BRISTOL FOOD WASTE RECYCLING FACILITY PERMIT VARIATION

Environmental Risk Assessment

EPR/PP3734LK

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Jennifer Stringer	Technical Director		30 January 2025

Prepared by:

RPS

Joanna Bruce
Environmental Consultant

20 Farringdon Street
London, EC4A 4AB

T +44 20 3691 0500
E joanna.bruce@rps.tetratech.com

Prepared for:

Wessex Water Enterprises Limited

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1 INTRODUCTION

1.1.1 This Environmental Risk Assessment (ERA) has been carried out in support of an application to vary Environmental Permit EPR/PP3734LK to include a new waste operation to permit the transfer of pre-treated waste (food soup) offsite.

1.1.2 The pre-treated food waste soup (de-packaged, blended and screened) will be exported for off-site anaerobic digestion under EWC code 19 12 12. This is to enable the food waste plant to continue recycling food waste from across Bristol UA whilst anaerobic digestion cannot occur. This would enable Wessex Water to continue operating as usual.

1.1.3 The applicant and operator is Wessex Water Enterprises Limited (WWEL).

1.1.4 The scope of the ERA considers risks associated with the operation of the facility and demonstrates that the risk of pollution or harm will be acceptable by taking the appropriate measures to manage these risks.

1.1.5 The Environment Agency's 'Risk Assessments for your environmental permit'[1] covers a range of environmental risks. Those aspects relevant to the operation of the proposed facility are covered within the following sections:

1.1.6 Section 3 provides the environmental risk assessment of 'Amenity and Accident' hazards associated with the operation of the storage of treated biosolids. This document provides the relevant risk assessments covering these aspects.

[1] Environment Agency (2019), Risk Assessments for your Environmental Permit. Available at Risk assessments for your environmental permit - GOV.UK (www.gov.uk)

2 SITE DETAILS

2.1 Site Setting

2.1.1 The site is located in an industrial area located 2.5 km north of Avonmouth train station and 10 km north-west of Bristol city centre. It is also east of the River Severn Estuary and North of the River Avon.

2.1.2 The site address is:

Avonmouth CHP, Sludge Drying and Food Waste Treatment Facility

Kings Weston Lane

Avonmouth

Bristol

BS11 0YS

2.1.3 The centre of the site is at National Grid Reference (NGR): ST 53317 79368

2.1.4 The immediate surrounding area is predominantly industrial business premises and open space. The M5 and M49 motorways run to the south and east of the site. Some disused reservoirs are located to the north of the site.

2.1.5 The nearest residential receptor is West Country Park Homes and caravan park located approximately 1 km north east of the site. The residential area of Hallen is located approximately 1.7 km east.

2.1.6 The nearest leisure receptor is St Antony's Holiday Park located approximately 620 m southwest from the site.

2.1.7 The nearest surface water features are three lakes/reservoirs located directly to the north of the site boundary, and a disused lake/reservoir located approximately 350 m southeast of the site. A number of small watercourses surround the site, including Mere Bank Rhine which runs parallel to the western perimeter. The River Severn Estuary / Bristol Channel is located approximately 2 km northwest and the River Avon approximately 3 km South.

2.1.8 The following designations are located within 2 km of the site.

- Lawrence Western Moor Local Nature Reserve (LNR) ~ 1 km east
- The Severn Estuary Site of Special Scientific interest (SSSI) and Special Area of Conservation (SAC) ~ 2 km northwest.

3 ENVIRONMENTAL RISK ASSESSMENT

3.1.1 The environmental risk assessment complies with regulatory guidance and uses the following approach for identifying and assessing the risks in six steps:

- Step 1: Identify and consider risks for your site, and the sources of the risks;
- Step 2: Identify the receptors (people, animals, property and anything else that could be affected by the hazard) at risk from your site;
- Step 3: Identify the possible pathways from the sources of the risks to the receptors;
- Step 4: Assess risks relevant to your specific activity and check they're acceptable and can be screened out;
- Step 5: State what you'll do to control risks if they're too high;
- Step 6: Present your assessment as part of you permit application.

3.1.2 This section provides an assessment of risks to environmental amenity and from accidents that could arise from operation of the facility. The assessment has been completed in accordance with the EA's Risk Assessments for your environmental permit.

3.1.3 The scope of the assessment has covered the following aspects:

- Odour;
- Noise and vibration;
- Fugitive emissions; and
- Accidents.

3.1.4 For each of the above, the approach to the assessment has followed the following six stage process:

- Identify and consider risks for the site, and the sources of the risks;
- Identify the receptors at risk;
- Identify the possible pathways from the sources of the risks to the receptors;
- Assess risks relevant to the activity;
- Choose appropriate further measures to control these risks (if required); and
- Submit the assessment of overall risk.

3.1.5 Results of the assessment are provided in the following tables:

- Table 3-2 Odour Risk Assessment and Management Plan
- Table 3-3 Noise and vibration risk assessment and management plan
- Table 3-4 Fugitive emissions risk assessment and management plan
- Table 3-5 Accidents Risk Assessment and Management Plan

3.1.6 The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:

- The probability of the exposure; and
- The consequence of the hazard to the environment or human health.

3.1.7 The risk assessment has been completed by scoring the hazard areas outlined above using a risk matrix as shown in Table 3-1 below:

Table 3-1: Risk Matrix

Consequence of the hazard to the environment or human health	Probability of Exposure			
	High	Medium	Low	Very Low
High	High	Medium	Low	Low
Medium	Medium	Medium	Low	Very Low
Low	Low	Low	Low	Very Low
Very Low	Low	Very Low	Very Low	Very Low

3.1.8 In completing the assessment, the proposed prevention and control measures are assumed to be put in place prior to operation. Where relevant, details of these measures are identified within the assessment.

Table 3-2: Odour Risk Assessment and Management Plan

Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the overall risk?
Odour	Local residents – closest residential receptor 1 km northeast Commercial receptor (400 m east) St Antony's Holiday Park (620 m southwest)	Air	The new activity will not introduce any new waste codes or additional quantities of waste that present a change in risk of odour from the permitted activities. The site has stringent waste acceptance and rejection procedures that ensure that any non-conforming waste is rejected and removed offsite the same day as observed. Waste acceptance procedures include checks for any loads that don't comply with the visual inspection for contaminants and odour. Discussions will be held with the driver regarding the source and nature of the waste and if is unusually odorous. Any loads that don't comply with visual inspection is rejected and returned to the supplier. Where it is safe to do so, contaminating material will be removed by machine or hand and this fraction rejected. The process is fully contained inside the Food Waste Reception Hall. Storage of waste in an enclosed building fitted with appropriate odour abatement and on an impermeable surface with sealed drainage. Doors to buildings that may contain odours are kept closed except for access. The food waste soup will be handled within a fully contained system comprising sealed pipework, existing buffer storage and a sealed connection to transfer vehicles for loading. No new assets are proposed for this new activity. Loading will take place within the building and any air displaced during loading will be contained within the Hall and extracted and treated through the existing Odour Control Unit. This unit has been designed to abate odour from the existing food waste operations which manage the same wastes. Good housekeeping is maintained, and operational areas are regularly cleaned to discourage odour generation from old degrading materials. Sniff testing is undertaken on site on a daily basis by site operational staff at the site boundary. If an odour intensity of ≥4 is detected, that is believed to be coming from within the permit area, this is reported to the Technical Supervisor. Any odour complaints will be investigated as detailed in the Odour Management Plan.	High - due to nature of the waste	Medium odour nuisance	Medium – No sensitive receptors impacted

Table 3-3: Noise and vibration risk assessment and management plan

Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the overall risk?
Noise	Local residents – closest residential receptor 1 km northeast Commercial receptor (400 m east) St Antony's Holiday Park (620 m southwest)	Air	The variation will not introduce any new significant noise sources. A noise and vibration plan is in place. The main source of noise associated within this variation will be additional vehicle movements to transfer the food waste soup off site. Transfers are limited to day time hours 06:00 to 23:30 Monday to Friday. The site has not received complaints relating to noise or encountered any noise related issues from the site. In the event of a noise complaint, the site has an environmental complaint procedure in place which will be followed.	Medium	Low noise nuisance	Low – No sensitive receptors impacted

Table 3-4: Fugitive emissions risk assessment and management plan

Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the overall risk?
To Air						
Dust	Local residents – closest residential receptor 1 km northeast Commercial receptor (400 m east) St Antony's Holiday Park (620 m southwest)	Air	The food waste soup activity will have a low potential for dust generation. All surfaces are hard surfaced and regularly inspected and routinely swept. Roads and processing areas will be dampened down at least daily during dry conditions. Good housekeeping is maintained to keep levels of dust to a minimum. In the event of a complaint relating to dust, the site has an environmental complaint procedure in place which will be followed.	Medium	Low	Low
Bio-aerosols	Local residents – closest residential receptor 1 km northeast Commercial receptor (400 m east) St Antony's Holiday Park (620 m southwest)	Air	The new activity will not introduce any new waste codes. There are no new processes which will introduce bioaerosols. The food waste soup will be handled within a fully contained system comprising sealed pipework, buffer storage and a sealed connection to transfer vehicles for loading. All vehicle loading takes place in a building. The probability of exposure is low as there are no sensitive receptors within 250 m of the facility, and the magnitude of bioaerosol that could be released is low due to the fact it is liquid and contained within a building. On this basis there will be no change in the risk from bioaerosols.	Low	Low	Low
To Water						
Release from soup process	Watercourse – River Severn (~2 km northwest)	Surface Water	The food soup does not generate any discharge or returns and consequently there is no aqueous discharge from the food waste storage and transfer facility. The pre-treatment of waste takes place in an enclosed building and on impermeable surface with sealed drainage system. Any floor washings and vehicle washdown is returned to the process and contained. The storage of waste is in an enclosed building fitted with appropriate odour abatement and on an impermeable surface with sealed drainage. The food waste soup is handled and stored in a fully contained system.	Low	Low	Low
Leak of fuel from vehicles	Watercourse – River Severn (~2 km northwest)	Groundwater / surface water	The unloading of delivery vehicles and storage of waste will take place in an enclosed building on an impermeable surface with sealed drainage. In the event of a spillage, the building is fully contained with sealed pipework. The spillage will be contained and cleaned up immediately and therefore would not be released to groundwater or surface water. A spill kit is stored within the building on site. Staff are aware of spill kit locations and are trained in spillage response. The drainage system is regularly inspected and maintained.	Low	Low - surface water/groundwater contamination	Low
Other:						
Unauthorised Wastes	Local residents – closest residential receptor 1 km northeast Commercial receptor (400 m east) St Antony's Holiday Park (620 m southwest)	Air/ Land/ Water	The site has stringent waste acceptance and rejection procedures that ensure that any non-conforming waste is rejected and removed offsite the same day as observed. Upon arrival at the waste reception hall, the driver will tip the load onto the floor. The Plant Operator will complete a visual inspection of the load for contaminants and an assessment of potential to cause odour problems. Discussions will be held with the driver regarding the source and nature of the waste.	Low	Medium - Odour nuisance Contamination of land, surface water and groundwater.	Low

Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the overall risk?
			Where it is safe to do so, contaminating material will be removed by machine or hand and this fraction rejected. The remaining suitable food waste will be accepted for treatment. In exceptional circumstances, non-compliant waste or vehicles can be moved to the defined quarantine area. This is avoided where possible due to space limitations. Any quarantined waste that requires a skip will be covered. Waste acceptance procedures ensure that any loads that don't comply with the visual inspection is rejected and returned to the supplier. In the event that unauthorised waste is accepted to the site, the waste is rejected and segregated. A rejection note will be completed detailing the alternative disposal route as outlined in the Rejection Procedure.			
Pests	Industrial / commercial receptors (400 m east)	Land	The site follows a Pest Management Plan which covers flies, rats and scavenging birds. All food waste acceptance and treatment take place within a purpose-built fully enclosed Food Waste Reception Hall building designed to prevent access to pests. Good housekeeping including daily checks and cleaning is maintained to avoid the presence of pests. All food waste deliveries are visually inspected to assess contaminants, odour problems and presence of pests before acceptance. The food waste soup export facility will be fully contained within sealed pipework and a buffer storage tank. It will be transferred using a sealed connection. Should food waste be spilled it would be cleared up immediately. A spill kit is stored within the building on site. Staff are aware of spill kit locations and are trained in spillage response. Staff are trained in the importance of pest prevention and the requirement for pest management procedures and a complaint procedure is in place in the event of a pest complaint.	Medium	Low	Low
Litter	Industrial / commercial receptors (400 m east)	Land	The food waste soup transfer facility is unlikely to generate litter due to its liquid nature combined with the material being handled within closed systems. The site will maintain good housekeeping procedures and routines in order to reduce litter. Operational areas are regularly cleaned and inspected for litter daily. The load will be rejected if it contains contaminating material. Details of contaminant considered acceptable to remove are outlined in the Waste Acceptance Procedure. Operational areas are regularly swept and inspected, with any litter removed.	Medium	Low	Low

Table 3-5: Accidents Risk Assessment and Management Plan

Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the overall risk?
Operator error	Variable - dependent on nature of the error	Air/Water/Land	The new activities proposed with this variation are simple, and there is little potential for operator error. Clear procedures are in place for site activities and all operational staff are fully trained in the requirements. Training will not only address normal operations but will also include those actions required in the event of abnormal operations and emergencies.	Low	Medium	Low - provided operating procedures are followed
Vandalism	Variable - dependent on nature of the error	Air/Water/Land	There is a low probability of vandalism. All entry gates to Avonmouth WRC are manned and fencing is all around the perimeter of the site to minimise the risk of vandalism and arson. CCTV is appropriately placed on site and is monitored 24/7. Gates are locked outside operational hours. CCTV is also available inside the food hall. This is locked out of hours. All activity takes place inside the building.	Low due to security measures in place.	Low/medium depending on the nature of the event. Potential contamination of local water courses/ air / land / and / or / local nuisance depending on nature of event.	Low, given the probability of any unauthorised access to the site.
Flooding	Watercourse – River Severn (~2 km northwest)	Water / land	An assessment of flood risk shows that the site is located in a flood zone 3 and has a high probability of flooding; the annual probability of flooding from fluvial sources is classified as 1 in 100 and from tidal sources 1 in 200. The site has a flood procedure in place and is registered to receive flood alerts and warnings from the Environment Agency. In the event of a flood warning or physical evidence that the site will flood, the flood procedure will be followed. All equipment will be monitored and shut down if necessary, and waste will be diverted to an alternative facility. If flooding occurs, water is unlikely to access site as the building is raised above ground level. The food waste soup is contained within sealed pipes and sealed storage tanks, which would provide protection to prevent contamination of floodwaters. All waste is stored within the building and therefore would prevent floodwater and food waste soup from mixing.	High	Medium depending on the nature of the flood event. Potential contamination of local water courses / land.	Medium
Fire causing emissions to air	Local residents – closest residential receptor 1 km northeast Commercial receptor (400 m east) St Antony's Holiday Park (620 m southwest)	Direct release to air	The same waste codes and amount of waste will be accepted as part of the variation and therefore there will be no change to the risk of fire. The food waste soup is liquid with a low risk of combustion. Measures to maintain a tidy site and keep levels of dust, loose fibre, and other combustible materials to a minimum are in place to minimise the potential for a fire. Storage of waste is in an enclosed building. CCTV is monitored 24/7 and in the event a fire is identified, a fire procedure is in place and will be followed. Security fencing and gates have been installed to minimise the risk of vandalism and arson. Gates are locked outside operational hours. Fire alarms and extinguishers are appropriately placed on site. Staff are trained in emergency fire procedures and actions to take in the event of a fire at the site. Severn Park Fire Station is located adjacent to the facility.	Low	Low/Medium Short term impacts	Low

Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the overall risk?
Firewater	Watercourse – River Severn (~2 km northwest)	Water / land	The same waste codes and amount of waste will be accepted as part of the variation and therefore there will be no change to the risk of fire. The food waste soup is liquid with a low risk of combustion. In the event of a fire, the firewater will follow the drainage channel to be returned to the sewage treatment works. Firefighting will be carried out in accordance with advice from the Fire and Rescue service. In the event that firewater is required the fire water would be contained. Fire response systems will ensure a rapid response thereby addressing the fire at the earliest point.	Low	Low	Low

4 CONCLUSIONS

4.1.1 The Environmental Risk Assessment (ERA) report has been undertaken to assess the likelihood of risk from amenity and accidents associated with the variation to include a new waste operation to permit the transfer of pre-treated waste (food soup) offsite.

4.1.2 The results of the ERA have shown that with the proposed management plans in place, the risk of odour, noise and vibration, fugitive emissions and accidents range from ‘very low’ to ‘medium’.