

Old Whittington Sludge Treatment Facility: Accident Management Plan



YorkshireWater

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Review Period: Every 4 years or sooner in the event of changes that may impact this plan, including (but not limited to):

- Changes to site activities, equipment or management / operational procedures.
- An accident or incident on this site, or other similar sites (whether or not these are YW sites) that prompts a review of accident risks, preventive controls and emergency responses measures.

Document Approval

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Business areas affected by this document

This applies to colleagues that are operating or managing Old Whittington STF.

1. Introduction

In accordance with the Environmental Permit for Old Whittington Sludge Treatment Facility (STF) (permit reference: EPR/YP3392ZZ), this document presents the Accident Management Plan for the permitted facility.

This plan is established to identify, evaluate and prepare for potential incidents or events that could result in:

- Pollution; and / or
- not being able to comply with permit conditions.

This plan for accident prevention and management follows relevant Environment Agency guidance and includes the following sections:

- Overview of management controls (Section 2)
- Identification of relevant sensitive receptors (Section 3).
- Identification of potentially polluting substances held on site (Section 4).
- Identification potential accidents and incidents and assessment of the overall risk posed by these hazards (Section 5).
- The overall risk of each of the hazard is identified on the basis of the likelihood of the event occurring and the environmental consequence of that event, taking account of:
 - Preventive controls in place; and
 - Actions to be taken in the event of the accident / incident occurring.
- Summary of actions to be taken following an accident or incident occurring, including measures to record, investigate and respond to the incident (Section 6).
- List of emergency contacts (Section 7).

2. Overview of relevant management controls and procedures

YW has an established EMS, which is certified to the ISO 14001 standard. The EMS forms part of a wider corporate Integrated Management System (IMS) which also incorporates quality management, health and safety management, asset management, organisational resilience and business continuity requirements. The management system follows an asset life cycle approach, from design through to decommissioning. Corporate level management system processes are in place, which are supplemented by site-specific documented procedures and processes.

YW has developed processes to identify, respond to and control emergency situations that may cause adverse environmental consequences. Spill kits are readily accessible at locations where there is a risk of spillage (e.g. delivery, storage and areas of use). Spill control toolbox talks are provided to staff. This includes information about how to prevent and control pollution incidents from accidental spills of oils, fuels, sludge and chemicals.

Contingency plans help minimise potential environmental impacts; this includes emergencies arising from breakdowns, enforced shutdowns, abnormal circumstances such as flooding as well as major fire and spill/loss of containment events.

The YW Business Continuity Plan is in place to define and prioritise critical business functions, details the immediate response requirements for a critical incident and details strategies and actions to be taken to ensure business continuity. All Bioresources sites, including Old Whittington STF, have the

capability of remote monitoring and remote operation of key functions. CCTV security cameras are located across the site with monitoring provided 24/7 by the YW Service Delivery Centre. All buildings are alarmed and high-risk equipment is provided with secondary fencing for added security.

3. Sensitive receptors

A summary of sensitive receptors relevant to Old Whittington STF is provided in Table 1 below.

Table 1: Raw Materials Associated with the Facility and their Potential to Pollute

Receptor type	Receptor description and distance
Residential housing	<ul style="list-style-type: none"> North: Nearest residential property located 190m East: Nearest residential property located approximately 1km South: Nearest residential property located approximately 390m to the southeast and 215m to the southwest West: Nearest residential property located approximately 250m
Schools	There are 20 schools within 2km of the site, and 6 schools within 1 km of the site. The nearest school is approximately 700m from the site.
Hospitals / healthcare facilities	There are no hospitals within 2km of the installation boundary.
Industrial/commercial sites	There are a number of industrial/commercial sites within close proximity of the installation. This includes industrial premises on land 270m to the north, 280m to the south and 140m to the north-west.
Habitat sites	<p>The following sensitive land uses have been identified within 10km of the installation: • Brearily Wetland Local Nature Reserve (LNR) located c. 280 km north north east. • Bluebank Pools LNR, located 140m east. • Peak District Moors (South Pennine Moors Phase 1) Special Protection Area, is located 8.6km to the west. • Chesterfield Canal LWS, located c. 140m east • Grasscroft Wood LWS / Ancient Woodland (1.8 km from site) • Whittington Hospital Grounds LWS (1.3 km from site)</p> <p>There are no Sites of Special Scientific Interest (SSSI) or National Nature Reserves within 2km and no RAMSAR sites within 10km.</p>
Ground / groundwater	Underlying and adjacent groundwater classed as a Secondary A aquifer and River Rother; groundwater vulnerability classed as high.
Surface water	River Rother directly adjacent to installation boundary. Likely hydraulic continuity between underlying groundwater and river.
Atmosphere	River Rother directly adjacent to installation boundary. Likely hydraulic continuity between underlying groundwater and river.

4. Inventory of potentially polluting materials

In assessing potential accidents and incidents consideration has been given to the potentially polluting substances held on site, including review of their properties, toxicity and the volume stored. 0 details the raw materials stored on site, 0 details the sludge, sludge cake and process liquors stored on site and 0 details the waste materials stored on site.

Table 2: Raw Materials Associated with the Facility and their Potential to Pollute

Description of raw material	State	Use	Storage Arrangement	Toxicity/ Fate/ Mobility
Polymer (liquid)	Liquid	Coagulant used for raw sludge thickening	1 x c.6m ³ tank and 1 m ³ IBC storage (~20 no.)	Polluting to watercourses in the event of a spillage/loss
Polymer (powder)	Powder	Coagulant used for digested sludge dewatering	Storage in 750kg bags (~5 no.)	Polluting to watercourses in the event of a spillage/loss
Antifoam	Liquid	Digester antifoaming agent	10 x 20 litre containers	Polluting to watercourses in the event of a spillage/loss
Boiler treatment chemicals	Liquid	Boiler treatment	Not normally stored on site	Polluting to watercourses in the event of a spillage/loss
Glycol	Liquid	Antifreeze	Not normally stored on site	Polluting to watercourses in the event of a spillage/loss
Lubrication oil	Liquid	Equipment lubricant	Not normally stored on site	Polluting to watercourses in the event of a spillage/loss
Diesel	Liquid	Fuel for mechanical loaders	1,000 litres	Polluting to watercourses in the event of a spillage/loss

Table 3: Bulk Storage of Sludge, Sludge Cake and Process Liquors and their Potential to Pollute

Tank	Size m ³ (each tank)	Year constructed	Construction material
1 no. sludge screen feed tank	183	2011	Steel
2 no. drum thickener feed tanks	1,600	2013	Steel

2 no. thickener polymer tanks (dilution)	8 2	2014 2013	GRP
2 no. digester feed tanks	463	2011	GRP lined steel tank
2 no. digesters	2,300	2013	Steel
2 no. dewatering feed tanks	623 835	2012	Steel
2 no. centrifuge polymer storage tanks (mix and make-up)	2.6 2.6	2008	GRP
1 no. liquors return tank	494	2012	Steel
1 no. red diesel tank	1	Unknown	Steel

Table 4: Process Wastes and Potential to Pollute

Waste Type	Nature of material	Storage Arrangements	Storage and Disposal Method
Waste oil	Hazardous	Stored in IBCs on hardstanding within the digester compound	Collected by approved waste contractor for off-site disposal
General waste	Non-hazardous	Dedicated skips and smaller containers, located on hardstanding at designated points within the installation	Collected by approved waste contractor for off-site disposal
Wood	Non-hazardous	Skip within designated area	Collected by approved waste contractor for off-site disposal (recycled or treated via EfW)
Empty IBCs	Hazardous	Stored in designated within the installation prior to removal	Collected by approved waste contractor for off-site disposal
Oil contaminated absorbents	Hazardous	Dedicated containers (20 litre drum) within digester compound	Collected by approved waste contractor for off-site disposal

Waste Type	Nature of material	Storage Arrangements	Storage and Disposal Method
Oil filters	Hazardous	Dedicated container (20 litre drum) within digester compound	Collected by approved waste contractor for off-site disposal
Antifreeze	Hazardous	Removed from site when servicing requires a change over (in 20 litre drums)	Collected by approved waste contractor for off-site disposal

5. Accident Management Plan

The potential for accidental releases resulting from the activities proposed in this variation application are identified and assessed in Table 5 below. This includes a summary of measures in place to manage/reduce accident risks. Refer to Appendix 1 for the scoring mechanism.

Table 5: Potential accidental releases and associated risk

What harm can be caused and who can be harmed			Managing the risk	Assessing the risk (after preventative controls)		
Hazard	Receptor	Pathway	Risk management	Probability of exposure	Environmental Consequence	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Site Wide - general						
Flooding leading to damage to site processes and/or mobilisation of polluting materials	Ground / groundwater / surface waters	Floodwaters / Infiltration	Preventative controls <ul style="list-style-type: none"> Flood risk review undertaken. Digestion assets including sludge tanks, digestion tanks and cake storage sit outside of flood zones. Materials are stored in appropriately sealed containers (bulk or semi-bulk), or proprietary secondary containment cabinets, such that the risk 	Likely	Medium	Moderate risk

			<p>of contents being mobilised or containers being washed away in a flood event is low.</p> <ul style="list-style-type: none"> • Vulnerable Asset Protection Plan specifically details flooding actions including how river levels should be monitored and what actions are required. • In the event of an incident/accident • Initiate site emergency plan. • Remove mobile fuel/ chemical sources away from flood risk, if appropriate and safe to do so. 			
<p>Flooding due to drain blockages and/or excessive rainfall causing localised on-site surface water flooding leading to damage to site processes and/or mobilisation of polluting materials</p>	<p>Ground / groundwater / surface waters</p>	<p>Floodwaters / Infiltration</p>	<p>Preventative controls</p> <ul style="list-style-type: none"> • Drains are monitored for blockages and cleaned as required. • Materials are stored in appropriately sealed containers (preferably bulk or semi-bulk), or proprietary secondary containment cabinets, such that the risk of contents being mobilised or containers being washed away in a flood event is low. • Vulnerable Asset Protection Plan specifically details flooding actions. • Planned maintenance / inspection of site drainage systems. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Initiate site emergency plan. 	<p>Unlikely</p>	<p>Mild</p>	<p>Low risk</p>

			<ul style="list-style-type: none"> Remove mobile fuel/ chemical sources away from flood risk, if appropriate and safe to do so. 			
Fire	Nearby human receptors Local air quality and global climate impacts Ground / groundwater / surface waters	Air Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> Regular maintenance of equipment; LDAR programme in place. Fire alarms are fitted in CHP cabinets and boiler house DSEAR assessment has been completed for site and only appropriate ATEX rated equipment may be used in high-risk areas. Access controls in place for digester compound and portable gas monitor use required when inside compound. Site does not treat combustible wastes. Sludge is wet. Gas slam shut valves on biogas feeds to the CHPs / boilers Gas and fire detection in the boiler house and CHP enclosures, and other key AD plant areas Gas oil tank is located outside of the boiler house and CHP compound. Lightning protection provided for biogas storage. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Follow site emergency procedure. 	Highly unlikely	Severe	Low risk

			<ul style="list-style-type: none"> Hydrants connected to a final effluent supply can be used by the fire service. Excess biogas created by the site will be burnt through the flare. 			
Failure to contain firewater following fire / explosion event leading to localised on site surface water flooding leading to damage to site processes and/or mobilisation of polluting materials	Ground / groundwater / surface waters	Floodwaters / Infiltration	<p>Preventative controls</p> <ul style="list-style-type: none"> Site drainage collects and returns surface/yard water to WwTW for treatment. Site drainage systems, hardstanding, sumps, storm tanks etc will minimise flow of firewater to receptors. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Initiate site emergency procedure. 	Highly unlikely	Medium	Low risk
Excessively low temperatures leading to blockages or damage to pipework, valves or equipment and unplanned release of gas with fire / explosions risks and/or release of potentially polluting liquids	Nearby human receptors Local air quality and global climate impacts Ground / groundwater / surface waters	Air Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> 'Winterisation' procedures. Bunding provided to environmentally critical plant and equipment. Current YW technical standards include trace heating for vulnerable pipework. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Isolate systems as appropriate and initiate fire, spill and emergency response procedures, cleaning up spill and disposal of wastes appropriately. Carry out repairs (as required). 	Unlikely	Mild	Low risk

Generalised or localised power failure leading to failure of pumps / control systems and escape of sludge and/or biogas	Nearby human receptors Local air quality and global climate impacts Ground / groundwater / surface waters	Air Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> • Process for recovering from power failure has been planned and recorded. • In the event of power failure, sludge transfers will stop but this will not affect security of containment e.g., tanks will not overflow. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Halt sludge imports to site. • Confirm backup power supply is online. • Confirm that all systems are operating normally. 	Unlikely	Mild	Low risk
Vandalism / site security failure leading to unplanned release of gas with fire / explosions risks and/or release of potentially polluting liquids (chemicals, oils, sludges)	Nearby human receptors Local air quality and global climate impacts Ground / groundwater / surface waters	Air Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> • High level of security on site with 24 hr security monitoring, secure entry gate systems and locked cabs and control units. • In addition to perimeter fencing around site, key digestion equipment sits within a separate fenced area. • Storage containers banded. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Isolate systems as appropriate and initiate fire, spill and emergency response procedures, cleaning up spill and disposal of wastes appropriately. • Carry out repairs (as required). • Review security measures on site. 	Highly unlikely	Mild	Negligible risk

<p>Failure of chemical or oil containment due to deterioration of storage containers, pipework or valves leading to spillage</p>	<p>Ground / groundwater / surface waters</p>	<p>Overland runoff / infiltration / drainage systems</p>	<p>Preventative controls</p> <ul style="list-style-type: none"> • All oil storage and waste oil storage tanks are fully bunded (using either fixed or mobile bunds). • Tank and pipework inspections undertaken as part of routine maintenance. • Operational procedures for refilling oil and chemical storage tanks. Spill kit to be available at tanks. • Any oil spilt around engines during maintenance will be cleaned up and disposed of appropriately. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Isolate systems as appropriate and initiate spill response procedure, cleaning up spill and disposal of wastes appropriately. • Carry out repairs (as required). • Review systems to prevent recurrence. 	<p>Unlikely</p>	<p>Mild</p>	<p>Low risk</p>
<p>Failure of chemical or oil containment during delivery</p>	<p>Ground / groundwater / surface waters</p>	<p>Overland runoff / infiltration / drainage systems</p>	<p>Preventative controls</p> <ul style="list-style-type: none"> • Delivery procedures inc. supervision by site staff, check on space available in receiving tank. • Storage containers bunded. • Chemical/oil storage only in area surrounded by hardstanding with all drainage directed to WwTW. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Follow incident plan. 	<p>Unlikely</p>	<p>Mild</p>	<p>Low risk</p>

<p>Vehicle impact leading to loss of pressurised gas and explosion / fire risk or loss of liquid containment (chemicals, oils, sludges)</p>	<p>Nearby human receptors Contribution to local air pollution and global warming Ground / groundwater / surface waters</p>	<p>Air</p>	<p>Preventative controls</p> <ul style="list-style-type: none"> • Site speed limits in place to reduce chance and consequence of collision. • Access to site is controlled by security gates, with all vehicles arriving at site requiring either their own security pass, or their access to be approved by site staff. • Key areas have barriers to prevent collision with equipment. • Key digestion assets including digestion tanks are set back from road and surrounded by a fence. • Site drainage will capture spills related to pipe failure. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Isolate systems as appropriate and initiate fire, spill and emergency response procedures, cleaning up spill and disposal of wastes appropriately. • Carry out repairs (as required) 	<p>Highly unlikely</p>	<p>Medium</p>	<p>Low risk</p>
<p>Excessive noise from plant or equipment e.g., due to equipment deterioration or failure</p>	<p>Nearby human receptors</p>	<p>Air</p>	<p>Preventative controls</p> <ul style="list-style-type: none"> • Procurement controls mean plant are selected to comply with relevant noise limits. • Regular maintenance completed to ensure equipment operates within normal noise parameters. 	<p>Unlikely</p>	<p>Mild</p>	<p>Low risk</p>

			<ul style="list-style-type: none"> Acoustic enclosures / controls on some noise generating plan (e.g. compressors) Sensitive receptors not located within close proximity to the site. Refer to Table B2: 6-2 for summary of sensitive receptors. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Investigate cause and implement preventive measures, which may include system maintenance interventions. 			
Excessive gas pressure in vessels causing pipework/tank rupture	Nearby human receptors Ground / groundwater / surface waters	Air Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> Operators are trained to operate site within design parameters. Process has automated processes in place to prevent dangerous occurrences e.g. use of flare Over-pressure valves fitted on gas lines Alarms alert operators if a hazardous situation is developing. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Follow emergency procedure 	Unlikely	Medium	Moderate/Low risk
Site wide - sludge pipework, tanks, valves						

Spillage of sludge during transfer / handling activities	Ground / groundwater / surface waters	Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> • Staff training on system operation. • Hardstanding in key/high risk areas. • Site drainage returns surface runoff to WwTW. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Isolate systems as appropriate and initiate spill response procedure, cleaning up spill and disposal of wastes appropriately. 	Likely	Minor / negligible	Low risk
Failure (cracks, splitting) of underground pipework (e.g. fuel, chemicals, sludge, site drains)	Ground / groundwater / surface waters	Infiltration	<p>Preventative controls</p> <ul style="list-style-type: none"> • Existing underground pipework will be surveyed using in-pipe crack detection technology every 5 years, where buried mechanical joints are present, and every 10 years in other cases. • Where new pipework at the site has to be underground, the containment provision will be risk assessed and appropriate design specification implemented, which may include secondary containment and leak detection. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Damaged pipe will be isolated. • Spill management procedure will be followed. 	Unlikely	Medium	Moderate/Low risk

			<ul style="list-style-type: none"> Repairs to damaged pipework will be arranged. 			
Minor failure of sludge storage tanks / digester tanks e.g., tank overtopping, pipework leaks	Ground / groundwater / surface waters	Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> High level probes to prevent overfilling of tanks, overflow pipework is in place as a failsafe. Trace heating is provided to tank level gauges to prevent freezing and reduce the risk of false readings. Site is monitored on a daily basis. Infrastructure maintenance and inspections. Protective measures as for sludge spillage. Site drainage returns to WwTW for safe processing. See also Appendix 10 for details of secondary containment risk assessment. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Isolate systems as appropriate and initiate spill response procedure, cleaning up spill and disposal of wastes appropriately. Arrange repairs. 	Likely	Minor / negligible	Minor risk
Major failure of digester or other sludge storage tank or associated pipework leading	Ground / groundwater / surface waters	Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> Design and construction of assets is governed by relevant YW technical standards to ensure it is fit for purpose. 	Highly unlikely	Severe	Moderate/Low risk

to large scale sludge loss/spillage			<ul style="list-style-type: none"> Infrastructure maintenance and inspections. Site drainage returns to WwTW for safe processing. See also Appendix 10 secondary containment risk assessment. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Cancel all sludge deliveries to site. Isolate systems as appropriate and initiate spill response procedure, cleaning up spill and disposal of wastes appropriately. 			
What harm can be caused and who can be harmed			Managing the risk	Assessing the risk (after preventative controls)		
Hazard	Receptor	Pathway	Risk management	Probability of exposure	Environmental Consequence	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Biogas pipework, valves, vents						
Failure of biogas pipework, valves and biogas holder (corrosion, cracks, material defects etc) leading to minor release of biogas and slight fire / explosion risk	Nearby human receptors Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Design and construction of pipework is governed by relevant YW technical standards to ensure it is fit for purpose. Most biogas pipework operates at low pressures. Pipework/gas holders protected from excessive pressure by pressure relief valves. 	Unlikely	Minor / negligible	Negligible risk

			<ul style="list-style-type: none"> Pipework is above ground where possible to facilitate inspection and maintenance. Maintenance schedule defined as part of LDAR strategy at site. Requirements around use of ATEX rated equipment control risk of leak leading to fire/explosion. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Consider need to isolate pipework. Consider need to initiate emergency response procedures. Arrange repair to affected asset. 			
Failure of biogas pipework, valves and biogas holder (corrosion, cracks, material defects etc) leading to major release of biogas and fire/explosion risk	Nearby human receptors Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Design and construction of pipework is governed by relevant YW technical standards to ensure it is fit for purpose. Most biogas pipework operates at low pressures. Pipework/gas holders protected from excessive pressure by pressure relief valves. Pipework is above ground where possible to facilitate inspection and maintenance. Maintenance schedule defined as part of LDAR strategy at site. Standard operational H&S requires staff to wear personal gas monitors at all times, these will detect large scale leakage from pipes. 	Highly Unlikely	Medium	Low risk

			<ul style="list-style-type: none"> Requirements around use of ATEX rated equipment control risk of leak leading to fire/explosion. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Immediately follow safety control mechanisms in place to isolate pipework / equipment. Consider need to initiate emergency response procedures. 			
Breakdown or other damage to on site gas consumers e.g. CHP/boilers leading to disposal of biogas without energy recovery	Nearby human receptors Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Site is designed to minimise risk of uncontrolled release to air. Operational and maintenance controls in place to ensure reliability of equipment and minimise requirement to send biogas to flare. There are two CHP engines and one boiler with biogas firing capability, therefore flaring rarely occurs. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Any remaining capacity on on-site gas storage will fill. Once gas storage is full flare will operate, ensuring proper combustion of biogas. If flare fails, gas will vent through PRVs to prevent damage to site gas system. 	Unlikely	Mild	Low risk
Failure of flare leading to release	Nearby human receptors	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Flare only used as backup in event of problems elsewhere on site. 	Unlikely	Mild	Low risk

of unburnt biogas to atmosphere	Local air quality and global climate impacts		<ul style="list-style-type: none"> Proposed new flare selected to give minimum 0.3s retention at 1,000 deg. C ensuring full combustion of biogas. Operational and maintenance controls in place to minimise requirement to send biogas to flare. Flare has control system that ensures ignition e.g., flame detection. Maintenance programme in place to ensure that flare is always in good operational condition. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Raise urgent maintenance request for repairs to flare. If flare fails, valve will automatically shut down flow of gas to flare. Once all site gas containment is full, pressure will release through PRVs to prevent damage to equipment and uncontrolled release of biogas. 			
Incorrect setting or damage to emergency pressure relief valves leads to premature release of gas or valve fails to reseal after release leading to uncontrolled	Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Inspection and maintenance of PRVs carried out on a routine basis to ensure they are set and operate correctly. Checks on PRVs part of normal operational routine. Over-pressure alarms in control system will alert site staff to incidents that could trigger PRV release. 	Unlikely	Minor / negligible	Negligible risk

release of biogas to atmosphere			<p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Follow management procedures to ensure that the valves are re-seated/pressure setting adjusted rapidly and without putting staff at risk. 			
Digester foaming blocks gas lines, leading to release of biogas and/or foam through PRVs	Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Feed rate to digesters is controlled to prevent organic overloading. Digester mixing is regularly assessed as part of operational checks to ensure that it is functioning effectively. Feedstock assessment ensures that nature and quality of feedstock is understood. Anti-foam system is fitted to digesters to control foaming. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Follow site procedures for dealing with foaming. Investigate cause and implement preventive measures. Ensure that PRVs are not blocked with foam and operating correctly to protect tanks. Ensure PRVs reseal once pressure in headspace returns to normal levels. 	Unlikely	Mild	Low risk
Spillage / loss of containment of liquids	Ground / groundwater / surface waters	Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> Checks on condensate traps and valves are part of regular operational routine. 	Unlikely	Minor / negligible	Negligible risk

			<ul style="list-style-type: none"> • Condensate runs to site drainage for treatment. • Digester operation is controlled to minimise risk of foaming, which could lead to blockages on condensate system. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Clear up any spills. • Ensure all valves are operating correctly. 			
Cyber security incident which leads to unauthorised site access and unplanned release of gas with fire / explosions risks and/or release of potentially polluting liquids (chemicals, oils, sludges)	Nearby human receptors Local air quality and global climate impacts Ground / groundwater / surface waters	Air Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> • YW operates an information security management system to provide cyber security protection and response. • High level of security on site with 24 hr security monitoring, secure entry gate systems and locked cabs and control units. • Storage containers banded. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Isolate systems as appropriate and initiate fire, spill and emergency response procedures, cleaning up spill and disposal of wastes appropriately. • Carry out repairs (as required). • Review cyber security measures. 	Highly unlikely	Mild	Negligible risk

Sludge treatment processes					
Import of sludge which does not meet waste acceptance criteria leading to disruption to sludge treatment processes	Ground	Spread to land as part of disposal	<p>Preventative controls</p> <ul style="list-style-type: none"> YW control all sites supplying sludge. Only sewage sludge is imported to the STF, this has a consistent composition and comes from carefully controlled treatment processes. Prior to initial acceptance of sludge from a new YW site, a screening assessment will be completed to confirm it is safe and stable. WaSP system records the dry solids, volume and origin of every import brought to site. Site operators and tanker drivers are trained to identify problem sludges and divert them to alternative sites for treatment. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Digester health will be investigated to understand cause of problem and best route to resolution. Digestate being removed from digesters will be subject to enhanced monitoring to ensure that there is no environmental risk. Note this is also a HACCP requirement. Where relevant the Environment Agency will be alerted that a problem has occurred. The root cause of the problem will be investigated and procedures updated so that the incident cannot recur. 	Unlikely	Minor / negligible Negligible risk
Sludge contamination leading to inhibition of microbial activity / process disruption	Ground	Spread to land as part of disposal	<p>Preventative controls</p> <ul style="list-style-type: none"> Management controls to identify potentially problematic sludges at source. All sludge imports are from YW sites where sludge characteristics are very stable. 	Highly Unlikely	Medium Low risk

and insufficient digestion			<ul style="list-style-type: none"> Contamination levels would need to be very severe to significantly impact digestion processes due to the very large digester volume. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Assess digester content to decide best route to normal digester health. Sample cake prior to export from site to confirm it is safe to spread to land. Review acceptance procedures. 			
Excessive feeding of digester leads to reduced retention time and failure to meet pathogen kill requirements	Ground / groundwater / surface waters	Spread to land as part of disposal	<p>Preventative controls</p> <ul style="list-style-type: none"> Staff training Digesters have a maximum feed interlock ensuring that a set daily feed volume cannot be exceeded. This limit has been calculated to ensure digester stability and environmental safety. HACCP monitoring. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Turn off digester feed. Stop additional sludge imports until normal operational situation returns. 	Highly Unlikely	Medium	Low risk
Failure of dewatering process leading to discharge to cake pad of cake with high water content	Ground / groundwater / surface waters	Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> Liquid runoff from sludge cake pad collected and directed to WwTW for treatment. System has large storage and handling capacity. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Switch off centrifuge and identify cause of problem. 	Unlikely	Minor/negligible	Negligible risk
Temporary cessation of land spreading e.g. due to extreme weather conditions,	Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Cake storage is on a pad, which under normal circumstances, has spare capacity. 	Likely	Minor/negligible	Low risk

leading to build up of digested sludge cake			<ul style="list-style-type: none"> Additional storage is available at nearby YW sites. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Monitor available storage on cake pad and reduce/stop sludge imports as required. Divert sludge imports to alternative YW sites for storage. 			
Very warm weather leading to increase in odour generation from sludge cake	Local air quality	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Only digested sludge is stored on cake pad. This has less odour potential than untreated sludge. Only likely to happen during a prolonged of extreme weather event. Sensitive receptors not located within close proximity to the cake pad. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Initial response would be to review operating times and avoid cake generation during problematic weather events, considering both temperature and wind. If this was not sufficient, YW would look to remove cake from site and store elsewhere. 	Likely	Minor/negligible	Low risk
Odour control unit						
Failure of components within odour extraction and treatment systems leading to reduced dispersion of odorous emissions to air	Nearby human receptors Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Regular operational checks on systems (e.g. fan operation). Inspection and maintenance schedule to ensure reliability of extraction system. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Follow operational procedures to minimise generation of emissions until system is repaired. 	Unlikely	Mild	Low risk

Failure of media within odour treatment system leading to release of partially treated or untreated, odorous emissions to air	Nearby human receptors Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Regular operational checks and process monitoring at OCU. Inspection and maintenance schedule to ensure reliability of extraction and treatment system. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Follow operational procedures to minimise generation of emissions until system is repaired. 	Unlikely	Mild	Low risk
Contamination of ground/groundwater following accidental spillage of exhausted odour control media	Ground / groundwater / surface waters	Overland runoff / infiltration / drainage systems	<p>Preventative controls</p> <ul style="list-style-type: none"> Operational controls in place for removal and disposal of exhausted media. Area surrounding odour control unit, including areas where maintenance activities are undertaken are covered by hardstanding and surface water drainage is connected to the head of the works. Only appropriately licenced operators used to remove waste from site. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> Contain media to prevent pollution. Arrange clean up and safe disposal of media as soon as is practicable. 	Unlikely	Minor/negligible	Negligible risk
CHPs, Boiler and other gas consumers						
Excessive emissions to air from boilers and CHP e.g., due to equipment failure, poor performance or malfunction leading to incomplete or	Nearby human receptors Local air quality and global climate impacts	Air	<p>Preventative controls</p> <ul style="list-style-type: none"> Planned preventative maintenance in place for equipment to ensure assets continue to meet original specification on emissions. Site operational knowledge supported through contracts with specialist providers. 	Unlikely	Mild	Low risk

inefficient combustion			<ul style="list-style-type: none"> • Regular emissions monitoring timetable in operation to confirm required performance level is maintained. <p>In the event of an incident/accident</p> <ul style="list-style-type: none"> • Investigate cause and implement preventive measures, which may include system maintenance interventions. 			
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Risk Assessment Methodology

The risk assessment methodology employed for the accident management plan is summarised in Tables A to D below.

The overall risk rating for each of the identified risk scenarios is determined on the basis of the probability of the scenario occurring (the probability/likelihood score) and the environmental consequence(s) if the scenario were to occur (the consequence score). The probability and consequence categories used in this methodology are provided in Tables A and B below.

Table A: Classification of Consequences

Classification	Definition
Severe	<ul style="list-style-type: none"> Acute risks to human health Short-term risk of pollution of sensitive water resource (e.g. major spillage into controlled waters) Impact on controlled waters e.g. large-scale pollution or very high levels of contamination Catastrophic damage to buildings or property (e.g. explosion causing building collapse) Ecological system effects – irreversible adverse changes to a protected location. Immediate risks
Medium	<ul style="list-style-type: none"> Chronic risks to human health Pollution of sensitive water resources (e.g. leaching of contaminants into controlled waters) Ecological system effects – substantial adverse changes to a protected location Significant damage to buildings, structures and services (e.g. damage rendering a building unsafe to occupy, such as foundation damage)
Mild	<ul style="list-style-type: none"> Non-permanent health effects to human health Pollution of non-sensitive water resources (e.g. pollution of non-classified groundwater) Damage to buildings, structures and services (e.g. damage rendering a building unsafe to occupy, such as foundation damage) Substantial damage to non-sensitive environments (unprotected ecosystems e.g. crops)
Minor/Negligible	<ul style="list-style-type: none"> Non-permanent health effects to human health (easily prevented by appropriate use of PPE) Minor pollution to non-sensitive water resources Minor damage to non-sensitive environments (unprotected ecosystems e.g. crops) Easily repairable effects of damage to buildings, structures, services or the environment (e.g. discoloration of concrete, loss of plants in a landscaping scene)

Table B: Classification of probability / Likelihood

Classification	Definition
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High Likelihood	An event is very likely to occur in the short term, and is almost inevitable over the long term OR there is evidence at the receptor of harm or pollution
Likely	It is probable that an event will occur. It is not inevitable, but possible in the short term and likely over the long term
Unlikely	Circumstances are possible under which an event could occur. It is by no means certain that even over a longer period such an event would take place, and less likely in the short term
Highly Unlikely	Probability is so low that it is close to zero; It is improbable that an event would occur even in the very long term

Table C below provides the matrix used to identify the overall risk category using these consequence and probability categories.

Table C: Risk Matrix and Terminology Used for Risk Assessments

		Consequence			
		Severe	Medium	Mild	Minor/Negligible
Probability (Likelihood)	High Likelihood	Very high risk	High risk	Moderate risk	Moderate/Low risk
	Likely	High risk	Moderate risk	Moderate/Low risk	Low risk
	Unlikely	Moderate risk	Moderate/Low risk	Low risk	Negligible risk
	Highly Unlikely	Moderate/Low risk	Low risk	Negligible risk	Negligible risk

The overall risk categories are described in Table D below.

Table D: Description of Risk Categories

Term	Description
Very high risk	Severe harm to a receptor may already be occurring OR a high likelihood that severe harm will arise to a receptor, unless immediate remedial action works / mitigation measures are undertaken.
High risk	Harm is likely to arise to a receptor, and is likely to be severe, unless appropriate remedial actions / mitigation measures are undertaken. Remedial works may be required in the short term, but likely to be required over the long term.
Moderate risk	Possible that harm could arise to a receptor but low likelihood that such harm would be severe. Harm is likely to be medium. Some remedial works may be required in the long term.
Moderate / low risk	Possible that harm could arise to a receptor, but where a combination of likelihood and consequence results in a risk that is above low, but is not of sufficient concern to be classified as medium. It can be driven by cases

	where there is an acute risk which carries a severe consequence, but where the exposure is unlikely.
Low risk	Possible that harm could arise to a receptor. Such harm would at worst normally be mild.
Negligible risk	Low likelihood that harm could arise to a receptor. Such harm unlikely to be any worse than mild.

6. Accident and Incident Response

Accidents and Incidents are managed in accordance with the Incident Management policy and procedures and Emergency Planning manual.

YW utilises the Nintex app to report, record, manage and assess incidents and accidents. This is available on phones and handheld devices of YW staff and provides an auditable record for every incident. Relevant forms used to record accidents are available electronically via this system.

In the event of a significant incident a root cause analysis is conducted. Actions are identified, reported, recorded and communicated to prevent reoccurrence.

Complaints are typically received by YW central Customer Services team, where all complaints are logged on the ICE system. Complaints relevant to Old Whittington STF are passed on to the Site Manager for further investigation. The Site Manager is responsible for ensuring that any complaint is investigated and, if found to be justified, that work is undertaken to resolve the issue, including liaising with the relevant regulatory bodies where appropriate. The Customer Service Team ensure an appropriate response to the complainant in a timely manner including, if and as appropriate, detailing the reason behind the issue and the actions taken to resolve the matter.

All complaints information is recorded on the ICE system in order that this can be monitored, reviewed and analysed.

If an incident with potentially significant environmental consequences occurs, YW will notify the Environment Agency without delay, and in accordance with the procedures and requirements specified in the site environmental permit.

7. Emergency contacts

Area	Contact
Old Whittington STF Contacts	Site Manager: Alex Cook 07790 615426 Site Optimiser: Matt Ashford 07790 617970
Derbyshire County Council	01246 450825
Environment Agency	0800 807060

8. Definitions

Definitions of Terms Used:

Yorkshire Water Yorkshire Water is used in this document to refer to Yorkshire Water Services Limited and all other subsidiary companies within Kelda Holdings.

Anaerobic Digestion AD is used to refer to anaerobic digestion. The process which imported waste is subject to at this sewage treatment facility.

CHP Combined Heat and Power

9. Compliance with this document

Colleagues shall comply with the requirements of this document, in line with the company Conduct Policy.

10. Assurance

Regular monitoring of compliance with these requirements shall be undertaken by the assurance providers documented as part of the Assurance Framework.

Any sampling that is undertaken will be taken in accordance with sampling procedures as documented in the internal guidance document Operator Self-Monitoring, which can be found on the Integrated Management System. Samples must be tested at a UKAS accredited laboratory.

11. Related Documents

N/A