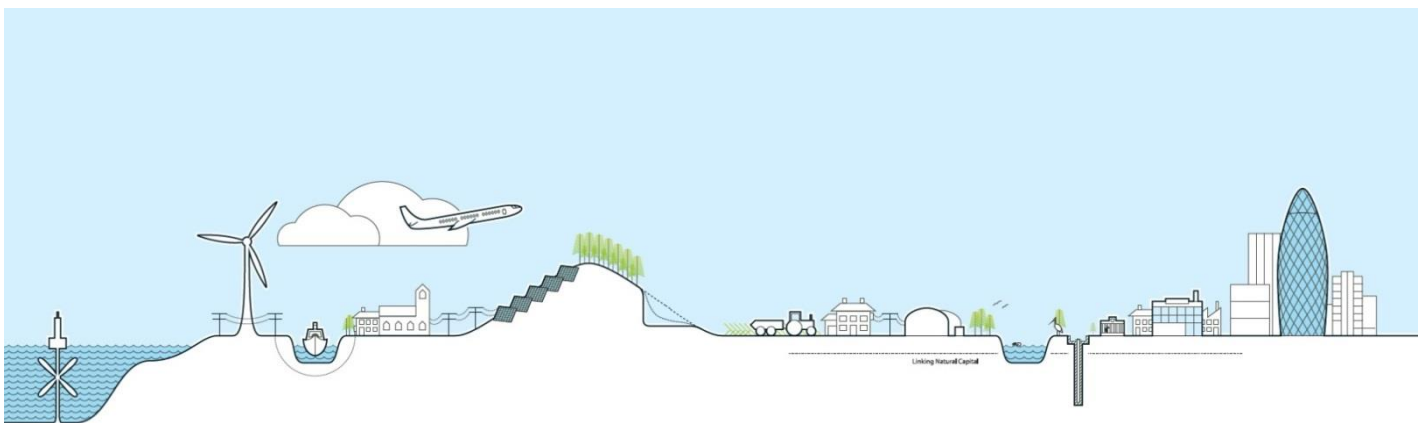


# Bridgwater Resource Recovery Facility Environmental Risk Assessment




March 2020

Prepared By



STC POWER DOCUMENT NUMBER:  
H171P-G9-00-0026-02

## Project Quality Control Sheet

ORIGINAL	Author	Checked by	Approved by
Signature			
Date	12/03/2020	12/03/2020	12/03/2020
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**Report Number:** H171P-G9-00-0026-02  
**Report Status:** FINAL

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## 1 Introduction

As part of the application for the environmental permit for Bridgwater Resource Recovery Facility, operators must assess the risk to the environment and human health related to the permitted activities they are applying for. This Environmental Risk Assessment (ERA) has been undertaken in accordance with the online Environment Agency Guidance for undertaking environmental risk assessments.

This includes the environmental risks associated with:-

- 1.) Emissions to air
- 2.) Emissions to water
- 3.) Emissions to land
- 4.) Noise
- 5.) Odour
- 6.) Dust
- 7.) Litter
- 8.) Pests
- 9.) Vandalism
- 10.) Fire

The assessment of risk associated with the above is conducted in accordance with the Environment Agency guidelines. Point source emissions are assessed on a quantitative basis using the Environment Agency's risk assessment tool, whilst fugitive releases are assessed on qualitative basis, with consideration of the adequacy of the management techniques to control the risk of pollution.

## 2 Risk Assessment Process

### 2.1 Risk Assessment Process

This risk assessment has been conducted in accordance with the Environment Agency guidance. It details five key steps to the risk assessment process prior to its submission with a permit application. These are:-

- 1.) Identify risks from the activity
- 2.) Identify the relevant receptors
- 3.) Identify pathways
- 4.) Assess the risks
- 5.) State methods of risk control
- 6.) Present the assessment

Further information on each stage of the risk assessment are set out below.

#### 2.1.1 Step 1 – Identify Risks

The following section of this document identifies those activities which present different types of risk to the environment associated with the proposed operation, including:-

- Emissions to air
- Emissions to water
- Emissions to land
- Accidental releases
- Release of odour
- Release of noise
- Pests
- Vandalism
- Fire

The categories for the risk assessment have been prepared in-line with the risks identified in the online guidance.

#### 2.1.2 Step 2 – Identify Pathways

These include any medium by which a pollutant could travel to one of the identified receptors. It is noted that a particular feature could be both a receptor and a pathway.

#### 2.1.3 Step 3 – Identify Receptors

These include all relevant environmental aspects such as people, vegetation, animals, properties and water bodies.

#### **2.1.4 Step 4 – Assess Risks**

Acceptable risks within environmental limits may be screened out. The level of risk presented can be indicatively assessed using a scoring matrix. These serve to act as a means to identify which risk, if any, are significant, and will require additional consideration in a more detailed assessment.

#### **2.1.5 Step 5 – Risk Control**

For any risks which are identified as part of the assessment process as being too high without additional management, this section of the report details how those risks can be controlled via management and mitigation to be within acceptable limits.

#### **2.1.6 Step 6 – Present the assessment**

The risk assessment is presented in Section 3 of this report.

### 3 Environmental Risk Assessment

The results of the risk assessment are presented in tabulated format below.

The column headings for the risk assessment are:-

- Hazard
- Receptor
- Pathway
- Risk Management Techniques
- Probability of exposure
- Consequence
- Overall Risk Assessment

It is noted that the assessment of risk in consideration of the risk management techniques employed. The probability of exposure and consequence of a hazard occurring are assessed assuming that the identified risk management technique has been effectively implemented. Where it is appropriate to assess a risk associated with a failure of function of a particular risk management techniques this is considered as part of the accident management plan.



**3.1 Point source emissions to air**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Point source emissions to air	Local human population	Emission to atmosphere	Operations of the flue gas treatment systems, including: - SNCR and SCR system for NO <sub>x</sub> abatement. - Acidic gases abatement (magnesium lime and lime injection) - VOC and heavy metal abatement (PAC injection) - Operation of the Air Pollution Control bag filter.	Low	Human health impacts associated in with inhalation of pollutants.	Insignificant As assessed by H171P-G9-00-0033-03 Air Quality Assessment ref. Refer to Section 4 for further details). Ref. H171P-G9- 00-0713-01 Human Health Risk Assessment Ref. H171P-G9-00712-01 Abnormal operations assessment.

**Table 1: Point source emissions to air assessment**

**3.2 Point Source Emissions to water**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Point source emissions to foul water drainage network	Wessex Water drainage network	Site drainage network	Discharge under normal conditions to be in-line with the conditions of a Trade Effluent Consent.	Low	Discharge of trade effluent outside of the parameters permitted by the site's Trade Effluent Consent.	Low
Point source emissions to surface water drainage network	Wessex Water's surface water drainage network.	The site's surface water drainage network	Only clean roof water, or surface water collected from external yard areas that passes through the appropriate oil interceptor and, where necessary, sedimentation tank, will be discharged to the surface water drainage network.	Low	Discharge to a surface water network, and subsequent discharge to watercourse.	Low

**Table 2: Point source emissions to water**

**3.3 Emissions to land**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Accidental spillages on external surfaces	Underlying soil/ groundwater	Infiltration through ground surface	All external areas will be finished with an appropriate surfacing of either concrete or tarmac to prevent contamination of the underlying ground in the event of a spillage.	Low	Unpermitted discharge to the site's drainage network.	Not significant

**Table 3: Emissions to land Risk Assessment Summary**

**3.4 Accidental Releases/ Spillages**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Spillages of waste during unloading in reception hall	Local residents	Air	Waste will be delivered to the facility in covered lorries. RDF unloading will take place within the designated area of the reception hall only.	Low	Local nuisance which may lead to complaint	Not significant
Bottom ash discharge when handling	Local residents	Air	Incinerator Bottom Ash (IBA) is discharged into the storage bunker after passing through a quench bath, which will limit the mobility of the ash. The vehicles leaving the site will be covered.	Low	Nuisance	Not significant
Release of APC residues when emptying silos	Local Residents	Air	Any spillage of APC residues will be cleared at the earliest opportunity.	Low	Local nuisance which may lead to complaint	Not significant
	Water	On-site drainage network	Any residual APC residue that it not cleared following a spillage may enter into the site's drainage network. Surface water collected from this area will be directed into a network of drains to a sedimentation tank and separator tank prior to discharge into the Wessex Water network.	Low	Local nuisance which may lead to complaint	Not significant
Loss of lime or activated carbon during injection into the APC system	Local residents	Air	Storage of raw materials in with an appropriate bunding. The injection system is fully enclosed.	Low	Liquid/ vapour release.	Not significant

**Table 4: Accidental spillages and releases Risk Assessment Summary**

**3.6 Noise**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Noise from within the facility buildings	Local population including residential properties and places of work	Air	The ERF facility encloses all of the plant items, with the exception of the Air Cooled Condenser (ACC).  The noise impacts are mitigated through the closing of the roller doors at the entrance to the building between deliveries. This will only be opened to permit access and egress for delivery vehicles.	Low	Low	Minor significance  Refer to document H171P-G9-00-0710-00 "Noise Assessment for Environment Agency"
Plant noise including the combustion process, boiler, air cooled condenser (ACC)	Local residents	Air	The Air Cooled Condenser (ACC)	Very low	Nuisance	Minor significance  Refer to document H171P-G9-00-0710-00 "Noise Assessment for Environment Agency"
Noise associated with vehicle movements due to deliveries on-site.	Local population including residential properties and places of work	Air	Main traffic movements associated with the ERF will occur from 07:00 to 17:00 Monday to Saturday.  Vehicle movements are controlled by condition of Planning Permission.	Low	Local noise	Minor significance  Refer to document H171P-G9-00-0710-00 "Noise Assessment for Environment Agency"
Vibration from the plant	Local population including residential properties and places of work	Land	Impacts from vibration are not anticipated as a result of the development. Any vibration issues associated with the plant will be resolved during the commissioning phase of the plant.	Low	Nuisance	Not significant

**Table 5: Noise Risk Assessment Summary**

**3.7 Odour**

**3.7.1 Odour Risk Assessment and Management Plan – for normal conditions**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Odour from waste being delivered to the reception hall	Residential and commercial properties bordering Marsh Lane and Showground Road.	Air	Physical Control Procedures:- <ul style="list-style-type: none"> <li>• Ensure that all vehicles delivering waste to the facility are fully enclosed</li> <li>• Ensure that roller doors on the Waste Reception Hall are only opened for the arrival of a delivery vehicle and that they are closed once the vehicle is fully within the building.</li> </ul> Procedural/ Managerial Control Measure: <ul style="list-style-type: none"> <li>• Continuous monitoring of the process using the automatic process control.</li> <li>• A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible.</li> <li>• A preventative maintenance programme will include the regular inspection of all plant and control measures.</li> </ul>	Unlikely	Odour annoyance	Not significant (when taking into account the measures outlined in the submitted Odour Management Plan and Waste Acceptance Procedures).

**Bridgwater Resource Recovery Facility – Environmental Risk Assessment**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Odour from waste being stored in the bunker	Residential and commercial properties bordering Marsh Lane and Showground Road.	Air	Physical control procedures: <ul style="list-style-type: none"> <li>• Ensure that waste is only held within the reception hall storage areas which is held at negative pressure and is utilised as combustion air within the furnace where odours are combusted.</li> <li>• Ensure that all waste is physically managed to minimise the time between initial receipt of waste and input into the grate.</li> </ul>	Unlikely	Odour annoyance	Not significant, (when taking into account the measures outlined in the submitted Odour Management Plan and Waste Acceptance Procedures).

**Table 6: Odour Risk Assessment Summary**

**3.7.2 Odour Risk and Management Plan – for abnormal conditions**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Odour from waste being delivered to the reception hall	Residential and commercial properties bordering Marsh Lane and Showground Road.	Air	Procedural/ Managerial Control Measures: <ul style="list-style-type: none"> <li>• Continuous monitoring of the process using the automatic process control and daily visual inspection</li> <li>• A complaints procedure in place to ensure that potential issues identified are rectified as soon as possible.</li> <li>• A preventative maintenance programme to include the regular inspection of structures, plant and control measures</li> </ul> Refer to H171P-G9-00-0020-02 Odour Management Plan for additional details regarding risk management techniques.	Very unlikely	Odour annoyance	Potentially significant.



**Bridgwater Resource Recovery Facility – Environmental Risk Assessment**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Odour from unplanned downtime	Residential and commercial properties bordering Marsh Lane and Showground Road.	Air	<p>Physical control procedures:</p> <ul style="list-style-type: none"> <li>• Operation of emergency air extraction and activated carbon filter to maintain negative pressure in the reception hall.</li> <li>• Limit waste deliveries until the plant is back online.</li> <li>• In the event of the plant being unavailable for in excess of 5 days, contingency plant which will include the emptying of the storage bunker will be implemented.</li> </ul> <p>Procedural/ Managerial Control measures:</p> <ul style="list-style-type: none"> <li>• Robust contingency planning in place for unplanned shutdowns</li> <li>• A preventative maintenance programme to include the regular inspection of structures, control measures to minimise the risk of unplanned shutdown</li> </ul>	Unlikely	Odour annoyance	Not significant

**Table 7: Odour Risk Assessment for abnormal conditions**

**Bridgwater Resource Recovery Facility – Environmental Risk Assessment**

**3.8 Dust**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Dust from waste being delivered to reception hall	Residential and commercial properties bordering Marsh Lane and Showground Road	Air	<p>Physical Control Procedures:</p> <ul style="list-style-type: none"> <li>• Ensure that all vehicles delivering waste to the facility are fully enclosed</li> <li>• Ensure that roller doors on the Waste Reception Hall are only opened for the arrival of a delivery vehicle and that they are closed once the vehicle is fully within the building</li> </ul> <p>Procedural/Managerial Control Measures:</p> <ul style="list-style-type: none"> <li>• Continuous monitoring of the process using the automatic process control</li> <li>• A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible</li> <li>• A preventative maintenance programme will include the regular inspection of all plant and control measures</li> </ul>	Unlikely	Dust emission - nuisance	Not significant, if management effective

**Bridgwater Resource Recovery Facility – Environmental Risk Assessment**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Dust from waste being held in the storage bunker	Residential and commercial properties bordering Marsh Lane and Showground Road	Air	<p>Physical Control Procedures:</p> <ul style="list-style-type: none"> <li>• Ensure that waste is only held within the reception hall storage areas within the reception hall which is held at negative pressure and is utilised as combustion air within the furnace where dusts are combusted</li> <li>• Ensure that all waste is physically managed to minimise the time between initial receipt of waste and input into the grate</li> </ul> <p>Procedural/Managerial Control Measures:</p> <ul style="list-style-type: none"> <li>• Continuous monitoring of the process using the automatic process control</li> <li>• A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible</li> <li>• A preventative maintenance programme will include the regular inspection of all plant and control measures</li> </ul>	Unlikely	Dust emission - nuisance	Not significant, if management effective

**Bridgwater Resource Recovery Facility – Environmental Risk Assessment**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Dust from waste being held in the storage bunker	Residential and commercial properties bordering Marsh Lane and Showground Road	Air	<p>Physical Control Procedures:</p> <ul style="list-style-type: none"> <li>• Ensure that waste is only held within the reception hall storage areas within the reception hall which is held at negative pressure and is utilised as combustion air within the furnace where dusts are combusted</li> <li>• Ensure that all waste is physically managed to minimise the time between initial receipt of waste and input into the grate</li> </ul> <p>Procedural/Managerial Control Measures:</p> <ul style="list-style-type: none"> <li>• Continuous monitoring of the process using the automatic process control</li> <li>• A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible</li> <li>• A preventative maintenance programme will include the regular inspection of all plant and control measures</li> </ul>	Unlikely	Dust emission - nuisance	Not significant, if management effective

**Bridgwater Resource Recovery Facility – Environmental Risk Assessment**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Particulate and dust from stack emissions	Residential and commercial properties bordering Marsh Lane and Showground Road.  Sensitive ecological receptors at distance from site due to deposition	Air	Physical Control Procedures <ul style="list-style-type: none"> <li>Installation of effective bag filters and other air pollution techniques to minimise any dust of particulates in the exhaust gases</li> </ul> Procedural/Managerial Control Measures: <ul style="list-style-type: none"> <li>Continuous monitoring of the process using the automatic process control</li> <li>A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible</li> <li>A preventative maintenance programme will include the regular inspection of all plant and control measures</li> </ul>	Unlikely	Dust emission – nuisance & habitat impact	Not significant, if management effective

**Bridgwater Resource Recovery Facility – Environmental Risk Assessment**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Dust emissions from Ash handling	Residential and commercial properties bordering Marsh Lane and Showground Road	Air	<p>Physical Control Procedures</p> <ul style="list-style-type: none"> <li>• Bottom ash from grate handled in quenched collection system and deposited into dedicated storage room</li> <li>• Fly ash from boiler handled within a sealed conveyor system and stored within enclosed silo</li> <li>• Air Pollution Control materials (from bag filters) transported and stored within sealed system</li> <li>• All transport off-site to reprocessing/disposal within enclosed or sheeted vehicles</li> </ul> <p>Procedural/Managerial Control Measures:</p> <ul style="list-style-type: none"> <li>• Continuous monitoring of the process and storage capacity used using the automatic process control</li> <li>• A complaints procedure will be put in place to ensure that potential issues are identified and rectified as soon as possible</li> <li>• A preventative maintenance programme will include the regular inspection of all plant and control measures.</li> </ul> <p>Refer to H171P-G9-00-0021-02 Dust Management Plan for additional details regarding risk management techniques.</p>	Unlikely	Dust emission – nuisance	Not significant, if management effective

**Table 8: Dust Risk Assessment Summary**

**3.9 Litter**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Escape of litter from site boundary	Local Residents and adjacent land uses	Land (carried by wind)	RDF will be deposited inside of the building. The reception area is located at the far side of the reception building, away from the entrance. The roller doors will be kept shut between deliveries.	Low	Low	Not significant
Escape of litter from site boundary	Bridgwater and Taunton Canal	Land (carried by wind)	As above, plus the positioning of fencing along the north-eastern boundary of the site.	Low	Litter pollution of the Bridgwater and Taunton Canal	Not significant

**Table 9: Litter Risk Assessment Summary**

**3.10 Pests**

Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk Assessment
Vermin	Local residents	Migration	The feedstock bunker is in an enclosed building. The site will be subject to a regular cleaning schedule to minimise attraction of vermin. Preventative pest control measures will be undertaken	Low	Local nuisance	Not significant
Scavenging birds, and associated noise issues	Local residents	Migration/ air	Control of odour in accordance with OMP and litter to minimise attraction for birds.	Low	Local nuisance	Low risk

**Table 10: Pest Risk Assessment Summary**



**3.11 Vandalism**

Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk Assessment
Loss of containment due to damage caused by vandalism or theft.	Local watercourse	Wessex Water Drainage network	Chemical stored inside of building or in secure containment on part of the site well away from public access or interference.	Low	Unpermitted discharge of pollutants into the surface water via the drainage network	Low risk

**Table 11: Vandalism Risk Assessment Summary**

**3.12 Fire**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Techniques</b>	<b>Probability of Exposure</b>	<b>Consequence</b>	<b>Overall Risk Assessment</b>
Contamination of drainage network with water used for firefighting	Wessex Water Drainage network	Site drainage network	Ref. Fire Prevention Plan (H171P-G9-00-0025-02)	Low	Contamination of Wessex Water's foul water and surface water network.	Low risk
Smoke fumes	Local human population M5 Motorway	Air	The site is fitted with a fire detection and suppression system to meet the objective of a fire on a waste pile being extinguished within a maximum timeframe of 4 hours  Ref. Fire Prevention Plan (H171P-G9-00-0025-02)	Very low	Potential for respiratory issues for very local human proximity.  Visibility issues on local roads, including the M5 motorway.	Substantial significance, though risk is adequately managed by adherence to a management plan.

**Table 12: Fire Risk Assessment Summary**

## 4 Emissions to Air

A full air quality assessment has been undertaken in support of this application by Air Quality Consultants Ltd (report ref. H171P-G9-00-00330-03).

The assessment is based upon the same report and dispersion modelling used in the Environmental Impact Assessment, which accompanied the planning application. A summary of this assessment is provided here.

The assessment uses the ADMS-5 dispersion model. This model incorporates a number of parameters to predict the ambient concentration of pollutants from the stack on the identified receptors. This includes the emission parameters of the stack, including the exit velocity, temperature of the exhaust gas, the internal stack diameter, the stack height.

The efflux volume rate is expressed in two forms; the actual volume rate, and the normalised volume flow rate.

The pollutant emission rates used in the assessment are derived from the upper limits specified by the Waste Incineration Best Available Techniques Reference (BREF) document limits. Emissions rates are expressed as “short-term” which is taken to be the half-hourly average, and daily average. However, where required by the regulations, different averaging periods are used.

The normalised volume rate refers to the standard reference conditions stipulated by the Industrial Emissions Directive (IED). This includes an exhaust gas recorded in the absence of oxygen, with 11% oxygen content and 0°C temperature.

The quantitative assessment includes consideration of the worse-case scenario from the operation of the facility, utilising the emission limit values set out in the Industrial Emissions Directive 2010/75/EU. These are summarised in the table below. It is noted that emissions will pass through Selective Non-Catalytic Reduction process as a means of reducing the concentration of nitrogen dioxide at source, which may reduce NO<sub>x</sub> below those specified by the Waste Incineration BREF.

The following assessment have been undertaken, and are submitted in support of the application for an environmental permit:

- Air Quality Assessment (document ref. H171P-G9-00-0033-03)
- Air Quality Abnormal Operations Assessment (document ref. H171P-G9-00-0712-01)
- Human Health Risk Assessment (document ref. H171-G9-00-0713-01)

## Bridgwater Resource Recovery Facility – Environmental Risk Assessment

Pollutant	Emissions averaging period	Emissions (mg/Nm <sup>3</sup> )
Nitrogen oxides	½ hour	400
	Daily average	120
Particulate Matter (PM <sub>10</sub> )	½ hour	5
	Daily average	5
Sulphur dioxide (SO <sub>2</sub> )	½ hour	200
	Daily average	30
Carbon monoxide (CO)	½ hour	100
	Daily average	50
Total Organic Carbon (TOC)	½ hour	20
	Daily average	10
Hydrogen Chloride (HCl)	½ hour	60
	Daily average	6
Hydrogen fluoride (HF)	Periodic over minimum 1 hour	1
Cadmium and Thallium (Cd and Tl)	Periodic over minimum 1/2 hour and maximum 8 hours	0.02
Mercury (Hg)	Periodic over minimum 1/2 hour and maximum 8 hours	0.01
Group III metals	Periodic over minimum 1/2 hour and maximum 8 hours	0.3
Ammonia (NH <sub>3</sub> )	½ hour average and daily average	10
Dioxins and furans	Periodic over minimum 6 hours and maximum 8 hours	1 x 10 <sup>-7</sup>
PAH (BaP)	Long-term	1.5 x 10 <sup>-4</sup>
PCB	Short-term	8 x 10 <sup>-9</sup>
	Long-term	8 x 10 <sup>-9</sup>

**Table 13. Emissions from the site**

The dispersal modelling creates a Cartesian grid with a resolution of 10m over the emission point and surrounding area to a distance of 500m, with an outer grid of 25m resolution, extending from 500m to 2km from the site boundary.

Meteorological data from 2010-2013 was used to model the dispersal from the site.

#### **4.1 Human Health Impacts**

For most of the pollutants and averaging periods, the process contribution is less than 1% of the long-term EAL or less than 10% of the short-term EAL. The impacts of the facility are therefore largely assessed as insignificant, in accordance with the Environment Agency's methodology.

The Predicted Environmental Concentrations (PEC) of arsenic and chromium VI were above the EAL, and therefore required further assessment.

The assessment of Group III metals in initially conducted on a “worse-case” approach, in which it is assumed that the total group III metals emissions is composed of that metal only.

It is noted that, in the cases of arsenic and chromium VI, the impact cannot be discounted when assessed upon this basis, and therefore the assessment follows a detailed approach specified which assumes lower mass emission rates of these metals.

The concluding remark of the human health assessment is that the impact of the facility on concentrations of all pollutants relevant to human health have been screened out as insignificant.

#### **4.2 Ecological Impacts**

The requirement for an appropriate assessment is set out in Article 6(3) of the Habitats Directive and transposed into UK law by Regulation 48 of the Habitats Regulations. The Habitats Directive stipulates that the precautionary principle must be applied to relevant designated areas where an application for an environmental permit application is determined by the regulator. This includes specifically the impact upon Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). These are collectively referred to as Natura 2000 sites.

Ramsar sites are afforded with the same status as Natura 2000 sites.

The assessment finds that all of the Process Contributions within the SAC are less than 1% of the long-term EAL and less than 10% of the short-term EALs and thus can be discounted as insignificant when assessed in accordance with the EA's guidelines.

The impact upon the Screech Owl Local Nature Reserve (LNR) is less than 100% of the EAL, and is therefore discounted as “insignificant” in AQC's assessment.

## **5 Emissions to surface water and sewer**

The discharges to water from the facility include the following:-

- 1.) Clean roof water directly to the surface water drainage network
- 2.) Surface water collected from external yard areas, via an appropriately sized and class of oil interceptor
- 3.) Surface water from external areas that may have come into contact with ash via an appropriate separator and oil interceptor
- 4.) Process water which cannot be recycled by the wastewater treatment system.
- 5.) Dirty water into the foul water network following collection in a buried tank located at the entrance to the site.

### ***5.1 Discharges to Surface Water***

There are no direct discharges into a surface water body proposed as part of this development. Surface water is discharged via the surface water drainage network operated by Wessex Water.

### ***5.2 Discharges to the foul water network***

An application for connection to the foul water network is submitted to Wessex Water, and is currently pending determination. The parameters for the discharge include emission limit thresholds will be established by this consent.

### ***5.3 Accidental releases***

This includes any unintended releases as a result of equipment malfunction or human error. This includes the acceptance of non-permitted (so-called “rogue loads”) which results in the emission of potentially harmful substances to the surrounding environment. Releases of hydrocarbons, as a results of fuel or oil leak may also occur.

## 6 Global Warming Potential

### 6.1 CO<sub>2</sub> (equivalent) emissions

The facility will result in approximately 46,820 tonnes per year of CO<sub>2</sub>,(e) which will be partially offset by the electricity exported to the public network that displaced other generation that would otherwise have been required.

A breakdown showing how this value is derived is included in the table below.

Emission Type	Unit	CO <sub>2</sub> (equivalent) t/yr
CO <sub>2</sub> released from the combustion of the non-biogenic elements of waste	CO <sub>2</sub>	43,160
N <sub>2</sub> O released from the combustion of the waste	CO <sub>2</sub> Equivalent	2,790
Combustion of gas-oil in auxiliary burners	CO <sub>2</sub> Equivalent	814
Import of electricity from National Grid	CO <sub>2</sub> Equivalent	56
<b>Total released</b>		<b>46,820</b>
Offset by electricity exported		13,330
Net GWP		33.490

**Table 14: Summary Impacts (CO<sub>2</sub> equivalent values)**

Further details of the above calculations are supplied in the Greenhouse Gas Assessment (document ref. H171P-G9-00-1139-01).