MOTT MACDONALD

Queensferry IED permit application

Main Supporting Document

February 2025

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Dŵr Cymru Welsh Water

Queensferry IED permit application

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	June 2024	Claudia Manca	Shannon Stone	Anita Manns	Draft for review
B	October 2024	Claudia Manca	Shannon Stone	Anita Manns	Final for submission
C	February 2025	Claudia Manca	Anita Manns	Anita Manns	Amended based on NRW initial feedback – table 6.1 updated

Document reference: B16383-123532-XX-XX-NN-ZA-DH0114 - QUY Main Supporting Document February 2025

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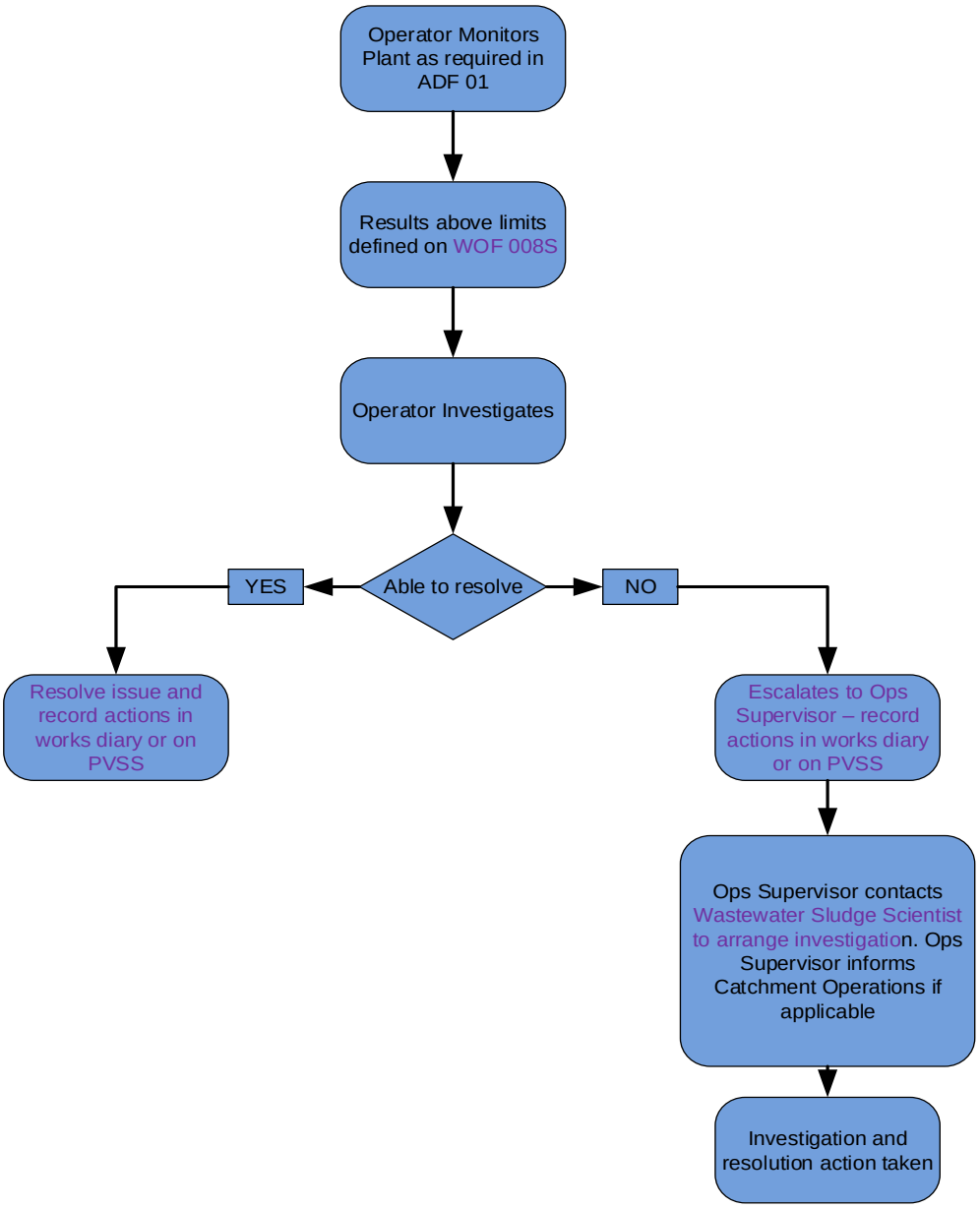
C. Abnormal Results Escalation Procedure – AD Plant



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Tables

1 Non-technical summary

1.1 Overview of the site and activities

Queensferry Wastewater Treatment Works (WTW) and Sludge Treatment Centre (STC) (also known as the "Site") is located within the Queensferry Industrial Estate adjacent to the River Dee in Deeside. The address for the site is Queensferry WwTW, Factory Road, Pentre, Flintshire, CH5 2QJ (NGR SJ 323 681).

The WTW is operated under the Urban Wastewater Treatment (England and Wales) Regulations 1994[1] and has a standalone Water Discharge Activity Environmental Permit, this will remain an independent permitted activity. The STC operation is a non-hazardous waste activity which is currently carried out under a (registered T21 exemption). The STC operation is currently not permitted.

The waste activity comprises imports, physio-chemical and anaerobic digestion (AD) treatment, and the storage of waste, all for recovery purposes. The STC solely handles waste derived from the wastewater treatment process, either indigenously produced on-site or imported from other Welsh Water owned assets. The Site undertakes AD of sewage sludge from the on-site WTW, and will continue this operation under a new bespoke Industrial Emissions Directive (IED) installation permit.

Dŵr Cymru Welsh Water (DCWW) ('the Operator') is applying for a Bespoke Installation Permit for the STC waste activity. This is because a joint Environment Agency/Natural Resources Waste and Department of Environment, Food and Rural Affairs (DEFRA) decision has been made that AD treatment facilities at WTWs and STCs are covered by the Industrial Emissions Directive and can no longer operate under T21 exemptions.

The primary permitted installation activity will be the AD treatment facility. The AD facility will treat indigenously produced and imported sludges. Permitted Directly Associated Activities (DAAs) will be:

- Physio-chemical treatment of imported and indigenously produced sludge.
- Storage of indigenously produced sludges and the sludge cake from the AD Site.
- Storage of biogas derived from the AD treatment of waste.
- Combustion of biogas in an on-site Combined Heat and Power plant (CHP).
- Combustion of excess biogas via an on-site flare stack

All digested, dewatered sludge cake will be transported to the Five Fords Advanced Anaerobic Digestion (AAD) Site, located off Cefn Road to the South-East of Wrexham, for further treatment to comply with the Biosolids Assurance Scheme (BAS). The imported cake will be processed through the AAD plant, and the derived biogas will then be exported via the Five Fords gas-to-grid installation. The sludge cake will be exported for use as a fertiliser.

1.2 Overview of the STC process

Imported sludge is transported onto site in sealed tankers and discharged into 1 No. 164m^3 covered sludge import tank before being screened and transferred to the adjacent screened

[1] The Urban Waste Water Treatment (England and Wales) Regulations 1994. Available at: The Urban Waste Water Treatment (England and Wales) Regulations 1994 (legislation.gov.uk) (Last accessed May 2024)

imported sludge tank. On average, seven tankers of sludge are received on a daily basis, accounting for approximately 99m^3 per day.

Indigenous primary sludge (approximately 5.5TDS/day) and screened sludge is transferred to 2 No. 243m^3 (each) covered concrete screened sludge holding tanks, where they are blended, before being pumped to a drum thickener, which thickens the sludge to approximately 6% dry solids with the aid of a polymer. The sludge is then stored in 1 No. 243m^3 covered concrete digester feed tank.

From here the sludge is transferred to 2 No. 1705m^3 (each) concrete digester tanks on a timed basis to undergo mesophilic anaerobic digestion. After a set retention time the digested sludge is then transferred and held in one of 5 No. digested sludge holding tanks. These vary in size but hold a total storage volume of approximately 7,300m^3 and are arranged in five zones as follows:

- Zone 1 comprises 2 no. open topped circular tanks (468m^3 each).
- Zone 2 is a covered concrete tank (1,720m^3).
- Zone 3 is a covered concrete former digester (1806m^3).
- Zone 4 is an open rectangular concrete tank (950m^3).
- Zone 5 is an open two lane rectangular concrete tank next to zone 4 (950m^3 each).

The treated sludge is pumped to 1 No. 159m^3 open glass fused steel centrifuge feed tank and then dewatered via a single centrifuge with the aid of polymer to increase the percentage dry solids to between 20 and 25%. The dewatered sludge is then transferred and stored in 3 No. 70m^3 (each) open concrete cake pad ready for export to Five Fords for further treatment.

The biogas generated during digestion is stored in 1 No. double membrane gas holder and is then used in 1 No. 0.545MWth combined heat and power (CHP) unit for electricity generation, which supplies the digestion plant and for recovering heat, to maintain digester temperature. The CHP engine at Queensferry was replaced in August 2024, by a CHP from DCWW's Kinmel site, and refurbished.

There are 2 No. dual fuel boilers (gas oil/biogas) both running continuously. In addition, there is 1 No. gas oil only boiler, that is only run for planned shutdown or failure of the dual fuel boilers. Each boiler has a thermal rated input of 0.39MWth. The operating hours are unknown. There is 1 No. standby 0.7MWth generator on the site that is powered by red diesel.

Any excess biogas is flared off via the on-site waste bio-gas burner (flare stack).

Table 1.1 provides details of the combustion plant at Queensferry STC

Table 1.1: Combustion Plant Details

Combustion Unit identifier	Rated MW thermal input	Type (boiler, engine, turbine etc)	Fuel and share of fuels (%)	Does it produce electricity?	Does it export electricity to the grid?	Emission point as per site plan	Does MCPD apply? If so new or existing?	Do SG regs apply? If so Tranche A or B?
CHP Engine	0.545	Engine	Biogas 100 %	Yes	No	Point 4	No	No
Boiler 1	0.39	Boiler	Biogas	No	No	Point 2	No	No
Boiler 2	0.39	Boiler	Biogas	No	No	Point 2	No	No
Boiler 3	0.39	Boiler	Biogas/ gas oil	No	No	Point 2	No	No

Combustion Unit identifier	Rated MW thermal input	Type (boiler, engine, turbine etc)	Fuel and share of fuels (%)	Does it produce electricity?	Does it export electricity to the grid?	Emission point as per site plan	Does MCPD apply? If so new or existing?	Do SG regs apply? If so Tranche A or B?
Standby Generator	0.7	Engine	Red diesel	Yes	No	Point 8	No	No

The Queensferry IED permit will include the following assets:

- 3 No. Cake storage bays (70m^3 each) (open)
- 3 No. Digested sludge holding tanks (3 Lanes) (950m^3 each) (Zones 4 & 5) (open)
- 1 No. Drum thickener, housed in thickener building
- 2 No. Screened sludge holding tanks (243m^3 each) (covered)
- 1 No. Digester feed tank (243 m^3) (covered)
- 1 No. Digester feed pumps
- 2 No. Digesters (1705m^3 each) (covered)
- 1 No. Biogas flare
- 1 No. Sludge reception tank (164m^3), connected to a sludge transfer pumping station and rotomat (screen) (covered)
- 2 No. Digested sludge storage tanks (1720m^3 & 1806m^3) (concrete) (Zones 2 & 3) (covered)
- 2 No. Digested sludge tanks (GFS) (468m^3 each) (Zone 1) (open)
- 1 No. Centrifuge feed tank (159m^3) (covered)
- 1 No. Standby diesel generator
- 1 No. Centrifuge, located in centrifuge building
- 1 No. Gas bag holder
- 1 No. Liquor returns storage tank (aka. supernatant tank) which is connected to a liquor return pumping station
- 1 No. CHP unit (0.545MWth)
- 3 No. Boilers (0.39MWth each) (2 No. dual fuel (biogas and gas oil) and 1 No. gas oil only))
- 2 No. OCUs (not operational)

The following are outputs from the process:

- Cake (dewatered post digestion sludge) – exported to Five fords for AAD treatment
- Bio-gas - stored in an existing gas holder, and is then either:
  - Burnt in CHPs, with the power exported to the grid;
  - Flared in the waste biogas burner.
- Grit and screenings (small amount) – deposited in skips before taken off-site.

1.3 Summary of key technical standards

Table 1.2 lists the technical guidance notes (TGNs) used to inform the techniques and measures proposed to prevent and reduce waste arising and emissions of substances, including during periods of start-up and shut down, momentary stoppage and malfunction, and leaks.

Table 1.2: Technical standards

Installation name	Queensferry STC	
Description of the schedule 1 activity or directly associated activity	**Best available technique (BATC, BREF or TGN reference)**	**Document reference**
Section 5.4 non-hazardous waste installation - anaerobic digestion installation regulated under the Industrial Emissions Directive, utilisation biogas for energy	How to Comply with Your Environmental Permit Additional Guidance for Anaerobic Digestion Best available techniques (BAT) conclusions, for the recovery and disposal of hazardous and non-hazardous waste (SGN S5.06)	https://www.wiseenvironment.co.uk/wp-content/uploads/2020/07/ How-to-Comply-with-Your-Environmental-Permit-Additional-Guidance-for-Anaerobic-Digestion.pdfhttp://eippcb.jrc.ec.europa.eu/reference/BREF/BATC_CWW.pdf https://www.gov.uk/government/publications/sector-guidancenote-s506-recovery-anddisposal-of-hazardous-and-nonhazardous-waste
General	How to comply with your environmental permit Monitoring stack emissions: technical guidance for selecting a monitoring approach M1 sampling requirements for stack emission monitoring Environmental permitting guidance, including: NRW's horizontal environmental permitting guidance, including: H1 - Risk assessments for your environmental permit H2 Energy efficiency (Energy efficiency for combustion and energy from waste power plants) H3 Noise assessment and control H4 Odour management H5 Site condition report Control and monitor emissions for your environmental permit	https://cdn.cyfoethnaturiol.cymru/media/2110/how-to-comply-with-your-environmental-permit.pdf?mode=pad&rnd=131467604540000000 https://www.gov.uk/guidance/monitoring-stack-emissions-technical-guidance-for-selecting-a-monitoring-approach https://www.gov.uk/government/publications/m1-sampling-requirements-for-stack-emission-monitoring https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit https://www.gov.uk/government/publications/energy-efficiencyfor-combustion-and-energyfrom-waste-power-plants https://www.gov.uk/government/publications/environmentalpermitting-h3-part-2-noiseassessment-and-control https://www.gov.uk/government/publications/environmentalpermitting-h4-odourmanagement https://cdn.cyfoethnaturiol.cymru/media/1213/site-condition-report-template.pdf?mode=pad&rnd=130989730490000000 https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit

2 Documents content and structure

2.1 Overview

This document has been prepared to support the application for a new bespoke Environmental Permit for an installation, for the Queensferry Sludge Treatment Centre (STC) ('the Site') on behalf of Dŵr Cymru Welsh Water (DCWW) ('the Operator').

This document contains a description of the Site and proposed permitted activities and Directly Associated Activities, an assessment of the possible effects of these activities and responses to questions in Parts A, B2, B3 and F1 of the application documentation (plus supporting information where required). The forms have been completed through NRW's online portal.

It is important to note that these documents were drafted prior to the changes NRW made to the application process; moving from paper to online. Therefore, this document references the questions in the previous forms. An additional document has been provided as XXX which identifies how these relate to the newer online application form.

The main body of the Permit application document ('the Main Supporting Document') includes all the supplementary information required in response to relevant questions as previously set out in Parts A, Part B2, Part B3, and Part F1 of the paper-based application forms for which there was insufficient space on the forms to answer the questions in full.

The Environmental Permit application document ('the Main Supporting Document') consists of two main parts:

- Chapter 5 provides the general information required to inform Part B2 relating to the bespoke permit; and
- Chapter 6 provides the more detailed information required to inform Part B3 relating to the bespoke installation permit.

Part F1 covers the financial information required for payment of the application fee.

Additional information included as part of this submission and not as stand-alone documents, are found in the following appendix:

- Appendix A – European Waste Catalogue (EWC) Codes.

3 Process description

3.1 Incoming Wastewater and Sludge

The Site receives flow from 6 pumping stations with approximately 80% of flows being classed as industrial effluent. It also receives domestic waste imports directly into the inlet works and a DCWW satellite site imports sludge via the sludge centre.

3.2 Wastewater Treatment

This subsection has been provided for context only.

Preliminary treatment consists of two escalator screens and associated de-waterer compactor and grit plant. Pass forward flow is 277.6 l/s. Any flow in excess of this is diverted to the two storm tanks via a fixed weir in the inlet channel. This is automatically returned to the inlet works once high incoming flows subside.

The inlet pumping station transfers crude sewage to two Primary Settlement Tanks (PSTs). Settled effluent weirs over the PSTs and is divided between three high-rate filters and five conventional biological filters (four with stone media and one with plastic media), in an approximate 70:30 split respectively. Biologically treated effluent passes to eight humus tanks for secondary settlement; two radial tanks receive flow from the hi-rate filters and six Dortmund style tanks receive flow from the traditional filters. Before flow reaches the final effluent outfall to the River Dee, it passes through an ultraviolet disinfection system to denature any remaining bacteria and viruses.

The permitted area of the site treats a combination of imported sludge which is tankered by road and indigenous sludge which is pumped from Queensferry WwTW.

The WTW will remain an independent permitted activity under the Urban Wastewater Treatment.

3.3 Sludge Treatment

Imported sludge is transported onto site in sealed tankers and discharged into 1 No. 164m^3 covered sludge import tank before being screened and transferred to the adjacent screened imported sludge tank. On average, seven tankers of sludge are received on a daily basis, accounting for approximately 99m^3 per day.

Indigenous primary sludge (approximately 5.5TDS/day) and screened sludge is transferred to 2 No. 243m^3 (each) covered concrete screened sludge holding tanks, where they are blended, before being pumped to a drum thickener, which thickens the sludge to approximately 6% dry solids with the aid of a polymer. The sludge is then stored in 1 No. 243m^3 covered concrete digester feed tank.

From here the sludge is transferred to 2 No. 1705m^3 (each) concrete digester tanks on a timed basis to undergo mesophilic anaerobic digestion. After a set retention time the digested sludge is then transferred and held in one of 5 No. digested sludge holding tanks. These vary in size but hold a total storage volume of approximately 7,300m^3 and are arranged in five zones as follows:

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The biogas generated during digestion is stored in 1 No. double membrane gas holder and is then used in 1 No. 0.545MWth combined heat and power (CHP) unit for electricity generation, which supplies the digestion plant and for recovering heat, to maintain digester temperature. The CHP engine at Queensferry was replaced in August 2024, by a CHP from DCWW's Kinmel site, and refurbished.

There are 2 No. dual fuel boilers (gas oil/biogas) both running continuously. In addition, there is 1 No. gas oil only boiler, that is only run for planned shutdown or failure of the dual fuel boilers. Each boiler has a thermal rated input of 0.39MWth. The operating hours are unknown. There is 1 No. standby 0.7MWth generator on the site that is powered by red diesel.

Any excess biogas is flared off via the on-site waste bio-gas burner (flare stack).

There is no scrubbing system on the biogas at Queensferry. The engine (or boilers if they are chosen to operate on biogas) will combust biogas as long as the methane content is ~50% or greater. This is achieved under normal operation for mesophilic anaerobic digestion.

With respect to any other substances, Hydrogen Sulphide and Siloxanes may be present in the gas, maybe on quantities that would cause increased wear, the biogas has never been routinely sampled for these at Queensferry as it is such a small engine DCWW has always chosen to operate without the additional costs and maintenance of the clean-up equipment, operational experience from the CHP's historic operations is that there has not been significant impact to its performance from the biogas.

The Site currently does not have any operational odour control units (OCUs). However, works are underway as part of the Queensferry IED Odour Control Scheme to install new OCU's, to replace the current non-functioning OCUs, to comply with the IED and BAT requirements.

The provision of new odour control treatment system - AWT Dry (Peacemaker chlorinated shale) system (similar to the existing odour unit on site as part of the wastewater treatment) at the works to treat combined extracted odorous airflow from the following locations:

- Sludge import tank
- Liquor return storage tank
- Imported sludge screen and screening skip
- Thickener building including direct extraction from existing drum thickener
- Indigenous sludge storage tanks no's.1 and 2
- Digestor feed tank

The Queensferry IED permit will include the following assets:

- 3 No. Cake storage bays (70m^3 each) (open)
- 3 No. Digested sludge holding tanks (3 Lanes) (950m^3 each) (Zones 4 & 5) (open)
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The following are outputs from the process:

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- Bio-gas - stored in an existing gas holder, and is then either:
  - Burnt in CHPs, with the power exported to the grid;
  - Flared in the waste biogas burner.
- Grit and screenings (small amount) – deposited in skips before taken off-site.

Refer to B16383-123532-XX-XX-DR-ZA-DH0115 - QUY - Block Flow Diagram P02 March 2021 for a schematic of the sludge treatment process and B16383-123532-XX-XX-DR-ZA-DH0116 QUY - Site Layout Plan February 2025, for location of the sludge treatment assets.

4 Part B2 – General – new bespoke permit

4.1 Relevant offences

Details of the relevant convictions are provided in the document reference B16383-123532-XX-XX-NN-ZA-DH0132 - QUY Directors September 2024. The site and associated personnel have no known record of any relevant convictions.

4.2 Technical ability

DCWW has an accredited Competency Management System (CMS) under the Competent Operator Scheme. The Scheme develops technical competency courses and skills to demonstrate that personnel have the appropriate technical skills and knowledge to manage the activities undertaken. The CMS is independently audited by LRQA and was accredited in 2023, in which the Queensferry site was visited. A copy of the CMS certificate, issued by LRQA in March 2023, is presented in document B16383-123532-XX-XX-CT-ZA-DH0120 QUY CMS Accreditation.

The CMS enables Operators to demonstrate technically competent management on the basis of corporate competence and employees' individual competence. Individual competence remains a key component with each employee having the relevant technical competences required to carry out their role.

Competency in terms of the requirements of the environmental permit will be ensured through the appropriate training of all staff, covering:

- Awareness of the regulatory implications of the Permit for the permitted activity and their own work activities
- Awareness of all potential environmental effects from operation under normal and abnormal circumstances
- Awareness of the need to report any deviation from the Permit
- Prevention of accidental emissions, and action to be taken when accidental emissions occur

All staff are aware of the implications of activities undertaken including the operation of the Site. Skills and competencies necessary to work on-site are documented and records of training needs and training received for these posts are maintained.

All DCWW Wastewater Treatment Works Operators are put through rigorous training to ensure competence for the role. Initially all operatives will complete a Level 2 Wastewater Treatment Processes Programme which is 9-days' duration. This consists of units from the Certification and Assessment Board for the Water Industry (CABWI) Diploma in Water Engineering with written assessments and covers all basic aspects of the wastewater process. Six to twelve months later, the Operators will complete the Level 3 Competent Operator Programme.

An "Advanced Digestion – Technical Operator" Knowledge and Skills Framework has been developed to identify all the relevant training required for the role. Through monthly one to ones with line managers and the annual Performance Management Review Process it is ensured that operations staff can demonstrate the knowledge and skills identified or are put forward for further training to develop the competency, if needed.

4.3 Finances

No relevant persons within DCWW have current or past bankruptcy or insolvency proceedings against them.

4.4 Management System

The Site operates under the company-wide Environmental Management System (EMS) Policy. In line with the EMS Policy, the Queensferry STC will also be operated in accordance with the DCWW Quality Management System (IMS).

DCWW have established and maintained documentation that defines and describes how the IMS is established, implemented, and maintained in accordance with ISO 9001:2008 and ISO/IEC 17025:2005. Where suitable and available, any monitoring of emissions to air, land and water is undertaken according to Monitoring Certification Scheme (MCERTS) Standards.

The system is structured on the organisation's strategic business areas, business processes and customer requirements.

DCWW has ISO 14001:2015 for the Queensferry site and the documentation defines and describes how the IMS is established, implemented, and maintained in accordance with ISO 9001:2008 and ISO/IEC 17025:2005 and monitoring emissions to air, land and water (MCERTS) Standards.

The system is structured on the organisation's strategic business areas, business processes and customer requirements.

The EMS is not integrated with the IMS at present. However, certain system procedures and operating procedures are shared by both systems.

Demonstrable procedures are outlined in the DCWW Environmental Policy dates April 2021 and the Site Operating Manual and IMS.

The EMS addresses the following to ensure staff understand their roles and responsibilities to comply with environmental legislation and protect the environment and human health:

- Resources, roles, responsibility and authority
- Legal and other requirements in protecting the environment and human health
- Competence, training and awareness requirements
- Explanation of the Non-Conformance, Corrective and Preventative Action procedures
- Details of the significance of Environmental Aspects and Impacts
- EMS Review and auditing procedure and requirements
- Monitoring and measurement requirements
- Record keeping procedures

An overall review of the IMS takes place every 12 months, and on other occasions as required, by senior management. There is a regular programme of audits covering all aspects of the IMS and EMS; they are included on the Internal Audit Programme operated by the Business Assurance team and audited by Natural Resources Wales on a frequent basis. In addition, the EMS and IMS are subject to audit by the inspection and certification company SGS (for accreditation purposes) every six months.

DCWW produces an annual report on environmental performance and where required attend local action group meetings.

One of the key tasks for DCWW during the permit determination process is the development of the management system arrangements for the STC Site to cover all STC operations as well as the quality and environmental aspects.

In 2020 the DCWW updated their Asset Management Policy Statement, Environmental Policy Statement, Health Safety and Wellbeing Policy Statement, Information Security Policy Statement, and Quality Policy Statement.

An accident management plan for the Site has been produced, document reference B16383-123532-XX-XX-PR-OA-HD0106 - QUY Accident Management Plan October 2024.

The Abnormal Results Escalation Procedure for the AD plant is provided in Appendix C.

4.4.1 Scope of the Environmental Management System

The SP (1) 01 - Master Asset List contains all IMS sites and shows all certified Environmental (ISO 14001) sites.

Environmental Procedures Overview

EN (3) 02 – Waste Management

This procedure defines waste management principles and guidance for the legal disposal of waste. This procedure goes into specific detail of the handling of Hazardous and Non-Hazardous Waste including the use of a Hazardous Internal Waste Transfer Form – ENF005 and the reporting of Fly Tipped Waste.

EN (3) 03 – Delivery Handling and Storage of Oils and Chemicals

This procedure defines in general terms the duties and responsibilities involved with the receipt and handling of chemicals, oils and fuels. This procedure goes into detail about the normal and abnormal operations of the delivery/receipt/handling of chemicals and oils and states the requirements of regulations around the storage of fuel and oil, both for fixed tanks and mobile bowsers.

EN (3) 04 – Environmental Incidents – Near Miss

This procedure defines the requirements necessary to deal with and report environmental incidents and must be used in conjunction with the DCWW Emergency Incident Response Handbook available from Senior Managers. This procedure gives examples of possible causes of incidents and explains the appropriate corrective and preventative actions to be taken.

Review of the IMS

An overall review of the IMS takes place every 12 months, and on other occasions as required, by Senior Management. There is a regular programme of audits covering all aspects of the IMS and EMS; they are included on the Internal Audit Programme operated by the Business Assurance team and audited by NRW on a frequent basis. In addition, the EMS and IMS are subject to audit by the inspection and certification company SGS (for accreditation purposes) every 6 months.

DCWW produces an annual report on environmental performance and where required attend local action group meetings.

One of the key tasks for DCWW during the permit determination process is the development of the management system arrangements for the STC Site to cover all STC operations as well as the quality and environmental aspects.

In 2020, DCWW updated their Asset Management Policy Statement, Environmental Policy Statement, Heath Safety and Wellbeing Policy Statement, Information Security Policy Statement, and Quality Policy Statement.

4.4.2 Accident Management Plan Summary

The Site operates under a set of site-specific Emergency Procedures which is incorporated into DCWW's Environmental Management System (where applicable) to prevent and manage environmental related accidents. The Emergency Procedures includes an inventory of substances stored at the site, details on storage facilities, inventory of pollution prevention equipment (spill kits and fire extinguishers), inventory of waste and storage capacities, contact details of internal contacts, national and regional (where appropriate) contact details of emergency services and environmental regulators. The Emergency Procedures are distributed to key staff, to supervise the implementation of the Plan, and shared with external contacts (emergency services and the NRW). The Emergency Procedures are accompanied by a site plan that identifies the locations of designated storage areas (and their maximum storage capacity), location of spill kits and fire extinguisher and storage locations and hazards posed by chemical substances.

The Emergency Procedures reference procedures to comply with environmental legislation and protect the environment and human health in regard to potential accidents:

- Spill prevention and management, and operation of safety valves
- Procedure for recovering spilled product
- Procedures for the prevention of overfilling vessels, management of plant and equipment failures
- Fire prevention and responses to fires, including fire water containment procedures
- Security measures to prevent unauthorised access, arson and vandalism
- Competence, training and awareness requirements
- Monitoring and measurement requirements
- Record keeping procedures for the recording of incidents, accidents and near misses
- Emergency procedures to notify relevant authorities, emergency services and neighbours

The AMP also includes details of the DSEAR Zoning plans, material safety data sheets and document Environmental Aspect & Impact Register.

The Accident Management Plan can be found in document reference B16383-123532-XX-XX-PR-OA-HD0106 – QUY Accident Management Plan October 2024 .

4.4.3 Leak Detection and Repair Plan Summary

The generation of odour from the processing of sewage is primarily associated with the release of odorous Volatile Organic Compounds (VOCs) that are generated as a result of the anaerobic breakdown of organic matter by micro-organisms. Since the main source of VOCs is the solid organic matter, the majority is generated from the operations involving the handling of sludge i.e. the processes applied to dewater, treat and store raw sludge. These processes are generally considered to present the greatest risk of fugitive air emissions unless adequate controls are put in place.

In order to mitigate fugitive emissions to air, such as VOCs and methane, from treatment plants and associated infrastructure including pipework, combustion plants, conveyors and tanks, a leak detection and repair (LDAR) plan has been produced (document reference B16383-123532-XX-XX-PR-ZA-DH0123 - QUY Leak Detection and Repair Plan October 2024) and plan

will be in place for the Queensferry STC with an IED permit for biological treatment of waste, to comply with the BAT requirements.

The LDAR plan has been written in accordance with Environment Agency's 'Appropriate measures for the biological treatment of waste'. The LDAR plan forms part of DCWW's existing Environmental Management System. Please refer to the LDAR plan for further details on the leak prevention procedures taken by DCWW.

4.4.4 Complaints

All written complaints are covered by the Quality Manual QM(1) 01 and handled according to procedures (DG7 Process Reports). The implementation of the complaints procedure is detailed in CC(3) series procedures. Compliance with these procedures is part of the overall assessment of DCWW's performance by OFWAT and there are penalties for poor performance. Telephone complaints are logged onto the DCWW SAP system and actions recorded by the DCWW operation and control centre (Linea). All complaints are analysed for root cause in order to prevent recurrence of the problem and assist with continuous improvement processes.

Complaints about pollution are dealt with the NO(03) 3 series procedures, and there are different procedures according to who reports the pollution. Pollutions may be reported via a number of routes including: general public, local authority, internally, contractor or formally via the Environment Agency. All pollution incident calls, or emails are input into DCWWs online control system (SAP) by a Pollution Incident Advisor (PIA). This is then sent to the Wastewater Scheduling Team who allocates a Network Crew or contractor to respond to the incident; they have 4 hours to respond. After attending the incident, the operational crew provide feedback via SAP; the pollution incident details along with remedial actions taken or required are also verbally communicated to the Responsible Officer (RO). The SAP incident remains open until all follow-up work has been completed.

Following each incident, the relevant Pollution technician/Environmental Performance Officer reviews the findings and investigates details of the incident. If the root cause of the incident is identified the appropriate remedial action is undertaken and the job is closed on SAP. If the root cause is not obvious, an enhanced investigation is instigated, and the findings reviewed for appropriate remedial action. Every category 1 and 2 pollution incidents are formally reviewed by the Head of Wastewater (Network).

4.5 Site layout plan and process diagram

Plans provided, to satisfy question 5a, can be found in the following stand-alone documents:

- Site Location Plan - Document reference B16383-123532-XX-XX-DR-ZA-DH0116 - QUY Site Layout Plan Plan February 2025
- Site Layout Plan – Document Reference B16383-123532-XX-XX-DR-ZA-DH0116 - QUY Site Layout Plan Plan February 2025
- Drainage Plan - Document reference B16383-123532-ZZ-XX-DR-CC-CI0014 - QUY Drainage Plan June 2022
- Schematics - Document reference B16383-123532-XX-XX-DR-ZA-DH0115 - QUY Block Flow Diagram P02 March 2021

4.6 Site condition report

In accordance with NRW requirements, a Site Condition Report (SCR) has been produced to demonstrate the condition of the land and groundwater at the Site on issue of the proposed permit. The SCR includes the following details (section 1 to 3 of the NRW template[2]):

- Site details;
- Condition of the land at permit issue; and
- Permitted activities.

A copy of the SCR can be found as document reference B16383-123532-XX-XX-RP-ZA-DH0110 QUY Site Condition Report October 2024. Relevant appendices can be found in B16383-123532-XX-XX-NN-NA-DH0111 - QUY SCR App Envirocheck, and B16383-123532-XX-XX-IV-NC-DH0112 - QUY SCR App - Preliminary site and ground condition assessment May 2020.

4.7 Environmental risk assessment

As part of the application for an environmental permit, operators must assess the risk to the environment and human health from the activities that they propose to undertake, using the methodology outlined in the Environment Agency's 'Risk assessments for your environmental permit'[3].

The Environmental Risk Assessment (ERA) sets the requirements for the management of the permitted area, emission control measures etc. It assesses the risks to the environment, amenity and human health. All control measures within the rules must be adhered to in order to obtain the permit.

The ERA assesses the impacts from the following environmental concerns:

- Point source and fugitive emissions to air
- Point source and fugitive emissions to water and land
- Noise and vibration
- Odour
- Litter, mud and debris
- Vermin and insects (pests)
- Human health and environment safety (i.e. visual impacts, Site security, flood risk)
- Natural habitats and ecology

Where emissions result in insignificant effects these have been screened out and where further detailed assessments of potential environmental impacts are required this is noted.

A copy of the ERA can be found as document reference B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environmental Risk Assessment Plan February 2025. Constraints maps have been included in the ERA and demonstrate human receptors to a radius of 2km.

[2] Natural Resources Wales (2014). Environmental permitting: H5 Site condition report. Available online at: https://cdn.cyfoethnaturiol.cymru/media/1213/site-condition-report-template.pdf?mode=pad&rnd=130989730490000000 (Last accessed May 2024)

[3] Environment Agency (2022) Risk assessments for your environmental permit. Available online at: https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit (Last accessed May 2024)

5 Part B3 – New bespoke installation permit

5.1 Activities applied for

Table 5.1: Activities applied for

Installation name	Schedule 1 or other references	Description of the Activity with Annex I (D codes) and Annex II (R codes)	Activity capacity (Non-hazardous waste treatment capacity)	Hazardous waste treatment capacity	Non - hazardous waste treatment capacity
Queensferry STC	S5.4, Part A (1), (b) and (i) 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 biological treatment	Anaerobic digestion R3 – Recycling/ reclamation of organic substances which are not used as solvents including composting and other biological transformation processes) R13 - Storage of waste pending any of the operations numbered R1 to R12.	255 wet tonnes per day	0	255 wet tonnes per day
Directly associated activities			**Limits of activity**		
New	Physical treatment of waste for the purpose of recycling.	R3 - Recycling/ reclamation of organic substances which are not used as solvents.	Undertaken in relation to the S5.4 activity From the receipt of waste to despatch for anaerobic digestion or despatch off site for recovery. Dilution of incoming wastes using final waste waters from the wastewater treatment works to aid pre-treatment and digestion only. Pre-treatment of waste in enclosed equipment and tanks or an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system, including shredding, sorting, screening, compaction, baling, mixing and maceration. Post-treatment of digestate in enclosed equipment and tanks or an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system, including separation, screening to remove contraries, centrifuge or pressing and addition of thickening agents polymers) or drying for use as a fertiliser or soil conditioner (drying for the purpose of use as a fuel is not requested). Gas cleaning by biological or physical (carbon filtration) or chemical scrubbing. Waste types suitable for acceptance are limited to those in Appendix A		

New	Steam and electrical power supply	R1 - Use principally as a fuel or other means to generate energy (CHP units and boilers	Undertaken in relation to the S5.4 activity. From the receipt of biogas produced at the on-site anaerobic digestion process to combustion with the release of combustion gases. Combustion of biogas in 1 no. combined heat and power (CHP) engines with a thermal input of 0.545MWth. Combustion in 3 No. boilers (2 No. dual fuel (biogas and gas oil) and 1 No. gas oil only)) thermal input of 0.39MWth each.
New	Operation of a biogas flare	D10 - Incineration on land	Undertaken in relation to the S5.4 activity From the receipt of biogas produced at the on-site anaerobic digestion process to incineration with the release of combustion gases. There shall be no venting or flaring of gas for disposal. Use of the auxiliary flare required only during periods of breakdown or maintenance of the CHP engines and/or auxiliary boilers.
New	Digestate storage	R13 - Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the Site where it is produced).	Undertaken in relation to the S5.4 activity. From the receipt of processed digestate produced from the on-site anaerobic digestion process to despatch for use off-site. Storage of processed liquid digestate in storage tanks. Storage of processed solid digestate 3 No. cake bays (open) of 70m^3 each on an impermeable surface with sealed drainage system.
New	Storage of waste pending recovery or disposal	R13 - Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the Site where it is produced).	Undertaken in relation to the S5.4 activity From the receipt of permitted waste to pre-treatment and despatch for anaerobic digestion on site. Storage of residual wastes from pre-treatment to despatch off-site for recovery. Storage of waste in enclosed equipment and tanks or an enclosed building fitted with appropriate odour abatement and on an impermeable surface with a sealed drainage system. Waste types suitable for acceptance are limited to those in Appendix A
New	Raw material storage	R05 - Storage of raw materials including (but not limited to) chemicals, lubrication oil, diesel, activated carbon	From the receipt of raw materials to despatch for use within the facility.
New	Gas storage	R13 - Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the Site where it is produced).	Undertaken in relation to the S5.4 activity Storage of biogas produced from on-site anaerobic digestion of permitted waste in one stand-alone biogas holder or roof space of digesters. From the receipt of biogas produced at the on-site anaerobic digestion process to despatch for use within the facility. Emissions of unburnt biogas shall be minimised.

New	Surface water drainage	Collection and storage of uncontaminated roof and site surface water	From the collection of uncontaminated roof and site surface water from non-operational areas only to re-use within the facility or discharge off-site.
New	Odour control/air abatement	Controlling channelled emissions to air. Collection and treatment of air from the buildings or plant using abatement systems prior to release to atmosphere	From the collection of air from site processes to treatment and release of treated air to atmosphere. Collection and treatment of air from the buildings, tanks or plant using abatement system.

The conversion of m^3 to tonnes is subjective. Liquid wastes are typically measured in m^3 rather than tonnes. WRAP waste volume to mass conversion factors (July 2014) identifies a conversion factor for a range of sludges from various treatment processes to be between 0.9 and 0.92 t/m^3. DCWW have agreed the use of 0.9t/m^3 for the sludges produced on site. Therefore, this conversion factor has been applied to **Error! Reference source not found.** and Table 5.2. Details of the installation is given in Table 5.2.

Table 5.2: Details of installations

For installations that take waste	Total storage capacity	164m^3 x 1 tank (imported sludge tank) 243m^3 x 2 tanks screened sludge tanks (aka consolidation tanks) 1,705m^3 x 2 tanks (digesters) 950m^3 x 3 tanks (digested sludge holding tanks) 468m^3 x 2 tanks (digested sludge holding tanks) 1720m^3 x 1 (digested sludge holding tank) 1806m^3 x 1 (digested sludge holding tank) 243m^3 x 1 tank (digester feed tank) 159m^3 x 1 tank (centrifuge feed tank) 70m^3 x 3 cake bays. Total volume 11,984m^3 available on site
	Annual throughput	The combined annual throughput for Queensferry is of 93,100 (wet) tonnes, this is based on 9750tdsd @11% across two digesters.

5.1.1 Question 1: Table 1b: Types of wastes accepted

DCWW requires a permit for the Site to be authorised to accept sludge waste to undergo anaerobic digestion. It is requested that the annual quantity of waste to be accepted is 93,100 (wet) tonnes). None of the requested wastes are hazardous. The types of waste accepted are shown in Appendix A. A waste acceptance procedure is presented for the site in B16383-123532-XX-XX-GU-ZA-DH0122 - QUY Waste acceptance procedure September 2024.

5.2 Point source emissions to air, water and land

5.2.1 Emissions to air

Table 5.3: Point source emissions to air

Installation name	Queensferry STC

Point source emissions to air

Emission point reference and location	Source	Parameter	Quantity	Unit
CHP SJ 32339 68291	CHP engine exhaust stack burning biogas	Oxides of Nitrogen (as NO2)	500	Mg/m^3
		Carbon Monoxide	1400	Mg/m^3

Installation name	Queensferry STC			
		Sulphur Dioxide	350	Mg/m^3
		Total VOCs	1000	Mg/m^3
Biogas flare stack SJ 32375 68230	Waste gas burner (flare stack)	Operational hours	No limits set	Mg/m^3
Dual Fuel Boiler 1 SJ 32334 68301	Shared boiler exhaust stack – operating on biogas or gas oil	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	250	Mg/m^3
Dual Fuel Boiler 2 SJ 32335 68300		Sulphur Dioxide (if burning biogas)	200	Mg/m^3
Gas oil standby Boiler SJ 32337 68299	Boiler exhaust stack –operating on Biogas, oil and diesel.	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	250	Mg/m^3
		Sulphur Dioxide (if burning biogas)	200	Mg/m^3
Gas holder PRV SJ 32383 68257	Gas holder pressure relief valve	Biogas release and operational events	No limits set	
Odour control units OCU 1 SJ 32311 68206	Channelled emissions to air as identified on the Site plan including tank vents biofilter and/or scrubbing system	Ammonia	20	Mg/m^3
		H_2S	No limit specified	
OCU 2 SJ 32299 68263		Odour concentration	1000	Oue/Nm^3
Digester 1 PRV SJ 32351 68280	Biogas pressure release and operational events	Operational hours Recorded duration and frequency.	No limit set	
Digester 2 PRV SJ 32371 68266				
Standby generator SJ 32254 68226	Diesel generator exhaust stack	Operational hours Recorded duration and frequency.	No limit set	

The emission points are shown in drawing reference B16383-123532-XX-XX-DR-ZA-DH0116 - QUY Site Layout Plan February 2025.

5.2.2 Emissions to water (other than sewers)

Not considered applicable as the drainage network sends water to the head of the works for treatment. There will be no point sources emissions from the Site.

There are no direct potentially contaminated discharges to controlled surface waters.

There will be no direct discharge of wastewater to controlled waters.

There are no direct potentially contaminated discharges to groundwaters.

Accidental releases of materials to the environment are controlled through adequate containment measures and working procedures in accordance with the IMS. Spill procedures are in place under and are detailed within the site's Accident Management Plan (Document reference: B16383-123532-XX-XX-PR-OA-HD0106 - QUY Accident Management Plan October 2024).

5.2.3 Emissions to sewers, effluent treatment plants or other transfers off-site

All condensate from the flare stack, digesters and gas bag holder is collected in the condensate traps adjacent to the assets and directed along the condensate line to the condensate. This discharges to the inlet works, pre-screen.

The centrate liquors, from the centrifuge process, discharge into the centrate returns well, which discharges to the inlet works pumping station, and pumped directly to the primary settlement tanks.

The thickener liquors discharge into the thickener returns well, then into the returned liquors tank, which also collects surface water run-off from the STC impermeable areas and liquors from the humus tanks and discharged before storm separation to the head of the works, pre-screen.

The liquors from the STC to the WwTW is not currently tested to know the full wastewater inventory (as required for BAT 2), and therefore the mean and variability of parameters is unknown. DCWW are committed to implement a monitoring programme to produce an inventory of the waste water streams. It is therefore, considered that this will be added as Improvement Conditions to the permit.

The waste water produced at the Site will be contained in a closed circuit; all waste water streams will either be recycled within the process or captured and rerouted to the adjacent WwTW.

Discharges will be minimal, typically arising from periodic maintenance/cleaning operations. As such, there are no direct potentially contaminated discharges to controlled surface waters and no significant impacts. All drainage (surface water or foul water) will be captured by the on-Site drainage system and returned to the head of the WwTW. A drainage plan of the Site is provided with the application, document reference B16383-123532-ZZ-XX-DR-CC-CI0014 - QUY Drainage Plan June 2022.

The stormwater drainage of potentially uncontaminated areas from within the Site boundary will be routed back to the head of the works, via the surface water pumping station. Digestate and effluent from the STC are returned to the process downstream of storm separation. Returns from the return liquor tank come in before storm overflow, therefore, flows from the return liquor tanks could physically escape down the storm route, if the WwTW is in storm with a flow greater than 277l/s. There are two storm tanks on site, one is blind and, therefore, cannot enter into the environment the second has a weir effect, so once full, it will weir over to storm outfall. However, any discharge will be substantially diluted by the incoming flow.

The centrate is pumped to the primary tanks and must pass through treatment before going out to the environment. Centrate cannot enter the environment through storm overflow.

Therefore, wastewater treated emissions and uncontaminated rainwater run off identified in this document enter the inlet before the storm overflow (with the exception of centrate) and, therefore, these emissions could bypass the WwTW treatment or be emitted as a diluted, direct discharge to water.

Any areas of the Site, where there is a risk of contamination of surface water, groundwater or discharge of process waters are located on impermeable concrete surface. All surface water from these areas drain to the WwTW internal drainage system and are returned to the head of the works for treatment prior to discharge as final effluent. A list of the point source emissions to sewers, effluent treatment plants and other transfers off Site is included as Table 5.4

Table 5.4: Point source emissions to sewers, effluent treatment plants or other transfers off-site

Emission point reference, and location	Source	Characteristics	Monitoring / mitigation measures prior to final discharge and emission point discharge
Return to inlet works of Queensferry WTW SJ 32256 68151	Condensate from the gas pipelines and gas storage bag	Condensate with slightly elevated levels of H_2S dissolved from the biogas, resulting in a low level of acidity	Rerouted to adjacent WTW
Centrate liquors returns well SJ 32261 68246	Process liquors from centrifuges	Variable, from processes	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Monitoring point for sampling as M01 on site layout plan (SJ 32261 68246)
Thickener liquors returns well SJ 32306 68240	Process liquors from thickeners	Variable, from processes	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Monitoring point for sampling as M02 on site layout plan (SJ 32306 68240)
Anaerobic digester (AD) No. 1 condensate trap SJ 32357 68288	Condensate from the AD	Condensate with slightly elevated levels of H_2S dissolved from the biogas, resulting in a low level of acidity	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Monitoring point for sampling as M03 on site layout plan (SJ 32357 68288)
Anaerobic digester (AD) No. 2 condensate trap SJ 32375 68275	Condensate from the AD	Condensate with slightly elevated levels of H_2S dissolved from the biogas, resulting in a low level of acidity	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Monitoring point for sampling as M04 on site layout plan (SJ 32375 68275)
Gas bag condensate trap SJ 32382 68262	Condensate from the AD	Condensate with slightly elevated levels of H_2S dissolved from the biogas, resulting in a low level of acidity	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Monitoring point for sampling as M05 on site layout plan (SJ 32382 68262)
Boiler Maintenance SJ 32331 68213	Boiler blow down to minimise damage from high mineral content water.	High purity water with traces of chemicals (used for boiler dosing).	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Via drainage to the returned liquors tank (SJ 32331 68213)
Drain down of plant SJ 32331 68213 (Dependent on equipment drained down – samples taken from various locations as listed)	Occurs during maintenance when it is necessary to drain down the feed water, hot well or boiler shell.	High purity water with traces of chemicals etc	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Via drainage to the returned liquors tank (SJ 32331 68213)
Rainwater SJ 32330 68253	Uncontaminated roof water from buildings	Clean rainwater from building roofs only	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Monitoring point for sampling as M06 on site layout plan (SJ 32330 68253)

Emission point reference, and location	Source	Characteristics	Monitoring / mitigation measures prior to final discharge and emission point discharge
Rainwater SJ 32330 68253	Run off from impervious surfaces within the bund	Potentially contaminated rainwater from runoff	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Monitoring point for sampling as M06 on site layout plan (SJ 32330 68253)
Washwater SJ 32331 68213 SJ 32330 68253	From the washing down of mechanical equipment during maintenance activities	Variable.	Discharged to adjacent WTW Inlet works (SJ 32256 68151) Via drainage to the returned liquors tank (SJ 32331 68213) or surface water pumping station (SJ 32330 68253)

Please refer to the ERA (doc ref B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environmental Risk Assessment February 2025) on the environmental risk the water emissions pose and how these are mitigated, where relevant.

A sampling and analysis plan relating to emissions to sewer is presented in doc ref B16383-123532-XX-XX-PR-ZA-DH0133 - QUY SamplingPlan February 2025.

5.2.4 Emissions to land

There will be no point source emissions to land as part of the activities carried out on-site.

Indigenous sewer grit and screenings are collected in separate skips and removed off-site by road vehicle and transported to a suitably Permitted facility.

Releases of raw materials to land are considered to be negligible due to adequate containment of the materials within suitable storage vessels, the provision of bunding and the presence of a contained drainage system.

There are no soakaways on site and all drainage diverts to either the head of works or to the various pumping stations to join the process at different points.

5.3 Operating techniques

This section provides a technical overview of the components, the proposed techniques and measures to prevent and reduce waste arising and emissions of substances and heat, including during periods of start-up or shut-down, momentary stoppage and malfunction, and leaks. Specifically, consideration is made of:

- The technology to be used.
- The process, in terms of how it will be operated and controlled.
- In-process controls and Best Available Techniques (BAT) Assessment.
- Measures implemented to control emissions to air, water, sewer and land.

Table 5.5**Error! Reference source not found.** lists the technical guidance notes (TGNs) used to inform the techniques and measures proposed to prevent and reduce waste arising and emissions of substances, including during periods of start-up and shut down, momentary stoppage and malfunction, and leaks.

The technical guidance and BAT requirements will also be addressed within DCWW Queensferry site management plan, as part of the EMS to be made available to staff to ensure compliance with a permit, which covers the following:

- Management of activities, including security and staffing
- Emissions and monitoring, including:
  - point sources to air, water and land
  - fugitive emissions
  - site drainage
  - storage of waste
  - odour, noise and vibration
- Site record keeping

Table 5.5: Technical standards

Installation name	Queensferry STC	
Description of the schedule 1 activity or directly associated activity	**Best available technique (BATC, BREF or TGN reference)**	**Document reference**
Section 5.4 non-hazardous waste installation - anaerobic digestion installation regulated under the Industrial Emissions Directive, utilisation biogas for energy	How to Comply with Your Environmental Permit Additional Guidance for Anaerobic Digestion Best available techniques (BAT) conclusions, for the recovery and disposal of hazardous and non-hazardous waste (SGN S5.06) Biological waste treatment: appropriate measures for permitted facilities Non-hazardous and inert waste: appropriate measures for permitted facilities	https://www.wiseenvironment.co.uk/wp-content/uploads/2020/07/ How-to-Comply-with-Your-Environmental-Permit-Additional-Guidance-for-Anaerobic-Digestion.pdfhttp://eippcb.jrc.ec.europa.eu/reference/BREF/BATC_CWW.pdf https://www.gov.uk/government/publications/sector-guidancenote-s506-recovery-anddisposal-of-hazardous-and-nonhazardous-waste https://www.gov.uk/guidance/biological-waste-treatment-appropriate-measures-for-permitted-facilities/1-when-appropriate-measures-apply https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities
General	How to comply with your environmental permit Monitoring stack emissions: technical guidance for selecting a monitoring approach M1 sampling requirements for stack emission monitoring Environmental permitting guidance, including: NRW's horizontal environmental permitting guidance, including: H1 - Risk assessments for your environmental permit H2 Energy efficiency (Energy efficiency for combustion and energy from waste power plants) H3 Noise assessment and control H4 Odour management H5 Site condition report Control and monitor emissions for your environmental permit	https://cdn.cyfoethnaturiol.cymru/media/2110/how-to-comply-with-your-environmental-permit.pdf?mode=pad&rnd=131467604540000000 https://www.gov.uk/guidance/monitoring-stack-emissions-technical-guidance-for-selecting-a-monitoring-approach https://www.gov.uk/government/publications/m1-sampling-requirements-for-stack-emission-monitoring https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit https://www.gov.uk/government/publications/energy-efficiencyfor-combustion-and-energyfrom-waste-power-plants https://www.gov.uk/government/publications/environmentalpermitting-h3-part-2-noiseassessment-and-control https://www.gov.uk/government/publications/environmentalpermitting-h4-odourmanagement https://cdn.cyfoethnaturiol.cymru/media/1213/site-condition-report-

Installation name	Queensferry STC	
Description of the schedule 1 activity or directly associated activity	**Best available technique (BATC, BREF or TGN reference)**	**Document reference**
		template.pdf?mode=pad&rnd=130989730490000000 https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit

A copy of the schematics describing the operation and process can be found in document reference B16383-123532-XX-XX-DR-ZA-DH0115 QUY Block Flow Diagram P02 March 2021.

5.3.1 BAT Assessment

An assessment against the BAT Conclusions set out in the 2014/738/EU: Commission Implementing Decision of 9 October 2014 establishing best available techniques (BAT) conclusions, under the Industrial Emissions Directive 2010/75/EU has been undertaken for the Queensferry site, and the outcome of these conclusions can be found in document reference B16383-123532-XX-XX-NN-ZA-DH0126 - QUY BAT Analysis.

This document reflects the existing arrangement at the Site and any commitments DCWW has made during the application process. It is acknowledged that it does not fully meet BAT in some instances. It is important to note that there are plans to cease the AD activity during AMP 8 and changing the site activity to dewatering only, with all sludge transported to Five Fords to be treated through the AAD process. However, a confirmed date is yet to be decided.

Changes to site will be undertaken, as necessary and completed to meet BAT, where applicable and appropriate. The changes required will be submitted to the NRW, in the plans to be submitted as part of Improvement Conditions within the permit, for their agreement and NRW's subsequent implementation.

An assessment in accordance with CIRIA 736 was undertaken in 2020 to provide the required containment solutions to meet the BAT requirements. Construction of these buds were undertaken, but the Mott MacDonald modelling team have re-modelled and produced a concept design for a potential solution, as part of improvements needed to meet CIRIA 736. DCWW currently provide 110% containment of the largest tank volume. However, modelling has showed that bunds constructed were not suitable for containing sludge in the event of a catastrophic failure and that DCWW should be providing containment for 25% of the total volume as this represents the greater volume. Additional containment measures will be designed and constructed as necessary. The detailed design will refine the concept solution.

The containment options report is presented in B16383-123532-ZZ-XX-RP-YB-HY0139 - Queensferry Containment Risk Assessment. The ADBA Risk Assessment is provided in B16564-123532-ZZ-XX-AS-ZA-CI0035 - Queensferry ADBA Assessment October 2024.

Part compliance to the IED permit on Queensferry is the installation of new impermeable areas and protection bunds in order to contain any potential sludge spillage within the areas highlighted below.

High-level inspection and maintenance required:

Drainage	Visual inspection monthly and when operational collecting rainwater throughout the year
Impermeable concrete areas	Visual inspection for cracking monthly
Bunds/kerbs	Visual inspection for movement or lines out of alignment.

All of the measures should be inspected in more depth in line with above annually with any findings rectified or after any spill from the process equipment on site.

It is important that cracking or defective bunds are rectified immediately to ensure protection aligning with the BAT18 of the IED permit.

Supplementary documents for the BAT assessment are provided:

- BAT 1: Environmental Management System is provided in
- BAT 1, 21 and 38: Accident Management Plan (AMP) is provided in B16383-123532-XX-XX-PR-OA-HD0106 - QUY Accident Management Plan October 2024 Catastrophic failures, of tanks for example, will be included in the AMP once final designs are agreed based on the findings in document reference B16383-123532-ZZ-XX-RP-YB-HY0139 - Queensferry Containment Risk Assessment October 2024.
- BAT 1, 11, 22 and 35: Residues Management Plan (RMP) is provided in B16383-123532-XX-XX-PE-NA-DH0107 - QUY Residue Management Plan October 2024)
- BAT 1, 8, 10, 12, 13, 14, 33, 34 and 52: Odour Management Plan (OMP) is provided in B16383-123532-XX-XX-PR-ZA-DH0129 - QUY Odour Management Plan February 2025
- BAT 2 and 52: Description of the waste acceptance and pre-acceptance procedures provided in B16383-123532-XX-XX-GU-ZA-DH0122 - QUY Waste Acceptance Procedure September 2024)
- BAT 3, 6, 7 and 20: Sampling commitment and proposal for characterisation is provided in B16383-123532-XX-XX-PR-ZA-DH0133 - QUY SamplingPlan February 2025.
- BAT 14 Leak Detection and Repair Plan (LDAR) is provided in B16383-123532-XX-XX-PR-ZA-DH0123 - QUY Leak Detection and Repair Plan October 2024.
- BAT 14: Bio-aerosols Risk Assessment (BRA) is provided in B16383-123532-XX-XX-AS-ZA-DH0117 - QUY Bioaerosol Risk Assessment November 2024
- BAT 17: Environmental Risk Assessment (ERA) is provided in B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environmental Risk Assessment February 2025
- BAT 19 and 38: ABDA Tool and proposed containment solution is provided in B16564-123532-ZZ-XX-AS-ZA-CI0035 - Queensferry ADBA Assessment October 2024 and the site layout plan B16383-123532-XX-XX-DR-ZA-DH0116 - QUY Site Layout Plan February 2025.
- BAT 19 Secondary Containment options report is provided in B16383-123532-ZZ-XX-RP-YB-HY0139 - Queensferry Containment Risk Assessment October 2024 and the ADBA risk assessment is provided in B16564-123532-ZZ-XX-AS-ZA-CI0035 - Queensferry ADBA Assessment October 2024
- BAT 19: Drainage is provided in B16383-123532-XX-XX-DR-CC-CI0137 - QUY Drainage Plan June 2022
- BAT 23: Energy Efficiency is provided in B16383-123532-XX-XX-NN-ZA-DH0114 - QUY Main Supporting Document February 2025
- BAT 34: Reducing channelled emissions, addressed in the Odour Management Plan (OMP), provided in B16383-123532-XX-XX-PR-ZA-DH0129 - QUY Odour Management Plan February 2025
- BAT 53: Reducing emission of hydrochloric acid (HCl), ammonia (NH_3) and organic compounds to air addressed in the Odour Management Plan (OMP), provided in B16383-123532-XX-XX-PR-ZA-DH0129 - QUY Odour Management Plan February 2025

5.3.2 Appropriate measures assessment

In addition to the Bref and associated BATc, the appropriate measures (which are applicable to sites in Wales) will form part of the technical standards the Site operates:

- Non-hazardous and inert waste: appropriate measures for permitted facilities
- Biological waste treatment: appropriate measures for permitted facilities

As the Site is existing some aspects of the Appropriate Measures do not apply, as the Site was built and operated prior to the issue of the guidance. Southern Water are committed to develop the application of the key principles from the guidance into Site operation and associated management plans as soon as practicable, to ensure the following:

- Reducing or preventing contamination
- Preventing cross contamination by segregation
- Maintaining appropriate primary and secondary containment
- Ensure the Site does not exceed site capacity (design and permitting constraints)
- General management:
  - Operate with a Management System
  - Operate with applicable specific management plans (odour, accident and residue plans)
  - Inspection, maintenance and monitoring regimes
  - Maintaining and reviewing staff competency requirements
  - Maintaining appropriate security measures across the Site
  - Record keeping procedures
  - Contingency plans
- Maintaining appropriate waste storage and suitable segregation, to prevent environmental impacts. Includes tank inspection and maintenance regimes
- Operate and calibrate process monitoring systems
- Record keeping of process outputs, and appropriate handling of residues
- Emissions controls, including prepare an emissions inventory
- Apply process efficiency measures for energy, raw materials, water use and waste minimisation.

As per document reference B16383-123532-XX-XX-PR-ZA-DH0133 - QUY SamplingPlan February 2025, sampling and analysis in relation to permitted waste operations, other than those related to Scheduled Activities, will be undertaken, where applicable, in line with 'Non-hazardous and inert waste: appropriate measures for permitted facilities' guidance text, using an MCERTS accredited, or equivalent, laboratory, where available.

5.4 General requirements

5.4.1 Overview

This section provides an overview of the measures in place at the Site for controlling fugitive emissions, noise and odour. An ERA has been completed and is provided with the application (Document reference: B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environmental Risk Assessment February 2025).

5.4.2 Control of fugitive emissions to air

There are no significant fugitive emissions to air of gases, vapours, or particulates as part of normal Site operation.

Details of the procedures that DCWW follows with regards to the control of mud and debris and potentially polluting leaks and spillages are addressed in the EMS.

Pressure relief valves (PRVs) are inspected daily.

The gas holder is equipped with a level transmitter which is used to determine the volume of biogas in the gas holder, where the level of the gas holder is a low or a high level, an alarm is raised on the SCADA system.

Pressure relief valves will be used in emergencies only, and are not part of normal operation, all PRVs and breather vents are fitted in appropriate locations.

The gas holder is equipped with a level transmitter which is used to determine the volume of biogas in the gas holder, where the level of the gas holder is a low or a high level, an alarm is raised on the SCADA system.

An Air Quality Dispersion Modelling report provides an assessment of the point source emissions to air, and subsequent air quality effects, associated with the proposed operation of the Site, document reference B16383-123532-XX-XX-AS-ZA-DH0119 QUY Air Quality Risk Assessment November 2024.

5.4.2.1 Odour

A review of the nearest human receptors has been undertaken to establish the level of odour risk to the receptors before and after mitigation. Sensitive receptors to odour are users of the adjacent land, which may vary in their sensitivity to odour. Sensitive receptors to odour within 500m of the site are residents to the south-west and residents of the caravan park to the north. DCWW are aware of over 40 complaints from the public regarding perceived odour from the STC (or wider WwTW, therefore, not associated with the STC) within the last 2 years. Although, there are other sources, within the area, that these odours have been identified as the cause of which NRW, the Local Authorities Environmental Health Officer and DCWW are aware of.

Odour dispersion modelling conducted by Olfasense of behalf of DCWW indicates that, under current operational conditions, odours from Queensferry WwTW (rather than the STC) might impact residential areas to the north and east of the site up to a distance of 900m, and commercial premises up to 600m. Based on this modelling, and the H_2S level dispersion rates over this distance, it is considered that the WwTW is unlikely to be the cause of the odour complaints received.

Olfasense has visited the site to conduct a quantitative odour impact assessment and have produced an Odour Impact Assessment (OIA) report (presented in document reference DCWW221_05_final) for the STC.

The Site currently does not have any operational odour control units (OCUs). However, works are underway as part of the Queensferry IED Odour Control Scheme to install new OCU's, to replace the current non-functioning OCUs, to comply with the IED and BAT requirements.

The provision of new odour control treatment system - AWT Dry (Peacemaker chlorinated shale) system (similar to the existing odour unit on site as part of the wastewater treatment) at the works to treat combined extracted odorous airflow from the following locations:

- Sludge import tank
- Liquor return storage tank
- Imported sludge screen and screening skip
- Thickener building including direct extraction from existing drum thickener
- Indigenous sludge storage tanks no's.1 and 2
- Digestor feed tank

In addition, as part of this scheme, DCWW will make odour cover improvements on the following assets:

- Sludge import tank
- Liquor return storage tank
- Indigenous sludge storage tanks no's.1 and 2
- Digestor feed tank
- New enclosure on imported sludge screening skip

Sludge treatment processes mostly happen in covered environments, with exception of the digested sludge holding tanks in Zones 1, 3, 4 & 5), minimising the likelihood for uncontrolled odour or bio-aerosol release. While cake storage bays are uncovered, the sludge at this stage does not require further treatment and has minimal bio-aerosol content.

Additional works are underway for odour cover improvements to replace existing covers that are in poor condition. There is no plans to cover the digested sludge tanks in Zones 1, 3, 4 & 5. The decision behind this is that the Site is due to be decommissioned before the end of AMP 8, although a date is yet to be confirmed,

The Site has an Odour Management Plan (OMP) reference: B16383-123532-XX-XX-PR-ZA-DH0129 - QUY Odour Management Plan February 2025, which identifies potential odour emissions from site operations and procedures to manage, control and minimise odour impacts. It sets out the procedures for engaging with neighbours and how the Operator will manage complaints, and the actions to be taken in the case of pollution events. The OMP also describes the monitoring and maintenance procedures to maintain the control measures. It was written in accordance with the Environment Agency's H4 Odour Management guidance (2011).

Leak detection (methane gas analyser) is installed on the biogas holder to ensure any leaks from the inner bag are detected. Any leaks detected on the biogas system would always be fixed immediately by DCWW due to the process safety risk of posed by biogas. A leak detection and repair plan (LDAR) has been produced to address any gaseous air emissions, that may also cause odours. The LDAR is provided in doc ref B16383-123532-XX-XX-PR-ZA-DH0123 - QUY Leak Detection and Repair Plan October 2024.

Management of the odour risks at the Site is also addressed in the OMP, document reference B16383-123532-XX-XX-PR-ZA-DH0129 - QUY Odour Management Plan February 2025. The Plan incorporates any additional mitigation, information and procedures to support the permit application.

5.4.2.2 Noise

The Site has not received any substantiated noise complaints in the last five years. Initial screening has been carried out for the Site. Potentially sensitive human receptors have been identified in residential housing as close as 90m from the site boundary. However, the site is situated in a largely industrial area adjacent to a dual-carriageway and railway.

In addition, baseline surveys conducted, by Mott MacDonald in 2018 in line with BS4142:2014, for a neighbouring highways project (the A494 River Dee Bridge Improvement) included two positions that represent the closest sensitive receptors to the STC (1. Dundas Street and Queens Street and 2. The Traveller Site, Queensferry). This baseline survey has shown that a major source of noise affecting the noise climate in the area of these two sensitive receptors was identified as road traffic on the A494 road. Other contributors were identified, but these did not include sources attributable to the operation of the STC. The noise impact of the STC is, therefore, considered likely to be sufficiently minor and will have no material impact on the community. It is therefore considered that a noise impact assessment for the site will provide the same conclusions and is not considered necessary.

Further discussions with the Acoustic Engineer also concludes that given the location of other noise emitting activities adjacent to the site (railway and dual carriageway), and that the site is not undergoing any changes to its existing operations, equipment or vehicle movements, a separate noise impact assessment is not required nor provide any additional benefit, and the data provided by the baseline survey carried out for the A494 scheme is sufficient to justify the STC does not impact on the closest sensitive receptors.

To support these discussions and survey data a high-level noise impact assessment has been undertaken and the findings is present in document reference B16383-123532-XX-XX-AS-ZA-DH0109 QUY Noise Impact Assessment January 2024.

Appropriate mitigation for any noise and vibration impacts that can be attributed to the site during abnormal operations are provided in Appendix B of the ERA (B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environmental Risk Assessment October 2024), and within the Noise and Vibration Management Plan (B16383-123532-XX-XX-NN-ZA-DH0118 - QUY Noise and Vibration Management Plan July 2024).

Appropriate mitigation for noise and vibration impacts are also provided in the ERA, document reference B16383-123532-XX-XX-AS-ZA-EI0108 – QUY Environmental Risk Assessment February 2025.

5.4.2.3 Dust and particulates

There are not considered to be any significant dust or particulate sources from the Site as identified in the ERA document reference B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environment Risk Assessment February 2025.

5.4.2.4 Bio-aerosols

A bio-aerosols risk assessment has been undertaken for the Site and considers there not to be any significant risks. The Bio-aerosol Risk Assessment can be found in B16383-123532-XX-XX-AS-ZA-DH0117 - QUY Bioaerosol Risk Assessment November 2024.

The bioaerosols risk assessment concluded that the Site poses an acceptable level of risk of bioaerosol release and the STC activities do not endanger human health or the environment. This is primarily due to the control measures in place at the Site, which are considered to be effective at reducing and containing emissions of bioaerosols, inhibiting the pathway between source and receptor. Subsequently, since the Site is found to be low risk, a Bioaerosol Management Plan is not required.

Best practice methods will be followed, during operation of the Site, to prevent the release of bioaerosols. These include methods and principles outlined in the Environment Agency's "Guidance on the evaluation of bioaerosol risk assessments for composting facilities" [4]

Monitoring of bio-aerosols, where applicable, will be undertaken in accordance with the Environment Agency's M9 guidance on environmental monitoring of bioaerosols at regulated facilities. For any sampling and analysis undertaken as part of permit compliance DCWW is committed to ensuring that those undertaking the sampling and analysis will be by accredited to MCERTs, or equivalent standards.

5.4.3 Control of fugitive emissions to surface water, sewer and groundwater

There are not considered to be any fugitive emissions to surface water, sewers or groundwater. However, best practice methods will be followed, during operation of the facility, to prevent the

[4] Drew, G.H., Deacon, L.J., Pankhurst, L., Pollard, S.J.T. and Tyrrel, S.F. (2009). Guidance on the evaluation of bioaerosol risk assessments for composting facilities. Environment Agency.

release of any fugitive emissions. There is appropriate containment for the control of liquid wastes put in place to minimise any potential releases, as identified in the EMS.

5.4.4 Control of fugitive emissions to land

Details of waste generated at the site is demonstrated in document reference B16383-123532-XX-XX-PE-NA-DH0107 - QUY Residue Management Plan October 2024.

As part of the quarterly health and safety checklist the site is screened for general litter, mud, and debris both within and outside site boundaries.

5.5 Site security

Activities are managed and operated in accordance with an EMS. Access to the Site is restricted by a combination of fence lines including a 3m palisade fence and 3.9m and 2.4m weldmesh fence. The Site also benefits from a CCTV system, which consists of multi-directional cameras and motion sensors (notably at the main entrance and site outlet), and intruder detection alarms. Intruder detection alarms are operational in all major buildings covering the control room, boiler house, admin office and mess room, these are activated/deactivated by keypad entry. Security rated doors are present protecting key buildings. Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to Site. Repairs are undertaken in accordance with the EMS requirements.

Other risks relating to human health and the environment are presented in Appendix B of the ERA, document reference B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environmental Risk Assessment February 2025.

5.6 Complaints procedure

Direct from DCWW policy:

“According to the Consumer Council for Water (CCW), a complaint is any inbound contact from a customer not eligible to switch retail provider or customer’s representative that expresses or implies dissatisfaction with the charges, service or functions provided by the company. Dissatisfaction should be identified in the body or title of the written correspondence/ contact or the customer’s sentiment at the close of a telephone/web chat/visit contact. Subsequent contacts about the same issue from the same customer should be reported as a complaint unless it falls under any of the exemptions.

We must accurately report all complaints for both Household and Non-Household. This information is used for:

- Household complaints reporting for CMEX in England and Wales
- Household and non-household complaints for CCW reporting
- Non - household complaints for Ofwat benchmarking.

We make a commitment to our customers that if they’re unhappy with the outcome of their first complaint and write to us again, it will be reviewed by another person / case handler before making recommendations to a Director”.

5.6.1 Complaints investigation procedure

Written complaint stages

Stage 1 complaint received from a customer or their representative

The classification of a Stage 1 Complaint can be one of the following:

- A complaint with no history of previous complaints on the same subject
- A second complaint about the same issue, but the first one was not answered within 10 working days from the original complaint.
- A follow-on written contact - If the new information relates to the original complaint but is substantial enough to change the outcome, then the company may report it as a stage 1, even if it the company reviews the complaint and decides no further action is necessary
- The new issue(s) are not connected to the original complaint, and, could or would change the outcome of the original complaint (whether it ultimately does or not), or, the original complaint has been resolved to the customer's satisfaction.

Examples of these may include:

- Attitude of company staff.
- The date or timescale to resolve the issue (perhaps due to operational works); and
- Recompense for the original service failure if it is not mentioned in the customer's first contact or is not part of the resolution of the initial complaint.

NB: In cases where there is nothing further that can be done, a Director may consider the Stage 1 response to be the final stage. In these instances, customers will be advised that the company complaints procedure (including Directors review) has been completed and they will be signposted to CCW.

Follow on complaints about the same matter or outcome would fall under exclusions as 'continued correspondence' and reported as a Stage 3, but only after Stage 1, when it has been explained that no further action can be taken and the complaint has been thoroughly reviewed.

Stage 2 (escalated complaint)

The classification of a Stage 2 Complaint is one of the following:

- A second written complaint from a customer relating to the same issue, following our response to the initial Stage 1 complaint
- New information (provided by the customer) which is something we should have been aware of, such as our own literature, action, works or contacts to the customer

Note: If the second complaint is received more than 12 months after the initial response, then this will be treated as a new Stage 1.

Stage 2 Repeat

After the Stage 2, if further correspondence about the same issue is received and an alternative course of action is considered, then these complaints should be categorised as a Stage 2 repeat complaint.

Stage 3 (exhausted complaint)

The classification of a Stage 3 is as follows:

- A further written complaint from a customer relating to the same issue; where the customer has already been advised that the company complaints procedure has been completed and they can, if they wish, contact CCW.

If a customer continues to correspond after this stage, unless there are new issues or new information, these will be categorised as a Stage 3.

Telephone, SMS, Web Chat, Visit and Social Media Complaints

This section gives information on how customer complaints in real time must be reported.

First customer contact through telephone, SMS, web chat, social media or visit

All contacts through the above channels should be reported as complaints based on the customer sentiment at the conclusion of the first contact or visit. If, at the end of the contact the customer is or appears satisfied or considers the matter resolved without complaint, this contact should not be marked as a complaint.

Examples of when inbound contacts should be classified as complaints include:

- Customer disagreement or challenge even when the company policy or procedure has been explained.
- Early termination of the contact by a customer whereby the end sentiment is negative (but not from loss of connection).
- Customer asks for their query to be escalated.
- Customers tone or mood is negative.

If in doubt, the customers can be asked if they are satisfied with the given explanation and proposed next steps at the close of the contact, but this must be done with no pressure on customers to agree. If in doubt of the customers' sentiment and customers are not asked, this will need to be classified as a complaint. The customer sentiment is only considered at the end of the first contact.

If a customer expresses satisfaction, for example, an agreed action, gratitude or says that no further action is needed, then the contact should not be reported as a complaint. Similarly, if the customer's points cannot be addressed, a handover to another member of staff should be offered where possible. In this event the customer sentiment should be based on the conclusion of the contact. If the customer requests a call back, or if a call back is initiated by the company, it should be treated as the continuation of the initial contact. The customer sentiment should be considered at the conclusion of the first call back only and not subsequent contacts.

Call back for web chat and social media

For webchat and social media contacts, in the event that customers are asked to provide their telephone number to be contacted over any issues, the call back should be treated as an inbound contact. If the customer sentiment is negative at the end of the contact, then it should be reported as a complaint. Complaints should be reported by the initial method of customer contact.

Complaints via social media

Ofwat's final Methodology for the 2019 Price Review states companies should offer at least five communication channels, including at least three online channels for receiving customer contacts and complaints. In line with this guidance, a route for customers to complain via social media might be offered. Complaints through all social media channels offered as contacts to customers should be reported.

In line with the inbound principle, only complaints through social media where the customer contacts the company directly (either through a visitor post on the company page or site or direct/personal message) should be reported. The company should be able to identify the customer.

Customer comments about another customer posting should not be reported as a complaint.

When not available to respond immediately but a response is warranted, customers should be contacted and the contact should be concluded within 24 hours. Any contact that continues beyond 24 hours should be reported as a complaint. To gauge a level of proportion, where

possible, the numbers of contacts via social media which went beyond the 24-hour timescale should be reported to CCW.

Again, the customer sentiment should only be considered at the end of the contact and where the customer is dissatisfied or there is implied dissatisfaction then the contact should be reported as a complaint.

Engagement with customers via social media

Customers who comment of the company posts via social media should be responded to at the company's discretion. Where a response is not warranted, then it should not be reported as a complaint. Where the company chooses to respond directly to a customer from a post, such as if the customer is asking for further information or has been affected by the subject of the post, then the contact should be reported as a complaint if at the close of the contact the customer is dissatisfied or implies dissatisfaction unless an exemption applies.

Vexatious Complaints

A small number of customers make vexatious complaints such as:

- Persistent/obsessive/repetitive complaints without sufficient or reasonable grounds/evidence;
- Repeated complaints about the same matter (and/or with minimal changes to the subject matter) together with a refusal to accept decisions;
- Refusal to co-operate with our complaints procedure;
- Any other complaint or behaviour that has been identified as having the potential to adversely affect the health or wellbeing of our colleagues.

The Vexatious Customer Register enables the company to identify and record customers who have made vexatious complaints. The complaints team manager is responsible for holding, updating and reviewing the Register. Further information is available on the Vexatious Customer Policy.

General Correspondence

General Correspondence is any other correspondence that is not a complaint. Everyone who handles correspondence is responsible for ensuring that it is classified correctly.

The process for logging on/responding/logging off General Correspondence is the same as for written complaints. However, the response for General Correspondence does not need to include information on the company's complaints procedure.

Data Protection Act

To ensure Welsh Water's compliance with the Data Protection Act 2018, a customer's personal data should only be disclosed to a third party (including someone calling on behalf of the customer such as their partner or parent and/or an AM/MP) upon confirmation of the customer's consent to receive the information.

5.7 Types and amounts of raw materials

Details of raw materials is demonstrated in document reference B16383-123532-XX-XX-PE-NA-DH0107 - QUY Residue Management Plan October 2024.

The COSHH assessments for the raw materials listed can be found in B16383-123532-XX-XX-PR-OA-HD0106 - QUY Accident Management Plan October 2024.

5.8 Monitoring

This section provides a summary of the proposed monitoring at the Site.

5.8.1 Emissions to air

Stack emissions monitoring will be undertaken for each stack in accordance with M5 monitoring guidance, MCERTS BS EN 14792 and the requirements of the environmental permit issued for the Site, where suitable and available.

Periodic monitoring will be undertaken on an annual basis as part of the routine maintenance programme. No abatement technology is required, and continuous monitoring is not considered necessary. Sample monitoring will be carried out after each maintenance period on the CHPs and boilers, in order to ensure compliance with ELVs as required in the Environmental Permit.

Once permitted monitoring will be undertaken in accordance with the relevant standards. It is anticipated the monitoring standards required are as stated in Table 5.6.

Table 5.6: Monitoring air emissions

Emission point type	Parameter	Reference period	Monitoring frequency	Monitoring standard or method
Stacks on CHP engine burning biogas	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Periodic over minimum 1-hour period	Annual	In accordance with TGN M5 – Monitoring of stack emissions to air
	Carbon monoxide			
	Sulphur dioxide			
	Total volatile organic compounds including methane			
Boilers - 2 dual fuel and 1gas oil)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	Periodic over minimum 1-hour period	Annual	In accordance with TGN M5 – Monitoring of stack emissions to air
Channelled emissions to air OCUs 1 & 2	Ammonia	periodic over minimum 1-hour period	Once every 6 months, or more frequent if stated in the permit	Emissions of pollutants into the environment through any kind of duct, pipe, stack, etc
	H_2S			
	Odour concentration		Once every 6 months, or more frequent if stated in the permit	BS EN 13725
Biogas flare	Operational hours	Recorded duration and frequency.	Continuous	Operational record including date, time and duration of use shall be recorded
Pressure relief valves	Biogas release and operational events	Recorded duration and frequency.	Daily inspection	Operational record including date, time duration of pressure

Emission point type	Parameter	Reference period	Monitoring frequency	Monitoring standard or method
				relief events and calculated annual mass release

DCWW acknowledge that the flare is appropriate for emergency use (such as breakdown and maintenance, up to 10% of the operational hour), records from monitoring will be reviewed regularly to reduce the use of the flare.

5.8.1.1 Assessment of the sampling locations

DCWW will bring in sub-contractors accredited to MCERTS to monitor the emissions points in accordance with the permit requirements, where suitable and available. An assessment of sampling locations is therefore not appropriate as this will be the responsibility of the sub-contractors.

5.8.2 Emissions to water (other than sewers)

There are no direct releases to controlled waters of emissions arising from the STC. As such, no monitoring or reporting is required.

5.8.3 Emissions to sewers, effluent treatment plants or other transfers off-site

The release of liquors from the sludge treatment process is considered to be a point source emissions or direct discharges to sewers, as part of the permit operation. The site layout plan, (drawing reference B16383-123532-XX-XX-DR-ZA-DH0116 - QUY Site Layout Plan February 2025), identifies the point at which liquors leave the site to enter the WTW at the inlet. A sampling location has also been identified on the site layout plan, although sampling will be undertaken as part of a wider implementation plan under BAT and IED.

DCWW confirms that they will undertake a chemical analysis of their wastewater, from the STC entering the adjacent WTW, which tests all pollutants they expect to find in the discharge to fully characterise the emissions to water.

DWCC will then take an informed viewpoint of the determinants the samples contain demonstrating those that are not in the sample. An H1 assessment to screen out any that are not applicable or relevant will be completed. Sampling and analysis will be undertaken using a UKAS accredited, or equivalent, laboratory. It is therefore, considered that this will be added as Improvement Conditions to the permit.

All condensate discharge directly to the site drainage system which diverts water to the head of the works of the adjacent Queensferry WTW.

5.8.4 Emissions to land

There are no direct releases to land of emissions arising from the STC. As required by the DCWW EMS various housekeeping and waste management practices are in place to monitor waste emissions. These include segregation of wastes according to their classification and nature, labelling waste and using designated storage containers.

In accordance with the DCWW EMS Policy solid waste is disposed of in accordance with ‘Duty of Care’ Regulations. The composition of the waste, its hazard characteristics and any relevant precautions are clearly stated on the transfer notes provided to licensed waste contractors

removing waste from Site for recycling and/or disposal. Records are maintained on Site and will be reported to the regulator as required by the EPR permit.

5.9 Environmental impact assessment

The proposal is not subject to an environmental impact assessment under Council Directive 85/337/EEC of 27 June 1985 [Environmental Impact Assessment] (EIA).

5.10 Resource efficiency and climate change

5.10.1 Basic energy requirements

DCWW aims to maximise the efficiency of the energy flows from its processes ensuring that, where possible, heat is recovered, and energy is not wasted.

There are a number of pieces of infrastructure and equipment that use electrical energy supply including:

- Fans, coolers and heating;
- Motors and motor drivers and drive systems;
- Aeration
- Pumps / boosters/conveyors;
- Facilities – heating and lighting
- Sludge handling and management e.g. AD, dewatering and polymer dosing equipment;
- Ventilation and odour control/abatement systems

Biogas is used to provide energy, produced by burning in a CHP engine, for the Site's processes. Diesel is used for the heating buildings or running the boilers and primary generators, where required.

5.10.2 Basic measures for improving energy efficiency

Biogas is a renewable gas, produced from organic waste and is reused on Site to power its energy requirements. A key objective of the DCWW EMS is to reduce energy consumption from the grid. Procedure EMP003 specifically contains objectives for the Reduction of Energy Consumption Programme; this includes the commitment to produce monthly usage energy reports that are to be sent to Senior and Operational management and obtaining detailed electricity usage information via metering of specific areas of plant.

DCWW recognise that target setting for, and measurement of, energy and carbon reduction is pivotal to reducing energy use and carbon emissions in new and existing installations.

DCWW is dealing with the measurement and reporting of operational carbon emissions in existing installations through:

- Monitoring of energy use from electricity meters
- Quarterly estimation and reporting of operational carbon emissions for internal reporting purposes
- Annual estimation and reporting of operational carbon emissions for regulatory reporting (Ofwat and CRC)
- Energy efficiency measures implemented at the Site include (but not limited to) the following:
- The combustion temperature is maintained relatively constant for reduced Nox emissions and increased efficiency.
- The engines are equipped with turbochargers, further increasing energy efficiency.

- Ongoing monitoring of plant operating parameters is carried out to ensure process is operating optimally and to enable constant optimisation to increase the plant's efficiency.
- Good housekeeping measures are employed, and regular preventative maintenance will ensure the operations, and therefore energy efficiency, is optimised.

Low-cost measures in place to avoid inefficiencies of excessive heating or cooling, include:

- Insulation of main hot water pipes
- Insulation of heating equipment such as hot water heat exchanger, boiler feed water tank and boiler feed water pumps and pipework.
- Utilising low energy equipment for lighting such as high frequency fluorescent lighting, high pressure sodium or LED
- Allowing for local or modular switching, where appropriate
- Consideration of energy recovery and the deployment of renewable energy systems, including CHP

The CHP area is not located in a building but housed in acoustic containers. There are limited opportunities for energy efficiency requirements as the buildings are not heated. Energy efficient lighting will be used throughout the buildings.

Heat generated from the CHP is used in the AD process. The energy created by burning of biogas in the CHP engine is used to supply the Site to reduce the need to import electricity from the grid.

The development of an energy efficiency plan will be considered once the Site is permitted; this will determine areas of improvement and will be developed under DCWW Environmental Policy and EMS.

In addition, DCWW implements optimisation measures across all its Sites in a proactive approach to ensuring efficiency measures across all its Site operations meets optimal and efficient operating requirements.

5.10.3 Changes to the energy the permitted activities use up and create

There will not be any changes to the energy that the permitted activities use or create.

5.10.4 Climate change levy agreement

DCWW is not a participant to the Climate Change Levy (CCL) agreement.

5.10.4.1 Specific measures for improving energy efficiency (Question 6c)

When equipment is replaced, energy efficient plant will be utilised in replacement. No other specific measures are employed.

5.10.5 Raw and other materials, other substances and water use

Details of raw materials stored on the site is demonstrated in residue management plan (B16383-123532-XX-XX-PE-NA-DH0107 - QUY Residue Management Plan October 2024).

The COSHH assessments for the raw materials listed can be found in B16383-123532-XX-XX-PR-OA-HD0106 - QUY Accident Management Plan October 2024.

5.10.6 Reducing production of waste

Details of measure to reduce the production of waste is demonstrated in residue management plan (B16383-123532-XX-XX-PE-NA-DH0107 - QUY Residue Management Plan October 2024).

5.11 Combustion plant

The CHP engine at Queensferry was replaced in August 2024, by a CHP from DCWW's Kinmel site, and refurbished. The AQRA used the specification data for this CHP model provided by DCWW for their assessment.

The CHP is powered by biogas and has a thermal rated input of 0.545MWth. Therefore, the Site falls outside the scope of the Medium Combustion Plant Directive (MCPD) since the thermal rated input is less than 1MWth thermal rated input. It is also, not subject to the specified generator rules as it is not used for standby operation. The CHP total annual operating hours is 8,500, allowing for routine maintenance. – This is due to be brought fully online by December 2024. Therefore, the details listed under Annex I of the MCPD and Appendix 8 of Part B3 are not relevant at the time of this application. Further information on the CHP can be found in Appendix B.

The Site's flare will only operate during emergencies, or when the Combined Heat and Power (CHP) is on downtime for maintenance, but less that 10% of operational time. Maintenance of the flare is undertaken annually. Overall impacts of all air pollutants are considered to be low.

MCP and SG do not apply to the site as the combustion plant falls outside for the scope of the MCPD. Details of the combustion plant is stated in Table 5.7.

Table 5.7: Combustion Plant

Combustion Unit identifier	Rated MW thermal input	Type (boiler, engine, turbine etc)	Fuel and share of fuels (%)	Does it produce electricity?	Does it export electricity to the grid?	Emission point as per site plan	Does MCPD apply? If so new or existing?	Do SG regs apply? If so Tranche A or B?
CHP Engine	0.545	Engine	Biogas 100 %	Yes	No	Point 4	No	No
Boiler 1	0.39	Boiler	Biogas	No	No	Point 2	No	No
Boiler 2	0.39	Boiler	Biogas	No	No	Point 2	No	No
Boiler 3	0.39	Boiler	Biogas/ gas oil	No	No	Point 2	No	No
Standby Generator	0.7	Engine	Red diesel	Yes	No	Point 8	No	No

The Oxygen Correction Factor (OCF) has been taken from the Standard Rules permit and has been based upon the OCF's set out in IED permits for similar sites operated by DCWW. 22/04/2021 - Cardiff: "Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

i. in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
ii. in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content."

The detail of abatement for each emission point is not mentioned, as it is not applicable.

6 Part F1 – Charges and declarations

6.1 Working out charges

The relevant applications forms have been completed online. An up-to-date Charging Band profile, and completed spreadsheet for the newly introduced charging banding tool have been provided in B16383-123532-XX-XX-CA-ZA-DH0131 - QUY charge-tool-new.

6.2 Payment

Payment will be made by BACS.

6.3 Confidentiality and National security

DCWW do not wish to claim confidentiality with this application.

6.4 Application checklist

Table 6.1 provides a list of section/document references included in the application. It has been used to only provide the references to standalone documents. References to all other questions are found in this document (Main Supporting Document, MSD) which makes reference to the question. Specific sections to the MSD are identified in the relevant forms.

Table 6.1: Application checklist and standalone document references

Document title	Document reference
Details of Directors	B16383-123532-XX-XX-NN-ZA-DH0132 – QUY Directors September 2024
List of Relevant Offences	B16383-123532-XX-XX-NN-ZA-DH0130 - QUY Relevant Offences September 2024
Competency Management System Agreement	B16383-123532-XX-XX-CT-ZA-DH0120 - QUY CMS Accreditation
Site Layout Plan	B16383-123532-XX-XX-DR-ZA-DH0116 - QUY Site Layout Plan February 2025
Drainage Plan	B16383-123532-ZZ-XX-DR-CC-CI0014 - QUY Drainage Plan June 2022
Site Condition Report	B16383-123532-XX-XX-RP-ZA-DH0110 - QUY Site Condition Report October 2024
Environmental Risk Assessment	B16383-123532-XX-XX-AS-ZA-EI0108 - QUY Environmental Risk Assessment February 2025
Environmental Constraints Maps	B16383-123532-XX-XX-PR-ZA-DH0125 - QUY Environmental Constraints Maps September 2024
Waste codes	B16383-123532-XX-XX-NN-ZA-DH0114 - QUY Main Supporting Document February 2025
Block Flow Diagram	B16383-123532-XX-XX-DR-ZA-DH0115 - QUY Block Flow Diagram P02 March 2021
Best Available Technique (BAT) analysis	B16383-123532-XX-XX-NN-ZA-DH0126 - QUY BAT Analysis
Leak detection and repair Plan	B16383-123532-XX-XX-PR-ZA-DH0123 -QUY Leak Detection and Repair Plan October 2024
Residues Management Plan	B16383-123532-XX-XX-PE-NA-DH0107 - QUY Residue Management Plan October 2024
Accident Management Plan	B16383-123532-XX-XX-PR-OA-HD0106 - QUY Accident Management Plan October 2024

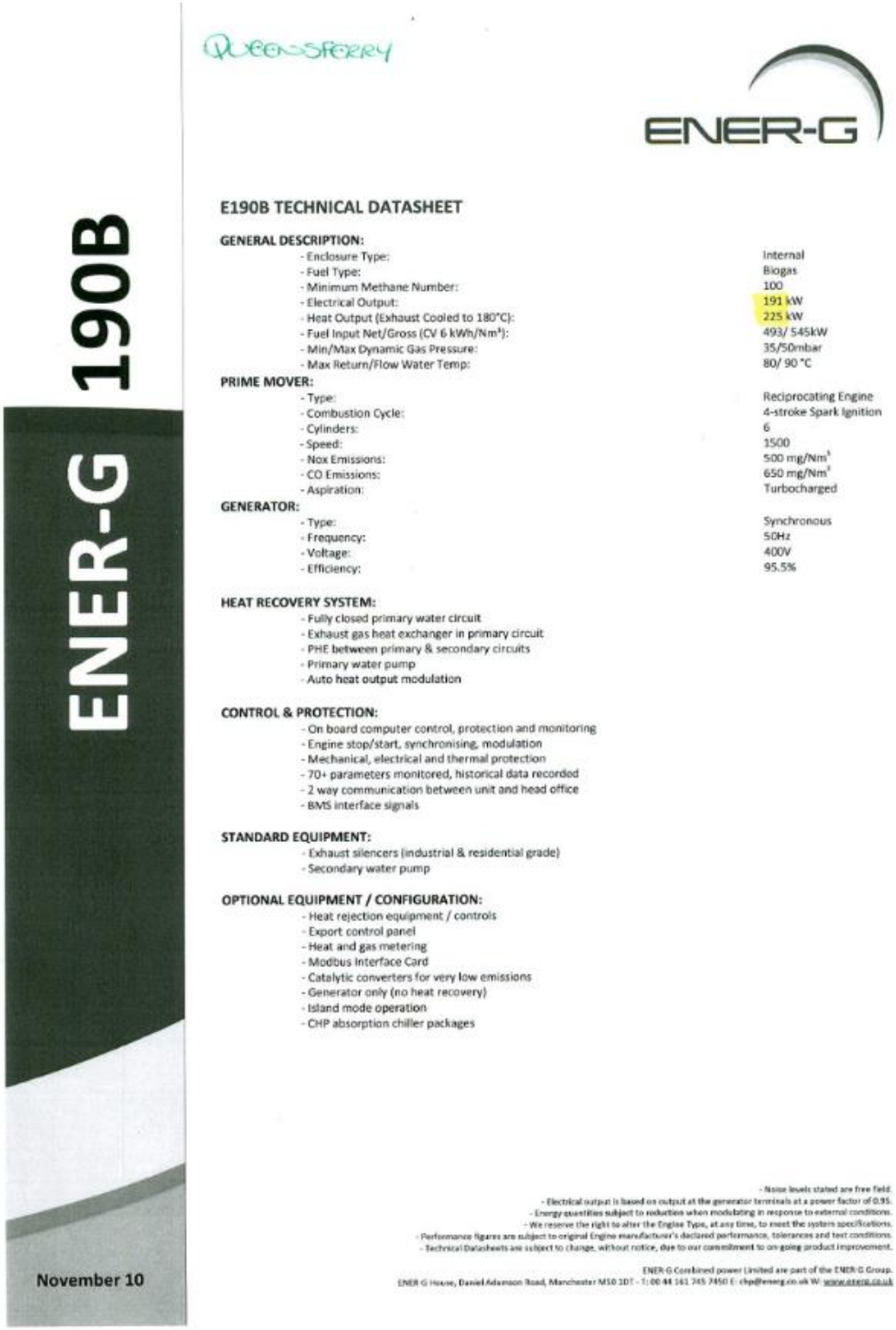
Document title	Document reference
Duty of care (waste acceptance)	B16383-123532-XX-XX-GU-ZA-DH0122 - QUY Waste Acceptance Procedure September 2024
H1 assessment	B16383-123532-XX-XX-AS-ZA-DH0127 - QUY H1 Screening Assessment April 2024
Odour Management Plan	B16383-123532-XX-XX-PR-ZA-DH0129 - QUY Odour Management Plan February 2025
Bio-aerosol Risk Assessment	B16383-123532-XX-XX-AS-ZA-DH0117 - QUY Bioaerosol Risk Assessment November 2024
Air Quality Risk Assessment	B16383-123532-XX-XX-AS-ZA-DH0119 - QUY Air Quality Risk Assessment November 2024
Noise Impact Assessment	B16383-123532-XX-XX-AS-ZA-DH0109 - QUY Noise Impact Assessment January 2024
Noise and Vibration Management Plan	B16383-123532-XX-XX-NN-ZA-DH0118 - QUY Noise and Vibration Management Plan July 2024
Materials Safety Data Sheets	B16383-123532-XX-XX-SP-ZA-DH0124 – QUY COSHH MSDS September 2024
Main Supporting Document	B16383-123532-XX-XX-NN-ZA-DH0114 - QUY Main Supporting Document February 2025

A. Waste codes

The annual throughout is 93,100 (wet) tonnes/annum (9750tds @ 11%) across two digesters.

EWC Code	Description
19	**Wastes from waste management facilities, off-site wastewater treatment plants and the preparation of water intended for human consumption and water for industrial use**
19 02	**Description wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**
19 02 06	Sludges from physico-chemical treatment other than those mentioned in 19 02 05 (sewage sludge only)
19 06	**Description digestate from anaerobic treatment of animal and vegetable waste**
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste (sewage sludge only).
19 08	**Wastes from wastewater treatment plants not otherwise specified**
19 08 05	Sludges from treatment of urban wastewater
19 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 12	Wastes from mechanical treatment of wastes other than those mentioned in 19 12 11 (sewage sludge only)

B. CHP engine specification



QUEENSFERRY

ENER-G

ENER-G 190B

November 10

E190B TECHNICAL DATASHEET

GENERAL DESCRIPTION:

- Enclosure Type:	Internal
- Fuel Type:	Biogas
- Minimum Methane Number:	100
- Electrical Output:	191 kW
- Heat Output (Exhaust Cooled to 180°C):	225 kW
- Fuel Input Net/Gross (CV 6 kWh/Nm³):	493/ 545kW
- Min/Max Dynamic Gas Pressure:	35/50mbar
- Max Return/Flow Water Temp:	80/ 90 °C

PRIME MOVER:

- Type:	Reciprocating Engine
- Combustion Cycle:	4-stroke Spark Ignition
- Cylinders:	6
- Speed:	1500
- Nox Emissions:	500 mg/Nm³
- CO Emissions:	650 mg/Nm³
- Aspiration:	Turbocharged

GENERATOR:

- Type:	Synchronous
- Frequency:	50Hz
- Voltage:	400V
- Efficiency:	95.5%

HEAT RECOVERY SYSTEM:

- Fully closed primary water circuit
- Exhaust gas heat exchanger in primary circuit
- PHE between primary & secondary circuits
- Primary water pump
- Auto heat output modulation

CONTROL & PROTECTION:

- On board computer control, protection and monitoring
- Engine stop/start, synchronising, modulation
- Mechanical, electrical and thermal protection
- 70+ parameters monitored, historical data recorded
- 2 way communication between unit and head office
- BMS interface signals

STANDARD EQUIPMENT:

- Exhaust silencers (industrial & residential grade)
- Secondary water pump

OPTIONAL EQUIPMENT / CONFIGURATION:

- Heat rejection equipment / controls
- Export control panel
- Heat and gas metering
- Modbus Interface Card
- Catalytic converters for very low emissions
- Generator only (no heat recovery)
- Island mode operation
- CHP absorption chiller packages

- Noise levels stated are free field.
- Electrical output is based on output at the generator terminals at a power factor of 0.95.
- Energy quantities subject to reduction when modulating in response to external conditions.
- We reserve the right to alter the Engine Type, at any time, to meet the system specifications.
- Performance figures are subject to original Engine manufacturer's declared performance, tolerances and test conditions.
- Technical Datasheets are subject to change, without notice, due to our commitment to on-going product improvement.

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C. Abnormal Results Escalation Procedure – AD Plant