Wessex Water Services Ltd

Avonmouth Bioresources Centre

H1 Environmental Risk Assessment

September 2022

Revision	Date	Description	Author	Checked by	Reviewed by
1.0	September 2022	Environmental Risk Assessment	Josh Parsons	Peter Duncan	Peter Duncan

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Appendices

1 INTRODUCTION

This Environmental Risk Assessment (ERA) has been completed for Wessex Water Services Limited (WWSL) for the Avonmouth Bioresources Centre (BC) located at Kings Weston Lane, Avonmouth, Bristol, BS11 0YS (the Site). This ERA has been completed in accordance with prevailing Environment Agency (EA) technical guidance (Environment Agency, 2020). It is noted that this guidance replaces previous EA H1 Guidance (Environment Agency, 2011), however, the H1 methodology is considered to remain appropriate.

Environmental Risk Assessments have been completed for:

- Emissions / discharges to water (surface water, groundwater and site drainage); [Table 3.1]
- Environmental accidents and incidents; [Table 3.2]
- Odour; [Table 3.3]
- Noise and vibration; [Table 3.4] and
- Fugitive emissions (including dust, mud, litter, pests and pollutants) [Table 3.5].

The Site is located at NGR 353358 179392, in the north of Avonmouth which is a suburb of Bristol, at approximately 8 km northwest of Bristol city centre. The Site covers an area of approximately 3.6 ha which includes the main sludge assets at the Water Recycling Centre (WRC), which the Site is co-located at.

This ERA assesses the environmental risk posed by the activities proposed as part of the Environmental Permit variation application, namely the biological treatment and associated activities (as operated by Wessex Water Services Limited (WWSL) within the 'installation boundary') as illustrated in Figure 1. The assets illustrated in Figure 1 are based on a short-term snapshot of the Site and largely refer to as built assets, but also include some assets which will be built within 18 months of the submission of this application such as the 'cake pad'.

This ERA also assesses three Directly Associated Activities (DAA) to the biological treatment activities, including Combined Heat and Power activities, Gas to Grid and biomethane flare, all of which will be managed by Wessex Water Enterprises Limited under a separate Environmental Permit but will be referenced as DAA's in this Environmental Permit application.

This ERA does not assess existing activities permitted under Environmental Permit EPR/PP3734LK, specifically:

- The 'treatment of sewage sludge to produce sludge pellets and associated production of fuel' – this activity was assessed at the time the existing Environmental Permit was determined; and
- The 'food waste digestion and associated production of fuel' – this activity is proposed to be transferred to WWEL.

The environmental risk is determined using the 'risk matrix' provided in Section 2.

This ERA does not include specific reference to the training of staff, as this aspect of mitigation stretches across all aspects of risk management for the Site. WWSL staff are provided with training which is specific to their role and only suitably trained staff are involved in the biological treatment activities. WWSL have a training matrix which provides a record of staff training and prompts for refresher training, as required. WWSL have a Technically Competent Manager who will oversee the biological treatment activities.

At present there are some aspects of the infrastructure on the Site that require improvements in order to further mitigate the risk posed to the environment. Once these improvements have been made, as detailed in the 'risk management' column of the ERA, it is considered that the mitigation measures in this ERA will sufficiently manage the risk posed to the environment from the operations.

This ERA concludes that, based on the implementation of the mitigation measures, it is not considered that the proposed activities detailed in the environmental permit application will have a significant impact on the environment.

Figure 1 Avonmouth Bioresources Centre – Process Flow Diagram

2 METHOD OF RISK ESTIMATION

Table 2.1 has been used to determine an estimation of risk from the proposed activities to be carried out within the proposed installation boundary. The estimation of risk is based on the magnitude of consequences from hazards associated with the activities carried out at the Site and the probabilities of these hazards occurring.

Table 2.1 Estimation of Risk

Risk →	*Consequences*			
	Severe	**Moderate**	**Mild**	**Negligible**
Probability				
High	High	High	Medium/low	Near Zero
Medium	High	Medium	Low	Near Zero
Low	High/medium	Medium/low	Low	Near Zero
Negligible	High/medium/low	Medium/low	Low	Near Zero

Although the above table is a simplification that cannot represent the true complexity of assessing risk on the Site, it has been used as a guide in preparing the Environmental Risk Assessment included in the subsequent sections of this report.

3 ENVIRONMENTAL RISK ASSESSMENT

Table 3.1 Emissions to Water (Surface Water, Groundwater and Sewage)

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
Contaminants from the biological treatment operations reaching surface water features	Surface water features - closest being drains located along the northern boundary of the Site, drains and the Mere Bank Rhine located along the southern boundary and approximately 300 west of the Site. The River Severn is located approximately 1.8km north east of the Site and flows northwest into the Severn estuary. Surface water lagoons lie approximately 40 m to the northwest of the Site, which are understood to be lined. Local flora and fauna associated with watercourses, including the Severn Estuary.	Infiltration and surface water run-off to surface water features e.g., ditches.	WWSL operate in accordance with an Environmental Management System, which has been prepared in accordance with prevailing EA Guidance (how to develop a management system: environmental permits). A copy of the Environmental Accident Management Plan is provided as part of this Environmental Permit application and prevalent points included below. A robust risk assessment process (EQRA) is provided as Appendix 6 of this application. The EQRA is based on the source-pathway-receptor model as prescribed by CIRIA C736, and in accordance with sector guidance. The EQRA allows for a determination of BAT or BAT equivalent measures for the containment of fugitive emissions to ground/groundwater. The surfacing on the Site is impermeable surfacing with sealed drainage. The site is laid to falls, with water draining towards gullies/inlets. Kerbing and containment infrastructure are present to prevent infiltration and surface water run-off. Water from the biological treatment operations that enters drains is directed to the head of works. Areas of the Site that re not impermeable are to be made such – these areas are identified in the Secondary Containment Assessment shown in Appendix 18.	Negligible	Medium	Medium

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	The Site is not located within a Groundwater Protection Zone. The Site is located on a Secondary B designated aquifer.		Secondary Containment Assessment shown in Appendix 18.			
Contaminants from the biological treatment operations reaching groundwater	Surface water features as described above (ultimately reaching groundwater) and groundwater.			Negligible	Medium	Medium

Table 3.2 Environmental Accidents and Incidents

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
Leaks and spills from plant/equipment, hazardous liquid containment facilities (e.g. polymer and fuel), tanks and pipework	Surface water features - closest being drains located along the northern boundary of the Site, drains and the Mere Bank Rhine located along the southern boundary and approximately 300 west of the Site. The River Severn is located approximately 1.8km north east of the Site and flows northwest into the Severn estuary. Surface water lagoons lie approximately 40 m to the northwest of the Site, which are understood to be lined. Local flora and fauna associated with watercourses, including the Severn Estuary.	Surface water run-off, infiltration.	All plant and equipment on the Site is fitted with process monitoring equipment, which will continuously monitor the process to detect any faults which could lead to an incident. This system will raise an alarm if a fault has, or is likely to, occur. As an example, an alarm will activate if levels within a tank exceed a trigger limit in order to minimise the risk of overfilling. Alarms notify key staff who will act to resolve the issue. All plant and equipment on the Site is checked and maintained as part of a maintenance regime. Checking for leaks is a specific item within the operational regime. This will act to reduce the likelihood of any loss of containment or leaks, alongside various control measures. Hazardous liquids e.g. fuel are stored appropriately in bunded tanks/containers. Powder polymer is bulk stored within a building. Provision of spill kits and incident response equipment to clean up leaks / spills. Supervision of all fuel deliveries.	Low	Negligible	Near Zero

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	The Site is not located within a Groundwater Protection Zone. The Site is located on a Secondary B designated aquifer.					
Failure of plant / equipment e.g. from blockages, pressure, faulty pipework, valves, pumps etc. which could cause accidents / incidents e.g. injury, fire etc.	Staff on site (direct harm) Industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are located to the west and southwest of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being	Direct – harm/injury, spread of fire. Air (air quality impact) Note – agricultural land bounds the Site to the south and east, which is unlikely to be affected by a fire. Fire could spread from the Site to the industrial units to the north.	As above, WWSL have an Environmental Management System. A copy of the Environmental Accident Management Plan is provided as part of this Environmental Permit application; prevalent points are outlined below. All plant and equipment on the Site is fitted with process monitoring equipment, which will continuously monitor the process to detect any faults. This system will raise an alarm if a fault has, or is likely to, occur. As an example, an alarm will activate if pressure is low or the temperature of the pump exceed a pre-set limit. Alarms notify key staff who will act to resolve the issue. All plant and equipment on the Site is checked and maintained as part of a planned maintenance program. Alarms will trigger as part of a continuous monitoring system for all plant, which will ensure prompt response to faults. Actions will be taken to fix plant / equipment in the event of a failure / breakdown to address the incident as quick as possible. In some	Low	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	located approximately 1 km southeast of the Site. Local flora and fauna associated with watercourses, including the Severn Estuary.		instances, a failure could have severe consequences i.e. a failure involving infrastructure managing biogas. An automated stop on assets will be initiated in the event that excess heat, low pressure or electricity anomalies are identified. Management may also make the decision to stop operations by utilising manual stops on assets. This decision will be largely based on if the plant is integral to the operation and likely to pose a wider concern to the Site and/or the environment.			
Fire e.g. from a fault in plant / equipment or from arson	Staff on site (direct harm) Industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are located to the west and southwest of the Site. Residential	Direct – spread of fire. Air (air quality impact) Note – agricultural land bounds the Site to the south and east, which is unlikely to be affected by a fire. Fire could spread from the Site to the industrial units to the north.	As above, WWSL have an Environmental Management System. A copy of the Environmental Accident Management Plan is provided as part of this Environmental Permit application and prevalent points included below. Waste accepted and treated on the Site is sludge which is not combustible in nature (as defined by EA Guidance for Fire Prevention). The majority of waste will have a high liquid content. Wessex Water have an 'Environmental Guidance - Fire Emergencies (Ref. ENVG008)' document which outlines the approach to dealing with fires on the site, which includes actions to be taken in the event of a fire and directions for managing contaminated fire water. A copy of the 'Environmental Guidance - Fire Emergencies' document is included as Appendix 1.	Low	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	dwellings to the east in Lawrence Weston, with the closest being located approximately 1 km southeast of the Site. Local flora and fauna associated with watercourses, including the Severn Estuary.		Water is immediately available on the site for use by the emergency services to tackle a fire. Biological treatment activities produce biogas which is flammable and if not properly managed could cause a fire or explosion. This biogas is managed by both WWSL and WWEL, as the proposed EP will be a multi-operator EP. Equipment involved in the management of biogas is checked and maintained as part of a maintenance regime. There are risks of explosion on the Site from the storage and use of containerised hazardous (flammable) substances such as the biogas as outlined above. WWSL manage these risks in accordance with Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR).			
Flooding from blocked drains, burst pipes, and handling fire water (water used during firefighting)	Surface water features - closest being drains located along the northern boundary of the Site, drains and the Mere Bank Rhine located along the southern boundary and approximately 300 west of the Site. The River Severn is located approximately 1.8km north east of	Overwhelmed drainage system and resulting surface water-runoff. Surface water run-off overwhelming drains.	As above, WWSL have an Environmental Management System. A copy of the Environmental Accident Management Plan is provided as part of this Environmental Permit application and prevalent points included below. The majority of the Site is in Flood Zone 3 (i.e. having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year) for river and coastal flooding, with the west of the Site being in Flood Zone 2 (i.e. having between 0.1% to 1% chance of flooding from rivers in any year (between	Medium	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	the Site and flows northwest into the Severn estuary. Surface water lagoons lie approximately 40 m to the northwest of the Site, which are understood to be lined. Industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are located to the west and southwest of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being		1:1000 and 1:100 chance) or between 0.1% to 0.5% chance of flooding from the sea in any year (between 1:1000 and 1:200 chance)) . The central-eastern area of the Site is not at risk from river and coastal flooding. The Site is not at risk to surface water flooding. The entire Site is at a negligible risk of flooding from groundwater. The surfacing on the Site is impermeable surfacing with sealed drainage. The site is laid to falls, with water draining towards gullies/inlets. Kerbing and containment infrastructure are present to prevent infiltration and surface water run-off. Water from the biological treatment operations that enters drains is directed to the head of works. Areas of the Site that are not impermeable are to be made such – these areas are identified in the Secondary Containment Assessment shown in Appendix 18. Flooding on Site would therefore only be likely to occur if the drainage system is overwhelmed, which could occur if the Site floods. Surface water drains are visually inspected on a daily basis.			

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	located approximately 1 km southeast of the Site. Local flora and fauna associated with watercourses, including the Severn Estuary. The Site is not located within a Groundwater Protection Zone. The Site is located on a Secondary B designated aquifer.					
Failure of services e.g. water, gas, electricity which could result in the failure of plant	Staff on site (direct harm) Industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are	Direct – spread of fire. Air (air quality impact)	As above, WWSL have an Environmental Management System. A copy of the Environmental Accident Management Plan is provided as part of this Environmental Permit application and prevalent points included below. Risk management identified in above rows, specifically in relation to 'failure of plant' and 'fire'. Backup generators (on site and mobile) are available to ensure operations can continue in a loss of power scenario. The telemetry system will inform WWSL staff in the event of a loss of power. Plant and equipment are fitted with process	Low	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	located to the west and southwest of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being located approximately 1 km southeast of the Site. Local flora and fauna associated with watercourses, including the Severn Estuary.		monitoring equipment. An alarm would be activated, and staff notified if plant/equipment failed e.g. pumps were overheating. Furthermore, the current of incoming water is monitored, which is regularly checked by members of the WW Water Team. Water levels are monitored and managed on a continuous basis. Combined Heat and Power facilities (CHP's) located on the Site will use biogas and can use natural gas if required. The CHP's are not solely reliant on natural gas and would likely continue operation in the event of a gas failure. A boiler is located on the Site and uses natural gas. Backup generators are available in the event of a power failure.			
Unauthorised entry and damage to plant and equipment e.g. from vandalism	Staff on site (direct harm) Industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is	Direct – spread of fire. Air (air quality impact) Note – agricultural land bounds the Site to the south and east, which is unlikely to be affected by a fire. Fire could spread from the Site to the industrial units to the north.	As above, WWSL have an Environmental Management System. A copy of the Environmental Accident Management Plan is provided as part of this Environmental Permit application and prevalent points included below. Unauthorised entry could result in arson, see entry for 'fire' above. Unauthorised entry could result in tampering / vandalism of plant and equipment, see 'failure of plant' above. WWSL have a number of site security measures. Gated entrance and site security	Low	Moderate	Medium/Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	followed by industrial units are located to the west and southwest of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being located approximately 1 km southeast of the Site. Local flora and fauna associated with watercourses, including the Severn Estuary.		attendant. Perimeter fence to boundary of wider WRC site, which is inspected on a weekly basis. Fencing of areas with risk of explosion, in accordance with DSEAR Regulations. CCTV is available on the Site, and the cameras and CCTV is remotely viewable by the Regional Operations Centre (ROC) and from the onsite control room. ROC can monitor remotely outside of working hours.			

Table 3.3 Odour

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
Odour from Biological Treatment activities	Staff on site, employees at industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are located to the west and southwest of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being located approximately 1 km southeast of the Site. Local flora and	Air (Atmospheric Migration)	An Odour Management Plan (OMP) is available for the Site, which includes mitigation measures adopted by WWSL to minimise odour. This OMP requires that all plant on Site limits the risk of causing an odour nuisance. All new plant installed on the site is designed and operated to minimise the risk of causing odour nuisance. The OMP includes key contacts and responsible parties in relation to odour control. The OMP includes controls for activities on Site with the potential to generate odour, with activity specific control measures employed to minimise the likelihood of odour. The sludge treatment process is optimised to ensure sludge is treated as soon as possible, and that each asset is functioning properly to enable quick treatment and removal from Site. Skips are used on the Site for storing sludge cake. These materials are removed from the Site as soon as is practicable to minimise the potential for odour. Additional measures can be found in the OMP. The OMP is regularly reviewed to ensure mitigation measures remain appropriate. Any odour complaints are investigated in accordance with the complaints procedure in the OMP, and any necessary actions are taken. All plant and equipment are fitted with process monitoring equipment. This equipment monitors the performance of assets and will continuously monitor these performance	Medium	Moderate May present more risk of nuisance in the spring / summer months.	Medium Risk mitigated by measures implemented in OMP, see 'risk management' column.

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	fauna associated with watercourses, including the Severn Estuary.		metrics. An alarm is activated in the event that any plant / equipment is not functioning as expected. Actions will be taken to rectify the issue. This will act to reduce the likelihood of odour generation. A planned maintenance and inspection regime is followed for plant and equipment present on the site. Plant will be checked regularly to ensure they are in good working order. This proactive approach to maintenance and inspection will ensure that plant breakdown is minimised and any potential for uncontrolled emissions are prevented or minimised. An assessment is carried out in the event of a critical failure of plant/process to determine any risk of odour and mitigation measures that may be needed. More information on emergency responses can be found in the OMP. The WWSL website provides an opportunity for the public to lodge a complaint in respect to any operations carried out at the site; The site entrance displays a sign with site details for information. Odour complaints will be recorded, and actions taken to resolve these complaints. Management will review these actions and amend the OMP and company procedures as appropriate to reduce the risk of future odour emissions.			
Odour from general site activities associated with the biological treatment activities.			Good housekeeping is maintained on the Site to minimise the likelihood of odour emissions arising from the site. Housekeeping will include sealing covers, cleaning Site surfacing and dealing with spillages.			

Table 3.4 Noise and Vibration

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
Noise and vibrations from biological treatment operations, notably: • Boiler / CHP's • Fans associated with odour extraction • Sludge pumping/screening processes • Compressors • Dewatering centrifuge • Waste gas burner • Air-cooled radiators	Staff on site, employees at industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are located to the west and southwest of the Site. Fields containing solar panels located approximately 330 m east of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being located	Air (Atmospheric Migration)	WWSL have a company-wide Noise Management Plan (NMP). The purpose of the NMP is to ensure that impacts associated with noise and vibration are dealt with appropriately during the design, construction, maintenance and operation of WWSL assets. The NMP requires that WWSL conduct a noise survey to assess the impact of any new assets, during installation and commissioning, to determine whether a proposed development is at risk from creating noise nuisance. A Noise & Vibration Risk Assessment has been prepared as part of this Environmental Permit application. Points below draw upon information from this assessment. All plant and equipment on the Site are subject to regular planned maintenance schedules. Good maintenance of plant is carried out to ensure that excessive noise levels are not generated from equipment breakdown or wear and tear (e.g. fan motor bearing failure). Plant on Site with the potential to generate noise is located such that surrounding structures shield potential receptors from the noise source. CHP's are located inside acoustic enclosures in a dedicated building. The thickener and centrifuge plant are located within buildings. There are no outstanding noise complaints for	Medium	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	approximately 1 km southeast of the Site. Local amenity and flora/fauna e.g. agricultural land and Severn Estuary.		the Site.			
Noise and vibrations caused by vehicle movements within the Site			Deliveries would take place during the daytime hours.	Medium	Negligible	Near Zero

Table 3.5 Fugitive Emissions (including dust, mud, litter, pests and pollutants)

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
Dust emissions from biological treatment activities leaving the Site boundary.	Staff on site, employees at industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are located to the west and southwest of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being located approximately 1 km southeast of the Site. Local amenity and	Air (Atmospheric Migration)	Waste stored and treated on the Site is sludge waste. Due to its nature, this waste is not likely to generate significant dust emissions. Polymer used in the thickening and dewatering activities has the potential to generate dust. Polymer is used within a building and container, which will prevent contain dust emissions. The Site is subject to planned visual inspections and a planned cleaning regime. This will ensure that mud/residues on the Site surfacing is managed.	Negligible	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	flora/fauna e.g. agricultural land and Severn Estuary.					
Mud / residues reaching the public highway	Nearby public highway Local amenity and flora/fauna e.g. agricultural land and River Tone.	Tracking of mud on wheels / undercarriage of vehicles.	As above. Waste stored and treated on the Site is not likely to generate mud/residues. Waste storage and treatment activities are largely contained, either within a building and/or containment e.g. tanks, pipework, skips and bays.	Negligible	Negligible	Near Zero
Litter leaving the Site boundary		Air (windblown)	Waste stored and treated on the Site is unlikely to contain significant quantities of litter. Any solids within the waste are unlikely to become windblown, which could cause litter on the Site. Fencing around the perimeter of the wider site will prevent windblown litter crossing the boundary.	Negligible	Mild	Low
Pests and vermin infestation causing an amenity impact and potential damage to plant / equipment and infrastructure on Site.	Amenity impact – staff on site and residential dwellings to the east in Lawrence Weston, with the closest being located approximately 1 km southeast of the Site. Nearby industrial units, closest being Amazon located approximately	Air transport and over land	WWSL have a fly management plan and pest procedures to follow to ensure that pests and vermin are controlled and managed on the Site. WWSL will conduct regular visual inspections to monitor potential pest/vermin infestations and will employ specialist contractors to manage pest/vermin infestations. An external pest control company visits monthly to check the Site for any signs of infestation.	Low	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site					
Storage of liquids (hazardous or potential to cause pollution) e.g. fuel	Surface water features - closest being drains located along the northern boundary of the Site, drains and the Mere Bank Rhine located along the southern boundary and approximately 300 west of the Site. The River Severn is located approximately 1.8km northeast of the Site and flows northwest into the Severn estuary. Surface water lagoons lie approximately 40 m to the northwest of the Site, which are understood to be lined. Local flora and fauna associated with watercourses,	Infiltration and surface water run-off	The closest surface water feature are the surface water ditches located adjacent to the Site (along north boundary and southern boundaries (Mere Bank Rhine)) and the surface water lagoons located approximately 40 m to the north-west of the Site. The Site is not located within a Groundwater Protection Zone.	Negligible	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	including the Severn Estuary. The Site is not located within a Groundwater Protection Zone. The Site is located on a Secondary B designated aquifer.					
Pollution arising from emissions to air (from stacks for CHP's and boiler)	Staff on site, employees at industrial units located to the north of the Site, with the closest being Amazon which is located approximately 160 m north of the Site. Agricultural land is located along the southern and eastern boundaries of the Site, which is followed by industrial units are located to the west and southwest of the Site. Residential dwellings to the east in Lawrence Weston, with the closest being	Air (Atmospheric Migration)	An Air Emissions Risk Assessment **(Appendix 8)** has been completed, which identifies the stacks for CHP's and the boiler as having a potential to impact air quality. The Air Emissions Risk Assessment concludes that there is an 'insignificant impact on protected habitats in close proximity to the Site, and to human health from these assets. Air emissions from these assets will be monitored throughout the life of the EP. Associated assets will be maintained in line with manufacturer's specifications. Assets are subject to regular planned maintenance schedules. Good maintenance of plant is carried out to ensure that excessive noise levels are not generated from equipment breakdown or wear and tear (e.g. fan motor bearing failure).	Low	Mild	Low

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of exposure**	**Consequence**	**What is the overall risk?**
	located approximately 1 km southeast of the Site. Local amenity and flora/fauna e.g. agricultural land and Severn Estuary. Protected habitats, specifically Severn Estuary and Avon Gorge Woodland (SAC's).					

4 REFERENCES

Environment Agency. (2011). *Horizontal Guidance Note H1: Overview Document. H1 Annex A - Amenity & accident risk from installations and waste activities*.

Environment Agency. (2020). *Risk assessments for your environmental permit*. Retrieved from https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

Appendix 1

Fire Emergencies Guidance Note

Environmental Guidance – Fire Emergencies

Purpose

This guidance note indicates details of how to minimise environmental impacts associated with fire emergencies affecting Wessex Water assets.

Guidance

Sites storing combustible material may require a Fire Prevention Plan as part of the Environmental Permit Management System. Refer to site specific Fire Prevention Plans where available.

On discovery of a fire affecting a Wessex Water asset, members of staff should immediately contact the Fire and Rescue Service and evacuate the workplace – see HSA25, Fire Safety.

The Fire and Rescue Service will be responsible for all actions to contain and control the fire and take appropriate steps to prevent pollution (as outlined in the Environment Agency's National Memorandum of Understanding with the Fire and Rescue Service[1]).

Wessex Water staff should identify any particular areas of concern where pollution may affect treatment infrastructure, particularly where this may affect drinking water quality and make the Fire and Rescue Service aware.

In the event of contaminated fire water being present on site, whilst the Fire and Rescue Service are primarily responsible for dealing with such water during the emergency, it may be necessary (where safe to do so) to:

- Divert contaminated water to storm tanks or storm storage (if available).
- Divert contaminated water to the foul sewer. Before discharging to the foul sewer, the Control Room must be advised so that the relevant Sewerage and Treatment Managers can be contacted to assess the impact on the receiving sewer. Do not discharge to the foul sewer without consent from relevant Operations Sewerage and Treatment manager. Evacuation of staff from the affected site (especially contractors) is also important. Further information is available in TRTWG111, Wastewater operational guide unauthorised discharges affecting STWs and NTKWG004 Guidance on spillage or discharge into sewer.
- Divert contaminated water to spill containment tanks (if available).
- If possible, block access of contaminated water to surface water drainage systems to prevent loss of fire water from site or divert surface water drainage so that fire water does not enter the environment. This can be

[1] http://www.cfoa.org.uk/11488

done by using drain seals, temporary sandbags, soil or sand bunds or absorbent booms in spill kits.
- Consider whether diversion of water to hard standing areas such as car parks is possible (use sandbags, soil or sand to form temporary bunds). Avoid diverting fire water to bare ground to ensure it is not allowed to soak away.

Waste Management

Waste is likely to be generated at incidents where pollution control measures have been employed. Waste types could include:
- Polluted fire water
- soiled materials (including clothing)
- used absorbents
- damaged containers
- contaminated equipment

This waste may be classified as hazardous and should be stored appropriately to prevent further pollution (for example, in a covered skip or on hardstanding with controlled drainage). All waste must be properly classified to determine if it is considered hazardous and disposed of correctly. If unsure of how to dispose of this, contact either the Waste Advisor or environmental team (or see guidance on Source Intranet).

If soil has become contaminated with pollutants, testing will be required to determine the appropriate disposal route or alternative mitigation. Water contaminated by hydrocarbons could be treated using oil/water separators.

Sites with Environmental Permits may have specific Fire Prevention Plans for fire emergencies and fire water as part of an accident management plan.

Where buildings or structures are affected by fire, potential asbestos contamination should be considered. Check the site Asbestos Management Plan to determine whether/where asbestos is present – a hard copy will be on site or available through the Site Information File.

Revision history

Issue	Date	Description	Prepared by	Approved by
1	September 2010	First issue	D Jones	Adrian Stoodley
2	December 2017	Updated with Fire Prevention Plan requirements and minor amendments	Dave Jones	Adrian Stoodley