# Bioresources Permitting

## Monkmoor STW Substantial Variation Resubmission

2 | 3

February 2024

**Severn Trent Water Ltd**

EPR/RP3799CW/V003

Jacobs

# Bioresources Permitting

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## Contents

# 1. Introduction

This application relates to a substantial variation application for a bespoke installation bioresources treatment permit for the Monkmoor Sewage Treatment Works in Shrewsbury, operated by Severn Trent Water Ltd.

The site is currently permitted for the storage, and treatment of trade effluent at a waste treatment works and has a separate Medium Combustion plant permit for the sites CHP engine. These two permits will be consolidated with the addition of the main listed activity of the site, namely the biological treatment of sewage sludge for recovery.

This substantial permit variation application relates to the addition of a listed activity to the site, that of biological treatment of waste under the Industrial Emissions Directive. It relates to the non-urban wastewater treatment directive (UWWTD) treatment of indigenous UWWTD derived sludge and imported UWWTD sludges from other works and cess and septic tank imported material which is of a similar composition. Note that these operations are currently operated at the site, under the UWWTD and The Controlled Waste Regulations 2012 (paragraph 3 exclusion). The anaerobic digestion process will require an extension to the current site boundary.

The listed activity starts from the point of the separation of the sludge from the main UWWTD treatment stream, through to its transfer for storage offsite. The additional aspects of the permit include the biogas handling and treatment system as a directly associated activity, including biogas fuelled gas engine and dual fuel boilers. The biogas fuelled gas engine is permitted under the Medium Combustion Plant Directive (MCPD), the three boilers are not permitted under the Medium Combustion Plant Directive (MCPD), as these units have a thermal rated input of less than 1MW, and as such do not need separate permitting under the MCPD regulations.

A bespoke installation permit is required for this site due to the CHP unit location, approximately 80 m from residential properties. Several other activities are undertaken at the site, outside of the scope of this permit, relating to the treatment of sewage derived materials, these activities are covered by the UWWTD.

## 1.1 Non-Technical Summary

This application is for a substantial variation to environmental permit EPR/RP3799CW/V002 under the Environmental Permitting (England and Wales) Regulations 2016 (as amended), following a change of interpretation of the Urban Wastewater Treatment Directive by the Environment Agency. Previously, sewage treatment sites operated by sewerage undertakers importing sludges and liquids were only regulated for the import and treatment of these materials to the wider site and indigenous sludges arising from the treatment of sewage was not required to be included in a permit. It has now been determined that the treatment of indigenous sludges do need to be permitted as they fall outside of the Urban Wastewater Treatment Directive (UWWTD).

The current main site permit allows for the import of tankered wastes for treatment via the UWWTD route, within the works. Wastes may either be offloaded directly into the works inlet, or into an existing holding tank, prior to being released into the inlet at a lower flow rate to control effluent loading on the UWWTD works. The permit also has a separate waste activity for the storage of wet well and similar wastes in a skip prior to removal from site after dewatering (referred to as the MOOS skip).

There is also a current permit reference EPR/AP3937QK for the site that covers the operation of one CHP engine combusting biogas that is generated by the onsite anaerobic digestion of sewage sludge,

This variation application is to: -

- Incorporate the addition of a new listed activity to the permit, that of biological treatment by anaerobic digestion, to make this an installation permit.
- Add the operation of biogas fuelled Combined Heat and Power unit on the site as a directly associated activity.

- Amend the site boundary to include the area of the anaerobic digestion plant and directly associated activities.

# 2. Technical Description

This application is for a substantial variation of the site's existing permit under the Environmental Permitting (England and Wales) Regulations 2016 (as amended), following a change of interpretation of the Urban Wastewater Treatment Directive by the Environment Agency. It relates to the permitting of indigenous sewage sludge and imported sewage sludge and other wastes for treatment by anaerobic digestion for the Monkmoor Sewage Treatment Works, operated by Severn Trent Water Ltd (Severn Trent).

The substantial variation to the permit is to include a new listed activity, the biological treatment by anaerobic digestion, of indigenous sewage sludge in a mixture with imported wastes. The existing biogas fuelled CHP engine and boilers will become a DAA to this installation activity. The site operates 24 hours per day with the site being unstaffed overnight. A standby rota picks up alarms overnight.

**Site Setting**

The site is located on the eastern fringes of the town of Shrewsbury. To the west of the site is predominantly urbanised with agricultural land adjoining the north, east and south. Beyond the agricultural land is the River Severn with the A49 intersecting both the river and agricultural land to the east. The closest residential receptors are located immediately west of the site off Conway Drive and Hamilton Drive on the site boundary, with several small commercial and industrial units located approximately 215m to the north and north west.

The site sits in area which is classified as flood zone 1 indicating that it has a less than 1:1000 probability of flooding in any year. The site does not lie within any source protection zones. There are no SAC's (special area of conservations), Special Protection Areas (SPAs) within 10kms of the site boundary. There are 2 RAMSAR sites within 10km. The nearest Site of Special Scientific Interest (SSSI) is 2.2km from the site boundary. There is 1 Local Nature Reserve (LNR), 6 Local Wildlife Sites (LWS) and 1 Ancient Woodland site within 2km of the site boundary. The site sits outside any Air Quality Management Area.

**Waste Activities**

The current main site permit allows for the import of tankered wastes for treatment via the UWWTD route, within the works. Wastes may either be offloaded directly into the works inlet, or into the three trade waste import tanks, which are open topped, rectangular and of concrete construction. Sewage from these tanks enters the UWWTD process via the works inlet after being screened and passed through a detritor. All waste imports are subject to an assessment under Severn Trent's management system to deem their suitability for treatment at the site and where in the works the waste should be offloaded.

The trade waste import tanks are used to temporarily hold waste, prior to it being released into the inlet at a lower flow rate than direct release, to control effluent loading on the UWWTD works. The waste codes for imported waste accepted at the installation are detailed Table S2.1 Schedule 2 permit reference EPR/RP3799CW. Once the tanker trade waste has mixed with the incoming UWWTD material, its treatment falls outside the scope of the Environmental Permitting Regulations.

There is also a currently permitted separate waste activity for the storage of wet well and similar sewer cleaning wastes in a skip, to allow for gravity draining of water, prior to removal from site (referred to as the MOOS skip in the permit).

**Installation Activities**

This application covers the biological treatment of indigenous and imported sewage sludge by anaerobic digestion, with a capacity above the relevant threshold. The site operates 24 hours per day with the site being unstaffed overnight. There are a number of directly associated activities, including the operation of a biogas fuelled CHP unit for the generation of electricity and heat at the site, which is already permitted under the Medium Combustion Plant Directive, operation of three dual fuelled auxiliary boilers and storage of biogas.

The operations at the site do not fit within the requirements of the appropriate standard rules permit (2008 no 19, v5) due to the close proximity to designated habitat sites and the standard rules set not including operation of a biogas engine, which would otherwise require multiple permits at the site. A bespoke permit application is therefore required.

**Sludge Treatment**

Indigenous sludges settle from the primary settlement tanks in the UWWTD process and enter the main pumping station, which is covered and vented to a Peacemaker odour control unit (OCU1). The sludge is then pumped to four rectangular consolidation tanks. These are also covered and vented to a Peacemaker odour control unit (OCU2).

There is an offloading coupling for tankers to discharge UWWTD derived sludge from other waste treatment sites into a sludge import tank, which is an above ground, enclosed steel tank. The sludge import tank is also vented to a Peacemaker odour control unit (OCU4). Sludge is passed through a logger to record the incoming volume of sludge. From the sludge import tank, sludge is transferred to the consolidation tanks where the imported sludge is blended with indigenous primary sludges prior to the thickening and biological treatment processes.

Sludges from the consolidation tanks are pumped to the crude belt feed tank, which is circular and of steel construction, before being screened. Both the crude belt feed tank and the screen are covered and vented to a Peacemaker odour control unit (OCU3). The screened sludge is then thickened on a belt thickener, where polymer is added to aid the thickening process.

Surplus Activated Sludges (SAS) are collected in the SAS belt feed tank from the final settlement tanks in the UWWTD process. The SAS belt feed tank is circular and of steel construction. SAS is then thickened on two belt thickeners, where polymer is added to aid the thickening process.

Thickened indigenous sludges, imported sludges and SAS are pumped from their respective belt thickeners to be combined in the pre-digestion blending tank which is circular and of steel construction. The pre-digestion blending tank is covered and vented to a CIF/Peacemaker odour control unit (OCU5). Sludge is then pumped from the pre-digestion blending tank to the primary digester tanks.

The digestion process is a one-step process using gas phase digestion in conventional primary digester tanks. There are three above ground gas phase primary digesters which are of concrete construction. Each of the primary digesters are fitted with two pressure relief valves, which operate in an emergency only. The primary digesters operate on a continual basis with incoming sludge added to the process as digested sludge is removed and transferred to the four pathogen kill tanks or five rectangular brick sludge storage tanks at the site. The four pathogen kill tanks are the preferred route and the five sludge storage tanks are often empty, however they are used as additional pathogen kill capacity when required. Sludge is held within each primary digester and pathogen kill tank for the period specified by the site's HACCP (hazard and critical control point) plan for the Sludge (Use in Agriculture) Regulations. The pathogen kill tanks are above ground, open topped, steel, circular tanks. The digested sludge is then transferred offsite to another appropriately permitted site for dewatering.

The sludge is transferred offsite for dewatering and eventual application to land under the Sludge Use in Agriculture Regulations (1989) (SUiARs), in accordance with the Biosolids Assurance Scheme (BAS).

Any liquor returns to the head of works, occur after (downstream of) the storm offtake at the site. This means that site returns cannot bypass treatment within the works via the storm release route.

**Biogas**

Biogas from the primary digesters is captured and transferred to a biogas holder. This is a flexible membrane bubble, equipped with a pressure relief valve. Biogas can then be combusted within one, currently permitted, CHP engine on site, which runs on biogas only and provides both electricity to the site processes and heat to maintain the primary digester temperature. Electricity can also be exported to the National Grid when there is excess supply above the site needs.

In the event there is excess biogas, i.e., more than the CHP engine can utilise, there are three dual fuelled auxiliary boilers and one ground mounted emergency flare. The flare is utilised under 10% of the year. Biogas is transferred from the gas holder via a biogas pipeline that is largely above ground and is fitted with condensate pots that capture entrained moisture from the generated biogas and allow it to be drained into the site drainage system for aerobic treatment via the UWWTD treatment route. Hydrogen sulphide ($H_2S$) and siloxane levels are monitored within the biogas and treated if required by their concentrations.

There is one currently permitted CHP engine at the site:

1 x Jenbacher, with a thermal input of 1.3 MW;

The thermal inputs for the boilers are:

Boilers 1&2: 0.46MWTh

Boiler 3: 0.36MWth

As such, the three boilers all fall outside the scope of the MCPD.

**Process Monitoring**

Anaerobic digestor operations are monitored automatically from the control centre at the site and outside of normal operational hours, from the regional control centre. Checks include digester health, temperature, and operation, including for the presence of foaming, which is treated with anti-foam as appropriate. All tanks are equipped with appropriate high-level alarms and automatic cut off valves to minimise the risk of overtopping. Site operations are covered by Severn Trent's ISO14001 accreditation for all operations, and technical competence is provided by the organisations CMS and training program.

Site drainage from operational areas is captured within the site-wide drainage system and returned to the head of the works for treatment within the UWWTD treatment route. This return occurs after the storm offtake at the inlet. Site drainage plans are included within Appendix A.

**BAT Assessment**

A full assessment of the relevant sections of the Waste Treatment BRef are supplied as Appendix C.

**Tank Inventory**

| Tank Purpose | Number | Operational Volume ($m^3$) | Construction |
|---|---|---|---|
| Import Sludge Tank | 1 | 50$m^3$ | Steel |
| Trade Waste Import Tanks | 3 | 161$m^3$ | Concrete |
| Consolidation Tanks | 4 | 4 x 175$m^3$ | Concrete |
| Crude Belt Feed Tank | 1 | 150$m^3$ | Steel |
| SAS Belt Feed Tank | 1 | 150$m^3$ | Steel |
| Pre-Digestion Blending Tank | 1 | 400$m^3$ | Steel |

| | | | |
|---|---|---|---|
| Primary Digester Tanks | 1<br>1<br>1 | 1,431m$^3$<br>1,476m$^3$<br>1,479m$^3$ | Concrete |
| Storage Tanks | 5 | 5 x 495m$^3$ | Brick |
| Pathogen Kill Tanks | 4 | 1,800m$^3$ | Steel |

**Containment**

The site infrastructure is not currently fully compliant with the requirements of BAT, specifically with regards to containment.

A spill risk assessment and proposed containment solution, in accordance with CIRIA 736 is supplied as Appendix E.

The outline containment solution does not utilised flood gates within its design.

**Open Topped Tanks**

There are a number of open top tanks within the permit boundary at Monkmoor, primarily the pathogen kill tanks. It is acknowledged that there may be emissions of biomethane and/or odour from some of these tanks, and Severn Trent is preparing a monitoring exercise to determine the nature of any emissions and the quantity. Based on these outputs, the requirement for covering the tanks will be assessed, in accordance with the design of the existing tanks and HSE requirements around ATEX and DSEAR, in accordance with the applicability notes for BAT 14d.

As part of any tank cover design, the initial monitoring data will be necessary to determine if the correct routing of any gas from the tank headspace would be to the biogas utilisation system or to a new OCU. The quantification of tank emissions is needed to determine if the gas treatment assets also require upgrading, e.g. existing engine utilisation levels. If an OCU is the required for the gases, the quantification and nature of the emissions will be required in order to ensure that the unit is sized correctly, with the right media to deal with the substances present.

Due to the variability of air pressure on the potential release rate of gas from the tank contents, it is proposed that the monitoring exercise will involve 4 rounds of sampling over a 6 month period, to reflect levels at different ambient air temperatures and atmospheric pressures.

**Liquor Returns Monitoring**

There are no direct emissions to water from the sludge treatment facility. The only indirect emission is of the primary sludge and SAS thickening liquors, biogas condensate and surface waters, which are returned to the wastewater treatment works for aerobic treatment under Urban Wastewater regulations. The liquors returned from the sludge treatment facility have originated from wastewater treatment works that are also under the control of Severn Trent Water.

As part of the new IED permit and in line with BAT 3, we commit to carrying out chemical analysis of the waste water, testing for all pollutants expected to be present in the discharge. We are currently in discussion with UKAS accredited laboratories to see what analysis is possible on our leachate returns, and what 'minimum reporting value' is appropriate. This review will be undertaken in line with EA guidance, for example 'Surface Water Pollution Risk Assessment for your environmental permit', and 'Monitoring Discharges to Water'. The sampling

will be undertaken by our suitably trained internal teams that already undertake compliance sampling for EA discharge permits to MCERTS standards. Analysis will be contracted to UKAS accredited laboratories.

The site has an odour management plan which is supplied as Appendix E.

There is no requirement for a fire prevention plan at the site, due to the nature of the wastes treated and the processes utilised, in accordance with Environment Agency guidance.

## 2.1 Regulatory listing

The installation is permitted as a Schedule 1 listed activity under the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

The relevant listing under Schedule 1 is:

*Section 5.4 Disposal, recovery or a mix of disposal and recovery of non-hazardous waste*

- *Part A(1) (b); Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC—*

*(i) biological treatment;*

In addition to the listed activity at the site, there is a directly associated activity of a biogas combustion plant which is also a specified generator, covered by the Medium Combustion Plant Directive under Schedule 25A and B of the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

The site includes the following Directly Associated Activities (DAA):

- Import of sewage sludge, cess and septic tank wastes to the digesters;
- Blending of imported wastes prior to treatment;
- Storage of biogas;
- Combustion of biogas in an MCPD and SG compliant biogas CHP unit and auxiliary boilers;
- Emergency flare;
- Storage of raw materials;
- Combustion of gas oil in three standby dual fuel boilers; and
- Surface water collection and drainage system

The currently permitted waste activities at the site are the import of liquids and thin sludges for aerobic biological treatment; and the import of solid wastes for storage and dewatering pending off site disposal.

# 3. Application Form Questions:

## 3.1 Form C2

## 1 About the permit

**1a Discussions before your application**

A Monkmoor STW Substantial Variation Application was provided on the 15th December 2021. A pre-application habitats screening assessment was undertaken in December 2021.

**1b Permit number**

**What is the permit number that this application relates to?**

EPR/RP3799CW/V002

**1c Site details**

**What is the site name, address and postcode of the site?**

Severn Trent Water Limited
Monkmoor STW
Monkmoor Road
Shrewsbury
Shropshire
SY2 5TL
NGR SJ 51889 13664

## 2 About your proposed changes

**2a Type of variation**

**What type of variation are you applying for?**

Substantial variation

**2b Changes or additions to existing activities**

This variation application is to add an installation to the existing waste permit. Note that this is due to a change in regulatory interpretation and the activities on site are currently operational. The variation is required as part of the IED, consisting of two listed activities: anaerobic digestion for recovery and aerobic treatment of effluent for disposal. The existing waste activity for the import of specified waste materials to the works inlet for treatment via the full flow, or UWWTD stream is retained, as is the waste import for storage pending disposal offsite.

**2c1 Do you want to have a modern style permit?**

Yes

**2c2 Identify all the permits you want to consolidate (combine)**

See Table 2 below

Table C2-2

| Table 2 – Permit Numbers |
|---|
| EPR/AP3937QK – Monkmoor STW CHP permit<br><br>EPR/RP3799CW – Monkmoor STW waste permit |

**2d Treating batteries**

**2d Are you proposing to treat batteries?**

No

**2e Ship recycling**

**2e1 Is your activity covered by the Ship Recycling Regulations 2015?**

No

2. About your proposed changes, continued

Table 1 – Changes to existing activities

| Installation Name | Installation Schedule 1 references | Description of waste operation | Proposed changes document reference |
|---|---|---|---|
| Monkmoor sewage treatment works | S5.4A1 (b)(i)<br>Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding100 tonnes per day involving one or more of the following activities and excluding activities covered by council Directive 91/271/EEC –<br>(i) Biological treatment by anaerobic digestion | Deposit of imported tankered waste to the head of the sewage treatment works pending aerobic treatment at the sewage treatment works.<br><br>Deposit of wastes for storage pending offsite disposal (the MOOS skip) | This document |

**2f Low impact installations**

**2f1 Will any changes mean that any of the regulated facilities will become low impact installations?**

No

## 3 Your ability as an operator

**3a Relevant offences**

**3a1 Have you, or any other relevant person, been convicted of any relevant offence?**

Yes

Table C2-3 – relevant offences

| Total payout | Type | Date | Location | Offender | Description of offence |
|---|---|---|---|---|---|
| £870,000 | Prosecution | Jun 20 | Shropshire, England | Severn Trent Water Ltd | Causing an unpermitted discharge, contrary to Regulation 38(1)(a) and regulation 12(1)(b) of the Environmental Permitting (England & Wales) Regulations 2010 and failing to comply with permit conditions, contrary to regulation 38(2). |
| £1,558,536 | Prosecution | Dec 21 | Worcestershire, England | Severn Trent Water Ltd | Sentenced for four breaches of the Regulations for four cases.<br><br>Sewage was discharged contrary to Regulation 38 (2) of the Environmental Permitting (England and Wales) Regulations 2016. (Blackminster)<br><br>Breach of a limit contrary to regulation 38(2) Environmental Permitting (England and Wales) Regulations 2016. (Bromsgrove, Stoke Prior, Priest Bridge) |

**3b Technical ability**

Severn Trent Water utilises a competence management system (CMS) to demonstrate technical competence at the site.

Please see the appended CMS certificate, which has a scope including waste storage and treatment.

The EU Skills coordinator has confirmed to STW there is no need to identify a specified person as TCM if the organisation is under the EU Skills scheme. The following is taken directly from the gov.uk website:

*EU Skills scheme: The EU Skills scheme considers the competence of your business as a whole. To join this scheme you need to have a competence management system in place and this must be certified by one of the scheme's approval bodies.*

**3c Finances**

There are no current or past bankruptcy or insolvency proceedings against the applicant.

**3d Management systems (all)**

**Confirm that you have read the guidance and that your management system will meet our requirements.**

Yes, we can confirm that this is the case.

**Does your management system meet the conditions set out in our guidance? What management system will you provide for your regulated facility? Please make sure you send us a summary of your management system with your application**

Yes. The Company holds BS EN ISO 14001:2015.

Please see Appendix B for EMS and CMS certificates.

**Scope**

Severn Trent Water was awarded certification to BS EN ISO14001:2015 for its Environmental Management System in August 2018, having held certification to previous versions of this standard continuously since 2011. The certified EMS scope covers "Management and delivery of wastewater treatment processes. Transfer and storage of highway waste on depots. CHP biogas plant activities. Mothballed landfill monitoring activities, Head office functions at Severn Trent Centre."

**Environmental Policy**

Implementation of Severn Trent Water's Environmental Policy is approved by the Severn Trent Executive Committee of the Severn Trent Plc Board and is the responsibility of all employees, with the Chief Executive being accountable for its implementation. The policy covers all Severn Trent activities, including this installation, and applies to all individuals who are employed by, or carry out work on behalf of, any Severn Trent group company including contractors, temporary staff and agency workers. The Management Systems Team (EMS specialists) is responsible for the implementation of the EMS, the site operations teams will be responsible for maintaining ongoing compliance and managing the sites.

https://www.severntrent.com/about-us/governance/our-policies/

**Management and Responsibilities**

The Management Systems Team (EMS specialists) has overall responsibility for the management and upkeep of the EMS. Compliance with specific elements of environmental legislation is managed by the relevant Business Areas across the Company. The Management Systems Team (EMS specialists) maintain a Legal Register and, in consultation with Operations Teams, their permit compliance advisors and other specialists, assess environmental risks for in-scope areas using a significance scoring method under normal, abnormal and emergency conditions. Significant environmental aspects and impacts take into account legal and other requirements, cost to the business, scale of impact and interested parties.

Management Systems Team are responsible for setting internal environmental standards with Standard owners which are then implemented by the relevant business areas. The Standards and other relevant information are communicated through a number of routes. Incident and corrective action routes exist to promote continual improvement.

Local operating procedures are the responsibility of the operational teams that operate the sewage works.

The defined roles and responsibilities are allocated to relevant personnel, depending on their job description, qualifications, knowledge, experience and training. Training and competency are based on specific roles.

**Operational Control**

Procedures are in place to identify and control environmental issues arising from Severn Trent Water operational and other activities. Each department is required to achieve operational control of its activities and, using a central database, identify and record any departmental environmental issues.

Routine sewage treatment operations and activities are recorded within the corporate management database, SAP. These include routine inspections, monitoring and maintenance tasks.

Non-routine site activities, such as major overhauls/refurbishments, which involve the use of sub-contractors are assessed for health, safety and environmental risks and method statements are produced to address these, as part of the Managing Contractors process.

Contractors who are required to carry out major services are closely managed by the team to ensure that compliance with Severn Trent Water's H&S and environmental policies is achieved. No contractors may work on site without having undergone a full site induction and being issued a work authorisation.

Processes on site operate continuously, 24-hours per day, 7-days per week, apart from maintenance periods. The plant is designed to operate unattended with process parameters being monitored continuously. Operating logs are stored electronically and there is an alarms process managed by a central team that flags anything outside of the set parameters for that process.

**Maintenance and monitoring**

Management will have the ultimate responsibility for the effective maintenance of plant throughout the company. The facility has named staff that are responsible for day-to-day maintenance operations and contractors are also used as required. The following basic inspections and maintenance activities are carried out on site:

- Daily operation of plant (24/7) involves visual inspection of operational assets;
- Daily inspection of temporary pipe work installed;
- Routine maintenance programme for plant; and
- Routine lubrication programme.

Personnel responsible for the inspection, testing and maintenance of pollution prevention infrastructure are trained to an appropriate level to ensure compliance with the Infrastructure Monitoring Programme.

All regular maintenance of all plant and equipment will be completed on the time scale specified by the equipment manufacturer, or earlier, including routine inspections. This high-level preventative maintenance is designed to avoid unscheduled down time, maximising the plant availability and its ability to control emissions and maintain an efficient level of operation between overhaul services. Record sheets will be completed that would highlight any issues that may require operator intervention outside the routine maintenance programme.

**Contingency Plans; Accident Prevention and Management Plans**

All operational sites have accident prevention and management plans, developed to reflect the site specific operational risk and control measures. Plans take into account the structures and design of individual sites, including their environmental setting and location. Where appropriate, these include contingency plans for how imports and exports are to be handled during any period of operational disruption, including details of the closest alternative sites for these substances. Full contingency plans are limited by the nature of the sewerage infrastructure, as incoming UWWTD materials delivered by sewer cannot be diverted due to capacity and practicality issues.

Plans for individual sites are currently being reviewed to ensure that they fully comply with current BAT and Environment Agency guidance, with the aim of having these plans up to date by July 2022.

All contingency plans fit within our centralized Standard for incident management, which incorporates a Bronze, Silver and Gold response level, ensuring the required levels of management are involved in the response. Once the incident is raised, it is managed by the central Network Control Team to maintain structure to the decisions, actions and records throughout.

**Environmental Improvement**

Severn Trent Water is committed to environmental improvements and has established environmental targets and plans relating to materials and waste management, transport, climate change mitigation and adaptation (energy efficiency and renewable energy generation), water resources, biodiversity, river water quality, and drainage asset performance.

The EMS is subject to a Senior Management Review twice a year to consider environmental performance, objectives and targets and continual improvement.

**Record Keeping**

Each site keeps electronic records of operational and environmental monitoring, as required within the management system, to comply with the requirements of OFWAT and the Environment Agency, including any monitoring data required for environmental permit compliance. All information required for the permit is kept for the required retention time, and this information is checked through EMS internal and external audits.

**Competence, Training and Training Records**

Severn Trent Water aims to ensure that all employees are in possession of the knowledge, skills and experience necessary to perform their role in accordance with the company's operating procedures and in full compliance with the law. Training needs are initially identified by role, and managed through Severn Trent's Academy system. Additional individual development opportunities are identified by the employee's immediate supervisor or line manager.

Induction training is carried out by the responsible line manager and consists of an introduction to the Company's Environmental Health and Safety Policy and description of emergency response and spill prevention procedures.

The EMS delivers a structured environmental awareness programme and targeted awareness training, where a need is identified. Managers and the CMS (Competence Management System) Manager review the competence of those working for the company where the tasks have the potential to cause a significant negative environmental impact, or impact on the operation of permitted activities within the EMS scope. The EMS Team, Permit Compliance Advisors and relevant Departments are responsible for rolling out the Basic Environmental Awareness, Permit competence training, and job specific training.

For each internal training course held a Training Record is issued through the employees' role specific records on SAP.

Staff receive specific training in the plant's operation and the environmental impact of the process as well as health and safety. The operators will have a detailed understanding of the operational procedures for the site for both normal and abnormal operation. As part of the training, operators will receive specific instructions relating to those aspects of plant operation that have the potential for a negative impact on the environment. This training will be provided by the equipment manufacturers or in-house staff as appropriate. All training is overseen by a dedicated in-house Learning and Development team, through "The Academy" process.

Severn Trent Water is able to demonstrate that permitted activities are managed by technically competent staff with its Competence Management System (CMS) that is independently certified to meet UKAS accredited requirements of the EU Skills Standard. The CMS is subject to management review at least annually. All appointed Technically Competent Persons (TCPs) undergo EMS awareness training and CMS Permit Competence training. These skills appear on employees SAP training records, and they are required to re-take training every 2 years. SAP automatically sends out a reminder to the individual and their line manager when the training is due to be renewed. A list of technically competent persons is stored within the CMS documentation on SharePoint.

**Managing Contractors**

There are several procedures to ensure contractors have the required skills and environmental competencies to carry out works at the site.

Initially, contractors are assessed by the procurement department for inclusion on the approved supplier list, which includes health and safety and environmental criteria for example, waste documentation such as waste carrier's licence/training certificates. Even when the contractors are on the approved supplier list, they are still further assessed for each specific contracted activity, and subject to performance reviews.

The contactor is required to submit a method statement prior to any commencement of work, identifying how work is to be undertaken and the associated risks. The method statement must be approved by the Site Manager or a TCP who is suitably qualified, who will also identify any site hazards and issue an Authorisation to Work/Enter the site, following a site induction. When on-site, the contractor must carry this Authorisation to Work at all times.

**Incidents, Non-compliances and Complaints**

Severn Trent Water has procedures for incidents, non-compliances and environmental complaints.

Incidents are managed through site specific procedures which ensure that all incidents are logged and that necessary preventative and/or corrective actions are taken. The Schedule 5 procedure ensures required notification to the environmental regulator where applicable.

Complaints are managed by Customer Services, where all complaints are logged on the Complaints Records Online Storage System (CROSS). The Regional Managers are responsible for ensuring that action is taken and for liaising with the relevant regulatory bodies (where appropriate). They ensure that any complaint is investigated and, if found to be justified, that work is undertaken to resolve the issue. They also provide an appropriate response to the complainant in a timely manner detailing the reason behind the issue and the actions taken to resolve the matter.

Information regarding complaints is recorded to allow determination of an appropriate response (corrective action) and to determine what measures need to be taken in the future to prevent its reoccurrence (preventive action). These records will be maintained as part of the management system for a minimum of four years.

**Climate Change**

As part of its management program, including reviews associated with the AMP process (asset management plan, part of the OFWAT price review process) regular assessments are undertaken of works for the impacts of climate change including consideration of potential increased rainfall. Operational sites have been reviewed for flood resilience and energy management, and these findings are subject to periodic review and updating.

**Communication**

There are regular meetings held on site to discuss all aspects of the treatment works and performance against targets; these are generally called “Comm Cells”. These meetings include the operation and performance of the installation and due to a standardized structure, allow issues direct line of sight escalation up to senior management and back again. Other communication methods to promote environmental management issues and continual improvement include: ‘Lessons Learnt’ bulletins, ‘One Supply Chain (OSC) portal forums and compliance audits.

**Site Closure**

Where new plant, structures and equipment are planned for a site, consideration is given in the design phase, including engineering specifications, for the long term maintenance of that asset. This includes the eventual cleaning and decommissioning of the asset. Due to the underlying sewerage infrastructure, there is no site wide closure plan, as Severn Trent does not envision closing any full works.

**Auditing**

The controls for addressing environmental aspects and impacts are checked through the EMS audit programme which is managed by the EMS Auditor. Findings are reported to Site Managers and their Leadership Team. All permitted sites are internally audited by the permitting team every three years as a minimum. These inspections support the EMS audit programme and are audited by the EMS Team on a sample basis. The EMS also checks that other audit programmes exist for our wider environmental obligations, for example, MCerts and Operator Self Monitoring compliance assessments.

## 4 Consultation

**Could the waste operation or installation involve releasing any substance into any of the following?**

**4a A sewer managed by a sewerage undertaker?**

No

**4b A harbour managed by a harbour authority?**

No

**4c Directly into relevant territorial waters or coastal waters within the sea fisheries district of a local fisheries committee?**

No

**4d Is the installation on a site for which:**

*4d1 - a nuclear site licence is needed under section 1 of the Nuclear Installations Act 1965?*

No

*4d2 - a policy document for preventing major accidents is needed under regulation 5 of the Control of Major Accident Hazards Regulations 1999, or a safety report is needed under regulation 7 of those regulations?*

No

## 5 Supporting information

**5a Provide a plan or plans for the site**

Please see Appendix A for the following plans:

Figure 1 – Site Location Plan

Figure 2 – Installation Boundary and Air Emission Points Plan

Figure 3 – Site Drainage Plan

Figure 4 – Process Flow Diagram

**Do any of the variations you plan to make need extra land to be included in the permit.**

Yes. See Appendix E for the site report for the extra land.

**5c Provide a non- technical summary of your application**

Please see Section 1.1 in this document.

**5d Risk of fire from sites storing combustible waste**

**Are you applying for an activity that includes the storage of combustible wastes?**

No – the site handles and treats wastes using processes that fall outside the scope of the FPP guidance. Note that the site primarily handles liquids or pumpable sludges which do not pose a fire risk.

**5f Adding an installation**

If you are applying to add an installation, tick the box to confirm that you have sent in a baseline report and provide a reference.

Severn Trent Water have chosen not to provide a baseline report for the site. The site has operated as a sewage treatment works for a significant period and there are no proposals to close or relocated the site. Due to the site history and difficulties in obtaining representative samples from land below existing infrastructure, in accordance with current Environment Agency guidance, no baseline data is provided. The surrender risk this poses is acknowledged.

## 6 Environmental risk assessment

An environmental risk assessment of the site changes has been carried out in line with the requirements of the Horizontal Guidance Note H1 and Guidance given on gov.uk. This guidance specifies the following approach to carrying out an environmental risk assessment for a proposed activity:

- Identify potential risks that your activity may present to the environment;
- Screen out those that are insignificant and don't need detailed assessment;
- Assess potentially significant risks in more detail if needed;
- Choose the right control measures, if needed; and
- Report your assessment.

An environmental screening assessment is provided in Table C2-5. To inform the screening assessment, a review of the sensitivity of the site setting has been undertaken.

Data taken from the MAGIC.gov.uk website and Environment Agency habitats assessment, accessed December 2023 and a habitats screening assessment undertaken in 2022 by the Environment Agency is presented in Table C2-4 below. For habitat sites, the relevant distances for consideration are: international designations (SAC, MPA, SPA and Ramsar - 10km); national designations (SSSI – 2km) and ancient woodlands, local wildlife sites (LWS) and local nature reserves (2km).

**Table C2-4 – Proximity of nature conservation sites**

| Site Name | Designation | Distance | Direction |
|---|---|---|---|
| Midland Meres and Mosses Phase 2 | Ramsar | 4,800m | North West |
| Midland Meres and Mosses Phase 1 | Ramsar | 4,600m | South West |
| Old Riverbed, Shrewsbury | SSSI | 2,200m | North West |
| Rea Brook Valley | LNR | 1300m | South West |
| Haughmond Hill | LWS | <2km | As shown on EA plan |
| River Severn (Shrewsbury to Emstrey) | LWS | <2km | As shown on EA plan |
| Monkmoor Pool | LWS | <2km | As shown on EA plan |
| Sundorne Canal | LWS | <2km | As shown on EA plan |
| Sundorne Pool | LWS | <2km | As shown on EA plan |
| River Severn (Montford – Shrewsbury) | LWS | <2km | As shown on EA plan |
| Abbey Wood / New Coppice | Ancient Woodland | 1800m | East |

The site sits entirely within flood zone 1 indicating that it less than a 1:1000 probability of flooding in any year. The site does not sit within any inside any designated source protection zones (SPZ). There are no SAC's (special area of conservations), Special Protection Areas (SPAs). There are 6 Local wildlife sites, 1 ancient woodland and 1 local nature reserve, within 2km of the site boundary and 2 RAMSAR sites within 10km of the site boundary. There is 1 site of special scientific interest (SSSI) 2.2km from the site.

**Table C2-5 Environmental Screening Assessment**

| Consideration | Receptors | Discussion | Detailed Environmental Risk Assessment |
|---|---|---|---|
| Amenity issues: Litter, vermin and pests | Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, amenity, and recreation areas such as playing fields and playgrounds. Industrial estates and rail stations.<br>The nearest commercial and industrial premises are 215m of the site to the west. The closest residential properties are approximately 80m to the west and south, 330m to the North and over 1000m to the west.<br>Ecological receptors - international designated habitats sites within 10km, nationally designated sites within 2km, locally designated sites within 2km.<br>There are 1 LNR, 6 LWS and 1 ancient woodland within 2km of the site boundary. There is 1 SSSI 2.2km from the site boundary. There are 2 RAMSAR sites within10km of the site boundary. There are no SAC/SPA within the designated distances. | The wastes handled at the site are primarily liquids and sludges, along with UWWTD derived material delivered by sewer.<br>There is no source of litter within the materials handled at the site.<br>In the unlikely event pests or vermin are observed on site a suitable contractor is called in as soon as practicable. | X |
| Dust and bio-aerosols | Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, recreation areas such as playing fields and playgrounds. Industrial estates and rail stations.<br>For human health and ecological receptors, see notes for Litter above.<br>The impact of dust on human health will depend on the distance and wind direction.<br>The digestate collection point at the site is approx. 110 metres from the nearest offsite receptor | The wastes handled at the site are liquids and sewage sludges, along with UWWTD derived material delivered by sewer.<br>The site will not be handling inherently dusty or powdery wastes. Roads will be maintained to avoid the production of dust. | X |
| Assessment of point source emissions to air<br>Emissions deposited from air to land | Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, recreation areas such as playing fields and playgrounds. Industrial estates and rail stations.<br>For human health and ecological receptors, see notes for Amenity issues above.<br>The impact of emissions from air on human health will depend on the distance and wind direction. | The installation has one biogas fuelled CHP engine and 3 dual fuelled boilers, for which ADMS modelling indicates emissions are unlikely to result in unacceptable impacts on air quality.<br>The emergency flare is used only during periods when there is a larger volume of biogas than the CHP engine or boilers can manage or are offline.<br>Fugitive emissions to air are assessed separately. | X |

| Consideration | Receptors | Discussion | Detailed Environmental Risk Assessment |
|---|---|---|---|
| Assessment of point source and fugitive emissions to water | The River Severn surrounds the site from the north East to the South, with the wider sewage works being on the North and eastern sides of the facility.<br>The site sits entirely within an area which is classified as flood zone 1 (indicating that it has less than 1:1000 probability of flooding in any year.<br>The site sits outside any designated source protection zone (SPZ).<br>Surface water drainage within the site drains to the inlet of the adjacent sewage treatment works for full treatment prior to discharge. | The main product of the process is a digested sewage sludge which is removed from site for dewatering.<br>Other aqueous discharges generated by the process are limited (comprising biogas condensate, and surface water run off). These sources are discharged to the on-site drainage system where they are transferred to the main sewage works inlet.<br>Due to the nature and small quantity of these emissions no further assessment of point source emissions is deemed necessary. | X |
| Assessment of odour | Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, recreation areas such as playing fields and playgrounds. Industrial estates and rail stations.<br>For human health and ecological receptors, see notes for Amenity issues above.<br>The impact of emissions from odour on human receptors will depend on the distance and wind direction. | The site has an odour management plan in place. This includes management systems, procedures and monitoring to control fugitive emissions of odour at the plant. Waste inputs to the site are of a similar nature to indigenous waste streams and as such there is no change in odour profile at the site.<br>There is a history of odour complaints from local residents. As result the raw primary and imported sludge routes are covered and vented to odour control units. The digested sludge tanks (sludge storage and pathogen kill tanks) and tanker trade waste import tanks are open topped, however, these are located away from the built up areas. | X |
| Energy | Global atmosphere (direct and indirect emissions) | Biogas generated by the facility is utilised to generate electrical power for the site and exported to the grid; thus increasing renewable energy supplies.<br>Waste heat from the CHP engine is utilised to control primary digester temperature when required and reduce demand on the auxiliary boilers. | X |
| Land and disposal of waste to other processes | Rivers and streams – see Assessment of point source and fugitive emissions to water above.<br>Drainage systems/sewers. The site sits outside a designated source protection zone (SPZ), the overlying geology is a secondary A aquifer, underlain with a secondary A bedrock. | All waste streams disposed of off-site will continue to be to appropriately permitted facilities. | X |

| Consideration | Receptors | Discussion | Detailed Environmental Risk Assessment |
|---|---|---|---|
| Noise and vibration | Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, amenity and recreation areas such as playing fields and playgrounds. Industrial estates and rail stations.<br>The nearest commercial and industrial premises are 215m of the site to the west. The closest residential properties are approximately 80m to the south and West, and over 1000m to the east.<br>Ecological receptors - international designated habitats sites within 10km, nationally designated sites within 2km, locally designated sites within 2km.<br>There are 1 LNR, 6 LWS, 1 ancient woodland and 2 RAMSAR sites within the designated distances.<br>There are no SAC or SPA/ within the designated distances. | Site design has been chosen to minimise the impact of noise on offsite receptors through building orientation, finishes and location of openings.<br>Noise from plant and equipment will be minimised through purchasing decisions and a robust preventative maintenance programme.<br>There are no sources of vibration within the facility. | X |
| Other issues (including visual impact) | Offsite habitats sites and other receptors as above | There are a number of protected species migratory routes located in close proximity to the site including European Eel; Atlantic Salmon, River Lamprey and Sea Lamprey, associated with the River Severn.<br>There are no other site-specific environmental risks identified. | X |
| Climate Change | Risks of increased temperature impacts resulting in digesters heating beyond optimal operating temperature and increased odour from sewage process. For human health and ecological receptors, see notes for Amenity issues above. | Digesters may require reduced heat input to digester via heat exchange system and digesters are insulated against worse impacts. Warmer temperatures may require less boiler input/use as a result of less heat demand, or increased heat dumping via air cooled radiator. If less biogas is used, the site may require a new gas engine that is appropriately sized to utilise additional biogas. However, the CHP engine will need to be replaced prior to 2050 when it reaches the end of its operational lifespans. | X |
| | Risks of increased storm events that causes surface water runoff exceeds capacity of site drainage system, or additional dewatering operations due to rainwater ingress, or caused bunds to infill. Increased precipitation may increase flooding on agricultural land, decreasing ability to | The STW design may require expansion or additional storm capacity; however, this would apply to UWWTD operations at the site rather than permitted activities. | X |

| Consideration | Receptors | Discussion | Detailed Environmental Risk Assessment |
|---|---|---|---|
| | spread digested sludge cake to land. For water environment receptors, see notes for Assessment of point source and fugitive emissions to water above | May need to increase bund or containment volume for sewage treatment works or individual assets.<br>Land spreading activities could be prevented during very wet, winter months. However, dewatering is undertaken offsite and would be addressed at that location. | |

## 3.2 Form C3

### 1 What activities are you applying to vary?

Table C3-1a

| Schedule 1 listed activities | | | | | | |
|---|---|---|---|---|---|---|
| **Installation name** | **Schedule 1 references** | **Description of the Activity** | **Activity capacity** | **Annex I (D codes) and Annex II (R codes) and descriptions** | **Hazardous waste treatment capacity (if this applies)** | **Non - hazardous waste treatment capacity (if this applies)** |
| Monkmoor STW Bioresources | S5.4A1(b)(i)<br>Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 100 tonnes per day involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC—<br>(i) biological treatment by anaerobic digestion | From receipt of permitted waste through to digestion and recovery of by-products (digestate). | 366m$^3$ per day (input)<br>2562m$^3$ per week (input) | R3 Recycling / reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)<br>Storage of waste pending any of the operations numbered R 1 to R 12 (excluding temporary storage, pending collection, on the site where the waste is produced) | None | 366m$^3$ per day (366 wet tonnes) |

| Name of DAA | Description of the DAA |
|---|---|
| AR1 | Import of sewage sludge, cess and septic tank wastes, and digested sludge for digestion. |
| AR2 | Blending of imported wastes prior to treatment |
| AR3 | Storage of biogas; |
| AR4 | Combustion of biogas in an MCPD and SG compliant biogas CHP unit and auxiliary boilers |

| Name of DAA | Description of the DAA |
|---|---|
| AR5 | Emergency flare |
| AR6 | Storage of raw materials |
| AR7 | Combustion of gas oil in three standby dual fuel boilers |
| AR8 | Surface water collection and drainage system |
| Total storage capacity (tonnes) | 366 $m^3$ |
| Annual throughput (tonnes each year) | 443,590 tonnes |

**Waste Activities (Currently permitted)**

| Name of Waste Activity | Annex I (D codes) and Annex II (R codes) and descriptions | Description of Waste Activity |
|---|---|---|
| AR9 Direct transfer and blending of waste into head of works. | D13: Blending or mixing prior to submission to any of the operations numbered D1 to D12.<br>D15: Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where the waste is produced) | Import of tankered waste to the head of the works for direct treatment through the UWWTD route<br>The maximum amount of waste stored must not exceed 800 tonnes. |
| AR10 Storage and pre-treatment of waste prior to inlet into the head of works including diversion of off spec waste to landfill (Moos skip) | D9: Physico-chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12.<br>D15: Storage pending any of the operations numbered D1 to D14 (excluding temporary storage, pending collection, on the site where the waste is produced) | Temporary storage of tankered waste in a tank prior to transfer to the head of the works for direct treatment through the UWWTD route<br>Temporary storage and gravity draining of sewer cleaning and wet well wastes within a skip in a dedicated bay<br>The maximum amount of waste stored must not exceed 20 tonnes. |

## Types of waste accepted for waste activity ONLY

Please see Table 2.1 Schedule 2 in permit EPR/RP379CW for a list of waste codes and descriptions of wastes to be accepted, treated, and stored. We are not requesting any changes to this list during this variation.

## Imported and Indigenous wastes to the sludge AD process (digesters)

| Waste Code | Description of Waste |
|---|---|
| 19 06 06 | digestate from anaerobic treatment of animal and vegetable waste (sewage sludge only) |
| 19 08 05 | Sludges from treatment of urban waste water |
| 20 03 04 | Septic tank sludge |

## 2 Point source emissions to air, water and land

**Table C3-2a Emissions to Air**

Currently permitted assets are in Bold

| Emission point reference and location (NGR/Latitude & Longitude) | Source | Parameter | Concentration | Units |
|---|---|---|---|---|
| **A1 SJ 51753 13543** | **CHP engine 1 [Note 1] (1.6MWth)** | **NOx** | **190** | **mg/m$^3$** |
| A2 SJ 51755 13552 | Auxiliary flare [Note 2] | NOx | 150 | mg/m$^3$ |
| | | CO | 50 | mg/m$^3$ |
| | | Total VOCs | 10 | mg/m$^3$ |
| A3 SJ 51780 13543 | Standby Hot Water Boiler 1 (0.46MWth) | NOx | - | |
| | | CO | - | |
| A4 SJ 51785 13540 | Standby Hot Water Boiler 2 (0.46MWth) | NOx | - | |
| | | CO | - | |
| A5 SJ 51788 13538 | Standby Hot Water Boiler 3 (0.36MWth) | NOx | - | |
| | | CO | - | |
| A6 SJ 51766 13560 | Gas holder pressure relief valve | No parameters set | - | |
| A7 SJ 51779 13532 | Digester tanks pressure relief valves | No parameters set | - | |
| A8 SJ 51794 13521 | Digester tanks pressure relief valves | No parameters set | - | |
| A9 SJ 51809 13510 | Digester tanks pressure relief valves | No parameters set | - | |
| A10 SJ 51827 13556 | Main pumping station OCU | No parameters set | - | |

| | | | | |
|---|---|---|---|---|
| A11<br>SJ 51806 13543 | Consolidation tanks OCU | No parameters set | - | |
| A12<br>SJ 51837 13514 | Screen and crude belt feed tank OCU | No parameters set | - | |
| A13<br>SJ 51847 13489 | Sludge import OCU | No parameters set | - | |
| A14<br>SJ 51894 13454 | Pre-digestion blending tank OCU | No parameters set | - | |

Note 1. Note that the engine has a horizontal exhaust with a cowl, due to the small distance between the unit and the nearest neighbours and to minimise the risk of complaints from nearby neighbours.

Note 2 Monitoring to be undertaken only in the event that emergency flare has been operational more than 10% of the year (836 hours). Record of operating hours to be submitted annually to the Environment Agency

**Table C3-2b Emissions to Sewer**

| Emission point reference and location (NGR/Latitude & Longitude) | Source | Parameter | Concentration | Units |
|---|---|---|---|---|
| T1<br>SJ 51693 13640 | Site returns to inlet | No parameters set | - | - |
| T2<br>SJ 51701 13637 | Tanker trade waste offloading point for inlet | No parameters set | - | - |
| T3<br>SJ 51757 13655 | Tanker trade waste offloading point for trade waste tanks | No parameters set | - | - |

Points T2 and T3 are also where any direct sampling of trade waste imports would be carried out on site, as these are the offloading points for the inlet and trade waste tanks respectively.

The location of the sampling point for the returns to the inlet is point S1

| Emission point reference and location (NGR/Latitude & Longitude) | Source |
|---|---|
| S1<br>SJ 51723 13620 | Site returns to inlet |

## 3 Operating techniques

### 3a Technical standards

**Table C3-3 Technical standards**

| Schedule 1 activity or DAA | Best available technique | Document reference |
|---|---|---|
| Anaerobic Digestion plant S5.4A1(b)(i)<br>Anaerobic Digestion plant S5.4A1(b)(i); | Biological waste treatment: appropriate measures for permitted facilities | Updated 6th July 2023 |

| Schedule 1 activity or DAA | Best available technique | Document reference |
|---|---|---|
| Import of waste to the inlet for treatment through UWWTD route;<br>Storage of waste prior to treatment | | |

**3a1 Does your permit have references to any of your own documents or parts of documents submitted as part of a previous application for this site?**

Yes – remain as per previously permitted waste operation and MCPD

**3b General requirements**

**Table C3-4 General requirements**

| Name of the installation: Monkmoor STW Bioresources | Document references |
|---|---|
| If the technical guidance or your risk assessment shows that emissions of substances not controlled by emission limits are an important issue, send us your plan for managing them. | N/A – see Table C2-6 above |
| If the technical guidance or your risk assessment shows that odours are an important issue, send us your plan for managing them. | See Odour Management Plan Appendix E |
| If the technical guidance or your risk assessment shows that noise or vibration are important issues, send us your noise or vibration plan (or both). | N/A – see Table C2-6 above |

## 3b - General requirements

**If the TGN or H1 assessment shows that emissions of substances not controlled by emission limits are an important issue, send us your plan for managing them.**

Although screened out of the detailed Risk Assessment (Question C2 Q6), due to the nature of the process the installation has the potential to generate fugitive emissions to air and water, which are subject to a number of process controls. An assessment of fugitive emissions has been undertaken using the following methodology. The risk assessment is presented in Tables C3-3b(i) to (iv).

**Risk Matrix and Terminology for Accident for Risk Assessment**

| | Consequence | | |
|---|---|---|---|
| **Likelihood ↓** | **Low** | **Medium** | **High** |
| **Low** | Low | Low | Medium |
| **Medium** | Low | Medium | High |
| **High** | Medium | High | High |

| Classification | Likelihood | Consequence | Risk |
|---|---|---|---|
| **Low** | Probability of an event is low and likely only to occur in the long-term (a yearly basis or less frequent). | Impact is low or a minor, short-term nuisance.<br>Minor release to a non-sensitive receptor or pollution of water course.<br>Non-permanent health effects to human health (preventable by appropriate PPE).<br>Minor surface damage to buildings; structures; services; or the environment which can be repaired immediately. | A level of harm is possible although this may not be noticeable to a receptor and would be a short-term event without lasting effects. Level of harm can be reduced using industry best practice and appropriate management and techniques. |
| **Medium** | It is probable that an event will occur periodically in the medium-term (twice yearly basis). | Impact is noticeable in the short to medium-term.<br>Large release impacting on the receiving media killing flora and fauna and requires remediation.<br>Nuisance causing non-permanent health effects to human health.<br>Damage to buildings; structures; services; or the environment preventing short-term use and/or requiring repair. | A level of harm may arise to a receptor which is noticeable although not long-lasting and may require some remedial actions in order to prevent re-occurrences. |
| **High** | An event is very likely to occur in the short-term (monthly or weekly basis) and is almost inevitable over the long-term OR there is evidence at the receptor of harm or pollution. | Impact is significant, wide-ranging and long-lasting effect.<br>Has a chronic or acute impact on human health.<br>Very large release that has a major impact on flora and fauna which may be very difficult to remediate.<br>Significant damage to buildings; structures; services; or the environment which prevents use long-term and may require complete replacement.<br>May cause a long-term impact or contribute towards a global issue due to releases of greenhouse gases. | A level of harm is likely to arise to a receptor that is severe causing significant harm to human health or the environment without appropriate remedial and mitigation measures being implemented. Remedial works to infrastructure and processes is required in the long-term. |

Although screened out of the detailed Risk Assessment (Question C2 Q6), due to the nature of the processes, the anaerobic digestion operations along with biogas utilisation have the potential to generate fugitive emissions to air and water, which are subject to a number of process controls.

## Table C3-3b(i) Fugitive emissions risk assessment

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| **Emissions to air of NOx, $SO_2$, $CO_2$ and VOCs** | Normal | Emissions to air and dispersion leading to inhalation by local human and animal receptors | High | Low | Medium | Activities are managed and operated in accordance with the site management system (including inspection and maintenance of equipment, including engine management systems), point source emissions to air (CHP engine,) has an emission limit for NOx,<br><br>Flare stack height approx. 5m, CHP stack approx. 4m and boiler flue approx.6m. | Low |
| **Gas transfer systems, gas storage tank, gas engines, flares or PRVs failure causing emissions of biogas** | Abnormal | Emissions to air and dispersion leading to: inhalation by local human and animal receptors. Odour impact. Global warming potential. Risk of fire and explosion | Low | Medium | Low | The plant is designed to capture and utilise all biogas possible, combusting the biogas in order to maximise recovered value from the biological treatment of sludge.<br><br>The gas system utilised is subject to regular preventative maintenance to minimise the potential for leaks occurring. The system is also protected with a comprehensive array of pressure and flow sensors and with isolation valves to minimise the potential for release if a leak is detected.<br><br>Personnel on site wear portable gas detectors in order to alert staff to presence of biogas. | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| | | | | | | A waste gas burner (emergency flare) is utilised for the safe disposal of surplus gas in the event of plant breakdown, or a surplus of gas above the level that can be safely stored or utilised. Use of emergency flare is recorded.<br><br>PRVs are in place on the gas holder to be operated in the event of failure of the emergency flare to prevent over pressurisation and catastrophic failure. | |
| **Catastrophic loss of biogas emissions from gas transfer systems, gas storage tank, gas engines, flares or PRVs** | Abnormal | Emissions to air and dispersion leading to: inhalation by local human and animal receptors. Odour impact. Global warming potential. Risk of significant fire and explosion | Low | High | Medium | The plant is designed to capture and utilise all biogas possible, combusting the biogas in order to maximise recovered value from the biological treatment of sludge.<br><br>The gas system utilised is subject to regular preventative maintenance to minimise the potential for leaks occurring. The system is also protected with a comprehensive array of pressure and flow sensors and with isolation valves to minimise the potential for release if a leak is detected.<br><br>A waste gas burner (emergency flare) is utilised for the safe disposal of surplus gas in the event of plant breakdown, or a surplus of gas above the level that can be safely stored or utilised. Use of emergency flare is recorded. | Medium |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| | | | | | | PRVs are in place on the gas holder to be operated in the event of failure of the emergency flare to prevent over pressurisation and catastrophic failure. | |
| **Combustion of biogas within CHP engine and emergency flare. Combustion of biogas or natural gas within boilers** | Normal | Emissions to air and dispersion leading to: inhalation by local human and animal receptors. Global warming potential | High | Low | Medium | Combustion plant is regularly maintained and appropriately sized to manage volumes of gas.<br><br>Combustion plant operates within permitted ELVs subject to routine monitoring against permit compliance.<br><br>CHP engine and emergency flare are located away from the nearest residential properties which are over 80m from the CHP engine west, the nearest commercial buildings are approx. 215m west. | Low |
| **Release of bioaerosols and dust from storage or spillage** | Normal | Emissions to air and dispersion leading to inhalation by local human and animal receptors. Odour impact of bioaerosols. Nuisance impact of dust. | Low | Low | Low | The site does not produce sewage cake, instead digested sewage sludge is transferred from site for dewatering.<br><br>Roads are made from concrete/asphalt and not prone to the generation of dust.<br><br>Staff responsible for site housekeeping and cleaning of spillages in a timely manner. | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| **Spillage of liquids, including chemicals and oils.** | Abnormal | Emissions to surface waters close to and downstream of site. Acute effect resulting in loss of flora and fauna. Chronic effect resulting in deterioration of water quality.<br><br>Emissions to ground and ground water. | Low | Medium | Low | The closest surface water body surrounds the site, closets to the northern, eastern and southern boundaries.<br><br>Chemicals and oils all stored within suitably bunded tanks and IBCs with rainwater removed as required to maintain 110% capacities. Penstock valves available within chemical delivery areas to contain large spillages.<br><br>Handling and use of chemicals and oils is carried out by trained personnel. COSHH data sheets available.<br><br>Spill kits available on site.<br><br>There are no point source emissions to water with drainage system pumping back to works inlet. | Low |
| **Spillage from storage and digestion tanks, overtopping of tanks, leakage from same tanks and from buried pipes** | Abnormal | Emissions to surface waters close to and downstream of site. Acute effect resulting in loss of flora and fauna. Chronic effect resulting in deterioration of water quality<br><br>Emissions to ground and ground water. | Medium | Medium | Medium | The site lies outside any Groundwater Source Protection Zone.<br><br>Provision of suitably structurally integral tanks constructed from pre-conditioned concrete, and steel and glass reinforced plastic/insulation (where needed). All tanks are subject to asset inspection and proactive maintenance programme including regular visual inspection for cracks or weeping. | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| | | | | | | Visual checks during regular day-to-day operations and scheduled preventative maintenance of equipment, such as pumps, pipes, joins etc.<br><br>Biogas condensate discharged back to the works inlet through site drainage system.<br><br>Spill kits available on site.<br><br>There are no point source emissions to water with drainage system pumping back to works inlet. | |
| **Generation of solid waste resulting in litter** | Normal | Releases of litter to the environment. Visual nuisance and local loss of amenity | Low | Low | Low | Site operations do not give rise to large amounts of solid wastes and litter that would be prone to dispersion by wind. Rags are stored within skips and retain high moisture content.<br><br>Waste is stored securely for collection by appropriately licensed approved contractors.<br><br>Litter picking activities are completed as required. | Low |

**Where the TGN or H1 assessment shows that odours are an important issue, send us your odour management plan.**

Due to the nature of the process, the installation has the potential to generate odorous emissions resulting from the permitted activities. Odour management is a key operational objective, as summarised in the risk assessment table below. A copy of the site-specific odour management plan has been appended to this application as Appendix E.

## Table C3-3b(ii) Odour risk assessment

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| **$H_2S$/biogas emissions from uncovered tanks** | Normal | Emissions to air and dispersion leading to inhalation by local human receptors<br><br>Loss of amenity from odour nuisance | High | Low | Medium | Biogas will principally be generated in the three primary digestion tanks which are covered with fixed roofs.<br><br>The nearest residential properties approx. 80m west from the digesters and nearest commercial buildings approx. 215m West.<br><br>$H_2S$ production is controlled through the digestion process which can be manually overridden if required.<br><br>There is a history of odour complaints from local residents. As result the raw primary and imported sludge routes are covered and vented to odour control units. The digested sludge tanks (sludge storage and pathogen kill tanks) and tanker trade waste import tanks are open, however, these are located away from the built up areas. | Low |
| **Loss of containment from** | Abnormal | Emissions to air and dispersion leading to | Low | Medium | Low | Biogas is principally stored within a gas storage vessel which is suitably sized to manage biogas generation. | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| **biogas holder and biogas pipework** | | inhalation by local human receptors<br><br>Loss of amenity from odour nuisance | | | | The gas system utilised is subject to regular preventative maintenance to minimise the potential for leaks occurring. The system is also protected with a comprehensive array of pressure and flow sensors and with isolation valves to minimise the potential for release if a leak is detected.<br><br>Personnel on site wear portable gas detectors to alert staff to presence of biogas.<br><br>Physical protection measures in place for biogas holder, including kerbing and pipework is guarded.<br><br>PRVs available to safely manage pressures within the biogas holder and prevent under or over pressurization. | |
| **Activation of biogas pressure relief valve** | Abnormal | Emissions to air and dispersion leading to inhalation by local human receptors<br><br>Loss of amenity from odour nuisance | Low | Low | Low | PRVs are only activated in emergency situations to maintain safety within the biogas system and are re-seated/repaired promptly to minimize biogas emissions.<br><br>PRVs subject to monitoring via SCADA and visual checks by site personnel.<br><br>Biogas is principally stored within the site gas holder which is suitably sized to manage biogas generation and act as buffer storage for biogas. Site has one CHP engine, three boilers and one | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| | | | | | | flare which are used in order of preference to maximise recovery of energy.<br><br>CHP engine and boilers are subject to regular maintenance to maintain maximum use of outlets, with flare maintained in good working order should it need to be used.<br><br>The nearest residential properties approx. 80m West from the digesters and nearest commercial buildings approx. 215 m West. | |
| **$H_2S$/biogas emitted when biogas cannot be combusted in engine, boilers or flare** | Abnormal | Emissions to air and dispersion leading to inhalation by local human receptors<br><br>Loss of amenity from odour nuisance | Low | Low | Low | Biogas is principally stored within the gas storage vessel which is suitably sized to manage biogas generation and act as buffer storage when biogas cannot be combusted. Site has one CHP engine, three boilers and one flare giving multiple outlets for biogas.<br><br>The nearest residential properties approx. 80m West from the digesters and nearest commercial buildings approx. 215 m West.<br><br>CHP engine and boilers are subject to regular maintenance to maintain maximum use of outlets, with flare maintained in good working order should it need to be used. | Low |
| **Failure of odour control units** | Abnormal | Emissions to air and dispersion leading to | Low | High | Medium | Odour control units are subject to regular preventative maintenance. | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| | | inhalation by local human receptors<br><br>Loss of amenity from odour nuisance | | | | Media is replaced in line with the manufacturer's recommendations | |
| **Storage of site generated wastes** | Normal | Emissions to air and dispersion leading to inhalation by local human receptors<br><br>Loss of amenity from odour nuisance | Low | Low | Low | Wastes generated on site are not inherently odorous and is stored securely for collection by appropriately licensed approved contractors. | Low |

**If the TGN or H1 assessment shows that noise or vibration are important issues, send us your noise or vibration management plan (or both)**

The installation has the potential to generate noise as a result of the permitted activities. Potentially noisy activities are subject to a number of process controls and noise management is a key operational objective, as summarised in the risk assessment table below. Note there is no history of substantiated noise complaints relating to the site:

## Table C3-3b(iii) Noise risk assessment

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| **Operation of CHP engine** | Normal | Generation of noise with air transportation, causing loss of amenity to local human receptors | High | Low | Medium | The one Jenbacher CHP engine is acoustically baffled, self-contained and designed for external applications therefore noise emissions are already low. | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| | | | | | | CHP engine is located away from the nearest residential properties which are 80m West of the engine with the nearest commercial buildings approx. 215m West. Good maintenance of plant to ensure that excessive noise levels are not generated.<br><br>Regular checks of noise mitigation measures fitted to items of plant. Such measures include silencers and baffles fitted to specific areas of plant. Where repair or replacement is required, the plant will, where possible, be taken out of service until repair or replacement of parts has been undertaken. | |
| **Operation of fans on air cooled radiators** | Normal | Generation of noise with air transportation, causing loss of amenity to local human receptors | High | Low | Medium | Air cooled radiators do not give rise to high levels of noise and are only used as required. They are located away from sensitive human receptors. The nearest residential properties which are 80m West of the engines with the nearest commercial buildings approx. 215m West.<br><br>Good maintenance of fans to ensure that excessive noise levels are not generated. Where repair or replacement is required, this will be completed promptly. | Low |

| Activity/Hazard | Normal or Abnormal | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|---|
| **Operation of site vehicles** | Normal | Generation of noise with air transportation, causing loss of amenity to local human receptors.<br><br>Generation of vibration with ground transmission, causing loss of amenity to local human receptors. | High | Medium | High | Vehicle movements across the site subject to speed limit and one-way system to reduce generation of noise.<br><br>Reversing obligations minimised by site layout.<br><br>Tanker deliveries limited to daytime only. | Low |
| **Operation of emergency flare** | Abnormal | Generation of noise with air transportation, causing loss of amenity to local human receptors. | High | Low | Medium | Use of the emergency flares is minimized by prioritizing use of the CHP and boilers with use of the flare recorded.<br><br>Emergency flare is located a similar distance to the engines from sensitive receptors. | Low |

## Table C3-3b (iv) - Environmental Risk Assessment and Accident Management Plan

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| **Major fire and/or explosion causing the release of polluting materials to air, water or land.** | Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population | Low | High | Medium | Follow site Incident Response Plan and inform relevant authorities.<br><br>Management systems requires DSEAR assessment which is adhered to by site operations. | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| | Emissions to ground and ground water of digestate contaminating soil and/or groundwater. Run-off from site polluting surface water courses. Harm to aquatic flora and fauna and chronic effect on water quality.<br><br>Injury to staff, fire fighters or arsonists/vandals. | | | | Designated ATEX zones on site and lightning protection system in place around biogas holder. Fire alarm systems installed and maintained.<br><br>Biogas contained within a closed system and monitored for safety. Automatic cut off valve to biogas supply to stop gas glows, electric temperature sensor, pressure monitors, flame arrestors, etc.<br><br>Warning signs clearly displayed, and staff wear gas alarms to alert to the presence of biogas. All visitors subject to site inductions and accompanied. Permit-to-work system in place.<br><br>Preventative maintenance programme and maintenance plans are in place to maintain equipment effectively.<br><br>Smoking only permitted in designated areas of site. | |
| **Minor fire causing the release of polluting materials to air, water, or land** | Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population<br><br>Emissions to ground and ground water of digestate contaminating soil and/or groundwater. Run-off from site polluting surface water courses. Harm to aquatic flora and | Low | Medium | Low | Follow site Incident Response Plan and inform relevant authorities.<br><br>Management systems requires DSEAR assessment which is adhered to by site operations.<br><br>Designated ATEX zones on site and lightning protection system in place around biogas holder. Fire alarm systems installed and maintained.<br><br>Biogas contained within a closed system and monitored for safety. Automatic cut off valve to biogas | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| | fauna and chronic effect on water quality.<br><br>Injury to staff, fire fighters or arsonists/vandals. | | | | supply to stop gas glows, electric temperature sensor, pressure monitors, flame arrestors, etc.<br><br>Warning signs clearly displayed, and staff wear gas alarms to alert to the presence of biogas. All visitors subject to site inductions and accompanied. Permit-to-work system in place.<br><br>Preventative maintenance programme and maintenance plans are in place to maintain equipment effectively.<br><br>Smoking only permitted in designated areas of site. | |
| **Failure to contain firefighting water** | Emissions to ground and ground water of contaminated firefighting water entering soil and/or groundwater. Run-off from site to surface water courses.<br><br>Harm to aquatic flora and fauna.<br><br>Chronic effect on water quality | Low | Medium | Low | Likelihood of firefighting water being generated is low as the risk of fire is low.<br><br>Follow site Incident Response Plan and inform relevant authorities.<br><br>Spill kits provided around the site can be used to direct run-off towards site drainage. Site drainage returns to works inlet providing containment and treatment process for fire water.<br><br>Arrange for off-site tankering of firefighting water, if required. | Low |
| **Accidental explosion of biogas** | Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory | Low | High | Medium | Follow site Incident Response Plan and inform relevant authorities. | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| | irritation, illness and nuisance to local population.<br><br>Injury to staff, fire fighters or arsonists/vandals.<br><br>Pollution of water or land | | | | Management systems requires DSEAR assessment which is adhered to by site operations.<br><br>Designated ATEX zones on site and lightning protection system in place around biogas holder. Fire alarm systems installed and maintained.<br><br>Biogas contained within a closed system and monitored for safety. Automatic cut off valve to biogas supply to stop gas glows, electric temperature sensor, pressure monitors, flame arrestors, etc. Lightning protection system installed.<br><br>Likelihood reduced by availability of multiple on site uses of biogas (CHP, boilers and emergency flare) and use of pressure release valves as a safety measure. | |
| **Significant leak of biogas to atmosphere** | Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness, and nuisance to local population.<br><br>Global warming potential of greenhouse gases. | Low | High | Medium | Site assets are protected by physical means to prevent vehicle strike and exposed pipework is guarded.<br><br>Regular proactive and preventative maintenance and regular visual checks.<br><br>Pressure relief valves are present to avoid over pressurisation of biogas system. Gas detectors are in place between the two layers of biogas membranes which will raise the alarm should a leak of biogas be detected. | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| **Leaks of emission to air, but principally NOx.** | Emissions to air and dispersion leading to harm to protected nature conservation sites – SSSIs, SAC and SPA.<br><br>Harm to protected site through toxic contamination, nutrient enrichment, disturbance etc. | Low | Low | Low | The site does not sit within any inside any designated source protection zones (SPZ). There are no SAC's (special area of conservations), Special Protection Areas (SPAs) within 10km of the site. There are 2 RAMSAR sites within 10km of the site boundary, and 6 Local wildlife sites, 1 ancient woodland and 1 local nature reserve within 2km of the site boundary. There is 1 site of special scientific interest (SSSI) within 2.2km of the site boundary.<br><br>Emissions modelling shows that deposition and impacts on habitats sites are acceptable.<br><br>Site operations will be subject to emission limits under current Regulations with infrastructure designed to minimise uncontrolled releases. Checks, monitoring and preventative maintenance will further minimise fugitive emissions. | Low |
| **Spillage of raw materials during (e.g. diesel, polymer, ) during use, transfer and disposal operations.** | Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses.<br><br>Harm to aquatic flora and fauna.<br><br>Chronic effect on water quality | Low | Medium | Low | Raw materials are stored on made ground, within bunded containers or on bunds to contain spillages of 110% of the volume. Contents of bunds are regularly checked during environmental audits and after periods of heavy rainfall and emptied as required.<br><br>In event of a spillage, follow site spillage response plan and inform relevant site personnel. COSHH data sheets available. | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| | | | | | Deliveries to site are made by approved suppliers. Use of raw materials is carried out by trained personnel or automatically controlled processes.<br><br>Penstock valves available within chemical delivery areas to contain large spillages. In the event of a minor spillage, spill kits are provided around the site which can be used to contain a spillage and direct it towards site drainage if suitable.<br><br>Site drainage returns to works inlet providing treatment process for suitable materials, or arrange off-site tankering of waste, if required. | |
| **Spillage of sludges (e.g. raw sludge, digested sludge) during processing and transfer operations e.g. tank overtopping, pipework leaks** | Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses.<br><br>Harm to aquatic flora and fauna.<br><br>Chronic effect on water quality | Low | Low | Low | Processing and transfer operations of waste materials is largely an automatic process controlled by the Process Controllers and parameters set within the SCADA system.<br><br>Storage and digestion tanks are fitted with sensors to monitor levels within a tank and can inhibit additional pumping if high alarms activate.<br><br>Preventative maintenance programme and maintenance plans are in place to maintain equipment effectively and minimise the risk of spillages.<br><br>In event of a spillage, follow site spillage response plan and inform relevant site personnel and relevant authorities. | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| | | | | | Spill kits are provided around the site which can be used to contain a spillage and direct it towards site drainage. Site drainage returns to works inlet providing treatment process for sludge or arrange off-site tankering of waste to another site. Sludge is relatively viscous and not highly mobile. | |
| **Failure of sludge storage tanks / digester tanks** | Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses.<br><br>Harm to aquatic flora and fauna.<br><br>Chronic effect on water quality. | Low | High | Medium | Follow site Incident Response Plan and inform relevant authorities.<br><br>Regular infrastructure inspections for tanks and pipework and planned preventive maintenance system in place. Regular visual inspections for tanks and pipework and reactive maintenance.<br><br>In-line flow monitoring in key locations and tank level monitoring would identify losses and enable a quick response.<br><br>Tanks are found on unmade ground but are connected to site drainage which returns to works inlet. Sludge is relatively viscous and not highly mobile limiting the distance it can spread in a short time period. | Medium |
| **All on-site hazards: machinery** | Direct physical contact with human population and /or livestock after gaining unauthorised access to the installation | Low | High | Medium | Direct physical contact is minimised by activity being carried out within enclosed digesters.<br><br>Site activities are managed and operated in accordance with a management system. Site physical security measures to prevent unauthorised access. | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| | Bodily injury | | | | Assets are protected by various physical means including fencing, kerbing and bollards to prevent vehicle strikes.<br><br>Site has a one-way traffic management system to minimise the need to reverse. Use of banksmen as appropriate.<br><br>Vehicles equipped with reversing alarms. | |
| **Vandalism causing the release of polluting materials to air (smoke or fumes), water or land.** | Emissions to air and dispersion leading to inhalation by local human receptors. Respiratory irritation, illness and nuisance to local population<br><br>Emissions to ground and ground water of digestate contaminating soil and/or groundwater. Run-off from site polluting surface water courses. Harm to aquatic flora and fauna and chronic effect on water quality.<br><br>Injury to staff, fire fighters or arsonists/vandals. | Low | High | Medium | Unauthorised access is unlikely to happen and minimised by physical site security measures and effective management systems.<br><br>Site has access controlled barrier entry for all vehicular access. Fence runs the perimeter of the site.<br><br>Additional security fences around some assets and other assets are kept within locked containers or buildings. Warning signs are displayed. | Low |
| **Flooding from rivers, streams and groundwater** | Emissions to surface water course and harm to aquatic flora and fauna. Infiltration to ground and groundwater. Harm to aquatic | Low | Low | Low | The site sits entirely within an area classified as flood zone 1, indicating that it has a less than a 1:1000 probability of flooding in any year. | Low |

| Activity/Hazard | Environmental Impact (Pathway-Receptor) | Likelihood | Consequence | Risk | Risk Management | Residual Risk |
|---|---|---|---|---|---|---|
| | flora and fauna and chronic effect on water quality. | | | | General wider works designed to minimise risk of localised works flooding due to storm surges.<br><br>Follow site Incident Response Plan and inform relevant authorities.<br><br>Take appropriate corrective and preventative actions to minimise environmental impact | |
| **Flooding due to drain blockages and/or excessive rainfall causing localised on- site surface water flooding** | Emissions to surface water course and harm to aquatic flora and fauna. Infiltration to ground and groundwater. Harm to aquatic flora and fauna and chronic effect on water quality. | Low | Low | Low | Site wide drainage system linked to main sewage works, which includes additional capacity in storm tanks within the works to manage additional flows.<br><br>Follow site Incident Response Plan and inform relevant authorities.<br><br>Take appropriate corrective and preventative actions to minimise environmental impact | Low |
| **Loss of mains power leading to failure of pumps / control systems and possible leaks and escape of sludge** | Emissions to ground and ground water of materials entering soil and/or groundwater. Run-off of liquids from site to surface water courses. Harm to aquatic flora and fauna. | Low | Medium | Low | Site CHP engine is able to supply electricity to the site using biogas supplies on site. Standby generators provide back-up power / contingency plans to provide power to critical operations in the event of an electrical outage.<br><br>Failsafe systems in place to ensure sludge remains in situ in the event of a loss of power and that systems are promptly returned into operation.<br><br>Site wide drainage system linked to main sewage works in the event of a spillage. | Low |

**3c –Types and amounts of raw materials**

**Table C3-5 Types and amounts of raw materials**

| Monkmoor Sewage Treatment Works | | | | |
|---|---|---|---|---|
| **Description of raw material and composition** | **Maximum storage amount (tonnes or as stated)** | **Annual throughput (tonnes per annum or as stated)** | **Description of the use of the raw material including any main hazards (include safety data sheets** | **Alternatives** |
| Anti foam<br><br>Burst 13 | 2,000 litres | 4,000 litres | Added to primary digesters to reduce foaming. | Standard product used for this purpose within the industry |
| Polymer (powder)<br><br>Flopam EM64 | Polymer liquid: 4,000 litres (4 IBCs) | Polymer liquid: <100,000 litres | Flocculant added to digested sludge to aid centrifugation and dewatering. | Standard product used for this purpose within the industry |
| Fuel oil | 15,000 litres | <15,000 litres | Standby fuel for boiler plant | None – backup fuel only |
| Lubrication oil | 5,000 litres | As required | Equipment lubricant | None |
| Waste oil | 2,000 litres | As required | Waste oil from the CHP. | |

## 4 Monitoring

**4a Describe the measures you use for monitoring emissions by referring to each emission point in Table 2 above.**

The existing air emission points A1 retains existing monitoring in accordance with the current permit.

Emission point A2 will only be monitored should its use exceed 10% of the year (836 hours)

No monitoring of the boilers A3 – A5 is proposed.

Emission points A7-A9 are PRVs and no monitoring is proposed.

Odour control units A10 – A14 to be monitored in accordance with current EA guidance.

**4b Point source emissions to air only**

The site has a number of emission points to air. Points which are subject to gas monitoring in accordance with the requirements of the current environmental permit, MCPD and EA guidance.

Hours of operation of the flare, A2, to be monitored and logged. In the unlikely event that the total annual hours of operation exceed 10% of the hours in a year (836 hours), emissions from the flare would be subject to monitoring in accordance with EA guidance.

There is no routine monitoring proposed for points for A7-A9 (PRVs) and OCUs other than recommended by the manufacturer to achieve effective operational conditions.

Air emission point A1 will be subject to periodic monitoring in accordance with the requirements of the Medium Combustion Plant Directive (EU2015/2193).5 Environmental impact assessment.

**4b1 Has the sampling location been designed to meet BS EN 15259 clause 6.2 and 6.3?**

No

**4b2 Are the sample ports large enough for monitoring equipment and positioned in accordance with section 6 and appendix A of BS EN 15259?**

No

**4b3 Is access adjacent to the ports large enough to provide sufficient working area, support and clearance for a sample team to work safely with their equipment throughout the duration of the test?**

Yes

**4b4 Are the sample location(s) at least 5 HD from the stack exit**

No

**4b5 Are the sample location(s) at least 2 HD upstream from any bend or obstruction?**

No

**4b6 Are the sample location(s) at least 5 HD downstream from any bend or obstruction?**

No

**4b7 Does the sample plane have a constant cross sectional area?**

Yes

**4b8 If horizontal, is the duct square or rectangular (unless it is less than or equal to 0.35 m in diameter)**

No

**4b9 If you have answered 'No' to any of the questions 4b1 to 4b8 above, provide an assessment to how the standards in BS EN 15259 will be met.**

As an existing site with combustion assets, sampling locations and sampling ports may not meet all of the requirements for BS EN 15259, but monitoring has been carried out over a number of years in accordance with the permit requirements with the installed ports. Due to the nature of the ducting access, it is not possible to conduct a full velocity profile, however, no particulate sampling is required for biogas fuelled units, and all gaseous species are considered to be mixed sufficiently for the purposes of monitoring. There is no requirement to undertake a homogeneity test as per BS EN 15259 and as such the location cannot be compared against that or the criteria in M1. The sampling location is as previously approved for use by the Environment Agency.

Due to the size of the CHP and boilers, a permanent sampling platform is not provided, however, a temporary sampling platform is utilised to provide sufficient space, in accordance with standard industry practice.

Air emission point A1; will be subject to periodic monitoring in accordance with the requirements of the Medium Combustion Plant Directive (EU2015/2193). Boilers A3 – A5 are <1MWth, and therefore outside the scope of the MCPD.

## 5 Environmental Assessment

**5a Have your proposals been the subject of an environmental impact assessment under Council Directive 85/337/EEC of June 1985 [Environmental Impact Assessment] (EIA)?**

No

## 6 Resource efficiency and climate change

**6a Describe the basic measures for improving how energy efficient your activities are.**

The installation is designed to treat thickened sewage sludge to enable its recycling to land as a fertiliser, and to capture and utilise biogas to generate green electricity.

The plant has been designed from first principles to be energy efficient. Gravity is used as far as practicable for the transfer of sludge and liquids within the installation in order to minimise energy requirements. Biogas is captured and used within the CHP engine in the first instance to generate both electricity for use within the wider site and for export to the electrical grid as appropriate. Waste heat from the CHP engine is utilised to ensure that the primary digesters operate within the optimum temperature range for the anaerobic digestion process to be undertaken. The digester vessels are insulated to retain this additional heating, and boilers which are fuelled by biogas, are utilised in particularly cold periods to supplement the digester heating. Flaring is minimised.

Lighting has been optimised for low energy use and all pumps and other mechanical and electrical plant subject to regular, routine, preventative maintenance to minimise losses.

**6b Provide a breakdown of any changes to the energy your activities use up and create**

The main site energy sources are electricity from the public supply and biogas generated by the anaerobic digester which is combusted in the CHP engine to generate electricity and heat on site.

**6c Have you entered into, or will you enter into, a climate change levy agreement**

No, the activities are not eligible to take part in the CCL Scheme.

**6d Explain and justify the raw and other materials, other substances and water that you will use**

See response to question 3c above.

**6e Describe how you avoid producing waste in line with Council Directive 2008/98/EC on waste**

The facility is a waste treatment plant, and the primary wastes produced through the processes on site are maintenance waste. Production of maintenance waste is minimised by ensuring that preventative maintenance is carried out based on a combination of manufacturers best practice and operational experience.

## 3.3 Form C6

The relevant questions within the form are those applicable to effluent and / or surface water run-off arising from the operation of an installation

**1 About the effluent – details and type, continued**

**1a Give a brief description of the changes you want to make to your permit**

Point T1 – release from site drainage system

Effluent returns from the permitted activities, primarily comprising of thickening liquors from the primary sludge thickeners and SAS thickeners. Low volumes of biogas condensate, boiler blowdown, OCU residues and surface water runoff.

**1b Give this effluent a unique name**

T1 Site Returns

**1d Have you obtained all the necessary permissions in addition to this environmental permit to be able to carry out the discharge (see B6 guidance notes for more details)?**

**Yes. The discharge is into the inlet of a sewage works controlled by the applicant.2 About the effluent – how long will you need to discharge the effluent for?**

**2c Will the discharge take place all year?**

Yes, the discharge will take place all year

**3 How much do you want to discharge?**

**3b What is the maximum volume of effluent you will discharge in a day?**

366 cubic metres

**3c What is the maximum rate of discharge?**

4.2 litres / second

**3d What is the maximum volume of non - rainfall dependent effluent you will discharge in a day?**

366 cubic metres

**3f For each answer in question 3, show how you worked out the figure on a separate sheet**

3b – based on the maximum daily site input of 350 tonnes, assuming 1 tonne = 1 cubic metre. The liquor arisings must come from the installation inputs as there is limited additional water inputs. Actual discharge will be slightly lower as no allowance has been made for water entrained in the produced sewage cake, but there will be lower volumes inputs like biogas condensate.

3c – this is based on (366m3 / 86400) x1000. Arisings from sources such as dewatering are constant as the plant runs continuously. This gives a value of 4.236 litres, rounded up to 4.2 litres per second.

3d – based on the maximum daily site input of 350 tonnes, assuming 1 tonne = 1 cubic metre. The liquor arisings must come from the installation inputs as there is limited additional water inputs. This is primarily the outputs from the dewatering plant, which assumes all materials input to the primary digesters end up in the dewatering plant. Actual discharge will be slightly lower as no allowance has been made for water entrained in the produced sewage cake, but there will be lower volumes inputs like biogas condensate.

**4 No questions**

**5 Should your discharge be made to the foul sewer?**

**5a How far away is the nearest foul sewer from the boundary of the premises?**

Not applicable, the site is located within the curtilage of a sewage treatment works and discharges into the works inlet via the site drainage system.

**5b2 Discharges from all other premises including trade effluent**

Not applicable, the site is located within the curtilage of a sewage treatment works and discharges into the works inlet via the site drainage system.

**6 How will the effluent be treated?**

**6a Do you treat your effluent?**

Waste waters generated within the installation are not subject to pre-treatment.

The combined effluent generated by the process of treating sewage and sewage related arisings within the installation is returned to the inlet of the wider sewage treatment works, where it is subject to aerobic treatment in a mixture with UWWTD related waste waters.

**6b Fill in Table 2 for each stage of the treatments carried out on your effluent in the order in which they are carried out**

**Table B6-6b – (Table 2) Treatments carried out on your effluent**

| Order of Treatment | Code Number | Description |
|---|---|---|
| First | 09 | Primary settlement within sewage works |
| Second | 31 | Activated sludge process |
| Third | 03 | Tertiary biological treatment |

**6c You must provide details on a separate sheet of the final effluent discharge quality that the overall treatment system is designed to achieve**

The final effluent discharge from the wider sewage treatment works is specified in Environmental Permit MI/S/02/56373/R/V003

**7 What will be in the effluent?**

**7b Are any of the specific substances listed in 'Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater' added to or present in the effluent as a result of the activities on the site?**

BAT 6&7 sampling returns:

There are no direct emissions to water from the sludge treatment facility. The only indirect emission is of the sludge liquors and surface waters, which are returned to the wastewater treatment works for aerobic treatment under Urban Wastewater regulations. The liquors returned from the sludge treatment facility have originated from wastewater treatment works that are also under the control of Severn Trent Water.

As part of the new IED permit and in line with BAT 3, we commit to carrying out chemical analysis of the waste water, testing for all pollutants expected to be present in the discharge. We are currently in discussion with UKAS accredited laboratories to see what analysis is possible on our leachate returns, and what 'minimum reporting value' is appropriate. This review will be undertaken in line with EA guidance, for example 'Surface Water Pollution Risk Assessment for your environmental permit', and 'Monitoring Discharges to Water'. The sampling will be undertaken by our suitably trained internal teams that already undertake compliance sampling for EA discharge permits to MCERTS standards. Analysis will be contracted to UKAS accredited laboratories.

**7c Have any of the specific substances listed in 'Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater' been detected in samples of the effluent or in the sewerage catchment upstream of the discharge?**

Please see previous answer.

**7d Are there any other harmful or specific substances in your effluent not mentioned in 'Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater'?**

At present, no sampling or analysis for all substances listed within the referenced risk assessment at the site has been undertaken. A review of the MSDS sheets for chemicals used within the installation does not indicate the presence of any other harmful or specific substances within the effluent.

**7e If you have answered 'No' to any of questions 7a to 7d provide details on a separate sheet of how you have established that the effluent is not likely to contain specific substances**

A review has been undertaken of the relevant MSDS sheets for chemical used routinely within the installation to look for substances identified within the risk assessments listed. Discussions are being held with the local catchment team, to identify any known sources of these materials within the sewage works catchment area.

**7f What is the maximum temperature of your discharge?**

20°C back into the sewage works

**7g What is the maximum expected temperature change compared to the incoming water supply?**

0°C

**8 Environmental risk assessments and modelling**

**8b Discharges to lakes, estuaries, coastal waters or bathing waters**

The installation does not discharge to lakes, estuaries, coastal waters or bathing waters

**8d Discharges to groundwater**

The installation does not discharge to groundwater

**8e Discharges to freshwater (non - tidal) rivers from an installation, including discharges via sewer**

No modelling has been undertaken on the output from the installation at present, due to a lack of quality data and confirmation of flows. The final effluent discharge from the wider works, which includes the installation arisings has previously been subjected to modelling as part of the environmental permitting discharge application process.

**8f Environmental impact assessment**

No environmental impact assessment has been carried out on the installation, as it is an existing facility.

**9 Monitoring arrangements**

**9a What is the national grid reference of the inlet sampling point? (for example, SJ 12345 67890)**

Not applicable to this installation

**9b What is the national grid reference of the effluent sample point?**

Current sampling occurs at the final effluent point: SJ 51957 13436

**9d What is the national grid reference of the flow monitoring point?**

No flow meter installed

**9e Does the flow monitor have an MCERTS certificate?**

No. No flow meter installed

**9f Do you have a UV disinfection efficacy monitoring point?**

No. Not installed as part of this installation.

**9h You should clearly mark on the plan the locations of any of the above that apply to this effluent**

Please see site emission point plan.

**10 Where will the effluent discharge to?**

**10a Where the effluent discharges to**

Non - tidal river, stream or canal

**Appendix 5 – Discharges to non - tidal river, stream or canal**

A5.1 Give the discharge point a unique name For example, 'Outlet 1' (you must use this name to identify the discharge point on the plan)

Final Effluent Outlet

**A5.2 Give the national grid reference of the discharge point**

SJ 52045 13263

**A5.3 Give the name of the watercourse, canal or the main watercourse it is a tributary of if you know it**

River Severn

**A5.4 Is the discharge into a:**

Non - tidal river

**A5.5 Does the discharge reach the watercourse or canal by flowing through a surface water sewer?**

No

**A5.6 Does the watercourse dry up for part of the year?**

No

**A5.61 If the watercourse does dry up for part of the year can you indicate a typical period when the surface water runs dry each year – start and finish (in months)**

N / A

**A5.6.2 If the watercourse does dry up for part of the year, how many metres downstream of the discharge is it before the discharged effluent soaks in?**

N / A

**A5.7 Is the discharge made to a roadside drain or ditch?**

No

**10b Is this effluent discharged through more than one outlet?**

No

**10c If you answered yes to question 10b above make sure you show clearly on your discharge point appendix or appendices and site plan that this one effluent can discharge to more than one discharge point**

N / A

## 3.4 Form C4

### 1 What waste operations are you applying to vary?

**Types of Waste accepted**

See Table C3-1b in Section 3.3 above.

EWC codes as currently permitted.

**1c Deposit for recovery purposes**

**Are you applying for a waste recovery activity involving the permanent deposition of waste on land for construction or land reclamation (including landfill restoration)?**

No

### 2 Point source emissions to air, water and land

See Table C3-2 – Emissions

### 3 Operating techniques

3a Technical standards

Table C4-3a – Technical standards

| Description of waste operation | Appropriate measure (TGN reference) | Document reference (if appropriate) |
|---|---|---|
| Other biological treatment of waste: deposit of imported non-hazardous waste for treatment through a wastewater treatment works. | Biological waste treatment: appropriate measures for permitted facilities | Updated 6th July 2023 |
| Other biological treatment of waste: deposit of imported non-hazardous waste for treatment through a wastewater treatment works. | Biological waste treatment: appropriate measures for permitted facilities | Updated 6th July 2023 |

**In all cases, describe the type of facility or operation you are applying for and provide site infrastructure plans, location plans and process flow diagrams or block diagrams to help describe the operations and processes undertaken.**

**3b – General requirements**

**Table C4-3b General requirements**

| Name of the waste operation | Document references |
|---|---|
| If the technical guidance or your risk assessment shows that emissions of substances not controlled by emission limits are an important issue, send us your plan for managing them. | N/A |
| If the technical guidance or your risk assessment shows that odours are an important issue, send us your plan for managing them. | Odour Management Plan |
| If the technical guidance or your risk assessment shows that noise or vibration are important issues, send us your noise or vibration plan (or both). | N/A |

**3c Information for specific sectors**

N/A

## 4 Monitoring

**4a Describe the measures you use for monitoring emissions by referring to each emission point in Table 2 above**

See response for Form C3 previously

**4b Point source emissions to air only**

See response for Form C3 previously

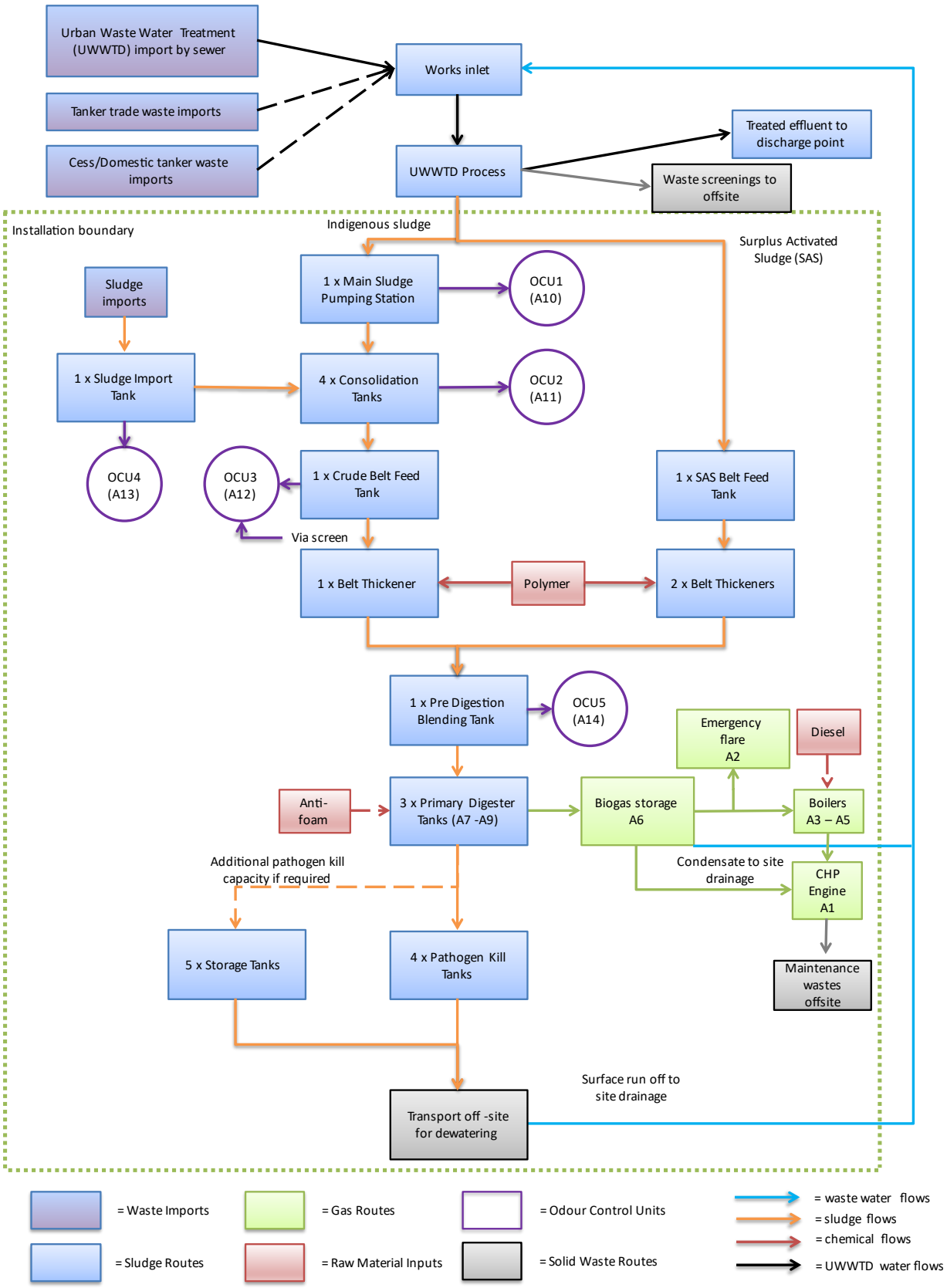
# Appendix A. Figures

### A.1.1 Site location plan

### A.1.2 Installation Boundary and Air Emission Points

### A.1.3 Site drainage plan

## A.1.4 Process Flow Diagram



### A.1.5 Site Emissions Plan

# Appendix B. Certificates

# Appendix C. BAT Assessment

Please see appended spreadsheet

# Appendix D. H5 Site condition report

# SITE CONDITION REPORT TEMPLATE

For full details, see H5 *SCR guide for applicants* v2.0  4 August 2008

**COMPLETE SECTIONS 1-3 AND SUBMIT WITH APPLICATION**

**DURING THE LIFE OF THE PERMIT: MAINTAIN SECTIONS 4-7**

**AT SURRENDER: ADD NEW DOC REFERENCE IN 1.0; COMPLETE SECTIONS 8-10; & SUBMIT WITH YOUR SURRENDER APPLICATION.**

| 1.0 SITE DETAILS | |
|---|---|
| Name of the applicant | Severn Trent Water Limited |
| Activity address | Monkmoor SW<br>Monkmoor Road<br>Shrewsbury<br>Shropshire<br>SY2 5TL |
| National grid reference | SJ 51753 13543 |

| | |
|---|---|
| Document reference and dates for Site Condition Report at permit application and surrender | Variation Application for bespoke Permit, December 2021 |

| | |
|---|---|
| Document references for site plans (including location and boundaries) | Please see site plan in Appendix A and information within Air Quality Assessment. |

**Note:**

In Part A of the application form you must give us details of the site's location and provide us with a site plan. We need a detailed site plan (or plans) showing:

- Site location, the area covered by the site condition report, and the location and nature of the activities and/or waste facilities on the site.
- Locations of receptors, sources of emissions/releases, and monitoring points.
- Site drainage.
- Site surfacing.

If this information is not shown on the site plan required by Part A of the application form, then you should submit the additional plan or plans with this site condition report.

| 2.0 Condition of the land at permit issue | |
|---|---|
| Environmental setting including:<br><br>• geology<br>• hydrogeology<br>• surface waters | The site sits entirely within an area which is classified as flood zone 1 indicating that it has a less than 1:1000 probability of flooding in any year. The site outside any designated source protection zone (SPZ) for groundwater and surface water.<br>The overlying geology is a secondary A aquifer, underlain with bedrock of a principal aquifer, designated as medium-high vulnerability. |
| Pollution history including:<br><br>• pollution incidents that may have affected land<br>• historical land-uses and associated contaminants<br>• any visual/olfactory evidence of existing contamination | The site is located on the eastern fringes of the town of Shrewsbury. To the west of the site is predominantly urbanised with agricultural land adjoining the north, east and south. Beyond the agricultural land is the River Severn with the A49 intersecting both the river and agricultural land to the east. |

| | |
|---|---|
| • evidence of damage to pollution prevention measures | There is no history of usage of the site prior to 1900, when the site is shown on maps as a sewage works. Since this time, the site has been a sewage treatment works.<br>Development and expansion of the site has taken place between the 1950's and 1970's at the same time as additional development within the proximity of the site. |
| Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available) | There has been a sewage treatment works at the site since at least 1900. The layout of the works and treatment methodologies have varied over time. |
| Baseline soil and groundwater reference data | None collected |
| **Supporting information** | None collected. Severn Trent acknowledge this may present surrender issues, but the site has been permitted for an extended period and there are no plans to surrender the permit. |

| **3.0 Permitted activities** | |
|---|---|
| Permitted activities | Operation of an anaerobic digestion plant for sewage sludge waste and imported sewage sludge wastes and combustion of biogas within a CHP engine to generate electricity for use on site. |
| Non-permitted activities undertaken | Storage of raw materials |
| Document references for:<br>• plan showing activity layout; and<br>• environmental risk assessment. | Please see Technical Summary in Chapter 2 of main application document |

**Note:**

In Part B of the application form you must tell us about the activities that you will undertake at the site. You must also give us an environmental risk assessment. This risk assessment must be based on our guidance (*Environmental Risk Assessment - EPR H1*) or use an equivalent approach.

It is essential that you identify in your environmental risk assessment all the substances used and produced that could pollute the soil or groundwater if there were an accident, or if measures to protect land fail.

These include substances that would be classified as 'dangerous' under the Control of Major Accident Hazards (COMAH) regulations and also raw materials, fuels, intermediates, products, wastes and effluents.

If your submitted environmental risk assessment does not adequately address the risks to soil and groundwater we may need to request further information from you or even refuse your permit application.

| 4.0 Changes to the activity | |
|---|---|
| **Have there been any changes to the activity boundary?** | Yes – the previous site boundary has been expanded to include additional sludge treatment assets and land required for the proposed containment solution |
| **Have there been any changes to the permitted activities?** | Yes. The permit now includes sludge treatment processes including the capture, storage and utilisation of biogas. |
| **Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?** | No |
| **Checklist of supporting information** | • Plan showing any changes to the boundary (where relevant)<br>• Description of the changes to the permitted activities (where relevant)<br>• List of 'dangerous substances' used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant) |

| 5.0 Measures taken to protect land | |
|---|---|
| Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked. If you can't, you need to collect land and/or groundwater data to assess whether the land has deteriorated. | |
| **Checklist of supporting information** | • Inspection records and summary of findings of inspections for all pollution prevention measures<br>• Records of maintenance, repair and replacement of pollution prevention measures |

| 6.0 Pollution incidents that may have had an impact on land, and their remediation | |
|---|---|
| Summarise any pollution incidents that may have damaged the land. Describe how you investigated and remedied each one. If you can't, you need to collect land and /or groundwater reference data to assess whether the land has deteriorated while you've been there. | |
| **Checklist of supporting information** | • Records of pollution incidents that may have impacted on land<br>• Records of their investigation and remediation |

| 7.0 Soil gas and water quality monitoring (where undertaken) |
|---|

| |
|---|
| Provide details of any soil gas and/or water monitoring you did. Include a summary of the findings. Say whether it shows that the land deteriorated as a result of the permitted activities. If it did, outline how you investigated and remedied this. |

| | |
|---|---|
| **Checklist of supporting information** | • **Description of soil gas and/or water monitoring undertaken**<br>• **Monitoring results (including graphs)** |

## 8.0 Decommissioning and removal of pollution risk

N/A

| | |
|---|---|
| **Checklist of supporting information** | • **Site closure plan**<br>• **List of potential sources of pollution risk**<br>• **Investigation and remediation reports (where relevant)** |

## 9.0 Reference data and remediation (where relevant)

N/A

| | |
|---|---|
| **Checklist of supporting information** | • Land and/or groundwater data collected at application (if collected)<br>• Land and/or groundwater data collected at surrender (where needed)<br>• Assessment of satisfactory state<br>• Remediation and verification reports (where undertaken) |

## 10.0 Statement of site condition

Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that:

- the permitted activities have stopped
- decommissioning is complete, and the pollution risk has been removed
- the land is in a satisfactory condition.

# Appendix E. Odour Management Plan

# Appendix F. Site Spill Risk Assessment and Containment Report