PROSPER THROUGH COMPLIANCE

SITE DETAILS:
Wiser Recycling Ltd
52 – 54 Brunel Way
THETFORD
NORFOLK
IP24 1HP

and

Colneside Business Park
George Street
Milnsbridge
HUDDERSFIELD
HD3 4JD

APPLICANT DETAILS:
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Permit Reference:
EA/EPR/FB3202TT and EA/EPR/TP3593VJ

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REFERENCE	TITLE
T5.0.1~003	Site Boundary and Layout Plan

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APPENDIX	TITLE
A	BATC Waste Treatment Summary

1 INTRODUCTION

This Best Available Techniques (BAT) Assessment has been produced by Wiser Recycling Ltd (Wiser) (the operator and applicant) to support the variation of Environmental Permits (EA/EPR/FB3202TT and EA/EPR/TP3593VJ)) at 52-54 Brunel Way, Thetford, IP24 1HP and Colneside Business Park, George Street, Milnsbridge, HD3 4JD respectively.

The facilities currently treat Waste Electrical and Electronic Equipment (WEEE) including lamps and CRT televisions. Current waste operations are under Standard Rules SR2015No.15 and SR2008 No23 respectively, which limit the amount of hazardous waste treated to less than 10 tonnes per day. Operations and activities are similar at both sites and they operate under common Management System procedures, processes and management team. This document outlines those processes, and also indicates where differences are between the two sites.

Lamp treatment processes are present at both of these sites, which are proprietary specialist treatment facilities which treat less than 3 tonnes per day each, and have a single emissions point via granular activated carbon filters.

The relevant Standard Rules will change on 10th July 2019 to prevent the operation of any emissions points. To continue with the lamp treatment operations an application to vary these permits to bespoke permit is required.

As part of the application, a technical description of the changes proposed and demonstration of meeting the Best Available Techniques (BAT).

The term 'best available techniques' is defined in Article 2(11) of the Directive as 'the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole.'

Article 2(11) goes on to clarify further this definition as follows:

'best' means most effective in achieving a high general level of protection of the environment as a whole.

'available' techniques are those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;

'techniques' includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;

Furthermore, Annex IV of the Directive contains a list of 'considerations to be taken into account generally or in specific cases when determining best available techniques… bearing in mind the likely costs and benefits of a measure and the principles of precaution and prevention'.

Additionally, consideration needs to be given to installations where the technical characteristics can be shown to be so different from those assumed in the sectoral assessment of BAT described in the guidance documents, that the indicative BAT standards may not be appropriate;

This document should be read in conjunction with other supporting information contained within the Application pack.

1.1 Proposed changes to the operations

The facilities currently accept and treat WEEE. Specialist plant is provided for gas discharge lamp at both sites, and cathode ray tube treatment at the Thetford site. . A process for small mixed WEEE appliances is also planned to be researched and commissioned during 2020.

Lamp Treatment

Lamp treatment is conducted using proprietary equipment provided by MRT System of Sweden. The equipment – Compact Crush and Sieve (CCS) – are similar at both sites, consisting of:

- Feed conveyor for whole linear lamps

- Feed auger for Compact Fluorescent Lamps (CFL) – at Huddersfield only
- Feed imploder for Compact Fluorescent Lamps (CFL) – at Thetford only
- Beater for breaking lamps
- Crushers for more finely breaking materials
- Cyclones and tumblers for separation of phosphor powders
- Magnet and eddy current for separation of steel and aluminium respectively
- Air extraction, fabric (bag) filters and cyclones for powder collection
- Air extraction and a series of carbon filters for extraction of process air
- Air extraction, fabric (bag) filters, and carbon filter for ancillary operations and peripheral activities
- Single emissions point to atmosphere

WEEE Treatment

The Standard Rules permits limit the treatment of hazardous WEEE to 10 tonnes per day and non-hazardous WEEE to 75 tonnes per day.

At present all Small Mixed WEEE (SMW)appliances are hand sorted into various categories. Changes are imminent on how SMW is classified and some of the processes may need to be altered as a result – including further separation of hazardous and non-hazardous materials.

Wiser is looking to install a small treatment process for Small Mixed WEEE (SMW)appliances. Our intention is that only non-hazardous materials will be processed through this plant – through manual segregation and initial hand dismantling. Depending on the way certain SMW becomes classified there may be a need to process hazardous WEEE but in any case no more than 4 tonnes hazardous SMW per day.

A dust extraction system will be installed with an emission point following dust control. The emission point will be common with the lamp treatment emissions stack point.

For Industrial Emissions Directive thresholds the following treatment processes are applicable – showing daily tonnage per day of hazardous treatment (please note that SMW treatment is currently considered to be non-hazardous):

Site	CRT	GDL (lamps)	SMW	TOTAL
Thetford	3	2	4	9
Huddersfield	0	2.5	0	2.5

1.2 Application of BAT standards to the specific process

In this BAT assessment, the following reference and guidance documents have been consulted:

- *Commission Implementing Decision (EU) 2018/1147, of 10 August 2018, establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council.*
- *Best Available Techniques (BAT) Reference Document for Waste treatment Industrial Emissions Directive 2010/75/EU (Integrated Pollution Prevention and Control); EUR 29362 EN; Publications Office of the European Union, Luxembourg, 2018;*
- *Guidance on Best Available Treatment Recovery and Recycling Techniques (BATRRT) and treatment of Waste Electrical and Electronic Equipment (WEEE), Department for Environment, Food and Rural Affairs (Defra), November 2006.*
- *Guidance for the Recovery and Disposal of Hazardous and Non Hazardous Waste S5.06,* Integrated *Pollution Prevention and Control (IPPC), Issue 5, May 2013.*

A summary of all the BAT contained in the BAT conclusions document have been collected in APPENDIX A (K73.5~09~002 BATC waste treatment summary). The table references the relevant documents within the Wiser Integrated Management System (IMS) that describe how compliance with BAT is met or will be met in the future, within the timescales allowed by the BAT conclusions document.

The assessment of the BAT conclusions and guidance documents has highlighted how the process carried out at the Thetford and Milnsbridge Facilities have technical characteristics different from those assumed in the guidance documents, making many of the BAT applied processes and techniques not always appropriate to the specific process.

The treatment of WEEE and metals assumes shredding activities take place, with emissions relevant to that type of process. Neither of these sites contain traditional shredding equipment to treat WEEE and nor are they likely to due to the inherent issues including dust emission, deflagration, and high maintenance cost and requirement.

The main process that requires BAT assessment is lamp treatment. The CCS machine is a dry air based system, including cyclones and shakers for the removal of phosphor powder. Phosphor powder contains approximately 500mg/kg of mercury. No separation of mercury occurs from the phosphor powder – which is sent for treatment elsewhere, when possible for recover of rare earths.

There is no distillation process on either site and hence there is considerable reduction in risk over similar sites.

2 POLLUTION CONTROL TECHNIQUES

The following section describes the in-process operating techniques that have been implemented at the Wiser facilities to avoid the release of polluting substances to the environment, taking into account relevant BAT requirement and site specific technical and economic factors.

2.1 Pre-acceptance procedure

All WEEE types are accepted at the sites. The AATF Sampling and Inspection Plan documents acceptance and pre-acceptance methods. The Sales and Quotation process also outlines the information requested of potential customers prior to quotations and work acceptance.

The sites are restricted to a narrow range of solid wastes, and as such samples and analyses are rarely required. Whether there is lack of clarity from a customer in terms of material type – samples and/or photographs are required prior to the quotation being provided. This ensure that the forwarding destination of the treated or bulked wastes is clear prior to acceptance.

At least the following information is to be provided by the waste producer for acceptance of waste on site:

- Source of the waste
- Type and description of waste
- Quantity and how packaged
- Collection accessibility
- Any special considerations – such as liquid or other hazardous component content

Waste producers are encouraged to send pictures of the units in the load as well as pictures of the labels, when available.

The Technical Competent manager (TCM) (or nominated alternative) shall review the information provided to determine whether is sufficient for acceptance of the waste on site.

A database of the common manufacturers and models is available to the operators on site and will be consulted to check if the units are compliant with the Permit (non-ODS). Other sources of information such as phone apps and internet can be used to check that the refrigerant and blowing agent used are non-ODS.

Where the information provided is deemed insufficient, the Operator will request further information form the waste producer.

Where uncertainties remain on whether the WEEE types in a load are compliant with the Permit, a precautionary approach will be used, and the operator will reject the load.

For every enquiry, the load is given a unique reference number through our Waste Logics Software system, contents of the load listed along with the information provided by the waste producer, and whether the load has been accepted or not. The information is recorded.

The load schedule information is transferred daily to an electronic database and will be used to ensure that capacity is available, as part of the site's stock control. Where there is no capacity the load shall be rejected at the pre-acceptance check stage.

2.2 Duty of Care checks

2.2.1 Load arrival

On arrival on site every load is required to park in the unloading area. At Thetford a vehicle weighbridge is used to have lorry weight recorded and to hand in all Duty of Care paperwork and job reference no. previously assigned during pre-acceptance procedures. Pallet scales and average weights are used to record weights of the individual waste categories/types in any mixed load – as outlined in the Sampling and Inspection Plan.

The duty of care paperwork (Hazardous Waste Consignment Notes, HWCN) is examined to check that it meets the legal requirements and that the information provided at the pre-acceptance stage is consistent.

The load shall then be subject to a visual check: trained operational staff shall check the load to ensure that the load contained only the refrigeration units described in the

schedule and duty of care documents. Non-permitted loads will be rejected at this stage and not allowed to be unloaded.

A detailed check is carried out to ensure the detail completed in the HWCN matches the waste types and number consigned.

Where identified after unloading non-permitted waste will be segregated and stored in a designated quarantine/isolation area prior to removal from site (quarantine area in Site Layout Plan).

Contaminated or non-conforming loads identified during the initial inspection will be rejected and details of the rejection along with dates, times and reasons recorded.

Where limited volumes of non-conforming material are identified the technically competent manager (TCM) will be consulted. Where possible and if safe to do so contaminated or non-conforming material will be removed by hand and quarantined pending disposal at a suitably permitted facility.

Where smouldering or burning material is identified during the initial inspection immediate action will be taken to extinguish the load, if safe to do so the load will be directed to the quarantine area prior to removal from site, as soon as is reasonably practical.

2.3 Waste storage

Waste inspections will be undertaken prior to acceptance and during unloading, non-permitted loads will be rejected. Where identified after unloading non-permitted waste will be segregated and stored in a designated quarantine/isolation area prior to removal from site.

Once unloaded the various waste types are moved to the relevant part of the site for processing. Each waste material is processed in a particular part of the site.

All storage takes place on impermeable surfaces with sealed drainage. All wastes awaiting processing are stored indoors.

The Sampling and Inspection Plan details the processes. Stock Control sheets are taken each week to ensure that tracking and stock treatment records are monitored regularly.

Turnaround for the processes are generally within a week of arrival on site. Gas discharge lamps are batch processed, and can be waiting for processing up to a month.

Gates and building are locked and secured every evening after operations finish.

The site security is visually inspected every night and Thetford has 24-hour CCTV coverage operates across the site. CCTV cameras are located both inside the building and outside areas, these provide surveillance of the entire site. CCTV is monitored throughout operational hours. Both fire and intruder alarms are now linked up to a security company control room and monitored 24 hours a day, and 7 days a week.

Huddersfield currently has the Colne Business Park landlords CCTV coverage for the external areas. This is monitored by external security company 24 hours a day 7 days a week. It is intended to install CCTV to internal and external areas in Q2 2020 to be controlled by Wiser.

Within the building, daily inspections are carried out of the condition of containers and written records are kept of these inspections weekly. If a container is found to be damaged, leaking or in a state of deterioration, the contents are immediately transferred to another container.

Site specific spillage procedures are in place at both sites. The procedures include actions to be taken in the event of fire and fire water run-off, and numbers of personnel involved in ensuring pollution control in major spill and fire events. Training of staff takes place at least once each 6 months – including a run through specific scenarios.

Any spillage is required to be cleaned up immediately and reported to site supervisors and managers. Residue removal will be undertaken rapidly, as will checks to the integrity of the site's surfaces and infrastructure. All spillages of hazardous wastes are recorded.

Vehicular and pedestrian access is kept at all times to the whole of the storage areas such that the transfer of containers is not reliant on the removal of others that may be blocking access

3 WASTE TREATMENT

The waste treatment processes are documented within the Sampling and Inspection Plan, within the Operations section of the Management System (t5) and process flow diagrams.

The bulk of the wastes are manually treated – separation of different types and removal of components from CRT televisions for example. Once removed, components are stored in dedicated boxes or IBC cages including:

- Compressors
- Yolks
- LED lights
- Fluorescent tubes
- Printed circuit boards
- Cables
- Non-ferrous metals

Larger volume materials such as steel and plastics are separated and baled on site.

A small amount residual non-recyclable material is disposed of as general waste.

4 MONITORING AND ABATEMENT OF EMISSIONS TO THE AIR

The only point source emission point to air from each site is currently the CCS machine.

Abatement of the potential emissions of mercury and particulate is by in-line granular carbon filters and bag filters.

Monitoring of emissions from this point source is carried out monthly using a Shaw City MVI mercury meter. This provides an indication of mercury levels being emitted at the discharge point and raises any actions required for further monitoring or indicates a need to change carbon.

Full emissions monitoring to EN13211 is carried out annually by a third party specialist consultancy.

The abatement and monitoring system is in accordance with the requirements of the European Commission BAT Conclusions document1, Defra's 'Guidance on Best Available Treatment Recovery and Recycling Techniques (BATRRT) and treatment of Waste Electrical and Electronic Equipment (WEEE), (November 2006). It is considered that annual monitoring is suitable and appropriate in this case due to the absence of separation of mercury from phosphor powder – the absence of a distillation process.

Monitoring standards, methods and monitoring points are outlined in the most recent reports.

4.1 BREACH OF EMISSION LIMIT VALUE

If the AEL is breached during the measurements, arrangements will be made for the abatement system to be replaced as soon as practically possible. The MVI measurements provide an early warning of any problem and generally carbon is replaced before failure.

[1] Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council (notified under document C(2018) 5070) (Text with EEA relevance.) https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D1147&from=EN

The measurement would be repeated once the system has been restored until the measurement demonstrates that the values return to compliance with the AEL.

Following this an investigation into possible causes of the breach will be instigated to establish the reasons for the exceedance. The results of this investigation will be reported to senior management and actions taken to prevent re-occurrence if any improvements to systems are identified. Results of the analysis and copies of the investigation and outcomes will be made available to the EA upon request.

5 MONITORING OF EMISSIONS TO WATER

All processes at the Wiser Recycling facilities are carried on impermeable surface with sealed drainage systems. There is no point source emission to water.

The drainage of the external area at Thetford is connected to an interceptor for the physical separation of gross solids, suspended solids, oil greases.

A surface water monitoring plan has been developed to ensure that the interceptor performs as intended.

Monitoring of surface water will commence in August 2019. Water samples will be collected on a quarterly basis from the discharge of the surface water interceptor for an initial period of 12 months to collect a baseline dataset.

This dataset will be analysed to assess what potentially polluting substances are present within the discharge and allow a statistically robust Emission Limit Value (ELV) to be set for any substance of concern.

Preliminary ELVs have been taken from the Environment Agency 'H1 Annex D-Basic Surface Water discharges' and the Drinking Water Inspectorate 'What are the Drinking Water Standards?'.

5.1 SAMPLING METHODOLOGY

Spot samples have been identified as a suitable means of assessing discharge quality as:

- the composition of the surface water is relatively constant;
- the quality of the discharge is to be checked at a particular moment, to assess compliance with permit conditions; and
- the discharge is not continuous.

Recovered samples will be transferred to a selected UKAS Accredited laboratory. The laboratory provides the required sample containers for the analysis to be undertaken. The samples are transferred within an insulated container equipped with ice packs to ensure sample integrity/stability.

The samples are to be analysed for the determinands detailed in Table 2 below.

Table 1. determinands analysed in the surface water samples

Determinand	Analytical Method	Accreditation Status	Detection Limit	Units
pH	Potentiometric	ISO 17025	+/- 0.1	µg/litre
Electrical Conductivity at 20°	Potentiometric	ISO 17025	10	µs/cm
Ammonium as NH_4	Discrete Analyser	ISO17025	<15	µg/litre
Total Organic Compound (TOC)	TOC Analyser	ISO 17025	<0.1	mg/litre
Chemical Oxygen Demand (COD)	Colorimetric	ISO 17025	<2	mg/litre
Total Phenols (monohydric)	Skalar CFA	ISO 17025	2	mg/litre
Aluminium (Total)	ICP-MS	ISO17025	<1	µg/litre
Arsenic (dissolved)	ICP-MS	ISO 17025	0.15	µg/litre
Boron (dissolved)	ICP-OES	ISO 17025	<10	µg/litre
Cadmium (dissolved)	ICP-MS	ISO 17025	<0.02	µg/litre
Chromium (dissolved)	ICP-MS	ISO 17025	<0.2	µg/litre
Copper (dissolved)	ICP-MS	ISO 17025	<0.5	µg/litre
Lead (dissolved)	ICP-MS	ISO 17025	<0.2	µg/litre
Mercury (dissolved)	ICP-MS	ISO 17025	<0.05	µg/litre
Nickel (dissolved)	ICP-MS	ISO 17025	<0.5	µg/litre
Selenium (dissolved)	ICP-MS	ISO 17025	<0.6	µg/litre
Zinc (dissolved)	ICP-MS	ISO 17025	<0.5	µg/litre
Methyl Tertiary Butyl Ether (MTBE)	H-GC/MS	ISO 17025	<10	µg/litre
TPH1 (C10-C40)	GC/MS	None	<10	µg/litre

5.2 SAMPLING FREQUENCY

In line with the monitoring frequency given in the Environment Agency guidance 'Control and monitor emissions for your environmental permit', and additional guidance: 'Site-specific quality numeric permit limits: discharges to surface water and groundwater' the discharge will be initially sampled on a quarterly basis and then reviewed.

5.3 BASELINE VALUES

To be able to use monitoring data to detect potential impacts from the storage of non-hazardous waste, the normal pattern of variation in a monitoring record needs to have been established at an early stage in the monitoring process. Baseline (or background) monitoring data is defined as measurements that characterise physical, chemical or other distinctive properties of the surface water unaffected by contamination from the waste operation. Monitoring data, including those collected during and after operation of the waste site remain part of the baseline record until a significant deviation from the established pattern of baseline variation is identified. To be statistically robust the baseline data should be taken

over a sufficient period to take into account seasonal variation and any other natural variation. Following the end of this monitoring period the data can be reviewed against established assessment criteria to determine the need for further assessment.

5.4 COMPLIANCE ASSESSMENT

Routine samples taken from the discharge will be assessed for compliance using percentile limits.

The 95th percentile limit will be used for routine sampling of the following parameters:

- Ammoniacal nitrogen
- Heavy metals / metalloids
- TOC
- COD
- BTEX, MBTE
- TPH (C10-C40)
- Phenols

Limits are set using the Maximum Allowable Concentration of the Environmental Quality Standards (MAC-EQS). Where there is no MAC-EQS information for certain substances, the Annual Average (AA) is used. The AA numeric value is multiplied by 5 to ascertain a parameter limit. Where there is no AA information for certain substances, parameter numeric values are compared to the Drinking Water Standards (DWS). Due to the stringent requirements of pollutant limits in drinking water, parameter numeric values within the DWS limits are assumed to be within the ELV.

If a parameter sample result is higher than its 95th percentile numeric limit it's an individual look-up table (LUT) exceedance.

When a LUT exceedance happens, the number of exceedances for that parameter are compared with the number of samples taken in the 12-month period. The 12-month period ends on the last day of the month in which the latest exceedance occurred.

5.5 BREACH OF EMISSION LIMIT VALUE

Once set if an ELV is breached on the Percentile Limit then another sample will be recovered as soon as practicable. If this sample returns above the limit arrangements will be made for the sump to be emptied and taken offsite for disposal at an appropriately permitted treatment facility.

This will continue until either:

- the samples demonstrate that the values return to compliance with the emission limit value; or
- a reassessment of the ELV is carried out and demonstrates that a higher ELV will not cause pollution.

Following this an investigation into possible causes of the breach will be instigated to establish the reasons for the exceedance. The results of this investigation will be reported to senior management and actions taken to prevent re-occurrence if any improvements to systems are identified. Results of the analysis and copies of the investigation and outcomes will be made available to the EA upon request.