064	0.0017	0.00087	0.00095	0.001	0.00049	<0.00020	0.00193			0.002		0.00201			0.00232			0.00022			0.00081			0.00094		<0.00002	<0.00020	0.0001	0.00021	0.00002		<0.00020				<0.00020	0.00058
Calcium (Dissolved) (mg/l)	100	169	114	100	117	132	124	108	109	91	89			84		98			113			65			82			91		153	238	215	223	194		202				199	90
Carbon Tetrachloride (ug/l)							<1									<1																							
Carbophenothion (ug/l)							<0.05									<0.2																							
Chlordane-gamma (ng/l)							<50									<200																							
Chlorfenvinphos (ug/l)							<0.05									<0.2																							
Chloride (mg/l)	1630	1410	1790	1380	1180	1980	1790	1780	1770	1690	1870	1570	1300	1650	1650	1280	1700	1700	1390	2280	1640	1430	1390	1900	1360	1560	1230	1840	1440	1370	464	503	491	661	412	518	515	1310	853	788	1940
Chlorobenzene (ug/l)							<1									<1																							
Chloroethane (ug/l)							<5									<5																							
Chloroform (ug/l)							<5									<5																							
Chloromethane (ug/l)							<1									<1																							
Chlorpyralid (ug/l)		<10					<10		<10		<10			<10		<10			<10			<10			<10			<10		<10	<10	<10	<10	<10		<10				<10	<10
Chlorpyriphos (ug/l)							<0.05									<0.20																							
Chlorpyriphos-methyl (ug/l)							<0.05									<0.20																							
Chlorthalonil (ug/l)							<0.05									<0.20																							
Chromium (Dissolved) (mg/l)	0.124	0.092	0.134	0.077	0.184	0.14	0.115	0.097	0.109	0.115	0.163	0.121	0.13	0.143	0.102	0.11	0.171	0.118	0.111	0.234	0.134	0.109	0.169	0.172	0.144	0.103	0.116	0.155	0.175	0.003	<0.010	0.002	0.016	0.002	0.001	<0.010	<0.010	<0.010	<0.010	<0.010	0.203
cis-1,2-dichloroethene (ug/l)							<5									<1																							
cis-1,3-dichloropropene (ug/l)							<1									<1																							
cis-chlordane (ug/l)							<0.05									<0.20																							
cis-permethrin (ug/l)							<0.05									<0.20																							
COD (mg/l)	1510	1760	1880	1470	1570	1510	1650	1540	1510	1480	1760			1630		1180			1280			1430			1720			1720		367	164	181	196	254		252				299	2260
Conductivity (uScm-1)	14100	13500	15700	15300	15300	15900	15900	15700	15400	18000	21000	15200	14700	17300	14100	12100	11800	14900	12900	18500	13500	14200	16900	16100	16500	14900	13100	14800	16100	7190	3730	3630	4000	4670	3280	4160	3560	6570	4930	4940	18500
Copper (Dissolved) (mg/l)	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	<0.010	0.01	<0.010			<0.010		<0.010			0.02			0.026			0.046			<0.010		<0.001	<0.010	0.001	<0.010	<0.001		<0.010				<0.010	0.02
Cresols (mg/l)		<0.05					<0.05		<0.05		0.09			<0.25		<0.05			<0.05			0.14			0.05			0.54		<0.05	<0.05	<0.05	<0.05	<0.05		<0.05				<0.05	0.05
Cyanide (Total) (mg/l)		0.05					0.03		0.03		0.03			0.03		<0.02			0.02			0.02			0.03			0.03		<0.02	<0.02	<0.02	<0.02	<0.02		<0.02				0.31	0.03
Diazinon (ug/l)							<0.05									<0.2																							
Dibromochloromethane (ug/l)							<1									<1																							
Dibromomethane (ug/l)							<1									<1																							
Dibutyl Tin (ng/l)							<200									<400																							
Dicamba (ug/l)		<20					<20		<20		<20			<20		<20			<20			<20			<20			<20		<20	<20	<20	<20	<20		<20				<20	<20
Dichlobenil (ng/l)							<50									<200																							
Dichlorodifluoromethane (ug/l)							<1									<1																							
Dichlorprop (ug/l)		<10					<10		<10		<10			<10		<10			<10			<10			<10			<10		<10	<10	<10	<10	<10		<10				<10	<10
Dichlorvos (ug/l)							<0.05									<0.2																							
Dieldrin (ug/l)							<0.05									<0.20																							
Dimethoate (ug/l)							<0.05									<0.2																							
Dimethylphenols (mg/l)		0.25					0.13		0.25		0.55			<0.25		<0.05			<0.05			2.11			2.64			2.02		<0.05	<0.05	<0.05	<0.05	<0.05		<0.05				<0.05	0.34
Endosulfan II (ug/l)							<0.05									<0.20																							
Endosulfan sulphate (ug/l)							<0.05									<0.20																							
Endosulphan-alpha (ug/l)							<0.05									<0.2																							
Endrin (ng/l)							<50									<200																							
Endrin Ketone (ug/l)							<0.05									<0.20																							
Ethion (ug/l)							<0.05									<0.20																							
Ethylbenzene (ug/l)							<1									<0.5																							
Etrimphos (ug/l)							<0.05									<0.20																							
Fenitrothion (ug/l)							<0.05									<0.2																							
Fenthion (ug/l)							<0.05									<0.2																							
Fluroxypyr (ug/l)		<15.0					<15.0		<15.0		<15.0			<15.0		<15.0			<15.0			<15.0			<15.0			<15.0		<15.0	<15.0	<15.0	<15.0	<15.0		<15.0				<15.0	<15.0
HCH-alpha (ng/l)							<50									<200																							
HCH-beta (ng/l)							<50									<200																							
HCH-delta (ug/l)							<0.05									<0.20																							
HCH-gamma (ng/l)							<50									<200																							
Heptachlor (ug/l)							<0.05									<0.20																							
Heptachlor Epoxide (ng/l)							<50									<200																							
Hexachlorobenzene (ug/l)							<0.05									<0.20																							
Hexachlorobutadiene (ug/l)							<5									<5																							
Ioxynil (ug/l)		<20					<20		<20		<20			<20		<20			<20			<20			<20			<20		<20	<20	<20	<20	<20		<20				<20	<20
Iron (Dissolved) (mg/l)	6.79	9.2	12.4	4.66	11.5	5.35	8.87	6.58	6.41	6.05	7.4			7.29		4.65			4.63			3.95			7.52			7.61		0.94	0.92	3.37	1.19	1.32		0.72				2.13	4.67
Isodrin (ng/l)							<50									<200																							
iso-propyl benzene (ug/l)							<1									<1																							
Lead (Dissolved) (mg/l)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.001	<0.001	<0.010	<0.001	<0.0020	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.011
m & p xylene (ug/l)							1									1																							
Magnesium (Dissolved) (mg/l)	56	65	64	78	6	74	65	57	62	62	55			62		46			61			47			55			50		72	49	47	54	58		58				68	63
Malathion (ug/l)							<0.05									<0.20																							
Manganese (Dissolved) (mg/l)	0.176	0.484	0.36	0.132	0.261	0.175	0.168	0.2	0.162	0.14	0.155			0.131		0.165			0.132			0.157			0.135			0.147		0.158	0.233	0.125	0.219	0.062		0.026				0.023	0.112
MCPA (ug/l)		<10					<10		<10		<10			<10		<10			<10			<10			<10			28.1		<10	<10	<10	<10	<10		<10				<10	<10
MCPB (ug/l)		<10					<10		<10		<10			<10		<10			<10			<10			<10			<10		<10	<10	<10	<10	<10		<10				<10	<10
Mecoprop (ug/l)		85.5					87.1		52.2		72.9			102		65.8			61.4			78.9			64.7			74.3		<10	15.2	<10	24.2	63.1		78.4				49.9	152
Mercury (Dissolved) (mg/l)	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030			<0.00030		<0.00030			<0.00030			<0.00030			<0.00030			<0.00030		<0.00003	<0.00030	<0.00003	<0.00030	<0.00003		<0.00030				<0.00030	<0.00030
Methacriphos (ug/l)							<0.05									<0.20																							
Methoxychlor (ug/l)							<0.05									<0.20																							
Mevinphos (ug/l)							<0.05									<0.2																							
MTBE (ug/l)							<1									<1																							
Napthalene (ug/l)							<5									<5																							
n-butylbenzene (ug/l)							<1									<1																							
Nickel (Dissolved) (mg/l)	0.166	0.135	0.191	0.163	0.198	0.183	0.147	0.174	0.135	0.179	0.189			0.187		0.124			0.135			0.15			0.175			0.171		0.031	0.012	0.012	0.017	0.019		<0.010				0.02	0.274
Nitrate as N (mg/l)	<0.2	<0.2	<0.2	<2	<2	<0.2	<0.2	1.6	<2	<0.2	<0.2			<2		0.4			0.3			<2			<2			<0.2		<0.2	<0.2	<0.2	<0.2	0.2		<0.2				<0.2	<2
Nitrite as N (mg/l)	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.01	3.63	<0.1	<0.01	0.21			<0.1		<0.01			0.33			0.13			<0.1			<0.01		<0.01	<0.01	<0.01	<0.01	<0.01		<0.01				<0.01	2.84
n-propylbenzene (ug/l)							<1									<1																							
o,p-DDD (ug/l)							<0.05									<0.20																							
o,p-DDE (ng/l)							<50									<200																							
o,p-DDT (ng/l)							<50									<200																							
o-xylene (ug/l)							3									<1																							
p,p-DDD (ug/l)							<0.05									<0.20																							
p,p-DDE (ng/l)							<50									<200																							
p,p-DDT (ng/l)							<50									<200																							
Parathion-ethyl (ug/l)							<0.05									<0.20																							
Parathion-methyl (ug/l)							<0.05									<0.2																							

PCB 28 (ug/l)							<0.04									<0.04																									
PCB 52 (ug/l)							<0.04									<0.04																									
PCB101 (ug/l)							<0.04									<0.04																									
PCB118 (ug/l)							<0.04									<0.04																									
PCB138 (ug/l)							<0.04									<0.04																									
PCB153 (ug/l)							<0.04									<0.04																									
PCB180 (ug/l)							<0.04									<0.04																									
Pendimethalin (ug/l)							<0.05									<0.20																									
Pentachlorobenzene (ug/l)							<0.05									<0.20																									
Pentachlorophenol (PCP) (ug/l)		20					<20.0		<20.0		<20.0			<20.0		<20.0			<20.0			<20.0			<20.0			<20.0		<20.0	<20.0	<20.0	<20.0	<20.0		<20.0				<20.0	<20.0
pH (Arbitrary)	7.2	7.3	7.5	7.6	7.5	7.4	7.7	7.3	7.4	7	7	6.9	7.1	7.1	7.3	7.1	7	7	7	6.9	7	7.3	6.9	7.1	7.3	7.1	7.2	7.2	7.2	7.7	7.4	7.4	7.4	7.5	7.4	7.4	7.7	7.7	7.6	7.4	8
Phenol (mg/l)		<0.05					<0.05		0.24		0.33			0.45		<0.05			<0.05			0.41			0.45			0.35		0.1	<0.05	0.06	<0.05	<0.05		<0.05				<0.05	0.06
Phosalone (ug/l)							<0.05									<0.20																									
Phosphamidon (ug/l)							<0.05									<0.20																									
Phosphate (Total) as P (mg/l)	9.07	7.49	9.32	5.48	8.14	9.71	11.1	9.16	8.5	5.6	10.5	6.44	5.79	6.93	6.21	4.62	8.09	6.59	4.48	7.48	4.86	7.07	5.98	7.6	8.4	6.78	5.3	9.21	6.72	<0.01	<0.01	<0.01	<0.01	<0.01	<0.03	<0.01	0.06	0.03	<0.03	<0.01	10
Pirimiphos-ethyl (ug/l)							<0.05									<0.20																									
Pirimiphos-methyl (ug/l)							<0.05									<0.2																									
p-iso propyl toluene (ug/l)							<1									<1																									
Potassium (Dissolved) (mg/l)	548	577	633	619	67	625	700	590	616	557	667			617		429			455			115			606			563		179	72	96	81	88		82				102	799
Propetamphos (ug/l)							<0.05									<0.2																									
Propyzamide (ug/l)							<0.05									<0.20																									
sec-butyl benzene (ug/l)							<1									<1																									
Silvex (ug/l)		<10.0					<10.0		<10.0		<10.0			<10.0		<10.0			<10.0			<10.0			<10.0			<10.0		<10.0	<10.0	<10.0	<10.0	<10.0		<10.0				<10.0	<10.0
Sodium (Dissolved) (mg/l)	1150	1130	1220	1270	126	1490	1520	1290	1370	1210	1370			1320		987			1140			705			1270			1250		1040	455	367	370	466		424				620	1670
Styrene (ug/l)							<1									<1																									
Sulphate as SO4 (Dissolved) (mg/l)	2040	2000	1840	2140	1610	1630	1630	1760	1620	2070	2170			1570		1320			1630			835			1410			1170		74	49	24	34	46	29	40	36	60	44	48	236
Sulphide as S (mg/l)	0.24	0.86	0.28	0.24	0.6	0.42	0.32	0.18	0.14	0.17	3.13			0.19		0.15			0.14			0.14			0.15			0.08		0.02	<0.02	<0.02	0.02	<0.02		0.08				<0.02	0.1
Suspended Solids (mg/l)	84	114	60	<50	<50	<50	<50	267	<50	<50	119			54		15			300			13			23			38		84	23	56	29	61		2790				98	17
Tecnazene (ng/l)							<50									<200																									
tert-butylbenzene (ug/l)							<1									<1																									
Tetrachloroethene (ug/l)							<5									<5																									
Toluene (ug/l)							1									<1																									
Total Organic Carbon (mg/l)	510	550	12	530	510	460	610	480	490	22	540			500		320			382			497			591			582		109	46.3	56.7	58.5	81.9		80.5				97.8	698
Total Oxidised Nitrogen (mg/l)	<0.2	<0.2	<0.2	<2.0	<2.0	<0.2	<0.2	5.2	<2.0	<0.2	0.4			<2.0		0.3			0.6			<2.0			<2.0			<0.2		<0.2	<0.2	<0.2	<0.2	0.2		<0.2				<0.2	3.1
Total Phenols (mg/l)		<0.40					0.28		0.59		1.11			1.2		<0.20			<0.20			2.71			3.19			2.96		0.25	<0.20	0.21	<0.20	<0.20		<0.20				<0.20	0.5
TPH Total Petroleum Hydrocarbons (mg/l)							<1.5									<3.0																									
trans-1,2-dichloroethene (ug/l)							<1									<1																									
trans-1,3-dichloropropene (ug/l)							<1									<1																									
trans-permethrin (ug/l)							<0.05									<0.20																									
Triadimefon (ug/l)							<0.05									<0.20																									
Triallate (ng/l)							<50									<200																									
Triazaphos (ug/l)							<0.05									<0.2																									
Tributyl Tin (mg/l)							<0.0002									<0.0004																									
Trichlopyr (ug/l)		<15					<15		<15		<15			<15		<15			<15			<15			<15			<15		<15	<15	<15	<15	<15		<15				<15	<15
Trichloroethene (ug/l)							<5									<5																									
Trichlorofluoromethane (ug/l)							<1									<1																									
Trifluralin (ng/l)							<50									<200																									
Trimethylphenols (mg/l)		<0.05					<0.05		<0.05		0.14			<0.25		<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
Triphenyltin (ug/l)							<0.5									<1																									
Vinyl Chloride (ug/l)							<1									<1																									
Volatile Suspended Solids (mg/l)	51	155	51	57	<50	<50	<50	157	<50	62	78			<50		20			378			45			40			59		42	12	15	17	39		640				30	27
Xylenes, Total (ug/l)							4									<2																									
Zinc (Dissolved) (mg/l)	0.28	0.234	0.026	0.044	0.055	0.117	0.079	0.072	0.031	0.203	0.064	0.166	0.082	0.061	0.055	0.077	0.054	0.068	0.049	0.181	0.141	0.056	0.065	0.07	0.099	0.082	0.04	0.053	0.07	0.022	0.057	0.003	0.073	0.021	0.006	<0.020	0.064	0.039	0.029	0.037	0.166

Parameter																																								Minimum	Maximum	Average
1,1,1,2-Tetrachloroethane (ug/l)																																								0	0	#DIV/0!
1,1,1-Trichloroethane (ug/l)																																								0	0	#DIV/0!
1,1,2,2-Tetrachloroethane (ug/l)																																								0	0	#DIV/0!
1,1,2-Trichloroethane (ug/l)																																								0	0	#DIV/0!
1,1-Dichloroethane (ug/l)																																								0	0	#DIV/0!
1,1-Dichloroethene (ug/l)																																								0	0	#DIV/0!
1,1-Dichloropropene (ug/l)																																								0	0	#DIV/0!
1,2,3,4-Tetrachlorobenzene (ug/l)																																								0	0	#DIV/0!
1,2,3-Trichlorobenzene (ug/l)																																								0	0	#DIV/0!
1,2,3-Trichloropropane (ug/l)																																								0	0	#DIV/0!
1,2,4-Trichlorobenzene (ug/l)																																								0	0	#DIV/0!
1,2,4-Trimethylbenzene (ug/l)																																								0	0	#DIV/0!
1,2-Dibromo-3-chloropropane (ug/l)																																								0	0	#DIV/0!
1,2-Dibromoethane (ug/l)																																								0	0	#DIV/0!
1,2-Dichlorobenzene (ug/l)																																								0	0	#DIV/0!
1,2-Dichloroethane (ug/l)																																								0	0	#DIV/0!
1,2-Dichloropropane (ug/l)																																								0	0	#DIV/0!
1,3,5-Trichlorobenzene (ug/l)																																								0	0	#DIV/0!
1,3,5-Trimethylbenzene (ug/l)																																								0	0	#DIV/0!
1,3-Dichlorobenzene (ug/l)																																								0	0	#DIV/0!
1,3-Dichloropropane (ug/l)																																								0	0	#DIV/0!
1,4-Dichlorobenzene (ug/l)																																								0	0	#DIV/0!
2,2-Dichloropropane (ug/l)																																								0	0	#DIV/0!
2,3,6-TBA (ug/l)	<10	<10	<10	<10		<10				<10	<10	<10			<10		<10			<10			<10					<10								<10			<10		0	0	#DIV/0!
2,4,5-T (ug/l)	<15	<15	<15	<15		<15				<15	<15	<15			<15		<15			<15			<15					<15								<15			<15		0	0	#DIV/0!
2,4-D (ug/l)	<15	<15	<15	<15		<15				<15	<15	<15			<15		<15			<15			<15					<15								<15			<15		0	0	#DIV/0!
2,4-DB (ug/l)	<20	<20	<20	<20		<20				<20	<20	<20			<20		<20			<20			<20					<20								<20			<20		0	0	#DIV/0!
2,4-Dinitrophenol (ug/l)	<25.0	<25.0	<25.0	<25.0		<25.0				<25.0	<25.0	<25.0			<25.0		<25.0			<25.0			<25.0					<25.0								<25.0			<25.0		0	0	#DIV/0!
2-Chlorotoluene (ug/l)																																								0	0	#DIV/0!
4,6-Dinitro-2-methylphenol (ug/l)	<20.0	<20.0	<20.0	<20.0		<20.0				<20.0	<20.0	<20.0			<20.0		<20.0			<20.0			<20.0					<20.0								<20.0			<20.0		0	0	#DIV/0!
4-Chlorotoluene (ug/l)																																								0	0	#DIV/0!
Aldrin (ug/l)																																								0	0	#DIV/0!
Alkalinity as CaCO3 (mg/l)	6680	6550	5860	6910	6140	6110	6950	6730	7210	6390	1430	4140	4020	4850	4870	4990	3430	4580	3870	3370	5450	4720	4630	4260	4270	2740	4110	4080	5270	5310	5360	4520	4520	4290	4690	4860	5800	4990	4630		1190	7470	4271.37
Ammoniacal Nitrogen (mg/l)	1130	1340	1010	1080	813	797	1010	853	1220	1150	141	993	856	1010	912	922	859	1110	726	693	998	878	745	600	1150	478	1040	1020	933	1140	1060	1040	1130	1040	1180	1150	1390	1190	1030		79.4	1520	798.129
AOX (ug/l)																																								0	0	#DIV/0!
Arsenic (Dissolved) (mg/l)	0.022	0.018	0.017	0.019	0.016	0.016	0.023	0.017	0.023	<0.100	<0.010	0.119	0.13	0.077	0.044	0.144	0.09	0.12	0.038	0.031	0.042	0.126	0.054	0.047	0.147	0.029	0.259	0.214	0.224	0.228	0.196	0.221	0.215	0.208	0.06	0.225	0.236	0.23	0.155		0.003	0.259	0.09812
Azinphos-ethyl (ug/l)																																								0	0	#DIV/0!
Azinphos-methyl (ug/l)																																								0	0	#DIV/0!
Benazolin (ug/l)	<20	<20	<20	<20		<20				<20	<20	<20			<20		<20			<20			<20					<20								<20			<20		0	0	#DIV/0!
Bentazone (ug/l)	<10	<10	<10	<10		<10				<10	<10	<10			<10		<10			<10			<10					<10								<10			<10		0	0	#DIV/0!
Benzene (ug/l)																																								0	0	#DIV/0!
BOD (5 Day) (mg/l)	155	58.1	150	135	>74.7	157	>74.7	>74.7	35.8	192	<25	49	89.5	141	135	111	94.2	132	68.6	91.1	54.4	104	189	115	190	>74.7	>74.7	148	>74.7	>74.7	10.9	41.4	32.9	118	146	171	201	177	58.5		10.9	201	97.4725
Bromobenzene (ug/l)																																								0	0	#DIV/0!
Bromochloromethane (ug/l)																																								0	0	#DIV/0!
Bromodichloromethane (ug/l)																																								0	0	#DIV/0!
Bromoform (ug/l)																																								0	0	#DIV/0!
Bromomethane (ug/l)																																								0	0	#DIV/0!
Bromoxynil (ug/l)	<15	<15	<15	<15		<15				<15	<15	<15			<15		<15			<15			<15					<15								<15			<15		0	0	#DIV/0!
Cadmium (Dissolved) (mg/l)	0.00123	0.00121	0.00071	0.00086		0.00039				<0.00200	<0.00020	0.00118			0.00093		0.00214			0.0008			0.00087					0.00276								0.00197			0.00163		0.00002	0.00276	0.00103
Calcium (Dissolved) (mg/l)	87	113	90	81		74				65	160	79			80		96			127			104					76								64			66		64	238	125.043
Carbon Tetrachloride (ug/l)																																								0	0	#DIV/0!
Carbophenothion (ug/l)																																								0	0	#DIV/0!
Chlordane-gamma (ng/l)																																								0	0	#DIV/0!
Chlorfenvinphos (ug/l)																																								0	0	#DIV/0!
Chloride (mg/l)	1770	2110	1670	1930	1490	1490	1880	1720	1790	1930	559	1170	1130	1380	1360	1480	1290	1560	1120	1110	1450	1300	1150	986	1460	907	1500	1400	1520	1770	1640	1530	1570	1420	1400	1510	1710	1380	1300		412	2110	1307.2
Chlorobenzene (ug/l)																																								0	0	#DIV/0!
Chloroethane (ug/l)																																								0	0	#DIV/0!
Chloroform (ug/l)																																								0	0	#DIV/0!
Chloromethane (ug/l)																																								0	0	#DIV/0!
Chlorpyralid (ug/l)	<10	<10	<10	<10		<10				<10	<10	<10			<10		<10			<10			<10					<10								<10			<10		0	0	#DIV/0!
Chlorpyriphos (ug/l)																																								0	0	#DIV/0!
Chlorpyriphos-methyl (ug/l)																																								0	0	#DIV/0!
Chlorthalonil (ug/l)																																								0	0	#DIV/0!
Chromium (Dissolved) (mg/l)	0.182	0.13	0.121	0.186	0.161	0.154	0.203	0.192	0.234	0.151	<0.010	0.174	0.189	0.162	0.14	0.169	0.139	0.177	0.118	0.092	0.155	0.157	0.118	0.155	0.197	0.092	0.26	0.242	0.249	0.253	0.249	0.226	0.227	0.219	0.134	0.228	0.265	0.264	0.255		0.001	0.265	0.16468
cis-1,2-dichloroethene (ug/l)																																								0	0	#DIV/0!
cis-1,3-dichloropropene (ug/l)																																								0	0	#DIV/0!
cis-chlordane (ug/l)																																								0	0	#DIV/0!
cis-permethrin (ug/l)																																								0	0	#DIV/0!
COD (mg/l)	2280	2040	1750	2520		2030				2110	223	1490			2030		1470			1230			1530					2090								2050			1940		164	2520	1337.22
Conductivity (uScm-1)	18800	17600	17300	19300	16300	16500	18100	18600	19400	17600	4240	14500	16100	17100	16900	15400	13800	18400	14100	12400	17700	15900	14700	14100	60800	11200	17900	17900	18500	20700	19700	17400	17700	16200	17200	17200	18800	16600	16200		3280	60800	14862.7
Copper (Dissolved) (mg/l)	<0.010	0.031	<0.010	0.013		<0.010				<0.100	<0.010	<0.010			<0.010		0.053			<0.010			<0.010					<0.010								<0.010			<0.010		0.001	0.053	0.0236
Cresols (mg/l)	<0.05	<0.05	<0.05	<0.05		<0.05				0.1	<0.05	0.05			<0.05		<0.05			0.06			<0.05					<0.05								<0.05			<0.05		0.05	0.1	0.065
Cyanide (Total) (mg/l)	0.04	0.02	0.03	0.03		<0.02				0.02	<0.02	0.02			0.03		<0.02			0.02			0.02					0.02								<0.02			0.02		0.02	0.31	0.04692
Diazinon (ug/l)																																								0	0	#DIV/0!
Dibromochloromethane (ug/l)																																								0	0	#DIV/0!
Dibromomethane (ug/l)																																								0	0	#DIV/0!
Dibutyl Tin (ng/l)																																								0	0	#DIV/0!
Dicamba (ug/l)	<20	<20	<20	<20		<20				<20	<20	<20			<20		<20			<20			<20					<20								<20			<20		0	0	#DIV/0!
Dichlobenil (ng/l)																																								0	0	#DIV/0!
Dichlorodifluoromethane (ug/l)																																								0	0	#DIV/0!
Dichloroprop (ug/l)	<10	<10	<10	<10		<10				<10	<10	<10			<10		<10			<10			<10					<10								<10			<10		0	0	#DIV/0!
Dichlorvos (ug/l)																																								0	0	#DIV/0!
Dieldrin (ug/l)																																								0	0	#DIV/0!
Dimethoate (ug/l)																																								0	0	#DIV/0!
Dimethylphenols (mg/l)	0.13	<0.05	0.21	0.24		0.22				0.12	<0.05	0.22			<0.05		0.12			0.27			0.23					0.37								0.66			<0.05		0.12	0.66	0.26083
Endosulfan II (ug/l)																																								0	0	#DIV/0!
Endosulfan sulphate (ug/l)																																								0	0	#DIV/0!
Endosulphan-alpha (ug/l)																																								0	0	#DIV/0!
Endrin (ng/l)																																								0	0	#DIV/0!
Endrin Ketone (ug/l)																																								0	0	#DIV/0!
Ethion (ug/l)																																								0	0	#DIV/0!
Ethylbenzene (ug/l)																																								0	0	#DIV/0!
Etrimphos (ug/l)																																								0	0	#DIV/0!
Fenitrothion (ug/l)																																								0	0	#DIV/0!
Fenthion (ug/l)																																								0	0	#DIV/0!
Fluroxypyr (ug/l)	<15.0	<15.0	<15.0	<15.0		<15.0				<15.0	<15.0	<15.0			<15.0		<15.0			<15.0			<15.0					<15.0								<15.0			<15.0		0	0	#DIV/0!
HCH-alpha (ng/l)																																								0	0	#DIV/0!
HCH-beta (ng/l)																																								0	0	#DIV/0!
HCH-delta (ug/l)																																								0	0	#DIV/0!
HCH-gamma (ng/l)																																								0	0	#DIV/0!
Heptachlor (ug/l)																																								0	0	#DIV/0!
Heptachlor Epoxide (ng/l)																																								0	0	#DIV/0!
Hexachlorobenzene (ug/l)																																								0	0	#DIV/0!
Hexachlorobutadiene (ug/l)																																								0	0	#DIV/0!
Ioxynil (ug/l)	<20	<20	<20	<20		<20				<20	<20	<20			<20		<20			<20			<20					<20								<20			<20		0	0	#DIV/0!
Iron (Dissolved) (mg/l)	4.93	4.24	6.13	5.39		6.51				5.59	0.16	7.31			6.68		6.68			4.95			7.43					9.59								9.25			8.59		0.16	9.59	4.72565
Isodrin (ng/l)																																								0	0	#DIV/0!
iso-propyl benzene (ug/l)																																								0	0	#DIV/0!
Lead (Dissolved) (mg/l)	<0.010	<0.010	0.0046	0.0079	<0.0020	<0.0020	0.0057	<0.0020	0.0087	<0.0200	<0.0020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.006	0.003	<0.0020	0.0034	0.0037	0.0025	0.0048	0.002	<0.0020	<0.0020	0.0026	<0.0020	<0.0020	0.0024	0.0049	0.0033	0.0067	<0.0020	0.0023	0.0031	<0.0020	<0.0020		0.002	0.011	0.00466
m & p xylene (ug/l)																																								0	0	#DIV/0!
Magnesium (Dissolved) (mg/l)	73	72	93	76		89				86	61	42			58		54			59			58					51								48			43		42	93	62.2609
Malathion (ug/l)																																								0	0	#DIV/0!
Manganese (Dissolved) (mg/l)	0.091	0.081	0.123	0.123		0.083				<0.200	0.109	0.191			0.112		0.142			0.143			0.156					0.109								0.084			0.15		0.023	0.233	0.12068
MCPA (ug/l)	<10	<10	<10	<10		<10				<10	<10	<10			<10		<10			<10			<10					<10								<10			<10		0	0	#DIV/0!
MCPB (ug/l)	<10	<10	<10	<10		<10				<10	<10	<10			<10		<10			<10			<10					<10								<10			<10		0	0	#DIV/0!
Mecoprop (ug/l)	145	115	109	98.5		89.6				95.3	109	72.2			106		66.1			71.6			79.1					61.9								43.3			54.9		15.2	152	80.919
Mercury (Dissolved) (mg/l)	<0.00030	<0.00030	<0.00030	<0.00030		<0.00030				<0.00300	<0.00030	<0.00030			0.00035		<0.00030			<0.00030			0.00041					<0.00030								<0.00030			<0.00030		0.00035	0.00041	0.00038
Methacriphos (ug/l)																																								0	0	#DIV/0!
Methoxychlor (ug/l)																																								0	0	#DIV/0!
Mevinphos (ug/l)																																								0	0	#DIV/0!
MTBE (ug/l)																																								0	0	#DIV/0!
Napthalene (ug/l)																																								0	0	#DIV/0!
n-butylbenzene (ug/l)																																								0	0	#DIV/0!
Nickel (Dissolved) (mg/l)	0.232	0.207	0.209	0.227		0.203				0.264	<0.010	0.197			0.203		0.145			0.114			0.141					0.207								0.21			0.174		0.012	0.274	0.14848
Nitrate as N (mg/l)	<2	<2	<2	<2		<2				<2	<0.2	<2			<2		<2			<2			<2					<2								<2			<2		0.2	0.2	0.2
Nitrite as N (mg/l)	<0.1	<0.1	<0.1	<0.1		<0.1				<0.1	0.32	0.17			<0.1		<0.1			<0.1			<0.1					<0.1								<0.1			<0.1		0.17	2.84	1.11
n-propylbenzene (ug/l)																																								0	0	#DIV/0!
o,p-DDD (ug/l)																																								0	0	#DIV/0!
o,p-DDE (ng/l)																																								0	0	#DIV/0!
o,p-DDT (ng/l)																																								0	0	#DIV/0!
o-xylene (ug/l)																																								0	0	#DIV/0!
p,p-DDD (ug/l)																																								0	0	#DIV/0!
p,p-DDE (ng/l)																																								0	0	#DIV/0!
p,p-DDT (ng/l)																																								0	0	#DIV/0!
Parathion-ethyl (ug/l)																																								0	0	#DIV/0!
Parathion-methyl (ug/l)																																								0	0	#DIV/0!

PCB 28 (ug/l)																																									0	0	#DIV/0!
PCB 52 (ug/l)																																									0	0	#DIV/0!
PCB101 (ug/l)																																									0	0	#DIV/0!
PCB118 (ug/l)																																									0	0	#DIV/0!
PCB138 (ug/l)																																									0	0	#DIV/0!
PCB153 (ug/l)																																									0	0	#DIV/0!
PCB180 (ug/l)																																									0	0	#DIV/0!
Pendimethalin (ug/l)																																									0	0	#DIV/0!
Pentachlorobenzene (ug/l)																																									0	0	#DIV/0!
Pentachlorophenol (PCP) (ug/l)	<20.0	<20.0	<20.0	<20.0		<20.0				<20.0	<20.0	<20.0			<20.0		<20.0			<20.0			<20.0					<20.0								<20.0			<20.0		0	0	#DIV/0!
pH (Arbitrary)	7.9	8	7.8	7.9	7.9	7.9	7.9	7.9	8.1	8.1	7.7	7	7.1	7.3	7.3	7.2	7	7	7.2	7.3	7.1	7.2	7.5	7.3	7.3	7.1	7.3	7.1	7.4	7.3	7.2	7.2	7.2	7.3	7.1	7.3	7.4	7.1	7.4		7	8.1	7.44902
Phenol (mg/l)	1.2	0.91	0.62	1.47		1.2				0.96	<0.05	0.12			0.66		<0.05			0.35			0.35					0.28								0.32			0.28		0.06	1.47	0.55875
Phosalone (ug/l)																																									0	0	#DIV/0!
Phosphamidon (ug/l)																																									0	0	#DIV/0!
Phosphate (Total) as P (mg/l)	11.5	9.79	6.68	10	22.6	6.25	39	29.9	35	10.1	0.04	6.13	7.09	9.99	8.48	7.67	5.31	8.86	5.81	4.95	8.32	7.92	5.38	5.38	7.96	13	21.4	8.11	32.8	29.6	55.5	21.7	24.2	7.57	10.4	9.09	11.6	7.99	8.38		0.03	55.5	13.1319
Pirimiphos-ethyl (ug/l)																																									0	0	#DIV/0!
Pirimiphos-methyl (ug/l)																																									0	0	#DIV/0!
p-iso propyl toluene (ug/l)																																									0	0	#DIV/0!
Potassium (Dissolved) (mg/l)	694	707	620	672		649				690	89	562			643		431			367			462					639								586			505		72	799	426.739
Propetamphos (ug/l)																																									0	0	#DIV/0!
Propyzamide (ug/l)																																									0	0	#DIV/0!
sec-butyl benzene (ug/l)																																									0	0	#DIV/0!
Silvex (ug/l)	<10.0	<10.0	<10.0	<10.0		<10.0				<10.0	<10.0	<10.0			<10.0		<10.0			<10.0			<10.0					<10.0								<10.0			<10.0		0	0	#DIV/0!
Sodium (Dissolved) (mg/l)	1680	1650	1580	1600		1650				1710	452	1070			1460		1010			1030			1060					1430								1370			1270		367	1710	1105.83
Styrene (ug/l)																																									0	0	#DIV/0!
Sulphate as SO4 (Dissolved) (mg/l)	155	111	166	166	136	126	152	120	114	119	41	1020			1190		1260			1010			777			1390	2600	2360	1790	1780	1710	1590	1780			1630			1090		24	2600	660.605
Sulphide as S (mg/l)	0.44	<0.02	0.42	0.23		5				9.88	<0.02	0.08			0.11		<0.02			0.18			0.12					<0.02								0.63			0.12		0.02	9.88	1.162
Suspended Solids (mg/l)	<50	8	27	<50		363				510	105	55			<25		32			17			<50					11								<25			<25		8	2790	252.118
Tecnazene (ng/l)																																									0	0	#DIV/0!
tert-butylbenzene (ug/l)																																									0	0	#DIV/0!
Tetrachloroethene (ug/l)																																									0	0	#DIV/0!
Toluene (ug/l)																																									0	0	#DIV/0!
Total Organic Carbon (mg/l)	762	649	591	781		601				664	109	509			570		500			376			510					706								747			632		46.3	781	431.987
Total Oxidised Nitrogen (mg/l)	<2.0	<2.0	<2.0	<2.0		<2.0				<2.0	0.5	<2.0			<2.0		<2.0			<2.0			<2.0					<2.0								<2.0			<2.0		0.2	3.1	1.26667
Total Phenols (mg/l)	1.43	1.06	0.93	1.81		1.52				1.23	<0.20	0.44			0.81		0.27			0.73			0.68					0.75								1.08			0.43		0.21	1.81	0.83118
TPH Total Petroleum Hydrocarbons (mg/l)																																									0	0	#DIV/0!
trans-1,2-dichloroethene (ug/l)																																									0	0	#DIV/0!
trans-1,3-dichloropropene (ug/l)																																									0	0	#DIV/0!
trans-permethrin (ug/l)																																									0	0	#DIV/0!
Triadimefon (ug/l)																																									0	0	#DIV/0!
Triallate (ng/l)																																									0	0	#DIV/0!
Triazaphos (ug/l)																																									0	0	#DIV/0!
Tributyl Tin (mg/l)																																									0	0	#DIV/0!
Trichlopyr (ug/l)	<15	<15	<15	<15		<15				<15	<15	<15			<15		<15			<15			<15					<15								<15			<15		0	0	#DIV/0!
Trichloroethene (ug/l)																																									0	0	#DIV/0!
Trichlorofluoromethane (ug/l)																																									0	0	#DIV/0!
Trifluralin (ng/l)																																									0	0	#DIV/0!
Trimethylphenols (mg/l)	<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	0	#DIV/0!
Triphenyltin (ug/l)																																									0	0	#DIV/0!
Vinyl Chloride (ug/l)																																									0	0	#DIV/0!
Volatile Suspended Solids (mg/l)	25	15	28	20		174				233	22	27			19		22			23			20					32								24			20		12	640	66.3478
Xylenes, Total (ug/l)																																									0	0	#DIV/0!
Zinc (Dissolved) (mg/l)	0.134	0.048	0.114	0.144	0.024	0.031	0.133	0.103	0.109	0.253	<0.020	0.053	0.05	0.102	0.075	0.042	0.054	0.072	0.075	0.099	0.093	0.059	0.064	0.063	0.048	0.035	0.045	0.064	0.048	0.047	0.083	0.187	0.076	0.479	0.063	0.052	0.148	0.07	0.054		0.003	0.479	0.08184

Permeate data for Dogsthorpe - post RO Treatment																													
Parameter	28/01/2021	24/02/2021	25/03/2021	22/04/2021	09/06/2021	18/08/2021	20/10/2021	13/12/2021	27/01/2022	23/02/2022	17/03/2022	28/04/2022	30/05/2022	04/07/2022	22/08/2022	28/09/2022	21/10/2022	28/11/2022	19/12/2022	26/01/2023	27/02/2023	29/03/2023	27/04/2023	30/05/2023	29/06/2023	27/07/2023	24/08/2023	27/09/2023
1,1,1,2-Tetrachloroethane (ug/l)						<1									<1												<1	
1,1,1-Trichloroethane (ug/l)						<1									<1												<1	
1,1,2,2-Tetrachloroethane (ug/l)						<1									<1												<1	
1,1,2-Trichloroethane (ug/l)						<1									<1												<1	
1,1-Dichloroethane (ug/l)						<1									<1												<1	
1,1-Dichloroethene (ug/l)						<1									<1												<1	
1,1-Dichloropropene (ug/l)						<1									<1												<1	
1,2,3,4-Tetrachlorobenzene (ug/l)						<0.05									<0.01												<0.20	
1,2,3-Trichlorobenzene (ug/l)						<5									<5												<5	
1,2,3-Trichloropropane (ug/l)						<1									<1												<1	
1,2,4-Trichlorobenzene (ug/l)						<5									<5												<5	
1,2,4-Trimethylbenzene (ug/l)						<1									<1												<1	
1,2-Dibromo-3-chloropropane (ug/l)						<5									<5												<5	
1,2-Dibromoethane (ug/l)						<1									<1												<1	
1,2-Dichlorobenzene (ug/l)						<5									<5												<5	
1,2-Dichloroethane (ug/l)						<1									<1												<1	
1,2-Dichloropropane (ug/l)						<1									<1												<1	
1,3,5-Trichlorobenzene (ug/l)						<0.05									<0.01												<0.20	
1,3,5-Trimethylbenzene (ug/l)						<1									<0.6												<0.6	
1,3-Dichlorobenzene (ug/l)						<1									<1												<1	
1,3-Dichloropropane (ug/l)						<1									<1												<1	
1,4-Dichlorobenzene (ug/l)						<1									<1												<1	
2,2-Dichloropropane (ug/l)						<1									<1												<1	
2,3,6-TBA (ug/l)		<10				<10		<2		<2			<2		<10			<2			<2			<2			<2	
2,4,5-T (ug/l)		<15				<15		<3		<3			<3		<15			<3			<3			<3			<3	
2,4-D (ug/l)		<15				<15		<3		<3			<3		<15			<3			<3			<3			<3	
2,4-DB (ug/l)		<20				<20		<4		<4			<4		<20			<4			<4			<4			<4	
2,4-Dinitrophenol (ug/l)		<25.0				<25.0		<5.00		<5.00			<5.00		<25.0			<5.00			<5.00			<5.00			<5.00	
2-Chlorotoluene (ug/l)						<1									<1												<1	
4,6-Dinitro-2-methylphenol (ug/l)		<20.0				<20.0		<4.00		<4.00			<4.00		<20.0			<4.00			<4.00			<4.00			<4.00	
4-Chlorotoluene (ug/l)						<1									<1												<1	
Aldrin (ug/l)						<0.05									<0.01												<0.20	
Alkalinity as CaCO3 (mg/l)	870	730	1130	1150	753	782	924	764	1140	962	1210	758	760	498	578	777	645	474	851	615	389	841	559	539	472	404	477	451
Ammoniacal Nitrogen (mg/l)	1.4	0.8	0.6	0.7	1.8	1.2	1.5	0.8	1.2	0.8	0.9	0.9	1.3	1.8	1.5	1	1	0.6	0.6	0.5	1.9	1.1	4	1.3	1.8	1.2	2.2	1.5
AOX (ug/l)																							23	<10	88	31	138	<10
Arsenic (Dissolved) (mg/l)		<0.001				0.001		<0.001		<0.001	<0.001	<0.001	0.002	0.003	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.001
Azinphos-ethyl (ug/l)						<0.05									<0.01												<0.20	
Azinphos-methyl (ug/l)						<0.05									<0.01												<0.2	
Benazolin (ug/l)		<20				<20		<4		<4			<4		<20			<4			<4			<4			<4	
Bentazone (ug/l)		<10				<10		<2		<2			<2		<10			<2			<2			<2			<2	
Benzene (ug/l)						<1									<1												<1	
BOD (5 Day) (mg/l)	<1	1.2	<1	1.5	<66.7	<40	<25	<40	<20	<10	<6.7	<4	<2.5	<2	<1.3	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1
Bromobenzene (ug/l)						<1									<1												<1	
Bromochloromethane (ug/l)						<1									<1												<1	
Bromodichloromethane (ug/l)						<1									<1												<1	
Bromoform (ug/l)						<1									<1												<1	
Bromomethane (ug/l)						<5									<5												<5	
Bromoxynil (ug/l)		<15				<15		<3		<3			<3		<15			<3			<3			<3			<3	
Cadmium (Dissolved) (mg/l)	<0.00002	<0.00002	<0.00002	<0.00002	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002			<0.00002		0.00021			0.00006			<0.00002			<0.00002			<0.00002	
Calcium (Dissolved) (mg/l)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			<1		<1			<1			<1			<1			<1	
Carbon Tetrachloride (ug/l)						<1									<1												<1	
Carbophenothion (ug/l)						<0.05									<0.01												<0.2	
Chlordane-gamma (ng/l)						<50									<10												<200	
Chlorfenvinphos (ug/l)						<0.05									<0.01												<0.2	
Chloride (mg/l)	<1	1	<1	<1	<1	<1	<1	<1	1	<1	<1	2	<1	<1	<1	<1	<1	<1	1	<1	3	<1	5	1	2	<1	<1	<1
Chlorobenzene (ug/l)						<1									<1												<1	
Chloroethane (ug/l)						<5									<5												<5	
Chloroform (ug/l)						<5									<5												<5	
Chloromethane (ug/l)						<1									<1												<1	
Chlorpyralid (ug/l)		<10				<10		<2		<2			<2		<10			<2			<2			<2			<2	
Chlorpyriphos (ug/l)						<0.05									<0.01												<0.20	
Chlorpyriphos-methyl (ug/l)						<0.05									<0.01												<0.20	
Chlorthalonil (ug/l)						<0.05									<0.01												<0.20	
Chromium (Dissolved) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.001	0.003	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
cis-1,2-dichloroethene (ug/l)						<5									<1												<1	
cis-1,3-dichloropropene (ug/l)						<1									<1												<1	
cis-chlordane (ug/l)						<0.05									<0.01												<0.20	
cis-permethrin (ug/l)						<0.05									<0.01												<0.20	
COD (mg/l)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5			<5		<5			<5			<5		<5	<5	<5	<5	<5	<5
Conductivity (uScm-1)	1550	1540	1540	2130	1410	1420	1640	1510	1930	2500	2090	1390	2860	872	1090	1730	1160	962	1550	1100	683	1460	989	948	917	780	960	830
Copper (Dissolved) (mg/l)	0.001	<0.001	<0.001	0.003	0.003	<0.001	0.003	0.002	0.01	0.006			<0.001		0.002			0.002			<0.001			<0.001			<0.001	
Cresols (mg/l)		<0.05				<0.05		<0.05		<0.05			<0.05		<0.05			<0.05			0.37			<0.05			<0.05	
Cyanide (Total) (mg/l)		<0.02				<0.02		<0.02		<0.02			<0.02		<0.02			<0.02			0.03			<0.02			<0.02	
Diazinon (ug/l)						<0.05									<0.01												<0.2	
Dibromochloromethane (ug/l)						<1									<1												<1	
Dibromomethane (ug/l)						<1									<1												<1	
Dibutyl Tin (ng/l)						<200									<200												<400	
Dicamba (ug/l)		<20				<20		<4		<4			<4		<20			<4			<4			<4			<4	
Dichlobenil (ng/l)						<50									<10												<200	
Dichlorodifluoromethane (ug/l)						<1									<1												<1	
Dichloroprop (ug/l)		<10				<10		<2		<2			<2		<10			<2			<2			<2			<2	
Dichlorvos (ug/l)						<0.05									<0.01												<0.2	
Dieldrin (ug/l)						<0.05									<0.01												<0.20	
Dimethoate (ug/l)						<0.05									<0.01												<0.2	
Dimethylphenols (mg/l)		<0.05				<0.05		<0.05		<0.05			<0.05		<0.05			<0.05			0.36			<0.05			<0.05	
Endosulfan II (ug/l)						<0.05									<0.01												<0.20	
Endosulfan sulphate (ug/l)						<0.05									<0.01												<0.20	
Endosulphan-alpha (ug/l)						<0.05									<0.01												<0.2	
Endrin (ng/l)						<50									<10												<200	
Endrin Ketone (ug/l)						<0.05									<0.01												<0.20	
Ethion (ug/l)						<0.05									<0.01												<0.20	
Ethylbenzene (ug/l)						<1									<0.5												<0.5	
Etrimphos (ug/l)						<0.05									<0.01												<0.20	
Fenitrothion (ug/l)						<0.05									<0.01												<0.2	
Fenthion (ug/l)						<0.05									<0.01												<0.2	
Fluroxypyr (ug/l)		<15.0				<15.0		<3.00		<3.00			<3.00		<15.0			<3.00			<3.00			<3.00			<3.00	
HCH-alpha (ng/l)						<50									<10												<200	

HCH-beta (ng/l)						<50									<10													<200	
HCH-delta (ug/l)						<0.05									<0.01													<0.20	
HCH-gamma (ng/l)						<50									<10													<200	
Heptachlor (ug/l)						<0.05									<0.01													<0.20	
Heptachlor Epoxide (ng/l)						<50									<10													<200	
Hexachlorobenzene (ug/l)						<0.05									<0.01													<0.20	
Hexachlorobutadiene (ug/l)						<5									<5													<5	
Ioxynil (ug/l)		<20				<20		<4		<4				<4	<20			<4				<4			<4			<4	
Iron (Dissolved) (mg/l)	<0.01	<0.01	<0.01	<0.01	0.07	0.01	<0.01	<0.01	<0.01	0.01			0.02		<0.01			<0.01			0.01			<0.01			<0.01	
Isodrin (ng/l)						<50									<10													<200	
iso-propyl benzene (ug/l)						<1									<1													<1	
Lead (Dissolved) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.010
m & p xylene (ug/l)						<1									<1													<1	
Magnesium (Dissolved) (mg/l)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			<1		<1			<1			<1			<1			<1	
Malathion (ug/l)						<0.05									<0.01													<0.20	
Manganese (Dissolved) (mg/l)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002			<0.002		<0.002			<0.002			<0.002			<0.002			<0.002	
MCPA (ug/l)		<10				<10		<2		<2			<2		<10			<2			<2			<2			<2	
MCPB (ug/l)		<10				<10		<2		<2			<2		<10			<2			<2			<2			<2	
Mecoprop (ug/l)		<10				<10		<2		<2			<2		<10			<2			<2			<2			<2	
Mercury (Dissolved) (mg/l)	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003			<0.00003		<0.00003			<0.00003			<0.00003			<0.00003			<0.00003	
Methacriphos (ug/l)						<0.05									<0.01													<0.20	
Methoxychlor (ug/l)						<0.05									<0.01													<0.20	
Mevinphos (ug/l)						<0.05									<0.01													<0.2	
MTBE (ug/l)						<1									<1													<1	
Napthalene (ug/l)						<5									<5													<5	
n-butylbenzene (ug/l)						<1									<1													<1	
Nickel (Dissolved) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001		<0.001			<0.001			<0.001			<0.001			<0.001	
Nitrate as N (mg/l)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2		<0.2			<0.2			<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nitrite as N (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.09	0.01	<0.01	<0.01			<0.01		<0.01			<0.01			<0.01			<0.01			<0.01	
n-propylbenzene (ug/l)						<1									<1													<1	
o,p-DDD (ug/l)						<0.05									<0.01													<0.20	
o,p-DDE (ng/l)						<50									<10													<200	
o,p-DDT (ng/l)						<50									<10													<200	
o-xylene (ug/l)						<1									<1													<1	
p,p-DDD (ug/l)						<0.05									<0.01													<0.20	
p,p-DDE (ng/l)						<50									<10													<200	
p,p-DDT (ng/l)						<50									<10													<200	
Parathion-ethyl (ug/l)						<0.05									<0.01													<0.20	
Parathion-methyl (ug/l)						<0.05									<0.01													<0.2	
PCB 28 (ug/l)						<0.01									<0.01													<0.01	
PCB 52 (ug/l)						<0.01									<0.01													<0.01	
PCB101 (ug/l)						<0.01									<0.01													<0.01	
PCB118 (ug/l)						<0.01									<0.01													<0.01	
PCB138 (ug/l)						<0.01									<0.01													<0.01	
PCB153 (ug/l)						<0.01									<0.01													<0.01	
PCB180 (ug/l)						<0.01									<0.01													<0.01	
Pendimethalin (ug/l)						<0.05									<0.01													<0.20	
Pentachlorobenzene (ug/l)						<0.05									<0.01													<0.20	
Pentachlorophenol (PCP) (ug/l)		<20.0				<20.0		<4.00		<4.00			<4.00		<20.0			<4.00			<4.00			<4.00			<4.00	
pH (Arbitrary)	6.8	7.4	7.1	8.8	7.5	7.3	7	6.9	7.1	6.7	6.7	6.7	6.7	6.7	6.6	6.4	6.7	6.5	6.4	6.2	6.5	6.3	6.5	6.7	6.7	6.5	6.7	6.6		
Phenol (mg/l)		<0.05				<0.05		<0.05		<0.05			<0.05		<0.05			<0.05			<0.05			<0.05			<0.05	
Phosalone (ug/l)						<0.05									<0.01													<0.20	
Phosphamidon (ug/l)						<0.05									<0.01													<0.20	
Phosphate (Total) as P (mg/l)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01	<0.01		
Pirimiphos-ethyl (ug/l)						<0.05									<0.01													<0.20	
Pirimiphos-methyl (ug/l)						<0.05									<0.01													<0.2	
p-iso propyl toluene (ug/l)						<1									<1													<1	
Potassium (Dissolved) (mg/l)	<1	<1	1	1	5	<1	<1	<1	2	1			1		1			<1			<1			<1			<1	
Propetamphos (ug/l)						<0.05									<0.01													<0.2	
Propyzamide (ug/l)						<0.05									<0.01													<0.20	
sec-butyl benzene (ug/l)						<1									<1													<1	
Silvex (ug/l)		<10.0				<10.0		<2.00		<2.00			<2.00		<10.0			<2.00			<2.00			<2.00			<2.00	
Sodium (Dissolved) (mg/l)	383	340	389	480	381	340	353	357	500	411			338		287			238			887			247			226	
Styrene (ug/l)						<1									<1													<1	
Sulphate as SO4 (Dissolved) (mg/l)	<3	<3	<3	<3	10	<3	<3	<3	<3	<3			<3		<3			<3			8			<3			<3	
Sulphide as S (mg/l)	<0.02	0.04	0.06	<0.02	0.37	0.03	<0.02	<0.02	<0.02	3.22			<0.02		<0.02			<0.02			<0.02			<0.02			0.02	
Suspended Solids (mg/l)	<5	10	<5	<5	<5	<50	<5	<5	<5	<10			<5		<5			<5			<5			<5			7	
Tecnazene (ng/l)						<50									<10													<200	
tert-butylbenzene (ug/l)						<1									<1													<1	
Tetrachloroethene (ug/l)						<5									<5													<5	
Toluene (ug/l)						<1									<1													<1	
Total Organic Carbon (mg/l)	0.67	0.31	0.63	<0.20	0.35	0.28	0.48	0.71	0.64	0.6			0.45		<0.40			0.6			0.77			0.73			0.65	
Total Oxidised Nitrogen (mg/l)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2		<0.2			<0.2			<0.2			<0.2			<0.2	
Total Phenols (mg/l)		<0.20				<0.20		<0.20		<0.20			<0.20		<0.20			<0.20			0.83			<0.20			<0.20	
TPH Total Petroleum Hydrocarbons (mg/l)						<1.5									<0.3													<0.3	
trans-1,2-dichloroethene (ug/l)						<1									<1													<1	
trans-1,3-dichloropropene (ug/l)						<1									<1													<1	
trans-permethrin (ug/l)						<0.05									<0.01													<0.20	
Triadimefon (ug/l)						<0.05									<0.01													<0.20	
Triallate (ng/l)						<50									<10													<200	
Triazaphos (ug/l)						<0.05									<0.01													<0.2	
Tributyl Tin (mg/l)						<0.0002									<0.0002													<0.0004	
Trichlopyr (ug/l)		<15				<15		<3		<3			<3		<15			<3			<3			<3			<3	
Trichloroethene (ug/l)						<5									<5													<5	
Trichlorofluoromethane (ug/l)						<1									<1													<1	
Trifluralin (ng/l)						<50									<10													<200	
Trimethylphenols (mg/l)		<0.05				<0.05		<0.05		<0.05			<0.05		<0.05			<0.05			<0.05			<0.05			<0.05	
Triphenyltin (ug/l)						<0.5									<0.5													<1	
Vinyl Chloride (ug/l)						<1									<1													<1	
Volatile Suspended Solids (mg/l)	9	13	<5	7	<5	<50	6	<5	<5	<10			<5		<5			87			<5			<5			16	
Xylenes, Total (ug/l)						<2									<2													<2	
Zinc (Dissolved) (mg/l)	<0.002	0.007	<0.002	0.002	0.004	0.004	0.004	<0.002	0.002	<0.002	0.003	<0.002	<0.002	0.012	0.018	0.005	0.004	0.004	0.009	0.009	0.003	0.009	<0.002	0.009	0.006	0.012	0.006	0.006		

Parameter	18/01/2024	05/03/2024	10/04/2024	08/05/2024	16/07/2024	05/08/2024	13/09/2024	15/10/2024	05/11/2024	02/12/2024	09/01/2025	07/02/2025	03/03/2025	01/04/2025	01/05/2025	06/05/2025	13/05/2025	03/06/2025	03/06/2025	02/07/2025	05/08/2025	03/09/2025	02/10/2025	14/10/2025		Minimum	Maximum	Average
1,1,1,2-Tetrachloroethane (ug/l)						<1															<1					0	0	#DIV/0!
1,1,1-Trichloroethane (ug/l)						<1															<1					0	0	#DIV/0!
1,1,2,2-Tetrachloroethane (ug/l)						<1															<1					0	0	#DIV/0!
1,1,2-Trichloroethane (ug/l)						<1															<1					0	0	#DIV/0!
1,1-Dichloroethane (ug/l)						<1															<1					0	0	#DIV/0!
1,1-Dichloroethene (ug/l)						<1															<1					0	0	#DIV/0!
1,1-Dichloropropene (ug/l)						<1															<1					0	0	#DIV/0!
1,2,3,4-Tetrachlorobenzene (ug/l)						<0.01															<0.01					0	0	#DIV/0!
1,2,3-Trichlorobenzene (ug/l)						<5															<5					0	0	#DIV/0!
1,2,3-Trichloropropane (ug/l)						<1															<1					0	0	#DIV/0!
1,2,4-Trichlorobenzene (ug/l)						<5															<5					0	0	#DIV/0!
1,2,4-Trimethylbenzene (ug/l)						<1															<1					0	0	#DIV/0!
1,2-Dibromo-3-chloropropane (ug/l)						<5															<5					0	0	#DIV/0!
1,2-Dibromoethane (ug/l)						<1															<1					0	0	#DIV/0!
1,2-Dichlorobenzene (ug/l)						<5															<5					0	0	#DIV/0!
1,2-Dichloroethane (ug/l)						<1															<1					0	0	#DIV/0!
1,2-Dichloropropane (ug/l)						<1															<1					0	0	#DIV/0!
1,3,5-Trichlorobenzene (ug/l)						<0.01															<0.01					0	0	#DIV/0!
1,3,5-Trimethylbenzene (ug/l)						<0.6															<0.6					0	0	#DIV/0!
1,3-Dichlorobenzene (ug/l)						<1															<1					0	0	#DIV/0!
1,3-Dichloropropane (ug/l)						<1															<1					0	0	#DIV/0!
1,4-Dichlorobenzene (ug/l)						<1															<1					0	0	#DIV/0!
2,2-Dichloropropane (ug/l)						<1															<1					0	0	#DIV/0!
2,3,6-TBA (ug/l)	<2			<2		<2			<10			<2				<2					<2			<2		0	0	#DIV/0!
2,4,5-T (ug/l)	<3			<3		<3			<15			<3				<3					<3			<3		0	0	#DIV/0!
2,4-D (ug/l)	<3			<3		<3			<15			<3				<3					<3			<3		0	0	#DIV/0!
2,4-DB (ug/l)	<4			<4		<4			<20			<4				<4					<4			<4		0	0	#DIV/0!
2,4-Dinitrophenol (ug/l)	<5.00			<5.00		<5.00			<25.0			<5.00				<5.00					<5.00			<5.00		0	0	#DIV/0!
2-Chlorotoluene (ug/l)						<1															<1					0	0	#DIV/0!
4,6-Dinitro-2-methylphenol (ug/l)	<4.00			<4.00		<4.00			<20.0			<4.00				<4.00					<4.00			<4.00		0	0	#DIV/0!
4-Chlorotoluene (ug/l)						<1															<1					0	0	#DIV/0!
Aldrin (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Alkalinity as CaCO3 (mg/l)	368	404	485	460	437	623	751	603	498	502	405	360	252	532	959	903	742	621	609	802	635	441	372	379		252	1210	647.0384615
Ammoniacal Nitrogen (mg/l)	0.5	0.6	1.1	1.3	1.5	1.9	1.4	0.5	0.7	0.8	0.4	0.4	0.6	0.9	2.9	2	3.7	2.2	2.2	1.9	0.7	0.7	0.3	0.7		0.3	4	1.265384615
AOX (ug/l)	39	54	<10	17	30	25	286	4320	13	<10	58	15	15	<1000		117			839	1760	78	50	67	170		13	4320	374.2272727
Arsenic (Dissolved) (mg/l)	<0.001	<0.001	<0.001	<0.001	0.003	0.02	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.010	0.008	0.003	0.01	0.005	0.005	<0.001	<0.001	<0.001	<0.001	<0.010		0.001	0.02	0.004642857
Azinphos-ethyl (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Azinphos-methyl (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Benazolin (ug/l)	<4			<4		<4			<20			<4				<4					<4			<4		0	0	#DIV/0!
Bentazone (ug/l)	<2			<2		<2			<10			<2				<2					<2			<2		0	0	#DIV/0!
Benzene (ug/l)						<1															<1					0	0	#DIV/0!
BOD (5 Day) (mg/l)	<1	<1	<1	<1	<1	1.8	<1	<1	2.4	<1	<1	<1	<1	<1	<6.7	<1	7.3	<2	<1	<1	<1	1.3	<1	<1		1	7.3	2.357142857
Bromobenzene (ug/l)						<1															<1					0	0	#DIV/0!
Bromochloromethane (ug/l)						<1															<1					0	0	#DIV/0!
Bromodichloromethane (ug/l)						<1															<1					0	0	#DIV/0!
Bromoform (ug/l)						<1															<1					0	0	#DIV/0!
Bromomethane (ug/l)						<5															<5					0	0	#DIV/0!
Bromoxynil (ug/l)	<3			<3		<3			<15			<3				<3					<3			<3		0	0	#DIV/0!
Cadmium (Dissolved) (mg/l)	<0.00002			0.00003		<0.00020			<0.00002			<0.00002				<0.00002					<0.00002			<0.00020		0.00002	0.00021	0.00008
Calcium (Dissolved) (mg/l)	<1			<1		<1			<1			<1				<1					<1			<1		0	0	#DIV/0!
Carbon Tetrachloride (ug/l)						<1															<1					0	0	#DIV/0!
Carbophenothion (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Chlordane-gamma (ng/l)						<10															<10					0	0	#DIV/0!
Chlorfenvinphos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Chloride (mg/l)	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	2	<1	<1	13	1	2	3	4	<1	2	1	1	<1	<1		1	13	2.611111111
Chlorobenzene (ug/l)						<1															<1					0	0	#DIV/0!
Chloroethane (ug/l)						<5															<5					0	0	#DIV/0!
Chloroform (ug/l)						<5															<5					0	0	#DIV/0!
Chloromethane (ug/l)						<1															<1					0	0	#DIV/0!
Chlorpyralid (ug/l)	<2			<2		<2			<10			<2				<2					<2			<2		0	0	#DIV/0!
Chlorpyriphos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Chlorpyriphos-methyl (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Chlorthalonil (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Chromium (Dissolved) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.010	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.010		0.001	0.004	0.0025
cis-1,2-dichloroethene (ug/l)						<1															<1					0	0	#DIV/0!
cis-1,3-dichloropropene (ug/l)						<1															<1					0	0	#DIV/0!
cis-chlordane (ug/l)						<0.01															<0.01					0	0	#DIV/0!
cis-permethrin (ug/l)						<0.01															<0.01					0	0	#DIV/0!
COD (mg/l)	<5	<5	<5	8	<5	6	<5	<5	<5	<5	<5	<5	<5	6	<5	8	5	10	<5	<5	<5	8	<5	<5		5	10	7.285714286
Conductivity (uScm-1)	727	826	929	849	837	1110	1380	1100	882	915	738	645	475	1060	1640	1590	1320	1080	1100	1350	1150	814	687	680		475	2860	1219.711538
Copper (Dissolved) (mg/l)	0.001			<0.001		0.048			<0.001			<0.001				<0.001					<0.001			<0.010		0.001	0.048	0.007363636
Cresols (mg/l)	<0.05			<0.05		<0.05			<0.05			<0.05				<0.05					0.61			<0.05		0.37	0.61	0.49
Cyanide (Total) (mg/l)	<0.02			<0.02		<0.02			<0.02			<0.02				<0.02					<0.02			<0.02		0.03	0.03	0.03
Diazinon (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Dibromochloromethane (ug/l)						<1															<1					0	0	#DIV/0!
Dibromomethane (ug/l)						<1															<1					0	0	#DIV/0!
Dibutyl Tin (ng/l)						<20															<200					0	0	#DIV/0!
Dicamba (ug/l)	<4			<4		<4			<20			<4				<4					<4			<4		0	0	#DIV/0!
Dichlobenil (ng/l)						<10															<10					0	0	#DIV/0!
Dichlorodifluoromethane (ug/l)						<1															<1					0	0	#DIV/0!
Dichloroprop (ug/l)	<2			<2		<2			<10			<2				<2					<2			<2		0	0	#DIV/0!
Dichlorvos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Dieldrin (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Dimethoate (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Dimethylphenols (mg/l)	<0.05			<0.05		0.44			<0.05			<0.05				0.49					<0.05			<0.05		0.36	0.49	0.43
Endosulfan II (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Endosulfan sulphate (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Endosulphan-alpha (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Endrin (ng/l)						<10															<10					0	0	#DIV/0!
Endrin Ketone (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Ethion (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Ethylbenzene (ug/l)						<0.5															<0.5					0	0	#DIV/0!
Etrimphos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Fenitrothion (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Fenthion (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Fluroxypyr (ug/l)	<3.00			<3.00		<3.00			<15.0			<3.00				<3.00					<3.00			<3.00		0	0	#DIV/0!
HCH-alpha (ng/l)						<10															<10					0	0	#DIV/0!

HCH-beta (ng/l)						<10															<10					0	0	#DIV/0!
HCH-delta (ug/l)						<0.01															<0.01					0	0	#DIV/0!
HCH-gamma (ng/l)						<10															<10					0	0	#DIV/0!
Heptachlor (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Heptachlor Epoxide (ng/l)						<10															<10					0	0	#DIV/0!
Hexachlorobenzene (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Hexachlorobutadiene (ug/l)						<5															<5					0	0	#DIV/0!
Ioxynil (ug/l)	<4			<4		<4			<20			<4				<4					<4			<4		0	0	#DIV/0!
Iron (Dissolved) (mg/l)	<0.01			0.01		0.01			<0.01			0.01				0.01					<0.01			0.01		0.01	0.07	0.017
Isodrin (ng/l)						<10															<10					0	0	#DIV/0!
iso-propyl benzene (ug/l)						<1															<1					0	0	#DIV/0!
Lead (Dissolved) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.010	<0.0020	<0.0002	0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0020	<0.0002	<0.0002	<0.0002	0.0009	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0020		0.0002	0.0009	0.0005
m & p xylene (ug/l)						<1															<1					0	0	#DIV/0!
Magnesium (Dissolved) (mg/l)	<1			<1		<1			<1			<1				<1					<1			<1		0	0	#DIV/0!
Malathion (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Manganese (Dissolved) (mg/l)	<0.002			<0.002		<0.020			<0.002			<0.002				<0.002					<0.002			<0.020		0	0	#DIV/0!
MCPA (ug/l)	<2			<2		<2			<10			<2				<2					<2			<2		0	0	#DIV/0!
MCPB (ug/l)	<2			<2		<2			<10			<2				<2					<2			<2		0	0	#DIV/0!
Mecoprop (ug/l)	<2			<2		<2			<10			<2				<2					<2			<2		0	0	#DIV/0!
Mercury (Dissolved) (mg/l)	<0.00003			<0.00003		<0.00030			<0.00003			<0.00003				<0.00003					<0.00003			0.0031		0.0031	0.0031	0.0031
Methacriphos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Methoxychlor (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Mevinphos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
MTBE (ug/l)						<1															<1					0	0	#DIV/0!
Napthalene (ug/l)						<5															<5					0	0	#DIV/0!
n-butylbenzene (ug/l)						<1															<1					0	0	#DIV/0!
Nickel (Dissolved) (mg/l)	<0.001			<0.001		0.02			0.002			<0.001				<0.001					<0.001			<0.010		0.002	0.02	0.011
Nitrate as N (mg/l)	0.4	1.2	0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	0.6	<0.2	0.2	1.3	0.8	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	0.3	<0.2	0.2		0.2	1.3	0.536363636
Nitrite as N (mg/l)	<0.01			<0.01		<0.01			<0.01			<0.01				<0.01					<0.01			<0.01		0.01	0.09	0.05
n-propylbenzene (ug/l)						<1															<1					0	0	#DIV/0!
o,p-DDD (ug/l)						<0.01															<0.01					0	0	#DIV/0!
o,p-DDE (ng/l)						<10															<10					0	0	#DIV/0!
o,p-DDT (ng/l)						<10															<10					0	0	#DIV/0!
o-xylene (ug/l)						<1															<1					0	0	#DIV/0!
p,p-DDD (ug/l)						<0.01															<0.01					0	0	#DIV/0!
p,p-DDE (ng/l)						<10															<10					0	0	#DIV/0!
p,p-DDT (ng/l)						<10															<10					0	0	#DIV/0!
Parathion-ethyl (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Parathion-methyl (ug/l)						<0.01															<0.01					0	0	#DIV/0!
PCB 28 (ug/l)						<0.01															<0.01					0	0	#DIV/0!
PCB 52 (ug/l)						<0.01															<0.01					0	0	#DIV/0!
PCB101 (ug/l)						<0.01															<0.01					0	0	#DIV/0!
PCB118 (ug/l)						<0.01															<0.01					0	0	#DIV/0!
PCB138 (ug/l)						<0.01															<0.01					0	0	#DIV/0!
PCB153 (ug/l)						<0.01															<0.01					0	0	#DIV/0!
PCB180 (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Pendimethalin (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Pentachlorobenzene (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Pentachlorophenol (PCP) (ug/l)	<4.00			<4.00		<4.00			<20.0			<4.00				<4.00					<4.00			<4.00		0	0	#DIV/0!
pH (Arbitrary)	6.5	6.4	6.4	6.6	6.6	6.6	6.6	6.8	7	6.5	6.5	6.8	6.5	6.6	6.5	6.7	6.7	6.6	6.6	6.7	6.7	6.5	6.5	6.5		6.2	8.8	6.713461538
Phenol (mg/l)	<0.05			<0.05		<0.05			<0.05			<0.05				<0.05					<0.05			<0.05		0	0	#DIV/0!
Phosalone (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Phosphamidon (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Phosphate (Total) as P (mg/l)	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	0.04	<0.01	<0.01	0.17	0.03	0.01	<0.03	<0.03	0.02	0.03	0.01	<0.01	<0.01	<0.01		0.01	0.17	0.034615385
Pirimiphos-ethyl (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Pirimiphos-methyl (ug/l)						<0.01															<0.01					0	0	#DIV/0!
p-iso propyl toluene (ug/l)						<1															<1					0	0	#DIV/0!
Potassium (Dissolved) (mg/l)	<1			<1		2			<1			<1				2					<1			<1		1	5	1.777777778
Propetamphos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Propyzamide (ug/l)						<0.01															<0.01					0	0	#DIV/0!
sec-butyl benzene (ug/l)						<1															<1					0	0	#DIV/0!
Silvex (ug/l)	<2.00			<2.00		<2.00			<10.0			<2.00				<2.00					<2.00			<2.00		0	0	#DIV/0!
Sodium (Dissolved) (mg/l)	182			204		273			219			150				393					279			164		150	887	334.2083333
Styrene (ug/l)						<1															<1					0	0	#DIV/0!
Sulphate as SO4 (Dissolved) (mg/l)	<3			<3		3			<3			<3			3	4	4	<3			<3			<3		3	10	5.333333333
Sulphide as S (mg/l)	<0.02			<0.02		<0.02			<0.02			<0.02				<0.02					<0.02			<0.02		0.02	3.22	0.623333333
Suspended Solids (mg/l)	6			<5		6			<5			<5				<10					<5			<5		6	10	7.25
Tecnazene (ng/l)						<10															<10					0	0	#DIV/0!
tert-butylbenzene (ug/l)						<1															<1					0	0	#DIV/0!
Tetrachloroethene (ug/l)						<5															<5					0	0	#DIV/0!
Toluene (ug/l)						<1															<1					0	0	#DIV/0!
Total Organic Carbon (mg/l)	0.69			0.82		1.98			0.68			0.48				1.96					0.81			0.9		0.28	1.98	0.735909091
Total Oxidised Nitrogen (mg/l)	0.4			<0.2		<0.2			<0.2			<0.2				<0.2					<0.2			0.2		0.2	0.4	0.3
Total Phenols (mg/l)	<0.20			<0.20		0.59			<0.20			<0.20				0.64					0.76			<0.20		0.59	0.83	0.705
TPH Total Petroleum Hydrocarbons (mg/l)						<0.3															<0.3					0	0	#DIV/0!
trans-1,2-dichloroethene (ug/l)						<1															<1					0	0	#DIV/0!
trans-1,3-dichloropropene (ug/l)						<1															<1					0	0	#DIV/0!
trans-permethrin (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Triadimefon (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Triallate (ng/l)						<10															<10					0	0	#DIV/0!
Triazaphos (ug/l)						<0.01															<0.01					0	0	#DIV/0!
Tributyl Tin (mg/l)						<0.00002															<0.0002					0	0	#DIV/0!
Trichlopyr (ug/l)	<3			<3		<3			<15			<3				<3					<3			<3		0	0	#DIV/0!
Trichloroethene (ug/l)						<5															<5					0	0	#DIV/0!
Trichlorofluoromethane (ug/l)						<1															<1					0	0	#DIV/0!
Trifluralin (ng/l)						<10															<10					0	0	#DIV/0!
Trimethylphenols (mg/l)	<0.05			<0.05		<0.05			<0.05			<0.05				<0.05					<0.05			<0.05		0	0	#DIV/0!
Triphenyltin (ug/l)						<0.05															<0.5					0	0	#DIV/0!
Vinyl Chloride (ug/l)						<1															<1					0	0	#DIV/0!
Volatile Suspended Solids (mg/l)	<5			<5		6			8			<5				<5					<5			<5		6	87	19
Xylenes, Total (ug/l)						<2															<2					0	0	#DIV/0!
Zinc (Dissolved) (mg/l)	0.011	0.015	0.02	0.015	0.009	0.227	0.036	0.024	0.041	<0.002	0.11	0.024	0.022	0.053	0.017	0.021	0.015	0.07	0.046	0.01	0.004	0.017	0.018	<0.020		0.002	0.227	0.022395349

APPENDIX 3

The analytical datasets from the Marstonvale Biological treatment plant (effluent)

Effluent data for Marstonvale - post biological treatment

Parameter		09/01/2024	06/02/2024	14/03/2024	09/04/2024	08/05/2024	17/06/2024	29/07/2024	28/08/2024	10/09/2024	22/10/2024	13/11/2024	05/12/2024	13/01/2025	26/02/2025	11/03/2025	08/04/2025	21/05/2025	11/06/2025	10/07/2025	12/08/2025	09/09/2025	28/10/2025	05/11/2025		min	max	average
Ammoniacal Nitrogen	N:mg/l	0.17	0.4	0.6	0.2	0.41	0.4	1.9	0.44	0.4	0.15	0.39	0.32	0.3	0.3	0.3	0.6	0.6	0.7	0.35	0.38	0.3	0.4	0.2		0.15	1.9	0.443913
Conductivity	uS / cm	13500	18200	15200	16300	19100	23000	21400	22000	21600	17200	19700	20300	16000	20300	19100	24500	18000	18400	13100	18800	21200	17600	15800		13100	24500	18708.696
pH (Lab)		7.6	7.6	7.7	7.7	7.7	7.6	7.4	7.9	7.8	8	7.9	7.9	7.7	7.6	7.7	7.8	8.2	8.1	8.3	8.5	8.2	8.2	8.1		7.4	8.5	7.8782609
Suspended Solids	mg/l	69	9	6	15	<5	27	16	41	18	25	<10	<10	8	<50	22	<25	<10	33	<10	20	8	10	64		6	69	24.4375
Suspended Solids - Volatile	mg/l	30	45	30	<5	5	8	<5	11	<5	16	40	6	<5	1350	<5	20	10	45	<5	277	<5	14	<5		5	1350	127.13333
Chloride	mg/l	1500	1820	1370	1850	2400	2610	2510	2510	2880	2030	1900	2260	1980	2250	2350	2870	2070	1980	1340	2090	2430	2250	2520		1340	2880	2163.913
Chromium (VI) as Cr	mg/l	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.003		0	0	#DIV/0!
Nitrite	N:mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.45	566	0.1		0.1	566	113.368
Nitrate	N:mg/l	574	771	635	791	919	957	1020	1080	1210	738	918	1050	698	704	791	1320	850	873	719	840	1010	245	1010		245	1320	857.52174
Sulphide	mg/l	0.26	0.39	0.28	0.34	0.58	0.02	0.53	0.3	0.39	0.23	0.33	0.32	0.41	0.74	0.45	0.38	0.24	0.25	0.62	0.33	0.48	0.03	0.18		0.02	0.74	0.3513043
Cyanide (Total)	mg/l	0.04	0.06	0.04	0.05	0.05	0.06	0.07	0.06	0.06	0.05	0.06	0.06	0.06	0.08	0.07	0.08	0.05	0.05	0.03	0.04	0.06	4.18	<0.02		0.03	4.18	0.2436364
COD	mg/l	652	978	764	820	1020	1020	1360	1220	1220	995	1210	1050	970	1360	1200	1440	940	3210	674	1040	1480	2010	865		652	3210	1195.5652
Alkalinity	CaCO3:mg/l	758	615	879	543	540	485	317	1020	833	1120	992	1060	903	529	752	675	1430	1360	1310	1580	1460	1560	1210		317	1580	953.52174
BOD	mg/l	<2	2.5	1.8	2	2.2	3.1	13.5	2.2	2	1.8	2	3.2	2.2	3.3	3.1	2.3	4.1	6.2	1.8	4.1	4.9	3.8	1.8		1.8	13.5	3.3590909
AOX	µg/l	414	740	<100	905	1280	1610	1330	910	776	833	958	902	824	852	850	1150	1850	25400	19900	628	>1000	3460	599		414	25400	3151
Arsenic (Diss)	mg/l	0.025	0.047	0.032	0.039	0.046	0.042	0.086	0.074	0.071	0.04	0.004	0.047	0.037	0.068	0.072	0.149	0.059	0.059	0.045	0.06	0.11	0.057	0.046		0.004	0.149	0.0571739
Chromium (Diss)	mg/l	0.078	0.109	0.089	0.1	0.127	0.112	0.144	0.102	0.13	0.087	0.011	0.112	0.102	0.14	0.146	0.109	0.071	0.086	0.068	0.145	0.189	0.125	0.057		0.011	0.189	0.1060435
Copper (Diss)	mg/l	<0.010	0.011	<0.010	0.012	0.011	<0.010	0.017	0.02	0.022	0.013	<0.001	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.013	<0.010	0.02	0.011	0.01	<0.010		0.01	0.022	0.01425
Lead (Diss)	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0119	<0.0020	<0.0020	<0.0002	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0034	<0.0020		0.0034	0.0119	0.00765
Nickel (Diss)	mg/l	0.109	0.158	0.121	0.143	0.185	0.17	0.235	0.197	0.208	0.131	0.017	0.187	0.15	0.194	0.204	0.153	0.123	0.123	0.084	0.165	0.2	0.157	0.087		0.017	0.235	0.1522174
Zinc (Diss)	mg/l	0.079	0.084	0.059	0.064	0.083	0.169	0.127	0.164	0.07	0.073	0.009	<0.020	0.115	0.084	0.08	0.072	0.043	0.07	0.04	0.082	0.148	0.126	0.079		0.009	0.169	0.0872727
Cadmium	mg/l	0.00052	0.0003	<0.00020	0.00025	0.00031	0.00056	0.00047	0.00079	0.00044	0.00055	0.00051	0.00058	0.00043	0.00058	0.00033	0.00023	0.00022	0.00023	<0.00020	0.00021	0.00116	<0.00020	0.00025		0.0002	0.0012	0.000446
Iron (Diss)	mg/l	0.91	1.33	1.06	1.02	1.46	1.02	1.36	1.11	0.89	0.3	0.64	1.41	1.11	1.52	1.41	0.83	0.56	0.6	0.38	1.03	1.34	1.12	0.53		0.3	1.52	0.9973913
Magnesium (Diss)	mg/l	113	115	99	113	116	121	110	110	98	105	100	125	102	111	103	119	107	102	77	95	111	99	89		77	125	106.08696
Potassium (Diss)	mg/l	601	848	662	747	849	892	964	897	848	787	788	929	703	990	902	1120	875	840	529	838	1080	779	673		529	1120	832.21739
Total Sulphur (Diss)	mg/l	999	1050	796	900	1170	971	1130	1830	1150	947	967	1120	928	1160	1060	1210	739	727	153	779	964	486	358		153	1830	938.86957
Sodium (Diss)	mg/l	2520	3610	2760	3070	3780	3960	3800	3770	3870	3470	3570	4090	2780	3740	3470	4610	3830	3730	2400	3790	4270	3670	3240		2400	4610	3556.5217
Magnesium as Mg (Total)	mg/l	109	114	99	105	109	124	118	103	103	107	107	108	101	110	102	121	104	99	74	98	113	97	91		74	124	105.04348
Phosphorus as P (Total)	mg/l	4.4	6	4.4	5.3	7.2	7.5	9.5	8.6	11.8	8.8	6.4	5.5	4.9	8.1	8.5	18	8.3	7.4	4.1	5.5	6.5	8.8	12.7		4.1	18	7.7478261
1,3,5-trichlorobenzene	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
1,2,3-trichlorobenzene	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Dichlobenil	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
1,2,3,4-Tetrachlorobenzene	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Pentachlorobenzene	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Tecnazene	ng/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Trifluralin	ng/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
HCH-alpha	ng/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Hexachlorobenzene	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.34	<0.20		0.34	0.34	0.34
HCH-beta	ng/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
HCH-gamma	ng/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Propyzamide	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Chlorthalonil	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Triallate	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Delta-HCH	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Heptachlor	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Aldrin	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Triadimefon	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Pendimethalin	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Heptachlor Epoxide	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Chlordane-gamma	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Isodrin	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
o,p-DDE	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
cis-Chlordane	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Endosulphan-alpha	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		0	0	#DIV/0!
p,p-DDE	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	760	<200		760	760	760
Dieldrin	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
o,p'-DDD	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Endrin (ng/l)	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Endosulfan II	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
p,p-DDD	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
o,p-DDT	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Endosulphan Sulphate	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
p,p-DDT	µg/l	<10	<100	<200	<100	<50	<400	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200		0	0	#DIV/0!
Endrin ketone	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Methoxychlor	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
cis-Permethrin	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
trans-Permethrin	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20		0	0	#DIV/0!
Dichlorvos	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Mevinphos	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
methacriphos	µg/l	<0.01	<0.10	<0.20	<0.10	0.1	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0.1	0.1	0.1
Propetamphos	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Dimethoate	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Diazinon	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
phosfamidon	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Etrimphos	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Chlorpyriphos-methyl	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Parathion-methyl	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Pirimiphos-methyl	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Fenitrothion	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Malathion	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Chlorpyrifos	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Fenthion	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Pirimiphos-ethyl	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Parathion	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Chlorfenvinphos	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Ethion	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Triazophos	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Carbophenothion	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Phosalone	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Azinphos-methyl	µg/l	<0.01	<0.1	<0.2	<0.1	<0.05	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.01	<0.2		0	0	#DIV/0!
Azinphos ethyl	µg/l	<0.01	<0.10	<0.20	<0.10	<0.05	<0.40	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.01	<0.20		0	0	#DIV/0!
Simazine	µg/l	<0.03	<0.30	<0.60	<0.30	<0.15	<1.20	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.03	<0.60		0	0	#DIV/0!
Atrazine	µg/l	<0.03	<0.30	<0.60	<0.30	<0.15	<1.20	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.03	<0.60		0	0	#DIV/0!
Propazine	µg/l	<0.03	<0.30	<0.60	<0.30	<0.15	<1.20	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.03	<0.60		0	0	#DIV/0!
Trietazine	µg/l	<0.02	<0.20	<0.40	<0.20	<0.10	<0.80	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.02	<0.40		0	0	#DIV/0!
Terbutylazine	µg/l	<0.10	<1.00	<2.00	<1.00	<0.50	<4.00	<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	<0.10	<2.00		0	0	#DIV/0!
Ametryn	µg/l	<0.02	<0.20	<0.40	<0.20	<0.10	<0.80	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.02	<0.40		0	0	#DIV/0!
Prometryn	µg/l	<0.03	<0.30	<0.60	<0.30	<0.15	<1.20	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.03	<0.60		0	0	#DIV/0!
Terbutryn	µg/l	0.04	<0.30	<0.60	<0.30	<0.15	<1.20	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.03	<0.60		0.04	0.04	0.04

MCPP (Mecoprop)	µg/l	<2	<10	<2	<2	<2	<10	82.8	19.4	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	60	39	<10		19.4	82.8	50.3
Pentachlorophenol	µg/l	<4.00	<20.0	<4.00	<4.00	<4.00	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0		0	0	#DIV/0!
PCB 28	µg/l	<0.04	0.17	<0.1	<0.2	<0.04	<0.04	<0.04	<0.1	<0.04	<0.04	<0.04	<0.01	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.2	0.17	0.17	0.17
PCB 52	µg/l	<0.04	<0.1	<0.1	<0.2	<0.04	<0.04	<0.04	<0.1	<0.04	<0.04	<0.04	<0.01	<0.04	<0.04	<0.04	<0.04	0.08	<0.04	<0.1	<0.1	<0.2	0.08	0.08	0.08
PCB101	µg/l	<0.04	<0.1	<0.1	<0.2	<0.04	<0.04	<0.04	<0.1	<0.04	<0.04	<0.04	<0.01	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.2	0	0	#DIV/0!
PCB118	µg/l	<0.04	<0.1	<0.1	<0.2	<0.04	<0.04	<0.04	<0.1	<0.04	<0.04	<0.04	<0.01	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.2	0	0	#DIV/0!
PCB153	µg/l	<0.04	<0.1	<0.1	<0.2	<0.04	<0.04	<0.04	<0.1	<0.04	<0.04	<0.04	<0.01	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.2	0	0	#DIV/0!
PCB138	µg/l	<0.04	<0.1	<0.1	<0.2	<0.04	<0.04	<0.04	<0.1	<0.04	<0.04	<0.04	<0.01	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.2	0	0	#DIV/0!
PCB180	µg/l	<0.04	<0.1	<0.1	<0.2	<0.04	<0.04	<0.04	<0.1	<0.04	<0.04	<0.04	<0.01	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.1	<0.1	<0.2	0	0	#DIV/0!
Phenol	mg/l	<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	<0.05	<0.05	0.05	<0.05	0.05	0.05	0.05
Cresols	mg/l	<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	<0.05	<0.05	0.28	<0.05	0.28	0.28	0.28
Dimethylphenols (mg/l)	mg/l	<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	<0.05	<0.05	<0.05	<0.05	0	0	#DIV/0!
Trimethylphenols	mg/l	<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	<0.05	<0.05	<0.05	<0.05	0	0	#DIV/0!
Total Phenols	mg/l	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.43	<0.20	0.43	0.43	0.43
Dichlorodifluoromethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Chloromethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Vinyl Chloride	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Bromomethane	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
Chloroethane	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
Trichlorofluoromethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,1-Dichloroethene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Trans-1,2-dichloroethene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,1-Dichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
MTBE	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
2,2-Dichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Cis-1,2-dichloroethene	µg/l	<1	<1	4	3	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	3	4	3.5
Bromochloromethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Chloroform	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
1,1,1-Trichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Carbon Tetrachloride	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,1-Dichloropropene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Benzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,2-Dichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Trichloroethene	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
1,2-Dichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Dibromomethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Bromodichloromethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Cis-1,3-dichloropropene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Toluene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Trans-1,3-dichloropropene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,1,2-trichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Tetrachloroethene	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
1,3-dichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Dibromochloromethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,2-dibromoethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Chlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Ethyl Benzene	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0	0	#DIV/0!
1,1,1,2-tetrachloroethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
m,p-xylene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
o-xylene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Styrene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Bromoform	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Isopropylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,1,2,2-tetrachloroethane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
n-propylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
Bromobenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,2,3-trichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
2-chlorotoluene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,3,5-trimethylbenzene	µg/l	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<3.0	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<3.0	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	0	0	#DIV/0!
4-chlorotoluene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
tert-butylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,2,4-trimethylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
sec-butylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
p-isopropyltoluene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,3-dichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,4 Dichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
n-butylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	0	0	#DIV/0!
1,2-dichlorobenzene	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
1,2-dibromo-3-chloropropane	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
1,2,4-Trichlorobenzene	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
Hexachlorobutadiene	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
Naphthalene	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
1,2,3-trichlorobenzene	µg/l	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<25	<5	<5	<5	<5	<5	<5	<5	<5	0	0	#DIV/0!
Dibutyl Tin	ng/l	<200	<200	<200	<20	<400	<20	<400	<400	<400	<400	<400	<400	<800	<400	<200	<200	<400	<100	<800	<800	<800	<400	<800		0	0	#DIV/0!
Tributyl Tin	mg/l	<0.0002	<0.0002	<0.0002	<0.00002	<0.0004	<0.00002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0008	<0.0004	<0.0002	<0.0002	<0.0004	<0.0001	<0.0008	<0.0008	<0.0008	<0.0004	<0.0008		0	0	#DIV/0!
Triphenyltin	µg/l	<0.5	<0.5	<0.5	<0.05	<1	<0.05	<1	<1	<1	<1	<1	<1	<2	<1	<0.5	<0.5	<1	<0.25	<2	<2	<2	<1	<2		0	0	#DIV/0!
NVM Light Petroleum Extract	mg/l	<5	<5	<5	7	<5	<5	<5	7	10	<5	22	<5	49	<5	21	<5	7	<5	<5	<5	<5	28	13		7	49	18.222222

APPENDIX 4

Yorkshire Water - Trade Effluent Consent

Registration Number: Y/4528/17C

YORKSHIRE WATER SERVICES LTD

The Water Industry Act 1991

COPY

CONSENT

to discharge trade effluent into a public sewer

To: Tradebe Chemicals
Weeland Road
Knottingley
WF11 8DZ

On the 27th March 2017 a Notice containing an application for a Trade Effluent Consent was served by you on Yorkshire Water Services Ltd (here called "YWS") in respect of the discharge of trade effluent (here called "the effluent") from the premises (here called "the premises") known as

Tradebe Chemicals
Weeland Road
Knottingley
WF11 8DZ

YWS now CONSENTS to the discharge of the effluent from the premises into a public sewer subject to the following Conditions:

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 300 cubic metres in any period of twenty-four hours.

The rate of discharge of the effluent shall not exceed 3.2 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 Consent 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.

DATED this 30th day of May 2017

Signed: .....

YWS Authorised Signatory

I/We: .....

have received the Consent, of which this is a copy

Dated: .....

Signed: .....

Print Name: .....

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 5000 milligrammes per litre.

4 Total load of Settled Chemical Oxygen Demand discharged in twenty-four hours shall not exceed 350 kilogrammes.

5 Settleable Solids shall not exceed 500 milligrammes per litre.

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.

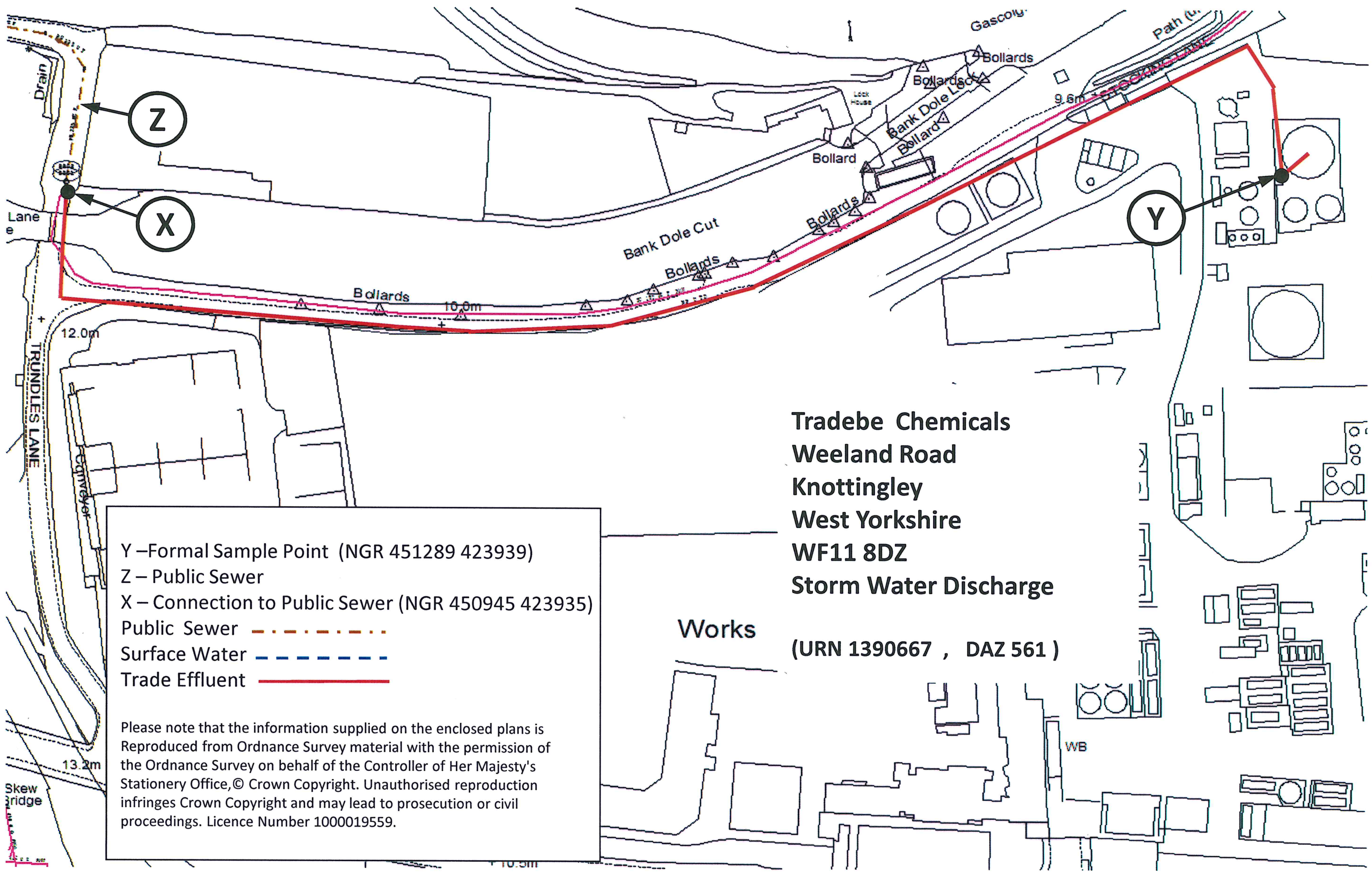
3. For purposes of Condition 5 prescribed substances shall be taken as being those substances that are included in Schedule 1 of 'The Trade Effluents (Prescribed Processes and Substances) Regulations 1989' Statutory Instrument Number 1156 or any amendment or addition to the same.

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 Consent 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.


Tradebe Chemicals
Weeland Road
Knottingley
West Yorkshire
WF11 8DZ
Storm Water Discharge
(URN 1390667 , DAZ 561)
Y –Formal Sample Point (NGR 451289 423939)
Z – Public Sewer
X – Connection to Public Sewer (NGR 450945 423935)
Public Sewer
Surface Water
Trade Effluent
Please note that the information supplied on the enclosed plans is Reproduced from Ordnance Survey material with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office,© Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number 1000019559.
Works
Bank Dole Cut
Bank Dole Lock
Bollards
Bollard
Lock House
TRUNDLES LANE
Conveyor
Drain
Lane
Skew Bridge
WB
12.0m
10.0m
9.6m
13.2m
Y
Z
X

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: Tradebe Solvent Recycling
Weeland Road
Knottingley
WF11 8DZ

By a Consent No. YW/973/93C, Dated 30th July 1993 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

Tradebe Solvent Recycling
Weeland Road
Knottingley
WF11 8DZ

That Consent was subject to subsequent Direction. YWS, gives notice of its Direction pursuant to Section 124 of the Act, which shall take effect on 22nd August 2014 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/4142/14D

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 13th day of June 2014

Signed: .....

YWS Authorised Signatory

I/We: TRADEPE KNOTTINGLEY

have received the Notice and Direction, of which this is a copy and we hereby give our consent to the giving of the Direction in accordance with Section 124(3) of the Act

Dated: 09/07/14

Signed: .....

Print Name: N. HOPTHOUSE

Registration Number : Y/4142/14D

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 400 cubic metres in any period of twenty-four hours.

The rate of discharge of the effluent shall not exceed 10 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 9 at the approved measuring point.

3 Settled Chemical Oxygen Demand shall not exceed 10000 milligrammes per litre.

4 Total load of Settled Chemical Oxygen Demand discharged in twenty-four hours shall not exceed 700 kilogrammes.

5 Settleable Solids shall not exceed 500 milligrammes per litre.

6 Total Ammonia (as N) shall not exceed 50 milligrammes per litre.

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.

Tradebe Solvent Recycling Limited
Weeland Road, Knottingley, WF11 8DZ. – URN 1391462.

Sample Point

Sample Point

Overview of Sample Point & Monitoring Station

Effluent Monitoring Station

Effluent Monitoring Station & Magflow on Pumping Main

Effluent Flow Recorder and pH meter

Composite Sampling Containers

Key: Trade Effluent —— Surface Water Sewer —— Public Sewer Z —— Sample Point Y Connection to Sewer X

APPENDIX 5

H1 Calculations for the permeate discharge to the River Aire

H1 Assessment

Direct discharge to the River Aire from the RO plant

Guidance doc: https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit

STEP 1 - is RC > 10% EQS

RC- Effluent concentration ug/l (discharge form the RO)

Discharge Consent Parameters	Units	Average Concentration µg/l	RC	EQS - AA	10%EQS	RC>10%EQS	Compliance Target Source
Ammoniacal Nitrogen [EQS based on correction for ammonia]	µg/l	1270	1270	620	62	FAIL	WFD (Standards and Classification) 2015
Chloride	µg/l	2600	2600	250000	25000	PASS	WFD (Standards and Classification) 2015
Sulphate	µg/l	5300	5300	400000	40000	PASS	WFD (Standards and Classification) 2015
Arsenic	µg/l	4	4	50	5	PASS	WFD (Standards and Classification) 2015
Cadmium	µg/l	0.08	0	0.09	0.009	FAIL	WFD (Standards and Classification) 2015
Chromium	µg/l	2.5	3	4.7	0.47	FAIL	WFD (Standards and Classification) 2015
Copper	µg/l	7	7	1	0.1	FAIL	WFD (Standards and Classification) 2015
Iron	µg/l	17	17	1000	100	PASS	WFD (Standards and Classification) 2015
Zinc	µg/l	22.4	22	13.8	1.38	FAIL	WFD (Standards and Classification) 2015
Phosphate	µg/l	34.6	35	113	11.3	FAIL	WFD (Standards and Classification) 2015
							WFD (Standards and Classification) 2015
							WFD (Standards and Classification) 2015
							WFD (Standards and Classification) 2015

Sewerage Treatment Reduction Factor

Parameter	Average Concentration µg/l	Percentage removal rate of substance by activated sludge plant (STRF)	Proportion remaining in activated sludge plant	RC value (µg/l)
Ammoniacal Nitrogen	1270	N/A	N/A	#VALUE!
Chloride	2600	N/A	N/A	#VALUE!
Sulphate	5300	N/A	N/A	#VALUE!
Arsenic	4	N/A	N/A	#VALUE!
Cadmium	0.08	N/A	N/A	#VALUE!
Chromium	2.5	N/A	N/A	#VALUE!
Copper	7	N/A	N/A	#VALUE!
Iron	17	N/A	N/A	#VALUE!
Zinc	22.4	N/A	N/A	#VALUE!
Phosphate	34.6	N/A	N/A	#VALUE!
				0
				0

STEP 2 - is PC<4% EQS

where PC = EFR*RC/(EFR+RFR)

EFR - effluent flow rate (m3/sec) - average over 24 opertaion	0.012	1000	m3/day
intermittent discharge - hours per day	N/A		
number of days per week discharge	7.000		
EFR - effluent flow rate (m3/sec) - average - for intermittent discharge	N/A		
RFR - river flow rate (Q95) (m3/sec)	**9.656**		
RFR - river flow rate (Q70) (m3/sec)	**16.8**		

Parameter	Units	RC	PC	EQS	4%EQS	PC > 4%EQS
Ammoniacal Nitrogen	µg/l	1270	2	620	25	PASS
Chloride	µg/l	2600	3.113	250000	10000	PASS
Sulphate	µg/l	5300	6.345	400000	16000	PASS
Arsenic	µg/l	4.0	0.00479	50	2	PASS
Cadmium	µg/l	0.1	0.00010	0.09	0.00	PASS
Chromium	µg/l	2.5	0.00299	5	0.19	PASS
Copper	µg/l	7.0	0.00838	1	0.04	PASS
Iron	µg/l	17.0	0.02035	1000	40	PASS
Zinc	µg/l	22.4	0.02682	14	1	PASS
Phosphate	µg/l	34.6	0.04142	113	4.52	PASS

STEP 3 - is (PEC -BC) > 10%EQS

where PEC*=((EFR*RC)+(RFR*BC))/(EFR+RFR) - this is only necessary where RFR<10*EFR

PEC = PC +BC

BC - background concentration - half EQS concentration

Parameter	Units	PC	BC	PEC	PEC*	PEC-BC	EQS	10%EQS	PEC-BC > 10%EQS
Ammoniacal Nitrogen	µg/l	1.520451	310	312	310	1.520451	620	62	PASS
Chloride	µg/l	3.11273	125000	125003	124850	3.112735	250000	25000	PASS
Sulphate	µg/l	6.34519	200000	200006	199761	6.345190	400000	40000	PASS
Arsenic	µg/l	0.00479	25	25.00	24.97	0.004789	50.00	5	PASS
Cadmium	µg/l	0.00010	0.045	0.04510	0.044946	0.000096	0.09	0.009	PASS
Chromium	µg/l	0.00299	2.35	2.35299	2.347190	0.002993	4.70	0.47	PASS
Copper	µg/l	0.00838	0.5	0.50838	0.499411	0.008380	1.00	0.1	PASS
Iron	µg/l	0.02035	500	500.02035	499.401422	0.020352	1000.0	100	PASS
Zinc	µg/l	0.02682	6.9	6.92682	6.891771	0.026817	13.80	1.38	PASS
Phosphate	µg/l	0.04142	56.5	56.54142	56.432407	0.041423	113	11.3	PASS

STEP 4 - is PEC > EQS

Parameter	Units	PC	BC	PEC			EQS		PEC>EQS
Ammoniacal Nitrogen	µg/l	1.520451	310	311.520451			620		PASS
Chloride	µg/l	3.11273	125000	125003.113			250000		PASS
Sulphate	µg/l	6.34519	200000	200006.345			400000		PASS
Arsenic	µg/l	0.00479	25	25.0047888			50		PASS
Cadmium	µg/l	0.00010	0.045	0.04509578			0.09		PASS
Chromium	µg/l	0.00299	2.35	2.35299301			4.7		PASS
Copper	µg/l	0.00838	0.5	0.50838044			1		PASS
Iron	µg/l	0.02035	500	500.020352			1000		PASS
Zinc	µg/l	0.02682	6.9	6.92681741			13.8		PASS
Phosphate	µg/l	0.041423315	56.5	56.5414233			113		PASS

Screening test: 'priority hazardous pollutants'

Average flow - litres per day 1000000

Pollutant	Annual significant load limit in kg	Average concentration (mg/l)	Loading per year (kg)
Cadmium	5	0.00008	0.0000292

APPENDIX 6

H1 Calculations for the effluent discharge to sewer

H1 Assessment

Discharge to the sewer from the Biological Treatment Plant

Guidance doc: https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit

STEP 1 - is RC > 10% EQS

RC- Effluent concentration ug/l

Discharge Consent Parameters	Units	Average concentration µg/l	RC	EQS - AA	10%EQS	RC>10%EQS	Compliance Target Source
Ammoniacal Nitrogen [based on correction for ammonia]	µg/l	440	35.20	620	62	PASS	WFD (Standards and Classification) 2015
Chloride	µg/l	2164	2164.00	250000	25000	PASS	WFD (Standards and Classification) 2015
Sulphate	µg/l	323250	323250.00	400000	40000	FAIL	WFD (Standards and Classification) 2015
Arsenic	µg/l	57	50.73	50	5	FAIL	WFD (Standards and Classification) 2015
Cadmium	µg/l	0.45	0.40	0.09	0.009	FAIL	WFD (Standards and Classification) 2015
Chromium	µg/l	106	16.96	4.7	0.47	FAIL	WFD (Standards and Classification) 2015
Copper	µg/l	14.2	2.98	1	0.1	FAIL	WFD (Standards and Classification) 2015
Iron	µg/l	997	767.69	1000	100	FAIL	WFD (Standards and Classification) 2015
Lead	µg/l	7.6	1.29	1.2	0.12	FAIL	WFD (Standards and Classification) 2015
Nickel	µg/l	152	115.52	4	0.4	FAIL	WFD (Standards and Classification) 2015
Zinc	µg/l	22.4	7.39	13.8	1.38	FAIL	WFD (Standards and Classification) 2015
Phosphorous	µg/l	7750	6200.00	148	14.8	FAIL	WFD (Standards and Classification) 2015
Mecoprop	µg/l	50.3	50.30	18	1.8	FAIL	WFD (Standards and Classification) 2015

Sewerage Treatment Reduction Factor

Parameter	Average concentration (µg/l)	Percentage removal rate of substance by activated sludge plant (STRF)	Proportion remaining in activated sludge plant	RC value (µg/l)
Ammoniacal Nitrogen	440	92	0.08	35.2
Chloride	2164	0	1	2164
Sulphate (no STRF - assumed 0)	323250	0	1	323250
Arsenic	57	11	0.89	50.73
Cadmium	0.45	11	0.89	0.4005
Chromium	106	84	0.16	16.96
Copper	14.2	79	0.21	2.982
Iron	997	23	0.77	767.69
Lead	7.6	83	0.17	1.292
Nickel	152	24	0.76	115.52
Zinc	22.4	67	0.33	7.392
Phosphorous	7750	20	0.800	6200
Mecoprop	50.3	0	1.000	50.3

STEP 2 - is PC<4% EQS

where PC = EFR*RC/(EFR+RFR)

EFR - effluent flow rate (m3/sec)	0.012	1000.000	m3/day
intermittent discharge - hours per day	N/A		
number of days per week discharge	7.000		
EFR - effluent flow rate (m3/sec) - average - for intermittent discharge	N/A		
RFR - river flow rate (Q95) (m3/sec)	**9.656**		
RFR - river flow rate (Q70) (m3/sec)	**16.8**		

Parameter	Units	RC	PC	EQS	4%EQS	PC > 4%EQS
Ammoniacal Nitrogen	µg/l	35.20	0.0421416	620.00	24.800000	PASS
Chloride	µg/l	2164	2.59075	250000	10000	PASS
Sulphate	µg/l	323250	387	400000	16000	PASS
Arsenic	µg/l	50.73	0.06073	50.0	2.0	PASS
Cadmium	µg/l	0.40	0.00048	0.09	0.00360	PASS
Chromium	µg/l	16.96	0.02030	4.70	0.18800	PASS
Copper	µg/l	2.98	0.00357	1.00	0.04000	PASS
Iron	µg/l	767.69	0.91908	1000	40	PASS
Lead	µg/l	1.29	0.00155	1.20	0.04800	PASS
Nickel	µg/l	115.52	0.13830	4.00	0.16000	PASS
Zinc	µg/l	7.39	0.00885	13.80	0.55200	PASS
Phosphorous	µg/l	6200.00	7.42267	148.00	5.92000	FAIL
Mecoprop	µg/l	50.30	0.06022	18.00	0.72000	PASS

STEP 3 - is (PEC -BC) > 10%EQS

where PEC*=((EFR*RC)+(RFR*BC))/(EFR+RFR) - this is only necessary where RFR<10*EFR

PEC = PC +BC

BC - background concentration - half EQS concentration

Parameter	Units	PC	BC	PEC	PEC*	PEC-BC	EQS	10%EQS	PEC-BC > 10%EQS
Ammoniacal Nitrogen	µg/l	0.042142	310	310.04214	309.628917	0.042142	620	62	PASS
Chloride	µg/l	2.59075	125000	125002.59	124850.35	2.59	250000	25000	PASS
Sulphate	µg/l	386.99672	200000	200387.00	199761.02	387.00	400000	40000	PASS
Arsenic	µg/l	0.06073	25	25.06073	24.970143	0.060734	50	5	PASS
Cadmium	µg/l	0.00048	0.045	0.04548	0.044947	0.000479	0.09	0.009	PASS
Chromium	µg/l	0.02030	2.35	2.37030	2.347211	0.020305	4.7	0.47	PASS
Copper	µg/l	0.00357	0.5	0.50357	0.499406	0.003570	1	0.1	PASS
Iron	µg/l	0.91908	500	500.91908	499.402498	0.919083	1000	100	PASS
Lead	µg/l	0.00155	0.6	0.60155	0.599284	0.001547	1.2	0.12	PASS
Nickel	µg/l	0.13830	2	2.13830	1.997771	0.138301	4	0.4	PASS
Zinc	µg/l	0.00885	6.9	6.90885	6.891750	0.008850	13.8	1.38	PASS
Phosphorous	µg/l	7.42267	74	81.42267	73.920293	7.422675	148	14.8	PASS
Mecoprop	µg/l	0.06022	9	9.06022	8.989297	0.060219	18	1.8	PASS

STEP 4 - is PEC > EQS

Parameter	Units	PC	BC	PEC			EQS		PEC>EQS
Ammoniacal Nitrogen	µg/l	0.042142	310	310.042142			620		PASS
Chloride	µg/l	2.590753	125000	125002.59			250000		PASS
Sulphate	µg/l	386.996719	200000	200387.00			400000		PASS
Arsenic	µg/l	0.060734	25	25.060734			50		PASS
Cadmium	µg/l	0.000479	0.045	0.045479			0.09		PASS
Chromium	µg/l	0.020305	2.35	2.370305			4.7		PASS
Copper	µg/l	0.003570	0.5	0.503570			1		PASS
Iron	µg/l	0.919083	500	500.919083			1000		PASS
Lead	µg/l	0.00155	0.6	0.601547			1.2		PASS
Nickel	µg/l	0.13830	2	2.138301			4		PASS
Zinc	µg/l	0.00885	6.9	6.908850			13.8		PASS
Phosphorous	µg/l	7.42267	74	81.422675			148		PASS
Mecoprop	µg/l	0.06022	9	9.060219			18		PASS

Screening test: 'priority hazardous pollutants'

Average flow - litres per day 1000000

Pollutant	Annual significant load limit in kg	Average concentration (mg/l)	Loading per year (kg)
Cadmium	5	0.00045	0.00016425

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