

# Environment Agency permitting decisions

## Variation

We have decided to issue the variation for Unit E, Ashfordby Business Park operated by eSynergy Developments Limited

The variation number is EPR/CB3404TN/V002

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

## Description of the changes introduced by the Variation

This is a Substantial Variation to vary the existing standard rules permit SR2008No23 to a bespoke waste operation and installation to undertake the following activities:

### Installation

- Processing of fridges containing ozone depleting substances (ODS)
- Crushing of compact fluorescent tubes containing mercury, in specifically designed plant

### Waste operation

- Dismantling and storage of waste electrical and electronic equipment for recovery (WEEE)
- Shredding of WEEE equipment < 75 tonnes per day
- Temporary Storage of hazardous waste <50 tonnes at any one time

## **Purpose of this document**

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

## **Structure of this document**

- Key issues
- Annex 1 the decision checklist
- Annex 2 the consultation and web publicising responses

## **Key issues of the decision**

### **Processing of fridges (installation)**

The operator will accept domestic and commercial fridges for treatment, some which contain ozone depleting substances (ODS) and/or volatile organic compounds (VOCs).

#### **Domestic fridge treatment**

Domestic fridges will be degassed and their hazardous components removed. They will then be processed via a bespoke fridge treatment system. Individual fridges will be inserted whole into the main fridge processing system and broken down by means of a spinning heavy duty chain for several minutes. The gas released from blown foam during the treatment is extracted and treated by a cryogenic system to remove Volatile Organic Compounds and Ozone Depleting Substances, if present. Fragments of the fridge units are then automatically separated into constituent materials.

#### **Commercial fridge treatment**

Commercial fridges (e.g. from supermarkets) will be degassed and hazardous components removed (e.g. compact fluorescent lamps). The units will then be inserted into the 'pre-shredder'. The pre-shredder will not take units which contain Ozone Depleting Substances in the compressor oil or blown foam. The gas released from blown foam during the treatment will be extracted and released to air after treatment via an abatement system. Processed material will then either be collected for onward recycling or inserted into the main fridge processing system for further processing. Materials will be separated out by the main shredding system and recovered appropriately. The gas released from blown foams during treatment in the main shredding system will be extracted and treated

### **Ozone depleting substances (ODS)**

The operator will take fridges which contain ozone depleting substances. This will consist mainly of domestic fridges due to the lifespan of commercial refrigeration, as post 2001 units containing CFC industrial coolant should have been phased out.

#### **Phase 1 draining of oil containing ozone depleting substances (degassing)**

Prior to any physical treatment, all fridges will be subject to degassing. The units are connected to piercing stations which draw the oil/gas mixture from the refrigerant circuit via a vacuum pipe. Under additional heating, the residual refrigerant gas dissolved in the oil/gas mixture is then vaporised. The oil is then filtered and leaves the process at a composition of less than 0.1% ODS content. Gas liberated from the oil/gas mixture then joins the bulk of the process gas through various filters before entering a high pressure zone where they are condensed and stored to be sent off site.

#### **Phase 2 collections – gases released during fridge destruction (in main fridge shredder only)**

Domestic Units containing CFC blowing agent will be inserted whole into the site's bespoke fridge processing system which is an encapsulated system that extracts and condenses release gases. The system extracts gases during the grinding step and subjects it a cryogenic condensing system. ODS can then be safely stored prior to offsite disposal.

No pre 1994 commercial units are expected which may contain CFC blowing agents. In the unlikely event these units are identified, they will have blown foam removed and will be manually dismantled. If necessary, appropriate sized sections may then be shredded and grinded in an encapsulated system (main fridge processing system).

## **Management of explosive gases**

### **Pre shredding plant**

This plant will be utilised to reduce the size of the commercial units in order for them to be inserted into the main shredding plant. The system will be injected with nitrogen to inert the internal atmosphere in order to prevent an explosive atmosphere being created. It will also be attached to a ventilation system which will vent nitrogen and explosive gases to atmosphere via an abatement system. The system will be designed for automatic shutdown if flammable gas concentrations exceed 25% of LEL (Lower explosion Limit)

### **Main shredding plant**

Shredding of refrigeration units will take place via this system under an inert atmosphere using temporary streams of gaseous nitrogen and automatic shutdown will occur if flammable gas concentrations exceed 25% of LEL (Lower explosion Limit). Once extracted from the shredding process, the gaseous mix goes through a filter, followed by a cryo-condensation process which segregates the hazardous substances for appropriate containment in gas cylinders prior to being sent off-site for disposal.

## **Emissions to air**

### **Pre shredding plant**

The gases extracted from this plant will not contain ozone depleting substances (ODS) or F-gas as the operator will not subject ODS containing fridges to the process. This is mainly because commercial fridges containing ODS have mostly been phased out. To control the emission of VOC's created by this process, the operator has confirmed they will install an appropriate abatement system to treat the vented gas. The requirement to install this equipment has been incorporated into the permit through pre-operational condition 3

### **Main shredding plant**

All gas collected via the main shredding plant will be processed via the cryo-condensation unit and collected in cylinders for offsite disposal. Once the hazardous gases from the shredding plant (CFC, VOCs) have been removed, the remaining gases will be vented to atmosphere. The operator has demonstrated that these releases will be in line with the limits outlined in our guidance and the presence of CFCs and VOCs after treatment will be insignificant. To ensure the operator maintains emissions below the limits in our guidance, we have inserted emissions limits and monitoring requirements into the permit for CFCs (5g per 100 units) and VOCs (hourly average) to ensure the operator maintains effective treatment of the gases liberated during the process. The operator has confirmed they intend to process 100 – 200 units per hour, therefore if they exceed the trigger limit of 10 g/hr for a period of two consecutive hours, they will address the breach in line with the procedures contained in the Contingency Action Plan. If the Plant remains at over 10 g/hr for a further hour, the entire plant will be shut down.

## **Directly associated activities**

The operator has confirmed they will store hazardous waste on site below 50 tonnes at any one time. To maintain this 50 tonnes restriction, the operator has provided specific sized bays to restrict storage loads to certain tonnages. These bays will allow 3.5m high storage and provide an 18m by 4m area (72m<sup>2</sup>) which will only allow the

storage of approximately 18 tonnes of fridges. This will allow them to demonstrate based on how many bays are filled, the tonnage on site. All hazardous wastes will be stored under this activity will be kept on an impermeable surface with sealed drainage and all units containing hazardous components will be stored with an appropriate weatherproof covering.

### **Waste operation**

In addition to the refrigerator shredding installation, the site will have a waste operation which will undertake the following activities:

#### **Shredding of WEEE equipment < 75 tonnes**

The shredding process takes place using the 'Pre shredding system'. It is initially used for the disintegration of small WEEE, following a manual pre-sort stage to remove CRTs, batteries, etc. Once the WEEE has been disintegrated the material is fed onto a conveyor for sorting into the various different components and sent on for further processing/recycling or final disposal.

#### **Storage of waste oils <10 tonnes per day**

The operator will receive 1- 2 intermediate bulk containers (IBCs) of oil from other waste management sites. These containers will be stored within secondary containment designed in line with the requirement of CIRIA guidance C736 and with capacity of 110% of the IBCs.

#### **Fridges treatment in the event of equipment breakdown**

In the event the shredding systems break down, the operator has demonstrated that they can convert their process to manually dismantle fridges and other WEEE for recycling. This will allow them to continue processing materials in order to prevent the build up of waste on site.

### **Fugitive emissions**

The operator has outlined in their H1 risk assessment how they intend to manage fugitive emissions from the site. We have assessed the operator's proposed techniques in line with the requirements of our guidance and we are satisfied appropriate techniques are in place.

#### **Drainage**

All surface water emissions will be managed via the site's impermeable surface with sealed drainage systems. The site's building has a concrete floor which falls into the building and the south yard is surrounded by a concrete kerb and a sealed gully system which will collect all runoff from the site.

#### **Noise**

As noise is considered a significant risk at sites shredding WEEE and refrigerators. The operator has appropriately reviewed the risk at the site and proposed best available techniques to prevent significant noise emissions beyond the boundary of the site. These include:

- The site is located on an industrial estate at least 130m away from the nearest industry sensitive receptor.
- Bulk containers will be loaded inside the building.
- All shredding processes take place within a building
- The activity is carried out during normal working hours
- Doors will be kept closed during operating hours
- Vents are fitted with baffles.

#### **Dust**

Dust is also considered a significant risk at sites shredding WEEE and refrigerators. The operator has therefore reviewed the risks at the site and proposed best available

techniques to prevent significant dust emissions beyond the boundary of the site.

These include:

- Provision of a dust extraction system and bag filter
- Regular inspection of site for dust emissions
- Housing dusty activities within the main building

### Odour and Pests

Odour and pest are not considered a significant risk at sites shredding WEEE and refrigerators however there are potential sources (refrigerators containing food). The operator has therefore proposed measures to manage any potential risk. These include

- Refrigeration waste is rejected if food waste is detected in large volumes
- Containment of any food waste received in a sealed environment
- Contract with pest control company who inspect the site on a monthly basis or as needed.

Due to the risk being insignificant and the fact there are controls in place which go beyond that normally required at WEEE treatment sites, we have not inserted the pest control conditions within the permit.

### Litter

As the site is accepting, storing and treating waste there is the potential for litter to be brought onsite and litter to be created during the shredding and dismantling process. In order to manage litter the operator has proposed the following measures.

- All treatment operations will take place within a building
- All lorries collecting materials for onward use or disposal will be sheeted or netted before leaving the loading area. This will ensure that no debris is deposited on site or outside the site. In the event of any deposition, the site will be cleaned or picked immediately.
- Should any litter be found on site, or blow off site, the site supervisor will immediately organise its collection to keep the site and its surroundings tidy. Priority will be given to maintain clear public road and walkways.
- The site supervisor will ensure the site is litter picked each day

### Fire prevention

The operator submitted a fire prevention plan which describes how they intend to manage the risks associated with storing combustible non hazardous wastes on site.

The plan outlines:

- Storage of waste, tonnages and separation distances
- Potential sources of ignition and prevention measures in place
- Fire detection and suppressions systems in place
- Fire water management.

We have assessed the operator's fire prevention plan and we are satisfied they have put appropriate measures in place to prevent fire. In order to ensure the site operates in line with the requirements of this plan we have incorporated it into the permit. The fire prevention however has not been 'approved' as the fire suppression system method mentioned in the report has not been established and implemented. Only when an appropriate system is proposed and implemented in line with pre-operational condition 1, will we considered the fire prevention plan 'approved'.

## Annex 1: decision checklist

This document should be read in conjunction with the application, supporting information and permit/notice.

Aspect considered	Justification / Detail	Criteria met
		Yes
<b>Consultation</b>		
Scope of consultation	<p>The consultation requirements were identified and implemented. The decision was taken in accordance with RGN 6 High Profile Sites, our Public Participation Statement and our Working Together Agreements.</p> <p>For this application we consulted the following bodies:</p> <ul style="list-style-type: none"> <li>• Local authority environmental protection department</li> <li>• Health and Safety Executive</li> <li>• Local Fire Service</li> </ul>	✓
Responses to consultation and web publicising	<p>The web publicising and consultation responses (Annex 2) were taken into account in the decision.</p> <p>The decision was taken in accordance with our guidance.</p>	✓
<b>Operator</b>		
Control of the facility	<p>We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator.</p>	✓
<b>European Directives</b>		
Applicable directives	<p>All applicable European directives have been considered in the determination of the application.</p>	✓
<b>The site</b>		
Extent of the site of the facility	<p>The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility including discharge points</p> <p>A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.</p>	✓
Site condition report	<p>The operator has provided a description of the condition of the site.</p>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	We consider this description is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under IED–guidance and templates (H5).	
Biodiversity, Heritage, Landscape and Nature Conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>A full assessment of the application and its potential to affect the sites has been carried out as part of the permitting process. We consider that the application will not affect the features of the sites.</p>	✓
<b>Environmental Risk Assessment and operating techniques</b>		
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p> <p>The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment all emissions may be categorised as environmentally insignificant.</p> <p>Please refer to the key issues sections of this document for further information.</p>	✓
Operating techniques	<p>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes.</p> <ul style="list-style-type: none"> <li>• IPPC Sector Guidance Note IPPC S5.06 –Guidance for the Recovery and Disposal of Hazardous and Non hazardous Waste; and</li> <li>• How to Comply with Your Environmental Permit.</li> </ul> <p>The proposed techniques/ emission levels are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with relevant BREFs and BAT Conclusions, and ELVs deliver compliance with BAT-AELs.</p> <p>Key measures proposed by the operator include:</p> <ul style="list-style-type: none"> <li>• Pre-acceptance of waste procedures</li> <li>• Acceptance of waste procedures</li> <li>• Storage of waste</li> <li>• Treatment of waste</li> <li>• Point source emissions to air</li> </ul>	✓



Aspect considered	Justification / Detail	Criteria met
		Yes
	<ul style="list-style-type: none"> <li>• Fugitive emissions to air, surface and ground water</li> <li>• Odour</li> <li>• Accidents</li> </ul>	
<b>The permit conditions</b>		
Waste types	<p>We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility.</p> <p>We have inserted construction insulation panel waste codes 17 06 03* and 17 06 04 into table S2.2 as these panels are produced from and blown with the same materials used for the production of refrigerator insulation panels. Therefore we are satisfied the risks they present will be appropriately managed using the operating techniques outlined in the application.</p>	✓
Pre-operational conditions	<p>Based on the information in the application, we consider that we need to impose pre-operational conditions.</p> <p>Pre operational condition 1 has been inserted into the permit to require the operator, prior to undertaking any shredding activities, to install an appropriate sealed drainage system. This will ensure in the event of any leaks or spills of hazardous substances that no runoff will leave the site.</p> <p>Pre operation condition 2 has been inserted into the permit to require the operator, prior to undertaking any shredding activities, to install an appropriate fire suppression system within the building. This will ensure in the event of a fire that the site can effectively prevent the spread of fire to other areas of the building.</p> <p>Pre operational condition 3 has been inserted into the permit to ensure the operator installs a hydrocarbon abatement system to treat gas emissions from the pre-shredding plant, prior to processing any refrigeration equipment via the pre-shredding plant. This will ensure that there are no uncontrolled emissions from the site in line with the requirement of the Industrial Emissions Directive.</p>	✓
Improvement conditions	<p>Based on the information in the application, we consider that we need to impose improvement conditions.</p>	✓

Aspect considered	Justification / Detail	Criteria met Yes
	<p>IC1 has been imposed as an appropriate standard for mercury monitoring has not been outlined in our guidance for this type of processing plant. The operator is therefore required to demonstrate to the Environment Agency how their monitoring methods will allow accurate monitoring of the emissions against the emission limit imposed in the permit.</p> <p>IC2 has been imposed as there is the potential for the fugitive release of ODS or VOC emissions if the plant is not operated correctly. This condition therefore requires the operator to demonstrate they have an appropriate system in place to detect fugitive releases of ODC and VOC in order to demonstrate they are operating the equipment to a standard which results in no fugitive emissions.</p> <p>IC3 has been imposed as WEEE and metal shredding sites are considered to emit PM<sub>10</sub>, and PM<sub>2.5</sub> if not operated correctly. Therefore we require the operator to test Particulate emissions released from the pre-shredding and main fridge shredding plan to review the amount being expelled after abatement of the exhaust gas emissions.</p> <p>IC4 has been imposed to ensure the operator reviews the efficiency of the refrigerator shredding process in relation to throughput, captured emissions and amount of materials recovered.</p> <p>This requirement is based on the fact that reviews of the refrigeration treatment sector and resulting expectations for processing efficiency are based on sites which process mainly domestic refrigerators. As this site processes a high proportion of larger commercial refrigerators, the operator will need to demonstrate that they can achieve similar standards.</p> <p>IC5 has been imposed to support IC5 to ensure the operator acts on the results of their review. They are required to assess the results of their review and submit this in a report to the Environment Agency for approval. This will determine whether there is any scope to improve the efficiency of the plant and provide recommendations for improvement and ongoing monitoring.</p>	

Aspect considered	Justification / Detail	Criteria met Yes
Incorporating the application	<p>We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.</p> <p>These descriptions are specified in the Operating Techniques table in the permit.</p>	✓
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit.</p> <p>The following substances have been identified as being emitted in significant quantities, therefore ELVs and technical measures based on BAT have been set for those substances.</p> <p>These substances include:</p> <ul style="list-style-type: none"> <li>• Total suspended particulates - We have set a limit of 10 mg/m<sup>3</sup> based on information derived from our understanding of what abatement for this sector is able to achieve.</li> <li>• CFC, we have set a mass loss limit, on a pro-rata basis, based upon a mass limit of 5g per 100 domestic units processed per hour. This limit is based on existing refrigerator recovery guidance as it is the most appropriate figure to ensure environment protection at this time.</li> <li>• Mercury – As there is no specific emissions limit for mercury when processing CFL at this time we have applied the emissions limit in line with the workplace time weighted average value as this limit is the most appropriate figure to ensure environmental protection.</li> <li>• We have decided that emission limits should be not set in the permit for Volatile Organic Compounds (VOC) as the operator has demonstrated through the proposals in their application that they will implement appropriate measures to ensure VOC emissions from these activities are insignificant. We will revise this limit if necessary based on what is achieved in practice.</li> </ul>	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	It is considered that the ELVs described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.	
Monitoring	<p>We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.</p> <p>These monitoring requirements have been imposed in order to demonstrate compliance with the conditions of the permit for operations requiring the management of air emissions. We made these decisions in accordance with How to Comply with your Environmental Permit and Sector guidance Note S5.06 which are considered the most appropriate TGN for this activity.</p> <p>Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.</p>	✓
Reporting	<p>We have specified reporting in the permit.</p> <p>As the monitoring of point source emissions to air is required monthly and quarterly, reporting is required quarterly.</p> <p>Reporting forms have been prepared to facilitate reporting of data in a consistent format. These reporting requirements are deemed sufficient and proportional for the installation. We made this decision in accordance with our guidance How to Comply with your Environmental Permit and Sector guidance Note S5.06.</p>	✓
<b>Operator Competence</b>		
Environment management system	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.	✓
Technical competence	Technical competency is required for activities permitted. The operator is a member of an agreed scheme.	✓
Relevant convictions	The National Enforcement Database has been checked to ensure that all relevant convictions have been	✓

Aspect considered	Justification / Detail	Criteria met
		Yes
	<p>declared.</p> <p>No relevant convictions were found. The operator satisfies the criteria in RGN 5 on Operator Competence.</p>	
Financial provision	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.	✓

## **Annex 2: Consultation, web publicising and newspaper advertising responses**

The Local Authority Environmental Protection Department, Health and Safety Executive Local Fire Service were consulted however, consultation responses from these parties were not received - (receipt of comments to be received by 24/09/2015). No relevant comments / representations were received during the web consultation period.

This proposal was also publicised on our website between 02/09/15 and 29/09/2015 and no representations were received.