

Donald Ward Limited

H1 Screening Assessment Report

Boulder Bridge Lane, Carlton, Barnsley, South Yorkshire, S71 3HJ

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1.0 Introduction

1.1 Background

- 1.1.1 Donald Ward Limited are applying to operate a metals recycling facility located at Land at Boulder Bridge Lane, Carlton, Barnsley, South Yorkshire, S71 3HJ (the Site). The Site is located at National Grid Reference SE 37598 10506, approximately 5 km northeast of Barnsley town centre.
- 1.1.2 The metal recycling facility will receive, process and recover ferrous and non-ferrous metals from scrap and acts primarily as a source of ferrous feedstock for the steel manufacturing industry both in UK and abroad. The facility will also operate as a Waste Transfer Station for non-hazardous and hazardous construction and demolition, industrial, commercial and municipal wastes pending removal off site to authorised treatment facilities.
- 1.1.3 This report provides the H1 Assessment for the discharge to water (W1) and emissions to air (A1 and A2) from the Site, to support the application for an environmental permit. All discharge points are detailed Drawing 1.
- 1.1.4 The assessments have been undertaken according to approach detailed in Environment Agency (EA) Guidance¹.

1.2 Report Structure

- 1.2.1 The subsequent report structure is as follows:
- Section 2: Risk Assessment – Emissions to Water. Presents the approach, data sources and the outcome of the H1 Assessment Tool for discharge to surface water at the facility.
 - Section 3: Risk Assessment – Emissions to Air. Presents the approach, data sources and outcome of the H1 Assessment Tool for discharge to the air at the facility.

¹ [Risk assessments for specific activities: environmental permits - GOV.UK](https://www.gov.uk/guidance/risk-assessments-for-specific-activities-environmental-permits)

2.0 Risk Assessment – Emissions to Water

- 2.1.1 This section provides an environmental risk assessment including a completed H1 Environmental Risk Assessment Access H1 tool (version 2.7.9) for the discharge to water on the site. Site drainage discharges via W1 and Boulder Bridge Dike to Shaw Dike and ultimately Cudworth Dyke.
- 2.1.2 In accordance with the Site Operating Techniques document (June 2026), the metal source material (most notably cables) have not been subject to thermal processes (i.e. fire / burning), hence polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) are not considered to present a chronic potential contaminant of concern (CoC) emission to water.
- 2.1.3 The potential CoCs associated with the ferrous and non-ferrous metal processing activities for potential emission to water are identified using the Best Available Techniques (BAT) Conclusions for Waste Treatment². Additionally, the EA appropriate measures for permitted facilities guidance for chemical waste³ and non-hazardous and inert waste⁴, are used to identify CoCs associated with the storage of metal and non-metal wastes. Potential CoCs are as follows:
- Heavy metals including iron (As, Cd, Cr(VI), Cu, Fe, Hg, Ni, Pb, and Zn);
 - Aluminium and iron (Al and Fe);
 - Petroleum hydrocarbons and associated substances, most notably BTEX compounds;
 - Polycyclic Aromatic Hydrocarbons (PAHs);
 - Various VOCs associated with ELV and general metal sources;
 - Nitrogen compounds, most notably reduced forms (i.e. ammoniacal nitrogen);
 - Phosphorus;
 - Biochemical oxygen demand (BOD);
 - Chemical oxygen demand (COD);
 - Suspended solids; and
 - Total organic carbon.

² [Best Available Techniques \(BAT\) Conclusions for Waste Treatment](#)

³ [Chemical waste: appropriate measures for permitted facilities](#)

⁴ [Non-hazardous and inert waste: appropriate measures for permitted facilities](#)

2.2 Site Drainage

Drainage System

- 2.2.1 Discharge point W1 is located on the eastern boundary of the Site that follows Boulder Bridge Lane. The site drainage passes through an oil interceptor prior to off-site discharge.
- 2.2.2 The interceptor located to the east of the yard adjacent to the entrance, drains the total area of the site (circa 29,000 m²) and discharges to surface water drainage on Boulder Bridge Lane which ultimately discharges to controlled watercourse Cudworth Dyke (via Shaw Dike).
- 2.2.3 All water discharged from the Site is therefore rainfall dependent.
- 2.2.4 No other effluents are generated on the Site.

Estimated Effluent Flow Rate

- 2.2.5 All water discharged from the Site is rainfall dependent. There are no direct aqueous effluents from the waste treatment plant installed at the Site. The Effluent Flow Rate (EFR) is therefore dependent on the site run-off to the discharge point.
- 2.2.6 As rainfall or run-off rate is not monitored on the Site an estimate of the discharge rate has been made on the basis of publicly available rainfall data provided on the National River Flow Archive for the Dearne at Adwick, being the closest monitored catchment including the Site. The rainfall dataset and associated calculations used in this assessment is provided in Appendix A.
- 2.2.7 The average annual rainfall over the last 5 years on record (2019 to 2023 inclusive) is 821 mm, which equates to a daily rainfall of 0.00225 m/day. Based on the daily catchment rainfall and a site area of 29,000 m² the mean Effluent Flow Rate (EFR_{mean}) has been calculated:
 - $0.00225 \times 29,000 / (24 \times 3600)$, gives an EFR_{mean} of 0.0008 m³/s.
- 2.2.8 For the H1-Assessment the maximum effluent flow rate (EFR_{max}) is estimated as an order of magnitude greater than the mean discharge rate, giving maximum effluent flow rate of 0.008 m³/s for W1.

2.3 Receiving Waters

Overview

- 2.3.1 Surface water drainage point, W1, discharges to Shaw Dike which ultimately discharges to Cudworth Dyke at a point situated circa 100 m south of the Site.

Cudworth Dyke is a Water Framework Directive River waterbody (Ref. GB104027063230) and flows southward up to its confluence with the River Dearne approximately 2.8 km to the south.

Estimate of Flow in Receiving Waters

- 2.3.2 The Cudworth Dyke WFD waterbody has a small, low-lying, catchment area of only 34.374 km². It has been estimated that the catchment area of Cudworth Dyke at the downstream boundary of the Site is c. 0.75 of the total catchment area giving a site-specific catchment area for the watercourse of c. 25.78 km².
- 2.3.3 In the absence of flow data for Cudworth Dyke a proxy source of flow data has been used. A review of the National Flow Archive identifies three proximal river gauging stations for which data is available:
- Station 27023: River Dearne at Barnsley Weir (Upstream of the Cudworth Dyke)
 - Station 27030: River Dearne at Adwick (Downstream of the Cudworth Dyke); and
 - Station 27064: Went at Walden Stubbs (An adjacent surface water catchment area)
- 2.3.4 Station 27064 (Went and Walden Stubbs) is considered to share the closest similarity to the Cudworth Dyke considering it is also small, low-lying “upstream” catchment on a minor tributary of the River Dearne. From the National Flow Archive the key characteristics for Station 27064 are as follows:
- Catchment Area – 83.7 km²
 - Q95 flow – 0.165 m³/s
- 2.3.5 As shown in the calculations provided in Appendix A, the flow in the Cudworth Dyke at the Site have been estimated by assuming that it shares the same runoff characteristics as the adjacent catchment. On that basis it is assumed that the river flow per km² of catchment area is same for both surface water catchments. Thus, the Q95 flow in Cudworth Dyke at the site is estimated to be 0.051 m³/s.

Water Quality in Receiving Waters

- 2.3.6 Cudworth Dyke is a Water Framework Directive (WFD) River waterbody and is not designated to be artificial or heavily modified.
- 2.3.7 In the absence of upstream or background data for freshwaters, national guidance states:

“Assume that the concentration of each pollutant is 10% of the EQS in clean water (for example where there’s no other discharges of the pollutant) and 50% of the EQS in polluted water (where there are other discharges of the pollutant). If you’re unsure, assume that the upstream concentration is 50% of the EQS.”

- 2.3.8 In 2022 Cudworth Dyke was designated an overall WFD water body classification of ‘Poor ecological status’. However, that designation is largely based on biological elements of its ecological status. In the absence of 2022 classification items, the 2019 chemical status of the water body (Priority Substances and Priority Hazardous Substances) and chemical elements of its ecological status were good with the exception of Mercury, Perfluorooctanesulphonate (PFOS) and Polybrominated diphenyl ethers (PBDE) which failed. For this reason, a background concentration of 10% the EQS has been assumed, with the exception of Mercury where a background concentration of 50% has been used.

2.4 Assessment Type

- 2.4.1 Considering the site setting a freshwater river assessment has been undertaken. The completed H1 Assessment Tools are provided in Appendix B.

2.5 Input Parameters

Effluent Quality

- 2.5.1 Monitoring data collected by previous occupiers of the Site has been used in the assessment. The water quality dataset is summarised in Table 2-1 for discharges to surface water. Full data for W1 is provided in Appendix C. As the discharge is rainfall dependent, temperatures have not been tested due to being under ambient conditions.
- 2.5.2 As the operations for Site are proposed to extend to include the storage of non-metal wastes, proxy data from a Donald Ward site currently carrying out these activities has been assessed separately and presented alongside the H1 screening for the discharge to surface water. This data is summarised in Table 2-2 below. Complete proxy monitoring data is provided in Appendix C.

Table 2-1: Summary Statistics for Discharge to Surface Water (W1) Water Quality Dataset

Parameter	Units	No. Analyses	No. Analyses Above LOD* ¹	Concentration Range	Mean* ²	EQS	EQS Notes* ³
General Parameters							
pH	pH units	10	10	6.9 – 7.9	7.45	6-9	Min and Max
EC@20DegC	µS/cm	8	8	193 – 362	270		
Total Suspended Solids	mg/l	10	10	12 - 568	92.3		
BOD + ATU (5 day)	mg/l	10	9	1 - 14	6.35		
COD (Total)	mg/l	10	10	22 - 476	91.0		
Nutrients							
Ammoniacal Nitrogen	mg/l	10	5	0.41 – 1.10	0.52	0.3	Total - Good WFD Status
Dissolved Metals							
Arsenic	mg/l	7	7	0.0002 – 0.0005	0.0004		
Cadmium	mg/l	9	7	0.0006 - 0.00132	0.0008	0.00008 - 0.00025	AA Hardness dependent
Chromium	mg/l	9	5	0.0002 - 0.002	0.0008	0.0047	AA for Cr(III)
Copper	mg/l	9	9	0.034 - 0.345	0.173	0.001	AA Bioavailable [#]
Iron	mg/l	9	6	0.02 - 0.23	0.0678	1	AA
Lead	mg/l	9	7	0.0034 - 0.0542	0.0139	0.0012	AA Bioavailable [#]
Nickel	mg/l	9	7	0.0022 - 0.0086	0.0037	0.004	AA Bioavailable [#]
Zinc	mg/l	9	9	0.061 - 1.41	0.581	0.0109+ABC [^]	AA Bioavailable [#]
Total Metals							
Arsenic	mg/l	7	7	0.00071 - 0.0057	0.0016	0.05	AA
Cadmium	mg/l	9	9	0.0006 - 0.013	0.0031		

Parameter	Units	No. Analyses	No. Analyses Above LOD* ¹	Concentration Range	Mean* ²	EQS	EQS Notes* ³
Chromium	mg/l	10	10	0.0021 - 0.064	0.013		
Copper	mg/l	9	9	0.127 - 8.27	1.57		
Iron	mg/l	10	10	0.725 - 29	4.36		
Lead	mg/l	9	9	0.071 - 2.64	0.423		
Mercury	mg/l	6	6	0.0003 - 0.00039	0.00017	0.00007	MAC (for dissolved mercury)
Nickel	mg/l	9	9	0.004 - 0.073	0.021		
Zinc	mg/l	9	9	0.162 - 18.7	2.95		

Petroleum Hydrocarbons

Aliphatic EPH >C10 - C12	µg/l	8	0	20 - 100	27.5		
Aliphatic EPH >C12 - C16	µg/l	8	0	20 - 100	27.5		
Aliphatic EPH >C16 - C35	µg/l	8	7	64 - 583	248.6		
Aliphatic EPH >C35 - C44	µg/l	8	4	20 - 116	46.8		
Aliphatic EPH >C10 - C44	µg/l	8	7	64 - 698	282.8		
Aromatic EPH >C10 - C12	µg/l	8	0	20 - 100	27.5		
Aromatic EPH >C12 - C16	µg/l	8	0	20 - 100	27.5		
Aromatic EPH >C16 - C21	µg/l	8	0	20 - 100	27.5		
Aromatic EPH >C21 - C35	µg/l	8	2	20 - 100	32.9		
Aromatic EPH >C35 - C44	µg/l	8	0	20 - 100	27.5		
Aromatic EPH >C10 - C44	µg/l	8	2	20 - 100	32.9		
EPH >C10 - C44	µg/l	8	7	64 - 698	291.9		
Aliphatic VPH >C5 - C6	µg/l	3	0	10	5.00		

Parameter	Units	No. Analyses	No. Analyses Above LOD ^{*1}	Concentration Range	Mean ^{*2}	EQS	EQS Notes ^{*3}
Aliphatic VPH >C6 - C8	µg/l	3	0	10	5.00		
Aliphatic VPH >C8 - C10	µg/l	3	3	46.4 - 86.2	59.8		
Aliphatic VPH >C5 - C10	µg/l	3	3	46.4 - 86.2	59.8		
Aromatic VPH >C5 - C7	µg/l	3	0	10	5.00		
Aromatic VPH >C7 - C8	µg/l	3	0	10	5.00		
Aromatic VPH >C8 - C10	µg/l	3	0	10	5.00		
Aromatic VPH >C5 - C10	µg/l	3	0	10	5.00		
VPH >C5 - C10	µg/l	3	3	46.4 - 86.2	59.8		
Other Organic Compounds							
TOC as C	mg/l	10	10	3.4 - 20.5	9.56		

*1 LOD denotes the analytical limit of detection;

*2 Mean concentrations are calculated assuming that a result reported as being below LOD represent a concentration of (0.5 * LOD);

*3 AA denotes Annual Average concentration; MAC denotes Maximum Acceptable Concentration; WFD denotes a standard for the Water Framework Directive “good” quality.

The EQS of certain metals is the bioavailable component of the dissolved metal. Bioavailability is a function of characteristics of the watercourse (i.e. pH, temperature, DOC) and is lower than measured concentrations for those metals. ^ABC denotes Ambient Background Concentration.

Table 2-2: Summary Statistics for the Proxy Discharge to Surface Water Quality Dataset

Parameter	Units	No. Analyses	No. Analyses Above LOD* ¹	Concentration Range	Mean* ²	EQS	EQS Notes* ³
General Parameters							
pH	pH units	5	5	7.3 - 7.8	7.5	6-9	Min and Max
EC@20DegC	µS/cm	5	5	1520 - 3820	2066		
Total Suspended Solids	mg/l	3	3	26 - 69	53		
Nutrients							
Ammoniacal Nitrogen	mg/l	2	2	1.8 - 2.0	1.9	0.3	Total - Good WFD Status
Total Sulphur as SO ₄	mg/l	2	2	429-435	432		
Dissolved Metals							
Arsenic	mg/l	5	5	0.001 – 0.033	0.0076	0.05	AA (for total arsenic)
Cadmium	mg/l	5	4	0.00002 - 0.0027	0.000636	0.00008 - 0.00025	AA Hardness dependent
Chromium	mg/l	2	0	0.01	0.005	0.0047	AA for Cr(III)
Copper	mg/l	5	5	0.004 - 0.122	0.0396	0.001	AA Bioavailable [#]
Lead	mg/l	5	5	0.001 - 0.043	0.0112	0.0012	AA Bioavailable [#]
Mercury	mg/l	5	0	0.00003	0.000015	0.00007	MAC
Nickel	mg/l	5	5	0.016 - 0.502	0.118	0.004	AA Bioavailable [#]
Zinc	mg/l	5	5	0.163 - 0.586	0.298	0.0109+ABC [^]	AA Bioavailable [#]
BTEX and PAH							
Benzene	µg/l	2	0	5	2.5	10, 50	AA, MAC
Ethylbenzene	µg/l	2	0	5	2.5		
m/p-Xylene	µg/l	2	0	10	5	30	AA

Parameter	Units	No. Analyses	No. Analyses Above LOD* ¹	Concentration Range	Mean* ²	EQS	EQS Notes* ³
o-Xylene	µg/l	2	0	5	2.5	30	AA
Toluene	µg/l	2	0	5	2.5	74, 380	AA, MAC
Acenaphthene	µg/l	2	0	0.01	0.005		
Acenaphthylene	µg/l	2	0	0.01	0.005		
Anthracene	µg/l	2	0	0.01	0.005	0.1	AA & MAC
Benzo[a]anthracene	µg/l	2	1	0.01 - 0.02	0.0125		
Benzo[a]pyrene	µg/l	2	1	0.01 - 0.04	0.0225	0.27	MAC
Benzo[b]fluoranthene	µg/l	2	2	0.01 - 0.05	0.03		
Benzo[g,h,i]perylene	µg/l	2	1	0.01 - 0.02	0.0125		
Benzo[k]fluoranthene	µg/l	2	1	0.01 - 0.02	0.0125		
Chrysene	µg/l	2	1	0.01 - 0.03	0.0175		
Dibenzo[a,h]anthracene	µg/l	2	0	0.01	0.005		
Fluoranthene	µg/l	2	1	0.01 - 0.03	0.0175	0.0063, 0.12	AA, MAC
Fluorene	µg/l	2	0	0.01	0.005		
Indeno[1,2,3-cd]pyrene	µg/l	2	1	0.01 - 0.03	0.0175		
Naphthalene	µg/l	2	1	0.01 - 0.02	0.0125	2, 130	AA, MAC
Phenanthrene	µg/l	2	1	0.01	0.0075		
Pyrene	µg/l	2	2	0.07 - 0.12	0.095		
Total PAH 16	µg/l	2	1	0.22 - 0.45	0.28		
Petroleum Hydrocarbons							
Aliphatic EPH >C10 - C12	mg/l	2	0	0.01	0.005		

Parameter	Units	No. Analyses	No. Analyses Above LOD* ¹	Concentration Range	Mean* ²	EQS	EQS Notes* ³
Aliphatic EPH >C12 - C16	mg/l	2	1	0.01 - 0.03	0.0175		
Aliphatic EPH >C16 - C21	mg/l	2	1	0.01 - 0.09	0.0475		
Aliphatic EPH >C21 - C35	mg/l	2	1	0.01 - 0.75	0.378		
Aliphatic TPH >C8-C40	mg/l	2	2	0.02 - 0.91	0.465		
Aromatic EPH >C10 - C12	mg/l	2	0	0.01	0.005		
Aromatic EPH >C12 - C16	mg/l	2	1	0.01	0.0075		
Aromatic EPH >C16 - C21	mg/l	2	1	0.01 - 0.04	0.0225		
Aromatic EPH >C21 - C35	mg/l	2	2	0.01 - 0.16	0.085		
Aromatic TPH >C8-C40	mg/l	2	2	0.04 - 0.24	0.14		
EPH >C10 - C44	mg/l	3	3	0.98 - 12.9	6.05		
VPH >C5 - C10	mg/l	2	0	0.1	0.05		
Other Organic Compounds							
TOC as C	mg/l	3	3	9.53 - 49.2	23.58		

*1 LOD denotes the analytical limit of detection;

*2 Mean concentrations are calculated assuming that a result reported as being below LOD represent a concentration of (0.5 * LOD);

*3 AA denotes Annual Average concentration; MAC denotes Maximum Acceptable Concentration; WFD denotes a standard for the Water Framework Directive “good” quality.

The EQS of certain metals is the bioavailable component of the dissolved metal. Bioavailability is a function of characteristics of the watercourse (i.e. pH, temperature, DOC) and is lower than measured concentrations for those metals. ^ABC denotes Ambient Background Concentration.

Water Quality Standard and Contaminants Assessed

- 2.5.3 The H1 Assessment presented has only considered CoC: for which monitoring data is available and for which a water quality standard is available.
- 2.5.4 The Environmental Quality Standards (EQS) used within the inventory of the H1 Assessment Tool have been used in this assessment as presented in Appendix D. These principally relate to priority substances or specific pollutants as summarised in The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. The relevant EQS are summarised in Table 2-1 and Table 2-2.
- 2.5.5 For the majority of CoC identified the EQS relate to dissolved phase concentrations (i.e. sample filtered through a 45 µm filter) measured as an Annual Average (AA) or Maximum Acceptable Concentration (MAC) for a freshwater river scenario.
- 2.5.6 The Annual Average (AA) concentration has been calculated as the mean concentration for the entire dataset for each parameter. For those chemical datasets containing measurements reported as below the LOD, the mean concentration is estimated by assuming a concentration of (0.5 x LOD) for those measurements. The maximum concentration recorded in the entire dataset has been used for the MAC used in the assessment.
- 2.5.7 In accordance with Section 2.5.3, the following contaminants have been included in the emissions inventory for the H1 Assessment of discharge to surface water (W1):
- Dissolved metals that includes cadmium; copper; chromium (assumed to be Cr(III) form); iron; lead; nickel; and zinc
 - Total arsenic and mercury (as no dissolved data is available for mercury)
 - Ammonia
- 2.5.8 In accordance with Section 2.5.3, the following contaminants have been included in the proxy emissions inventory for the H1 Assessment of discharge to surface water (W1):
- Dissolved metals that includes arsenic; cadmium; copper; chromium (Cr(III) and Cr(VI) forms); lead; mercury; nickel; and zinc
 - Ammonia
 - BTEX and PAH compounds that includes benzene; xylene; toluene; anthracene; benzo(a)pyrene⁵; fluoranthene; and naphthalene

⁵ Benzo(a)pyrene is used as a proxy for total Polyaromatic Hydrocarbons (PAHs) within the H1 access screening tool.

- 2.5.9 The EQS for copper, nickel, lead and zinc are for their bioavailable form, which represents only a small proportion of the measured dissolved phase concentrations.
- 2.5.10 In the absence of appropriate chemical data for either effluent stream, it has been assumed that 10% of the dissolved concentration for discharge to surface water is bioavailable.
- 2.5.11 The EQS for cadmium has been identified for the hardness band of equal to or greater than 100 mg/l CaCO₃ but less than 200 mg/l CaCO₃. Yorkshire Water⁶ provides a hardness value of 100.8 mg/l CaCO₃. Although this value relates to water supplied to the area, it has been assumed to be representative of conditions in the receiving waterbodies.
- 2.5.12 Similarly, it has been assumed that un-ionised ammonia represents 5% of the total ammoniacal nitrogen concentration.

Effluent Flow Rates

- 2.5.13 As described in Sections 2.2.7 and 2.2.8, the mean and maximum effluent rate discharged from W1 is as follows:
- EDR_{mean} 0.0008 m³/s;
 - EDR_{maximum} 0.008 m³/s;

Background Water Quality in Cudworth Dyke

- 2.5.14 In line with regulatory guidance, the background concentrations in Cudworth Dyke have been estimated at 10% their respective EQS, except for Mercury where a background concentration of 50% has been used.

2.6 Results of Screening Tests: Freshwater

- 2.6.1 The H1 Assessment Tool for a freshwater river receptor is provided in Appendix B. Two separate tests have been carried out, the first using previous data for the Barnsley site and the second using the proxy site. The results of these assessments are discussed in turn.

Test 1

- 2.6.2 Test 1 determines whether the concentration of the pollutant in the discharge is less than 10% of the environmental quality standard (EQS) for each contaminant of concern.

⁶ [Yorkshire Water - Check your water hardness](#)

- 2.6.3 For discharge to surface water (W1), ammonia, arsenic, iron and nickel pass Test 1 for both Annual Average and MACs. All other modelled parameters fail Test 1.

Test 2

- 2.6.4 Test 2 introduces the dilution capacity within the receiving water. This test evaluates whether the Process Contribution (PC) for each pollutant is less than 4% of the EQS. If so, it is considered insignificant and can be screened out.
- 2.6.5 For discharge to surface water (W1), chromium passes Test 2. All other modelled parameters, that being cadmium, copper, lead, mercury and zinc, fail Test 2.

Test 3 and 4

- 2.6.6 Test 3 evaluates whether the discharge increases the Annual Average concentration of each pollutant in the river downstream of the discharge by more than 10% of the pollutant's EQS value. The predicted environmental concentration (PEC) in the water downstream of the discharge is a combination of the PC and Background Concentration (BC) in the watercourse. Test 4 evaluates whether the PEC is higher than the EQS for both the Annual Average and MAC. Substances must pass all three tests to be screened out.
- 2.6.7 For discharge to surface water (W1), cadmium, lead, mercury and zinc both Test 3 and Test 4.
- 2.6.8 Copper fails Test 3 but passes Test 4 for a both Annual Average and MAC. This suggests that while the risk to receiving water courses is unlikely to be significant, which is lent some support by the "Good" chemical quality status of the Cudworth Dyke, copper should be kept under review as further monitoring data is collected.

Significant Loads

- 2.6.9 All priority hazardous substances (PHS) pass the significant load test for W1.

2.7 Results of Proxy Screening Tests: Freshwater

- 2.7.1 The H1 Assessment Tool for a freshwater river receptor using proxy site data is provided in Appendix B.

Test 1

- 2.7.2 Test 1 determines whether the concentration of the pollutant in the proxy discharge is less than 10% of the environmental quality standard (EQS) for each contaminant of concern.

- 2.7.3 For the proxy discharge to surface water (W1), ammonia, naphthalene, benzo(a)pyrene and toluene pass Test 1 for both Annual Average and MACs. All other modelled parameters fail Test 1.

Test 2

- 2.7.4 Test 2 introduces the dilution capacity within the receiving water. This test evaluates whether the Process Contribution (PC) for each pollutant is less than 4% of the EQS. If so, it is considered insignificant and can be screened out.
- 2.7.5 For the proxy discharge to surface water (W1), anthracene, arsenic, benzene, chromium (VI) and xylene pass Test 2 for both Annual Average and MACs.
- 2.7.6 Cadmium, chromium (III), copper, fluoranthene, lead, mercury, nickel and zinc fail Test 2.

Test 3 and 4

- 2.7.7 Test 3 evaluates whether the discharge increases the Annual Average concentration of each pollutant in the river downstream of the discharge by more than 10% of the pollutant's EQS value. The predicted environmental concentration (PEC) in the water downstream of the discharge is a combination of the PC and Background Concentration (BC) in the watercourse. Test 4 evaluates whether the PEC is higher than the EQS for both the Annual Average and MAC. Substances must pass all three tests to be screened out.
- 2.7.8 For the proxy discharge to surface water (W1), all remaining pollutants (cadmium, chromium (III), copper, fluoranthene, lead, mercury, nickel and zinc) pass both Test 3 and Test 4.

Significant Loads

- 2.7.9 All proxy data priority hazardous substances (PHS) pass the significant load test.

2.8 Conclusions

- 2.8.1 An H1 screening assessment has been undertaken to determine whether the rainfall dependent discharge from the Site to surface water, represents a potential risk to Cudworth Dyke.
- 2.8.2 The surface water discharge to Cudworth Dyke fails Test 3 for copper. On this basis, it is considered that the discharge from the Site represents a low risk to Controlled Waters.

- 2.8.3 Proxy data supports the conclusions drawn and indicates the additional wastes proposed to be stored onsite will not have a significant impact on the receiving water body, Cudworth Dyke.
- 2.8.4 It is proposed the continued monitoring of all metals identified in the monitoring schedule should include relevant data of the discharge to more appropriately assess the impact on the receiving waterbody. That being the dissolved phase concentration of each metal.

3.0 Risk Assessment – Emissions to Air

- 3.1.1 A screening assessment of point source emissions to air from the installation has been completed using the latest version of the Environment Agency's H1 software (version 9.2).
- 3.1.2 The potential CoCs associated with the ferrous and non-ferrous metal processing activities identified for potential emissions to air in the Best Available Techniques (BAT) Reference Document for Waste Treatment are Particulate Matter (PM_{2.5} and PM₁₀).
- 3.1.3 In accordance with the Site Operating Techniques document (June 2026), WEEE or other materials containing Chlorofluorocarbons (CFCs), Total Volatile Organic Compounds (TVOC), Polychlorinated Biphenyls (PCBs) or Mercury are segregated and do not undergo mechanical treatment. Hence these are not considered to present a chronic potential CoC emission to air.
- 3.1.4 Emission point A1 is associated with the air extraction system for the metal granulation plant [the Eldan Plant] and is designed to capture and abate particulates as a result of the treatment activities being undertaken within the building.
- 3.1.5 Emission point A2 is associated with the air extraction system for the metal granulation plant [the Trennso Plant] and is designed to capture and abate particulates as a result of the treatment activity.
- 3.1.6 Both units are designed to control emissions to meet the BAT-AEL for channelled dust emissions to air from the mechanical treatment of waste of 5 mg/Nm³, applicable to mechanical treatment of waste where fabric filters are employed. Monitoring data from previous operations processing similar wastes through the same equipment is provided in Appendix E. This data shows a maximum measured concentration of 2.69 and 0.10 mg/Nm³ for A1 and A2 respectively, demonstrating that the BAT-AEL can be met.
- 3.1.7 The scope of the assessment has covered the following aspects:
- Release point characteristics,
 - Air emissions screening.
- 3.1.8 The air pollutant of concern with the potential to impact on human health and/or the environment from this emission point is particulate matter, both PM_{2.5} and PM₁₀ fractions.
- 3.1.9 The stack characteristics are outlined in Table 3-1 and Table 3-2 below.

Table 3-1: Stack A1 characteristics

Parameter	Value	Unit
Effective stack height	0	m
Efflux velocity	13.9	m.s ⁻¹
Normalised volumetric flow (dry, 273 K, 101.3 kPa)	36,299	Nm ³ .hr ⁻¹
TPM emission concentration (dry, 273 K, 101.3 kPa)*	5	mg.Nm ⁻³

Table 3-2: Stack A2 characteristics

Parameter	Value	Unit
Effective stack height	0	m
Efflux velocity	12.0	m.s ⁻¹
Normalised volumetric flow (dry, 273 K, 101.3 kPa)	30,984	Nm ³ .hr ⁻¹
TPM emission concentration (dry, 273 K, 101.3 kPa)*	5	mg.Nm ⁻³

- 3.1.10 Measured emissions have been screened for significance against appropriate environmental standards for long-term and short-term exposure. Emissions standards are based on statutory air quality objectives where available, and upon human health protection Environmental Assessment Levels (EALs) as given in H1 guidance.
- 3.1.11 An effective stack height of 0 m was used for both stacks as a conservative measure. This takes account of the adjacent granulation building structure and neighbouring watchtower.
- 3.1.12 The H1 Assessment used the average efflux velocity and normalised volumetric flow, from monitoring exercises carried out by CES Environmental Instruments Ltd in March 2025. Full air monitoring reports are provided in Appendix E.
- 3.1.13 The maximum operating hours of 4,992 per annum were used as a conservative measure. This equates to 57.0% of the year (based on 365 days*24 hours).
- 3.1.14 To add a further level of conservatism to the screening, the assessment assumed the total particulate matter for A1 and A2 was in the form of PM₁₀ and PM_{2.5} separately. That is both fractions at a total concentration of 5 mg.Nm⁻³ aligning with the BAT-AEL.
- 3.1.15 Figure 3-1: Air Impact Screening Test 1 for Particulate Matter as PM₁₀ and PM_{2.5}

Number	Substance	Long term EAL (ug/m3)	Long term PC (ug/m3)	%PC of EAL (long term)	>1% of EAL? (long term)	Short term EAL (ug/m3)	Short term PC (ug/m3)	%PC of EAL (short term)	>10% of EAL? (short term)
1	Particulates (PM2.5)	20	4.47	22.35%	fail	0	364.4479583		
2	Particulates (PM10)	40	4.47	11.18%	fail	50	215.0242954	430.05%	fail

- 3.1.16 The assessment failed Test 1 long term emissions of PM_{2.5} from emission points A1 and A2. There is no short term EAL for PM_{2.5}.
- 3.1.17 The assessment failed Test 1 for both long term and short term emissions of PM₁₀ from emission points A1 and A2.
- 3.1.18 Figure 3-2: Air Impact Screening Test 2 for Particulate Matter as PM₁₀ and PM_{2.5}

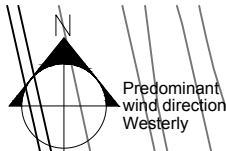
Substance	Long term EAL (ug/m3)	Long term PC (ug/m3)	Air Background conc (ug/m3)	%PC of headroom (long term)	PEC Long term (ug/m3)	%PEC of EAL% (Long term)	%PEC of EAL>70%? (long)	Short term EAL (ug/m3)	Short term PC (ug/m3)	%PC of the EAL-2+background	%PC of headroom >=20%? (short)
Particulates (PM2.5)	20	4.47	7.1	35%	11.57	57.85%	pass	0	364.4479583		
Particulates (PM10)	40	4.47	12	16%	16.47	41.18%	pass	50	215.0242954	827.02%	fail

- 3.1.19 The assessment screens out long term emissions and short term emissions of PM_{2.5} from emission points A1 and A2 as not significant at Test 2 of the screening assessment.
- 3.1.20 The assessment screens out long term emissions of PM₁₀ from emission points A1 and A2 as not significant. However, the assessment fails Test 2 for short term emissions of PM₁₀ from emission points A1 and A2.
- 3.1.21 Detailed modelling has been undertaken and is presented in an Air Quality Impact Assessment, which is provided within the permit application.

4.0 Conclusions

- 4.1.1 Screening assessments for emissions to surface water and emissions to air from the metals recycling facility located on Boulder Bridge Lane, Carlton, Barnsley, S71 3HJ (the Site).
- 4.1.2 The H1 screening assessment for emissions to surface water indicate all releases screen out as insignificant with the exception of copper in the surface water discharge to Cudworth Dyke, which fail Test 3 and Test 4. It is considered that the discharge from the Site represents a low risk to Controlled Waters, although continued monitoring of the dissolved phase of metals in the discharge is required.
- 4.1.3 Proxy surface water discharge data from another Donald Ward site, currently carrying out the activities to be permitted, supports the conclusion that there will be no significant impact from the site discharge. The H1 screening assessment for the proxy data also indicates that additional wastes proposed to be stored onsite will not have a significant impact on the receiving water body, Cudworth Dyke.
- 4.1.4 The screening assessment for emissions to air demonstrated that PM_{2.5} emissions for stacks A1 and A2, associated with the metal recycling activities screen out as insignificant at Test 2. However, PM₁₀ fails Test 2 for short term emissions from emission points A1 and A2.
- 4.1.5 A detailed assessment of potential air emission impacts has been carried out. The Air Quality Impact Assessment concluded that the effects are not significant.

Drawing 1: Site Layout Plan



WARD

Legend

- Permit Boundary
- Surface Water Drainage
- Foul Water Drainage
- Fire Extinguisher

Site Layout

- Entrance / Exit (Gated)
 - Car Parking
 - Weighbridge
 - Offices
 - Granulation Plant (Main)
 - Mobile Shredder
 - Non-ferrous building
 - Electrostatic Plant (not used)
 - Shear
 - Air Separation Plant
 - Maintenance Building
 - Electrical Substations
 - Welfare Facilities
 - Waste Storage
 - Cable Storage
 - Non-ferrous Storage
 - Ferrous Storage
 - Cable Pre-treatment
 - Cable Granulation Residue Plastic
 - Cable Granulation Residue Fine
 - Size Reduced Ferrous
 - Shearing Scrap Non-ferrous
 - Non-ferrous storage
 - Diesel Tank
 - Oil Storage
 - Quarantine / Orphaned Gas & Gas Cylinders
 - COSHH Store
 - Spill Kits
 - Water Shut Off Point
 - Concrete Panel Boundary Wall
 - Breeze block Boundary Wall
 - Battery Storage
 - Turnings Storage (bunded)
 - Non-ferrous / Cable Stripping Shed
 - Air system
 - NettingAbove Boundary Wall
 - Water Sprinkler System
 - End of Life Fridges
 - Emergency Assembly Point
 - Electrical Shut Off Point
 - Shear (decommissioned)
 - 30,000water tank
 - Acblue
 - Oxygen Cylinders
 - Waste Oil Tank
 - Asbestos Container
 - Propane Storage
 - Grab Bag
 - Interceptor-Where Bungwill be Deployed.
 - Hot Load Quarantine / Mobile Plant ParkingWhen Not In Use
 - ELV (non-depolluted)
 - SDA Storage
 - W1. EmissionPoint to Water
 - A1. EmissionPoint to Air
 - A2. EmissionPoint to Air
- Note: Fire hydrants located 250mE by residential and 220mS by industrial estate on Shaw Lane.

Rev	Description	By	Date
1	First version	DCW	04/06/26

Client Donald Ward Ltd

Project Barnsley

Title Site Layout Plan

Status FINAL Drawn By DCW PM/Checked by

Job Ref Scale @ A3 1:1000 Date Created June 2026

RPS Drawing / Figure Number DCW-001 Rev -

Appendix A: Run-off and Flow Calculations

2019-2023 (5 year average)

Daily Average 2.25 mm
0.00225 m

2019-2023 (5 year average)

Average Annual 821 mm
0.821 m

Site Area 29000 m2
Runoff 65.27 m3
Runoff Rate 0.0008 m3/s

27030 - Dearne at Adwick

Station info	Daily flow data	Live data	Peak flow data	Catchment info	Photo gallery
Grid reference:				SE476020	
Hydrometric area:				27 - Ouse (Yorkshire)	
Catchment area:				310.8 km ²	

27030 - Dearne at Aldwick

Q95	0.986 m3/s
Catchment Area	310.8 km2
Flow per km2	0.003172 m3/s/km2

27030 - Dearne at Adwick

Station info	Daily flow data	Live data	Peak flow data	Catchment info
Data series:		Gauged Daily Flow		
Period of record:		1963 – 2024		
Percent complete:		99 %		
Base flow index:		0.56		
Mean flow:		3.483 m ³ /s		
95% exceedance (Q95):		0.986 m ³ /s		

27030 - Dearne at Adwick

Station info	Daily flow data	Live data	Peak flow data	Catchment info	Photo gallery
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Catchment description:

Geology: primarily Carboniferous Coal Measures. Lower Coal Measures dip gently east northeast under more extensive Middle Coal Measures. Shales, overlain by alluvium. Land use: arable farming and moorland pasture in the headwaters. Significant urban development in middle reaches and valleys, including Barnsely. Coal mining and subsequent subsidence of land. Decline of coal mining and manufacturing industries throughout the period of record. Barnsley's growing population (and thereby development) peaked with the mining economy in 1971 (a quarter of Barnsley's population of Barnsley worked in mining by 1981). All mines were closed by 1994 with population decline since. The death of the industry left a legacy of abandoned deep mining pits and opencast coalmines, their associated spoil tips and mine works.

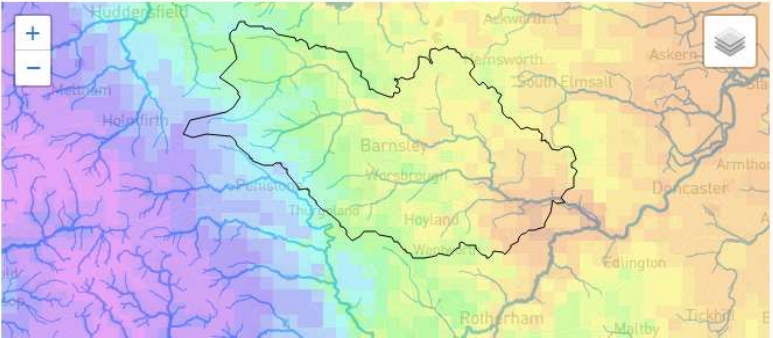
Elevation Hydrogeology Rainfall Other

Land Cover Maps (LCM)

Rainfall

Catchment statistics Legend

SAAR 1941-1970:	707.00 mm
SAAR 1961-1990:	696.00 mm
SAAR 1991-2020:	727.00 mm



27023 - Dearne at Barnsley Weir

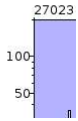
Station info	Daily flow data	Live data	Peak flow data	Catchment info	Photo gallery
Grid reference:				SE349072	
Hydrometric area:				27 - Ouse (Yorkshire)	
Catchment area:				118.9 km ²	

27023 - Dearne at Barsnley Weir

Q95	0.281 m3/s
Catchment Area	118.9 km2
Flow per km2	0.002363 m3/s/km2

27023 - Dearne at Barnsley Weir

Station info	Daily flow data	Live data	Peak flow data	Catchment info
Data series:		Gauged Daily Flow		
Period of record:		1960 – 2024		
Percent complete:		>99 %		
Base flow index:		0.48		
Mean flow:		1.378 m ³ /s		
95% exceedance (Q95):		0.281 m ³ /s		



27023 - Dearne at Barnsley Weir

Station info	Daily flow data	Live data	Peak flow data	Catchment info	Photo gallery
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Catchment description:

Mixed geology of Upper Carboniferous, coal measures, very little superficial deposits. Predominantly rural catchment, mixed agriculture and woodland with urban development near gauging station. No trace of original course of River Dearne.

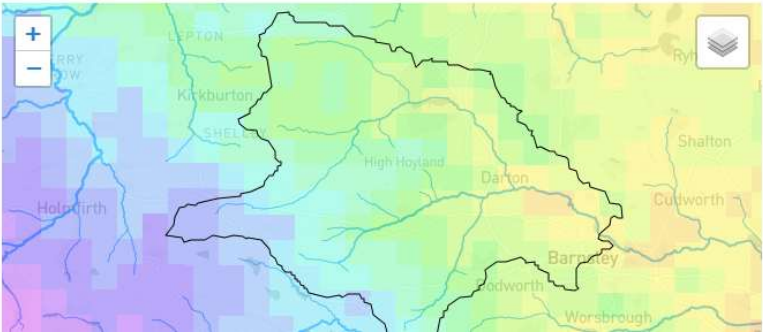
Elevation Hydrogeology Rainfall Other

Land Cover Maps (LCM)

Rainfall

Catchment statistics Legend

SAAR 1941-1970:	764.00 mm
SAAR 1961-1990:	766.00 mm
SAAR 1991-2020:	810.00 mm



27064 - Went at Walden Stubbs

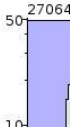
Station info	Daily flow data	Live data	Catchment info
Grid reference:			SE550163
Hydrometric area:			27 - Ouse (Yorkshire)
Catchment area:			83.7 km ²

27064 - Went at Walden Stubbs

Q95	0.165 m3/s
Catchment Area	83.7 km2
Flow per km2	0.001971 m3/s/km2

27064 - Went at Walden Stubbs

Station info	Daily flow data	Live data	Catchment info
Data series:		Gauged Daily Flow	
Period of record:		1979 – 2024	
Percent complete:		>99 %	
Base flow index:		0.57	
Mean flow:		0.594 m ³ /s	
95% exceedance (Q95):		0.165 m ³ /s	



27064 - Went at Walden Stubbs

Station info	Daily flow data	Live data	Catchment info
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Catchment description:

Geology comprises shales, sandstones and limestones. Low-lying, predominantly arable catchment with isolated built-up areas.

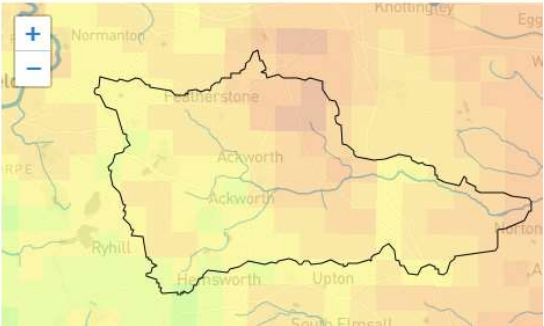
Elevation Hydrogeology Rainfall Other

Land Cover Maps (LCM)

Rainfall

Catchment statistics Legend

SAAR 1941-1970:	621.00 mm
SAAR 1961-1990:	611.00 mm
SAAR 1991-2020:	636.00 mm



Total Catchment Area 34.374 km2
Proportion of catchment area at site 0.75 Assumed from WFD plan

Site Catchment Area 25.78 km2

Assuming flow characteristics of Went at Waldon Stubbs

Q95 at Site **0.051 m3/s**
Cudworth Dyke **4391 m3/day**
(via Shaw Dike) **51 l/s**

Cudworth Dyke from Source to River Dearne Water Body

Poor ecological status



Get Cudworth Dyke from Source to River Dearne data

- [Download water body \(Shapefile\)](#)
- [Download water body \(GeoJSON\)](#)
- [Download classifications \(CSV\)](#)
- [Download site classifications \(CSV\)](#)
- [Download investigations \(CSV\)](#)
- [Download challenges \(CSV\)](#)
- [Download objectives \(CSV\)](#)
- [Download protected areas \(CSV\)](#)

Related links

- [Plan maps on ArcGIS online](#)
- [Flood risk management plans](#)

Attributes

Water Body ID GB104027063230	Water Body Type River	Hydromorphological designation not designated artificial or heavily modified	NGR SE3802510099
Catchment area 34.374 km2	Catchment area 3437.39 ha	Length 8.203 km	Surveillance Water Body No

Appendix B: H1 Assessment Tools

Appendix C: Water Monitoring Data

Surface Water (W1) Monitoring Results

Parameter	Units	BAT/AEL standard emission limit	26/11/2021	21/2/2022	06/09/2022	27/02/2023	29/01/2024	21/03/2024	23/5/2024	12/2/2025	28/5/2025	8/9/2025	AVERAGE* (LoD values at 50%)	Max	AA in H1	MAC in H1	Notes/Assumptions
Cadmium Total	µg/l	50	0.6	1.13	0.96	13		1.07	1.23	2.01	1.39	6.39	3.09	13			
Cadmium Filtered	µg/l		<0.6	<0.6	0.8	1.17		0.72	0.69	0.83	0.99	1.32	0.791	1.32	0.791	1.32	
Chromium Total	µg/l	150	3.07	8.67	16.4	64	14.9	3.49	5.76	9.5	2.98	2.09	13.09	64			
Chromium Filtered	µg/l		<2	<2.00	<2.00	<0.20		0.73	1.2	1.3	0.38	0.22	0.77	2	0.77	2	Max monitoring value is <2 µg/l - assumed MAC is 2 µg/l
Copper Total	µg/l	500	297	928	369	8270		590	1050	1610	844	127	1565	8270			
Copper Filtered	µg/l		83	84.2	126	92		324	267	205	345	34	173.4	345	17.34	34.5	10% of dissolved phase is bioavailable
Iron Total	µg/l		822	2200	1400	29000	4350	725	1349	2060	868	826	4360	29000			
Iron Filtered	µg/l		<230	<230	<230	66		22	53	20	52	52	67.8	66	67.8	230	Max monitoring value is <230 µg/l - assumed MAC is 230 µg/l
Lead Total	µg/l	100	70.7	231	86	2640		116	198	262	126	74.8	423	2640			
Lead Filtered	µg/l		<6	<6.00	11	3.4		9.9	13.9	54.2	14.5	12.2	13.9	54.2	1.39	5.42	10% of dissolved phase is bioavailable
Nickel Total	µg/l	500	6.09	8.15	66.1	73		4	6.9	9.4	6.6	8.2	20.9	73			
Nickel Filtered	µg/l		3.91	<3.00	<3.00	8.6		2.2	3.2	2.8	3.3	5.9	3.7	8.6	0.366	0.86	10% of dissolved phase is bioavailable
Zinc Total	µg/l	1000	846	1500	967	18700		806	861	1590	1120	162	2950	18700			
Zinc Filtered	µg/l		580	370	697	1410		469	397	570	674	61	581	1410	58.1	141	10% of dissolved phase is bioavailable
pH	units		7.8	7.8	7	7.3	7.9	7.6	7.3	7.4	6.9	7.5	7.45	7.9			
Suspended solids	mg/l	60	26	54	18	568	128	17	49	27	24	12	92.3	568			
BOD	mg/l		<1	4	5	14	3	4	7	11	12	3	6.35	14			
COD	mg/l	180	22	50	51	476	48	39	43	50	70	61	91	476			
Ammoniacal Nitrogen	mg/l		<0.41	<0.41	<0.41	0.79	0.52	1.1	<0.41	0.69	1	<0.55	0.520	1.1	0.026	0.055	Un-ionised ammonia represents 5% of the total ammoniacal nitrogen concentration
TOC	mg/l	60	4.3	3.4	9	14.6	5.9	8.1	8.7	7.5	20.5	13.6	9.56	20.5			
Arsenic Total	mg/l	0.05			0.00079	0.0057		0.00072	0.00122	0.00115	0.00079	0.00071	0.0016	0.0057	0.002	0.006	EQS relates to total arsenic
Arsenic Filtered	mg/l				0.0004	0.0002		0.0004	0.0004	0.0004	0.0005	0.0005	0.0004	0.0005			
Mercury	mg/l	0.005				0.00003	0.00039	0.0001	0.00007	0.0003	0.0001		0.000165	0.00039	0.000165	0.00039	No dissolved/filtered data for mercury available
Conductivity Electrical 20C	uS/cm				216	354	212	226	193	362	264	336	270	362			
Aliphatic EPH >C10 - C12	µg/l				<40	<40	<20	<20	<20	<100	<100	<100	27.5	0			
Aliphatic EPH >C12 - C16	µg/l				<40	<40	<20	<20	<20	<100	<100	<100	27.5	0			
Aliphatic EPH >C16 - C35	µg/l				174	257	232	64	173	583	<100	456	248.6	583			
Aliphatic EPH >C35 - C44	µg/l				<40	<40	28	<20	28	116	<100	102	46.8	116			
Aliphatic EPH >C10 - C44	µg/l				174	257	260	64	200	698	<100	559	282.8	698			
Aromatic EPH >C10 - C12	µg/l				<40	<40	<20	<20	<20	<100	<100	<100	27.5	0			
Aromatic EPH >C12 - C16	µg/l				<40	<40	<20	<20	<20	<100	<100	<100	27.5	0			
Aromatic EPH >C16 - C21	µg/l				<40	<40	<20	<20	<20	<100	<100	<100	27.5	0			
Aromatic EPH >C21 - C35	µg/l				<40	46	27	<20	<20	<100	<100	<100	32.9	46			
Aromatic EPH >C35 - C44	µg/l				<40	<40	<20	<20	<20	<100	<100	<100	27.5	0			
Aromatic EPH >C10 - C44	µg/l				<40	46	27	<20	<20	<100	<100	<100	32.9	46			
EPH >C10 - C44 (HOI)	µg/l	10000			174	302	288	64	200	698	<100	559	291.9	698			
Aliphatic VPH >C5 - C6	µg/l								<10	<10	<10		5	0			
Aliphatic VPH >C6 - C8	µg/l								<10	<10	<10		5	0			
Aliphatic VPH >C8 - 10	µg/l								46.9	86.2	46.4		59.8	86.2			
Aliphatic VPH >C5 - C10	µg/l								46.9	86.2	46.4		59.8	86.2			
Aromatic VPH >C5 - C7	µg/l								<10	<10	<10		5	0			
Aromatic VPH >C7 - C8	µg/l								<10	<10	<10		5	0			
Aromatic VPH >C8 - C10	µg/l								<10	<10	<10		5	0			
Aromatic VPH >C5 - C10	µg/l								<10	<10	<10		5	0			
VPH >C5 - C10	µg/l								46.9	86.2	46.4		59.8	86.2			

Appendix D: Environmental Quality Standards

Substance	Comment	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Category
Abamectin		0.01	0.03	O
Ammonia (un-ionised)		-	-	SP
Arsenic		50	-	SP
Azinphos-methyl - dissolved		0.01	-	O
Bentazone		500	-	O
Benzyl butyl phthalate		7.5	51 (95th percentile)	SP
Biphenyl		25	-	O
Boron		2,000	-	O
Bromine - total residual oxidant		2	5	O
Bromoxynil		100	1,000	O
Carbendazim		0.15	0.7	SP
Chloride		250,000	-	O
Chlorine - total residual oxidant		2	5 (95th percentile)	SP
4-chloro-3-methylphenol		40	-	O
Chloronitro toluenes		10	-	O
2-chlorophenol		50	-	O
3-chlorophenol 4- chlorophenol total or individual		50	250	O
Chlorothalonil		0.035	1.2	SP
Chlorotoluron		2	20	O
Chlorpropham		10	40	O
Chromium (III) - dissolved		4.7	32 (95th percentile)	SP
Chromium (VI) - dissolved		3.4	-	SP

Substance	Comment	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Category
Cobalt - dissolved		3	100	O
Copper - dissolved		1 (bioavailable)	-	SP
Coumaphos		0.03	0.1	O
Cyanide		1	5 (95th percentile)	SP
Cyfluthrin		-	0.001 (95th percentile)	O
Cypermethrin		0.0001	0.0004 (95th percentile)	SP
Demetons		0.5	-	O
Diazinon (sheep dip)		0.01	0.02 (95th percentile)	SP
Dibutyl phthalate		8	40	O
3,4-dichloroaniline		0.2	5.4 (95th percentile)	SP
Dichlorobenzene - total dichlorobenzene isomers		20	200	O
2,4-dichlorophenol		4.2	140 (95th percentile)	SP
2,4-dichlorophenoxyacetic acid (2,4-D)		0.3	1.3 (95th percentile)	SP
Dichlorvos		0.001	-	O
Diethyl phthalate		200	1,000	O
Diflubenzuron		0.001	0.015	O
Dimethoate		0.48	4 (95th percentile)	SP
Dimethyl phthalate		800	4,000	O
Diocetyl phthalate		20	40	O
Doramectin		0.001	0.01	O
EDTA		400	4,000	O

Substance	Comment	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Category
Fenchlorphos		0.03	0.1	O
Fenitrothion		0.01	-	O
Fluocifuron		-	1 (95th percentile)	O
Fluoride - dissolved	"Less than 50 milligrams of			
calcium carbonate per litre of"	1,000	3,000	O	
	More than 50mg/l of calcium	5,000	15,000	O
Formaldehyde		5	50	O
Glyphosate		196	398 (95th percentile)	SP
Hydrogen sulphide		0.25	1	O
loxynil		10	100	O
Iron - dissolved		1,000	-	SP
Ivermectin		0.0001	0.001	O
Linuron		0.5	0.9 (95th percentile)	SP
Malachite green		0.5	100	O
Malathion		0.01	-	O
Mancozeb		2	20	O
Maneb		3	30	O
Manganese		123 (bioavailable)	-	SP
MCPA	pH level less than 7	12	80	O
	pH level higher than 7	80	100	O

Substance	Comment	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Category
Mecoprop		18	187 (95th percentile)	SP
Methiocarb		0.01	0.77 (95th percentile)	SP
Mevinphos		-	0.02	O
Nitrilotriacetic acid (NTA)		1,000	10,000	O
Omethoate		0.01	-	O
PCSDs		-	0.05 (95th percentile)	O
Pendimethalin		0.3	0.58 (95th percentile)	SP
Permethrin		0.001	0.01 (95th percentile)	SP
pH		-	6-9 (95th percentile)	O
Phenol		7.7	46 (95th percentile)	SP
Pirimicarb		1	5	O
Pirimiphos-methyl		0.015	0.05	O
Prochloraz		4	40	O
Propetamphos		0.03	0.1	O
Propyzamide		100	1,000	O
Silver - dissolved		0.05	0.1	O
Sulcofuron		-	25 (95th percentile)	O
Sulphate		400,000	-	O
Styrene		50	500	O
Tecnazene - total		1	10	O
Tetrachloroethane		140	1,848 (95th percentile)	SP

Substance	Comment	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Category
Thiabendazole		5	50	O
Tin (inorganic) - total		25	-	O
Toluene		74	380 (95th percentile)	SP
Total anions		250,000	-	O
Triallate		0.25	5	O
Triazaphos		0.005	-	O
Tributyl phosphate		50	500	O
1,1,1-trichloroethane		100	-	O
Triclosan		0.1	0.28 (95th percentile)	SP
Triphenyltin and derivatives		-	0.02	O
1,1,2-trichloroethane		400	-	O
Vanadium	0-200mg/l of calcium	20	-	O
	More than 200mg/l calcium	60	-	O
Xylene		30	-	O
Zinc - dissolved plus ambient background concentration		10.9 (bioavailable)	-	S+A1:E99P

Substance	Water hardness - amount of calcium carbonate per litre of water	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Animals and plants (micrograms per kilogram)
Alachlor	-	0.3	0.7	-
Anthracene	-	0.1	0.1	-
Atrazine	-	0.6	2	-
Benzene	-	10	50	-
Benzo(a)-pyrene (BaP) (see PAHs below for AA and biota EQS)	-	-	0.27	
Benzo(b)-fluoranthene (see PAHs below for AA and biota EQS)	-	-	0.017	-
Benzo(k)-fluoranthene (see PAHs below for AA and biota EQS)	-	-	0.017	-
Benzo(g,h,i)-perylene (see PAHs below for AA and biota EQS)	-	-	0.0082	-

Substance	Water hardness - amount of calcium carbonate per litre of water	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Animals and plants (micrograms per kilogram)
Brominated diphenylether - total PBDE (or congener) numbers 28, 47, 99, 100, 153 and 154	-	-	0.14	0.0085 in fish
Cadmium and its compounds - dissolved	Less than 40 milligrams (mg)	Less than or equal to 0.08	Less than or equal to 0.45	-
	40mg to less than 50mg	0.08	0.45	-
	50mg to less than 100mg	0.09	0.6	-
	100mg to less than 200mg	0.15	0.9	-
	200mg or more	0.25	1.5	-
Carbon tetrachloride	-	12	-	-
Chlorfenvinphos	-	0.1	0.3	-
C10-13 chloroalkanes	-	0.4	1.4	-
Chlorpyrifos (chlorpyrifos-ethyl)	-	0.03	0.1	-

Substance	Water hardness - amount of calcium carbonate per litre of water	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Animals and plants (micrograms per kilogram)
Cyclodiene pesticides - total aldrin, dieldrin, endrin and isodrin	-	0.01	-	-
DDT total	-	0.025	-	-
Para-para-DDT	-	0.01	-	-
1,2-dichloro-ethane	-	10	-	-
Dichloro-methane	-	20	-	-
Di(2-ethylhexyl)-phthalate (DEHP)	-	1.3	-	-
Diuron	-	0.2	1.8	-
Endosulphan	-	0.005	0.01	-
Fluoranthene	-	0.0063	0.12	30 in crustaceans or molluscs
Hexachloro-benzene	-	-	0.05	10 in fish
Hexachloro-butadiene	-	-	0.6	55 in fish
Hexachloro-cyclohexane	-	0.02	0.04	-

Substance	Water hardness - amount of calcium carbonate per litre of water	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Animals and plants (micrograms per kilogram)
Indeno(1,2,3-cd)-pyrene (see PAHs below for AA and biota EQS)	-	-	-	-
Isoproturon	-	0.3	1	-
Lead and its compounds - dissolved	-	1.2 (bioavailable)	14	-
Mercury and its compounds - dissolved	-	-	0.07	20 in fish
Naphthalene	-	2	130	-
Nickel and its compounds - dissolved	-	4 (bioavailable)	34	-
Nonylphenol (4-nonylphenol)	-	0.3	2	-
Octylphenol (4-(1,1',3,3'-tetramethyl-butyl)-phenol)	-	0.1	-	-
Pentachloro-benzene	-	0.007	-	-
Pentachloro-phenol	-	0.4	1	-

Substance	Water hardness - amount of calcium carbonate per litre of water	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Animals and plants (micrograms per kilogram)
Polyaromatic hydrocarbons (PAH) - Benzo(a)-pyrene (BaP), Benzo(b)-fluor-anthene, Benzo(k)-fluor-anthene, Benzo(g,h,i)-perylene and Indeno(1,2,3-cd)-pyrene. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water	-	0.00017	-	5 in crustaceans or molluscs
Simazine	-	1	4	-
Tetrachloro-ethylene	-	10	-	-

Substance	Water hardness - amount of calcium carbonate per litre of water	AA-EQS (micrograms per litre)	MAC-EQS (micrograms per litre)	Animals and plants (micrograms per kilogram)
Tributyltin compounds (tributyltin-cation)	-	0.0002	0.0015	-
Trichloro-benzenes	-	0.4	-	-
Trichloro-ethylene	-	10	-	-
Trichloro-methane (chloroform)	-	2.5	-	-
Trifluralin	-	0.03	-	-

Appendix E: Air Monitoring Data