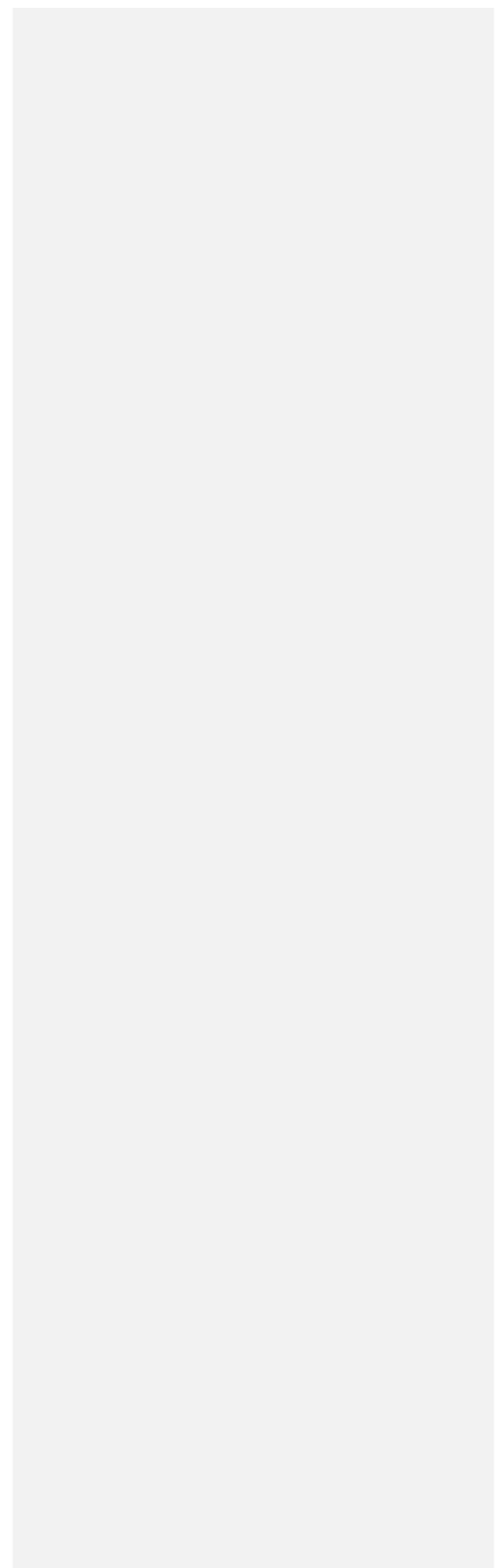


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Cambridge Sludge Treatment Centre Environmental Permit Application

Main Supporting Document

November 2021



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Cambridge Sludge Treatment Centre Environmental Permit Application

Main Supporting Document

November 2021

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Executive summary

1.1 Introduction

The non-technical summary has been written to support the application to vary the standard rules permit EPR/LP3196ER to a bespoke installation Environmental Permit (hereafter referred to as 'the Permit') and consolidate permit EPR/WP3535HT for the Cambridge Sludge Treatment Centre (STC) ('the Site') operated by Anglian Water Services Limited (AWS) (the 'Operator'). Following the joint Environmental Agency and DEFRA decision that anaerobic digestion (AD) treatment facilities at Water Recycling Centres (WRCs) and STCs are covered by the Industrial Emissions Directive (IED) the intent of this application is to ensure the Site is permitted in line with the IED and the Environmental Permitting Regulations 2016, as amended.

1.2 Overview of the Site and activities

Cambridge WRC and STC is located approximately 3.5km north of Cambridge city centre. The address for the Site is Cowley Road, Cambridge, Cambridgeshire, CB4 0AP (NGR TL 47440 61636). The WRC is operated under the Urban Wastewater Treatment Regulations (UWwTR) and has a standalone Discharge Activity Environmental Permit, this will remain an independent permitted activity. The STC is a non-hazardous waste activity which is currently permitted under a SR2008No19_250Kte standard rules permit (EPR/LP3196ER), the Combined Heat and Power (CHP) activities are permitted under separate Environmental Permit (EPR/WP3535HT). The waste activity comprises of imports, physio-chemical and anaerobic digestion treatment, and the storage of waste, all for recovery purposes. The STC treats waste derived from the wastewater treatment process indigenously produced on-site and imported liquid sludge, and will continue this operation under a new bespoke IED installation permit. No hazardous waste is imported or treated at Cambridge STC.

AWS are applying to vary the existing standard rules permit and to consolidate the CHP environmental permit to a single Bespoke Installation Permit to include the AD activities and ensure the STC is in line with the IED and the Environmental Permitting Regulations 2016, as amended.

The primary permitted installation activity will be the AD treatment activity. The AD activity will treat indigenously produced sludges, as well as imported liquid sludge. Permitted Directly Associated Activities (DAAs) will be the import of waste from other sites; the physio-chemical treatment of imported and indigenously produced sludges; the storage of indigenous and imported sludges, and the sludge cake from the AD facility; the storage of biogas derived from the AD treatment of waste and the combustion of biogas in the on-site CHP engines. In the event the CHP engines cannot run in an emergency or due to operational issues, biogas will be combusted via an on-site flare stack and back-up boiler system.

As part of the permit variation, AWS wishes to add three new EWC codes. These codes are 19 02 06 "sludges from physico/chemical treatment other than those mentioned in 19 02 05", 19 06 06 "digestate from anaerobic treatment of animal and vegetable waste" and 16 10 02 "aqueous liquid wastes other than those mentioned in 16 10 01". The full list of EWC codes accepted at Cambridge STC, and to be included on the permit, are listed in Appendix A.

AWS also wish to add an additional CHP engine, the additional CHP unit will need permitting under the Medium Combustion Plant Directive (MCPD) and would be classified as a 'Tranche B' specified generator. The new CHP engine will effectively replace the smaller CHP engine (CHP1), which in the future will only run other two engines are offline for service or maintenance. The new CHP is a larger more efficient engine.

The IED permit will include:

- Primary sludge import tank 1 No. (140m³)
- Pre thickening/Import tank SAS 1 No. (462m³)
- Screening
- Pre thickening tank primary 1 No. (580m³)
- D Works SAS tank (250m³)
- Gravity belt thickeners
- Pre-treatment tank (buffer tank) (800m³)
- Monsal enhanced enzymic hydrolysis tanks (EEH) 6 No. tanks (each 230m³). 5 are in operation
- Anaerobic digesters 3 No. (each 2700m³)
- Post digestion tanks 2 No. (each 1596m³)
- Centrifuges 2 No.
- Boilers 3 No. (1MWth each)
- CHP engines 3 No.
 - 2 No. existing CHP (1.4MWth, and 0.9MWth)
 - 1 No. new CHP (1.5MWth) to be added as part of this permit application
- Biogas burner (flare stack) 1 No.
- Cake storage – 5 No. ro-ro skips (80 tonnes)
- Gas holder 1 No. (2250m³)
- Odour Control Units

The following are outputs from the process:

- Sludge cake (dewatered post digestion sludge) – stored in skips before being shipped for use as a soil conditioner;
- Biogas – stored in an existing gas holder, and is then either:
 - Burnt in CHPs for use on site, the two existing CHP engines also export to the grid;
 - Flared in the waste biogas burner.

1.3 Summary of key technical standards

Table 1.1 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 1.1: Part C3, Question 3a, Table 3a: Technical standards

Installation name	Cambridge 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	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • https://www.wiseenvironment.co.uk/wp-content/uploads/2020/07/How-to-Comply-with-Your-Environmental-Permit-Additional-Guidance-for-Anaerobic-Digestion.pdf

Installation name	Cambridge STC	
	non-hazardous waste (SGN S5.06)	<ul style="list-style-type: none"> • http://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	<ul style="list-style-type: none"> • How to comply with your environmental permit • Monitoring stack emissions: technical guidance for selecting a monitoring approach • M1 sampling requirements for stack emission monitoring • Environment Agency environmental permitting guidance, including: <ul style="list-style-type: none"> – 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 	<ul style="list-style-type: none"> • https://www.gov.uk/government/publications/how-to-comply-withyour-environmental-permit • 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://www.gov.uk/government/publications/environmentalpermitting-h5-site-conditionreport • https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit

Source: Mott MacDonald

1.4 Additional information

The following application forms have been completed to support the application and have been submitted as stand-alone documents:

- Part A: About You (Document reference 101265_App_PartA_CAM).
- Part C0.5: Administrative variation of a standard or bespoke permit
- Part C2: Varying a bespoke permit (Document reference 101265_App_PartC2_CAM).
- Part C2.5 Variation to a bespoke permit to add a new MCP/SG permitted activity or to vary an existing MCP/SG standalone permit (Document reference 101265_App_PartC2.5_CAM).
- Part C3: Variation to a bespoke installation permit (Document reference 101265_App_PartC3_CAM).
- Part F1: Charges and declarations (Document reference 101265_App_PartF1_CAM).

The main body of the Permit application document ('the Main Supporting Document') includes all the supplementary information required in response to relevant questions within the Part A,

Part C2, Part C2.5, Part C3 and Part F1 application forms for which there was insufficient space on the forms to answer the questions in full.

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

- Chapter 5 provides the general information required to inform Form C2 relating to the variation of a bespoke permit;
- Chapter 6 provides the general information required to inform Form C2.5 relating to a new MCP/SG; and
- Chapter 7 provides the more detailed information required to inform Part C3 relating to the variation of a bespoke installation permit.

Part F1 covers the required 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 appendices:

- Appendix A – European Waste Catalogue (EWC) Codes
- Appendix B – Material Safety Data Sheets
- Appendix C – WAMITAB Certificate
- Appendix D – Customer Complaints
- Appendix E – AMP7 Strategy on a Page
- Appendix F – Sampling

Stand-alone documents included as part of this submission, are detailed below:

- Environmental Risk Assessment - Document reference 101265_ERA_CAM
- Environmental Constraints Maps - Document reference 101265_ERA_Maps_CAM
- Bio-aerosol Risk Assessment - Document reference 101265_ERA_BioaRA_CAM
- Odour Management Plan - Document reference 101265_ERA_OdourMP_CAM
- Odour Modelling Report - Document reference 101265_OMR_CAM
- Site Condition Report - Document reference 101265_MSD_SCR_CAM
- Environmental Management Plan - Document reference 101265_MSD_EnvMP_CAM
- BAT Analysis - Document reference 101265_MSD_BAT_CAM
- Site Location and Layout Plan - Document reference 101265_MSD_SiteLayoutPlan_CAM
- Drainage Plan - Document reference 101265_MSD_DrainagePlan_CAM
- Schematics - Document reference 101265_MSD_Schematics_CAM
- Environmental Management System Certificate - Document reference 101265_MSD_EMS_CAM
- Quality Management System Certificate – Document reference 101265_MSD_QMS_CAM
- Competency Management System Certificate - Document reference 101265_MSD_CMS_CAM
- HAZOP Drawings – Document reference 101265_MSD_HAZOP_CAM
- Accident Management Plan – Document reference 101265_MSD_AMP_CAM
- Asset inspections and Leak Detection and Repair (LDAR) 101265_MSD_LDAR_CAM

2 Introduction

2.1 Overview

This document has been prepared to support the application to vary the STC standard rules permit and consolidate the CHP environmental permit to a bespoke Installation Environmental Permit (hereafter referred to as 'the Permit') for the Cambridge Sludge Treatment Centre (STC) ('the Site') on behalf of Anglian Water Services Limited (AWS) ('the Operator').

Following the joint Environment Agency and DEFRA decision that AD treatment facilities at WRCs and STCs are covered by the Industrial Emissions Directive (IED,) the intent of the application is to ensure the Site is permitted in line with the IED and the EPR 2016, as amended.

This document contains a description of the Site, the proposed permitted activities, and Directly Associated Activities (DAAs), an assessment of the possible effects of these activities and responses to questions in Parts A, C2, C2.5, C3 and F1 of the application documentation (plus supporting information where required). Completed forms Part A, C2, C2.5, C3 and F1 are included as separate documents.

2.2 Document content and structure

The following application forms have been completed to support the application and have been submitted as stand-alone documents:

- Part A: About You (Document reference 101265_App_PartA_CAM).
- Part C0.5: Administrative variation of a standard or bespoke permit
- Part C2: Varying a bespoke permit (Document reference 101265_App_PartC2_CAM).
- Part C2.5 Variation to a bespoke permit to add a new MCP/SG permitted activity or to vary an existing MCP/SG standalone permit (Document reference 101265_App_PartC2.5_CAM).
- Part C3: Variation to a bespoke installation permit (Document reference 101265_App_PartC3_CAM).
- Part F1: Charges and declarations (Document reference 101265_App_PartF1_CAM).

The main body of the Permit application document ('the Main Supporting Document') includes all the supplementary information required in response to relevant questions within the Part A, Part C2, Part C2.5, Part C3 and Part F1 application forms for which there was insufficient space on the forms to answer the questions in full.

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

- Chapter 5 provides the general information required to inform Form C2 relating to the variation of a bespoke permit;
- Chapter 6 provides the general information required to inform Form C2.5 relating to a new MCP/SG; and
- Chapter 7 provides the more detailed information required to inform Part C3 relating to the variation of a bespoke installation permit.

Part F1 covers the required 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 appendices:

- Appendix A – European Waste Catalogue (EWC) Codes
- Appendix B – Material Safety Data Sheets
- Appendix C – WAMITAB Certificate
- Appendix D – Customer Complaints
- Appendix E – AMP7 Strategy on a Page
- Appendix F – Sampling

Stand-alone documents included as part of this submission, are detailed below:

- Environmental Risk Assessment - Document reference 101265_ERA_CAM
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- Odour Modelling Report - Document reference 101265_OMR_CAM
- Site Condition Report - Document reference 101265_MSD_SCR_CAM
- Environmental Management Plan - Document reference 101265_MSD_EnvMP_CAM
- BAT Analysis - Document reference 101265_MSD_BAT_CAM
- Site Location and Layout Plan - Document reference 101265_MSD_SiteLayoutPlan_CAM
- Drainage Plan - Document reference 101265_MSD_DrainagePlan_CAM
- Schematics - Document reference 101265_MSD_Schematics_CAM
- Environmental Management System Certificate - Document reference 101265_MSD_EMS_CAM
- Quality Management System Certificate - Document reference 101265_MSD_QMS_CAM
- Competency Management System Certificate - Document reference 101265_MSD_CMS_CAM
- HAZOP Drawings – Document reference 101265_MSD_HAZOP_CAM
- Accident Management Plan – Document reference 101265_MSD_AMP_CAM
- Asset inspections and Leak Detection and Repair (LDAR) 101265_MSD_LDAR_CAM

3 Process Description

Cambridge Sludge Treatment Centre (STC) is co-located on Cambridge Water Recycling Centre (WRC). The STC treats urban wastewater sludge produced at the WRC and liquid sludges imported from other Anglian Water sites into Cambridge STC.

Domestic waste in the form of cess and septic, as well as WTW brine from clarification enter the Site at the works inlet.

All liquid imports are screened at the WRC after being received to remove any unwanted material before being processed at the STC.

The STC receives sludges for treatment in two forms, liquid sludge produced from the host WRC (indigenous sludge and thickened Surplus Activated Sludge (SAS)), and liquid sludge imports by road tanker (liquid import).

Indigenous sludge from the primary settlement tanks (PSTs) is screened and then pumped to the Primary Sludge Pre-thickening Tank.

Liquid imports of primary sludge are received in the Primary Sludge Import Tank, they are then screened and blended with the indigenous sludge in the Primary Sludge Pre-thickening Tank.

This combined screened sludge then undergoes mechanical thickening by gravity belt thickeners to thicken the sludge to approximately 7% dry solids (DS). The thickened sludge is stored in the Sludge Buffer Tank, the Sludge Buffer Tank feeds to the Monsal process.

The Monsal process consists of a series of heating stages designed to condition the sludge before anaerobic digestion, five of the six tanks are currently in operation. The EEH plant consists of a two process steps, biological hydrolysis to condition the sludge prior to digestion and a pasteurisation step to reduce pathogens to enable a safe high-quality product to be produced in accordance with the safe sludge matrix suitable for beneficial use in agriculture as a soil conditioner. The EEH process is heated using low temperature hot water circuit and water to sludge heat exchanger. The water circuit is heated by recovered heat from the Combined Heat and Power (CHP) engines topped up as required by dual fuel (biogas and gas oil) hot water boilers.

After the EEH the conditioned and pasteurised sludge is pumped to three anaerobic digesters. The sludge is held for minimum 14 days, at mesophilic temperatures 35 to 39°C. Biogas produced by the anaerobic digestion process is stored in one 2250m³ gas holder.

The digested sludge is stored in two post digestion storage tanks, and then dewatered by two centrifuges. The treated sludge is dewatered to approximately 25% DS. The sludge cake is stored in five skips prior to being transported off-site for application to agricultural land as a soil conditioner under The Sludge (Use in Agriculture) Regulations. The treated biosolids cake is a quality assured product under the Biosolids Assurance Scheme (BAS).

The biogas collected from the anaerobic digestion process is used to fuel CHP engines. There are two existing CHP units on-site regulated under permit EPR/WP3535HT, three hot water boilers are also regulated under this permit. CHP 1 was installed in 2004 with a thermal rated input of 1.4MWth, CHP 2 was installed in 2011 with a thermal rated input of 0.9MWth both engines are fuelled by biogas, the three hot water boilers have a thermal rated input of 1MWth each. Therefore, the Site falls within the scope of the Medium Combustion Plant Directive (MCPD) since the thermal rated input is greater than 1MWth. The existing CHP units and boilers will not be required to meet MCPD requirements until 2030 because they are existing medium

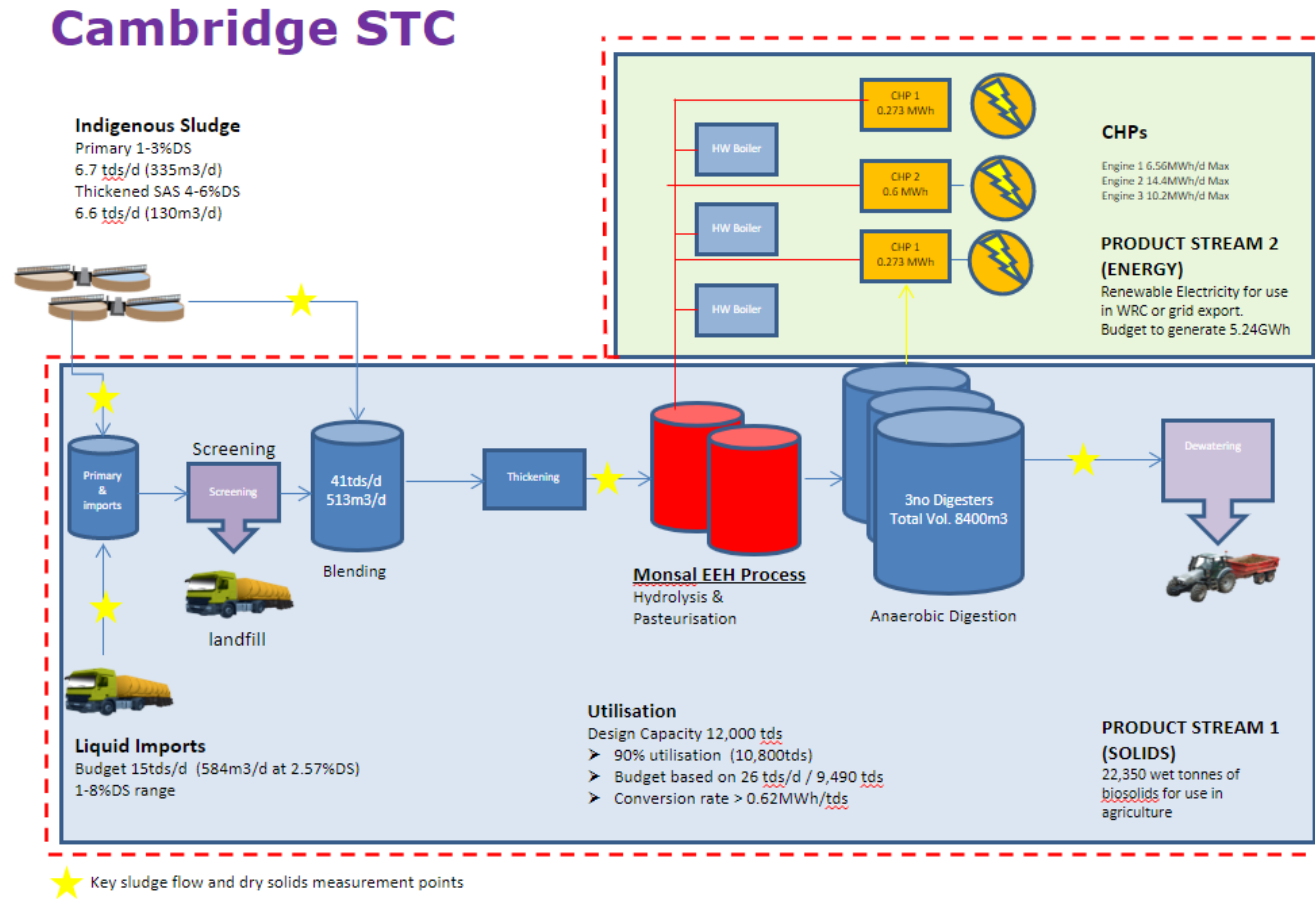
combustion plants (MCP) unless the planned upgrade is undertaken before the statutory date to meet MCPD.

AWS intend to commission a third CHP engine at the Site in 2022, with a thermal rated input of 1.5MWth. As this is a new engine it will fall within the scope of the MCPD as a Tranche B generator and will need to comply with the standards set out in the MCPD and Schedule 25A and 25B of the Environmental Permitting Regulations 2018.

The biogas is primarily used to fuel the three CHP engines to generate heat for the process and renewable electricity. The three hot water boilers burn heating oil under normal conditions but could burn biogas when excess is produced.

In the event that there is excess biogas, or the CHP engines and boilers are not in operation any surplus is flared via a low-level waste gas burner.

Figure 3.1: Flow Diagram of Cambridge STC



4 Part A – About you

4.1 Question 5c: details of directors

Table 4.1 below provides details of directors at Anglian Water (Company Number: 02366656)

Table 4.1: Details of directors

First name	Last name	Date of Birth	Position
John Richard	Barry	02/01/1968	Director
Stephen Robert	Billingham	07/05/1958	Director
James Alexander	Bryce	25/06/1974	Director
Steven John	Buck	16/02/1969	Director
Natalie	Ceeney	22/08/1971	Director
Veronica Anne	Courtice	03/06/1952	Director
John Raymond	Hirst	09/08/1952	Director
Scott Robert James	Longhurst	06/06/1967	Director
Niall Patrick	Mills	08/07/1968	Director
Zarin Homi	Patel	18/02/1961	Director
Peter	Simpson	31/01/1967	Director
Duncan John	Symonds	01/09/1973	Director
Paul Frederick Garry	Whittaker	23/04/1960	Director
Claire	Russell	24/08/1964	Company Secretary

4.2 Question 7: Contact details

Whereby the contact disclosed in Part A, Question 7a (Anita Manns, Mott MacDonald) is not available the Environment Agency should contact one of the secondary contacts:

Name: Natalia Cunningham

Address: Mott MacDonald, 1 Whitehall Riverside, Leeds, LS1 4BN

Phone number: 0113 394 6728

Email: natalia.cunningham@mottmac.com

Name: Shannon Stone

Address: Mott MacDonald, Mountbatten House, Grosvenor Square, Southampton SO15 2JU

Phone number: 023 8062 8538

Email: shannon.stone@mottmac.com

5 Part C2 – General – varying a bespoke permit

5.1 Question 2 – Table 1: Changes to existing activities

The variation application is to vary the existing STC standard rules permit and consolidate the CHP Environmental Permit to a bespoke Installation Environmental Permit for the Cambridge Sludge Treatment Centre (STC) operated AWS. The new bespoke permit will cover the AD treatment process and the CHPs as directly associated activities to ensure the Site is permitted in line with the IED and EPR 2016, as amended. Anglian Water also wish to add three EWC codes to the permit, and a third CHP engine to the activity.

Table 5.1: Question 2: Table 1: Changes to existing activities

Name	Installation schedule 1 ref.	Description of the installation activity	Description of waste operation
Cambridge STC	S5.4, Part A (1), (b) (i)	Anaerobic Digestion	Use of biogas in two CHP engines
	Schedule 25a and 25b	New CHP unit (MCP)	

5.2 Question 3a: Relevant offences

No relevant AWS person relating to the Cambridge site has been convicted of any relevant offence. The Environment Agency has been provided a full list of historic relevant offences for the company with previous permit applications.

5.3 Question 3b: Technical ability

Operational management is provided by qualified individuals and considered to be technically competent. All staff on site are trained to manage and operate activities without causing pollution. 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; and
- 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.

Currently AWS uses the AWS developed technical competency course to demonstrate that personnel have the appropriate technical skills and knowledge to manage the activities undertaken. The AWS scheme is independently certificated as meeting the requirements of the Standard. The Competence Management System (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.

AWS engage third-party certification body Lloyd's Register Quality Assurance Limited (LRQA) to audit and certify the CMS.

The Strategic Waste Planner located within the Environmental Quality team for AWS provides face to face CMS training to all appropriate AWS personnel and the Treatment Manager, once issued, training will be provided in respect of the obligations of the Environmental Permit for the Site.

The following persons are CMS trained at Cambridge STC; Philip Seamons, Mark Tidswell, William Doherty, Andrew Proctor, Connor Kersher and David Chappell.

Philip Seamons also provides technical competence at the following sites:

Permit No: EPR/EB3502GB/V002; Site Address: Chelmsford Water Recycling Centre, Brook End Road, Chelmsford, Essex; Post Code: CM2 6NX

Permit No: EPR/GB3735RL/V002; Site Address: Basildon Water Recycling Centre, Courtauld Road, Basildon, Essex; Post Code: SS13 1DB

Mark Tidswell also has WAMITAB accreditation, which can be found in Appendix C.

5.4 Question 3c: Finances

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

5.5 Question 3d: Management System

5.5.1 Integrated Management System

AWS operates a number of management systems, scoped and configured to provide the best overall level of assurance and value to the business. The Integrated Management System (IMS) unifies several management system processes into a single framework, enabling AWS' organisation to work as a single unit with unified objectives. The management system standards which support this framework share the same core structure and use common system clauses, terms and definitions, bringing consistency and compatibility between standards.

Key benefits of the IMS framework are:

- Aligned IMS Policy and management system objectives
- Improved risk management and integration
- Optimised use of business resources
- Enhanced customer satisfaction through the successful delivery of service expectations
- Efficiencies gained from the third party assessment process - by planning external assessments against a core set of requirements across AWS functions and activities, AWS reduces business impact and maximise value, both in cost and assurance
- Full alignment with AWS strategic priorities, business goals and outcomes.

Under the umbrella IMS framework, there are several smaller management systems which operate together to cover several areas relevant to AWS. For this permit application, the most relevant management systems are ISO 9001 Quality Management and ISO 14001 Environmental Management.

ISO 9001 Quality Management which is concerned with many aspects of water services, water recycling, labs, and AWS's Regional Environmental Services (RES) department which manages tankering and cake storage on sites.

ISO 14001 Environmental Management only covers RES's activities on site and sludge and cake movements between AWS sites. The RES environmental management system manages the impact of the activities carried out by the team as detailed below:

- Cake storage on site and its compliance to the waste permit
- Haulage of AWS sludge and cake to and from AWS WRC's or STC's
- Spreading biosolids on land – the regulation of this activity is covered under a separate mobile plant permit.

The scope of ISO 14001 covers the activities that RES carry out, rather than the STCs itself as the site's responsibility lies with the Water Recycling team (the site owners). Locations that are listed on the ISO 14001 certificate relate to the main office bases for the RES team.

Process controls for the sludge product are managed by the Water Recycling team, and Hazard Analysis and Critical Control Points (HACCP) monitoring points are in place at strategic positions in the treatment process, with hardwired measures in place that prevent non-compliant product moving forwards through the treatment process and are detailed in the sites HACCP plans. Compliance to the HACCP plans is reported on at key internal meetings attended by the Director of Water Recycling and heads of department.

The Water Recycling team own and manage the permit and have operational control over the STC, and work in conjunction with RES who oversee cake movements and storage of cake on site. Any complaints received proven to be specific to RES's operations will be passed on to RES's Environmental Compliance Team for further investigation.

5.5.2 Environmental Management Plan

AWS's water recycling operations department has internal quality procedures for the operation, maintenance, and monitoring of its treatment assets. AWS continues to develop these standards, policy and procedures to improve environmental performance at its treatment plants.

An Environmental Management Plan (EnvMP) is in place which acts as the Site's Environmental Management System, and prescribes requirements for:

- Establishing an environmental policy;
- Determining environmental aspects and impacts of products / activities / services through a risk assessment process;
- Planning environmental objectives and measurable targets;
- Implementing and operating programs to meet objectives and targets;
- Ensuring compliance with environmental legislation including the requirements of environmental permits;
- Checking and corrective action; and
- Management review

The EnvMP has a site specific environmental management plan for each AWS site, including Cambridge STC. The site specific environmental management plan (hereafter referred to as the 'EMP') was developed to identify potential risks of the activities carried out, understand what plans and mitigation are in place for:

- Emergency response;
- Odour control; and
- Accident management.

AWS has a number of policies and procedures covering the O&M and monitoring of wastewater treatment operation, including day-to-day operation, training requirements for operators and

sampling/testing. Policies and Operating Standards Maintenance (POSMAINT) covers policies and standards for the maintenance of assets such as planned preventative maintenance and reactive maintenance. Policies and Operating Standards for Telemetry (POSTEL) covers AWS remote monitoring telemetry systems, including policies and standards for alarm action codes, response times and data collection.

Roles and Responsibilities

The Treatment Manager is supported and advised by experts within the Energy Team, Process Science team and the Environmental Regulation team. The Treatment Manager has a staff of work technicians reporting to them.

AWS ensures compliance with both relevant legislation and appropriate standards (for example Environmental Permit conditions) by undertaking regular legislation reviews to identify updates to legislation and guidance applicable to the Plant and its management. The Strategic Waste Planner monitors waste imports into site to ensure they are below permitted limits.

The Treatment Manager is in regular contact with several colleagues regarding operational and compliance issues.

Through the IED permit application process, it has been highlighted that a regime of reviewing existing management plans is currently not in place. AWS is proactively working on developing this system to safeguard the management plan and ensure they are all as up to date as reasonably possible. The review schedule of each plan will be in line with the Environment Agency guidance (where guidance is available) or done on a risk-based approach.

5.6 Question 5a: Site layout plan and process diagram

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

- Site Location and Layout Plan– Document reference 101265_MSD_SiteLayoutPlan_CAM
- Drainage Plan – Document reference 101265_MSD_DrainagePlan_CAM.
- Schematics – Document reference 101265_MSD_Schematics_CAM.

5.7 Question 5b: Site condition report

In accordance with Environment Agency 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 4 of the Environment Agency template¹):

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

A copy of the SCR can be found as document reference 101265_MSD_SCR_CAM.

5.8 Question 6b: 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

¹ Environment Agency (2013). Environmental permitting: H5 Site condition report. Available online at <https://www.gov.uk/government/publications/environmental-permitting-h5-site-condition-report>

methodology outlined in the Environment Agency's 'Risk assessments for your environmental permit'².

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); and
- 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 in document reference 101265_ERA_CAM.

5.9 Climate change risk screening

The Site is not planned to operate and require an IED permit for more than five years and, therefore, does not require a Climate Change Risk Assessment (CCRA) as part of the application because the screening score is less than 5.

The score was calculated as follows:

- Timescale (score of 1: the Site is not anticipated to operate beyond 2060.
- Flooding (score of 1): The site is located in Flood Zone 1 and is therefore at very low risk of fluvial flooding³.
- Wastewater use (score of 1): Majority of water use for proposed permitted activities is sourced from recycled secondary wash water. Mains supply is used for:
 - Poly make up
 - Boilers
 - Eye baths and safety showers
 - Limited wash-down points where it would be uneconomic to extend the final effluent wash-water system
 - Office messing facilities

Total score is 3.

² Environment Agency (2021) Risk assessments for your environmental permit. Available online at: <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

³ Available at: <https://flood-map-for-planning.service.gov.uk/>

6 Part C2.5 Variation to a bespoke permit to add a new MCP/SG

6.1 Question 1: Table 1d: Activities applied for

Table 6.1: Part C2.5, Question 1, Table 1d: Listed activities

Listed activities					
Installation	Schedule-1 (or other) or Schedule 25A/25B references	Description of the activity	Activity capacity	Description of existing activity	Description of proposed change
Cambridge STC	S5.4, Part A (1), (b) and (i)	Anaerobic digestion	Annual: 187,354m ³ Daily: 513m ³ All non-hazardous wastes	N/A	Addition of S5.4, Part A (1), (b) and (i) activity, and variation of standard rules permit EPR/LP3196ER to a bespoke installation Environmental Permit. Recovery or a mix of recovery and disposal of non-hazardous waste with a biological treatment capacity exceeding 100 tonnes per day if the only waste treatment activity is anaerobic digestion. R3 - Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)

Listed activities

					R13 - Storage of waste pending any of the operations numbered R1 to R12.
	Schedule 25A/25B	Combustion of biogas	1.5MWth thermal rated input	N/A	Addition of new MCP.
	R1 As per EPR/WP3535H	Use principally as a fuel or other means to generate energy	Three combustion plants: 1.4 MWth input spark ignition engine 0.9 MWth input engine Three hot water boiler at 1MWth input each	Three combustion engines to utilise biogas produced at the STC to generate electricity. Hot water boilers can use biogas to supply heat to the STC.	Fundamentally no changes to conditions to EPR/WP3535H, other than consolidate into the varied SR permit EPR/LP3196ER. The CHPs and boilers to be DAAs to the anaerobic digestion activity.

Directly associated activities

Name of DAA	Description of the DAA (serving anaerobic digestion activity)	
Physical treatment of waste	Recycling/ reclamation of organic substances which are not used as solvents.	R3
Use of auxiliary standby flares	Incineration on land	D10
Standby boilers	Used for emergency only.	D10
Use of pressure release valves	Release of pressure from digesters	
Storage	Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the Site where it is produced)	R13
Raw material storage	Storage of raw materials including chemicals, lubrication oil, antifreeze, diesel, activated carbon	

Listed activities

Discharge of condensate	Condensate from the CHP exhaust, flare gas, pipelines gas storage bag	
Surface water discharge	Handling of site drainage until discharge to the Wastewater Treatment Works	
Gas booster set	From receipt of biogas to delivery to the engines	
For installations that take waste	Total storage capacity	5424m ³ in storage tanks + 80tonnes of storage in cake bays.
	Annual throughput	Anaerobic digestion: 192,992m ³

6.2 Question 1f: Changes to existing activities

This permit application is to vary the standard rules permit EPR/LP3196ER to a bespoke installation Environmental Permit and consolidate permit EPR/WP3535HT for the Cambridge Sludge Treatment Centre (STC). Anglian Water also wish to add a third CHP engine, this new additional CHP unit will need permitting under the Medium Combustion Plant Directive (MCPD) and would be classified as a 'Tranche B' generator.

There are two existing CHP units on-site regulated under permit EPR/WP3535HT. Details of the three CHP engines have been provided below.

Table 6.2: Details of CHP engines

Engine ref	Installation date	Input MWth	Operational hours	Fuel	Make and Model	MCPD Compliance Date
CHP 1	2004	1.4	8760	Biogas	MAN 2841-LE312	2030
CHP 2	2011	0.9	8760	Biogas	MWM TCG2016-V12	2030
CHP 3	2022	1.5	8760	Biogas	Perkins 4012TES1-200LC	Upon commissioning

6.3 Question 2: Emissions to air: Table 2

Table 6.3: Part C2.5, Question 2, Table 2: Point source emissions

Installation name		Cambridge STC				
Point source emissions to air						
Emission point reference and location	Source	Parameter	Quantity ¹	Unit		

Installation name		Cambridge STC		
CHP Stack 1 (A1) TL 47528 61628 As per EPR/WP3535HT	1.4MWth spark ignition engine exhaust stack	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	650	mg/m ³
		Carbon monoxide	1500	mg/m ³
		Total VOCs (including methane)	No Limit Set	
CHP Stack 2 (A1) TL 47545 61635 As per EPR/WP3535HT	0.9MWth spark ignition engine exhaust stack	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	500	mg/m ³
		Carbon monoxide	1400	mg/m ³
		Total VOCs (including methane)	No Limit Set	
CHP Stack 3 TL 47546 61608	1.5MWth spark ignition engine exhaust stack	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	190	mg/m ³
		Sulphur dioxide	40	mg/m ³
		Carbon monoxide	No Limit Set	
		Dust	No Limit Set	
Dual fuel hot water boilers 3 No. TL 47511 61608 As per EPR/WP3535HT	1.0 MWth Boiler exhaust stacks	Combustion gases	No Limit Set	
Flare Stack (A6) TL 47563 61629 As per EPR/WP3535HT	Surplus gas flare stack	Operational hours	No Limit Set	
A7, A8, A9, A11 As per EPR/WP3535HT	Relief vents/valves	Biogas	No Limit Set	
A10 As per EPR/WP3535HT	Diesel oil tank vent	VOCs	No Limit Set	

Notes: [1] Reference condition is dry air, 273K, at pressure of 101.3 kPa with oxygen content of 5%.
A1 to A11 references are the location references used in permit EPR/WP3535HT

The emissions points are shown in the site layout plan, document reference 101265_MSD_SiteLayoutPlan_CAM.

Cambridge currently meets the permitted air quality limits as certified by the annual emission reports undertaken by an MCERTS accredited contractor.

The limits detailed in Table 6.2, except for CHP 3 are applicable until January 1st, 2030. From January 1st, 2030 the existing CHP engines will be classified as existing specified generators operating on biogas. As such the emission limits listed under Annex II, Part 1, Table 3 of *Directive on the limitation of emissions of certain pollutants into the air from medium combustion plants* would be applicable, and therefore the emission limits will be:

- SO₂ = 60 mg/Nm³
- NO_x = 190 mg/Nm³

These ELVs are based on a temperature of 273.15K, a pressure of 101.3kPa and a standardised O₂ content of 15%.

6.4 Question 2d: Habitats screening for MCP and/ or SG

The new CHP unit is not within 10km of any European designated sites, or within 2km of a SSSI. However, the new CHP has been screened as requiring a Complex MCP application, due to the fuel type being biogas, and therefore an Air Quality Dispersion Modelling (ADM) report has been produced for this application, document reference 101265_MSD_ADM_CAM.

The results of the ADM concluded that no exceedances of the EQS are predicted as a result of the operation of the Site at locations of relevant public exposure. The air quality effects are highly localised and the impact at sensitive human health receptors is insignificant in accordance with EA guidance. The Site is not considered to conflict with the relevant air quality regulations.

6.5 Question 3: MCP/SG Emissions Monitoring

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

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 CHP and boilers, in order to ensure compliance with ELVs as required in the Environmental Permit.

Monitoring of the new CHP emissions will be first undertaken within 4 months of the permit being varied to include the MCP or the start of operation, whichever is the latest.

Once permitted monitoring will be undertaken in accordance with the relevant standards and permit conditions. It is anticipated the monitoring standards required are as follows:

Table 6.4: Question 3: Emissions Monitoring of CHP engines

Emission point type	Parameter	Reference period	Monitoring frequency	Monitoring standard or method
Stacks on engines burning biogas (CHP 1, CHP 2) As per EPR/WP3535HT	Oxides of Nitrogen (NO and NO2 expressed as NO2)	Periodic over minimum 1-hour period	Annual	BS EN 14792
	Carbon monoxide			BS EN 15058
	Total VOCs			BS EN 12619,
	MVOCs			BS EN 13649
Stack on engine burning biogas (CHP 3)	Oxides of Nitrogen (NO and NO2 expressed as NO2)	Periodic over minimum 1-hour period	Every 3 years	TGN M5
	Carbon monoxide			TGN M5
	Sulphur dioxide			TGN M5
Hot Water Boilers 3 No.	N/A - As per EPR/WP3535HT			
Auxiliary flare	Operational hours	Recorded duration and frequency.	Continuous	Operational record including date, time and duration of use shall be recorded

Details on monitoring for other air emissions (other than relating to MCPs and Specified Generators) at the Site are addressed in section 7.7.1.

7 Part C3 – Variation to a bespoke installation permit

7.1 Question 1: Table 1a: Activities applied for

As requested in the C3 form, since the application is to also add a new CHP unit the details are addressed for the C2.5 form in Table 6.1.

7.1.1 Question 1: Table 1b: Types of waste accepted

Anglian Water requires the permit for Cambridge STC to be authorised to accept sludge waste to undergo anaerobic digestion in compliance with the Industrial Emissions Directive. It is requested that the annual quantity of indigenous sludge and liquid sludge imports to be accepted is 250,000tpa. None of the requested wastes are hazardous.

As part of the permit variation, AWS wishes to add three new EWC codes to the existing permit EPR/LP3196ER (Standard Rules). These codes are 19 02 06 “sludges from physico/chemical treatment other than those mentioned in 19 02 05”, 19 06 06 “digestate from anaerobic treatment of animal and vegetable waste” and 16 10 02 “aqueous liquid wastes other than those mentioned in 16 10 01”.

The full list of EWC codes proposed to be accepted at Cambridge STC are listed in Appendix A.

Commented [NC1]: Kate - What is the reason for adding the two codes for digested cake and raw cake? When it is not currently accepted at the site? The EA may come back requiring justification for this, do you want to include one now or wait to see if it comes up in the schedule 5?

7.2 Question 2: Point source emissions to air, water and land

7.2.1 Emissions to air

The emission points and their monitoring parameters have been outlined in Table 6.3 of this document.

The emission points are shown in document reference 101265_MSD_SiteLayoutPlan_CAM.

7.2.2 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 STC.

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

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

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.

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

There will be no point source emissions to direct discharges to controlled waters or public sewers, as part of the permit operation. The water used at the Site will be contained in a closed circuit; all wastewater streams will either be recycled within the process or captured and rerouted to the adjacent Cambridge WRC.

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 WRC. A drainage plan of the Site is provided with the application, document reference 101265_MSD_DrainagePlan_CAM.

The stormwater drainage of potentially contaminated areas from within the Site boundary will be routed into the sewage treatment process with no discharge outside of the Site. There will, therefore, be no risk of polluted runoff affecting off-Site features.

Due to the anticipated very low levels of contamination of the water and the volumes involved, no monitoring of its composition is proposed prior to discharge to the WRC.

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 WRC 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 7.1.

Please refer to the ERA (document reference 101265_ERA_CAM) on the environmental risk the water emissions pose and how these are mitigated, where relevant.

Table 7.1: Part C3, Question 2, Table 2: Point source emissions to sewers, effluent treatment plants or other transfers off Site

Emission point reference and location	Source	Characteristic	Frequency	Monitoring/mitigation measures prior to final discharge emission point discharge
Drain down of plant TL 47285 61666	Occurs during the maintenance when it is necessary to drain down the feed water, hot well or boiler shell.	High purity water with traces of chemicals (used for boiler dosing)	Infrequent	Rerouted to adjacent WRC
Rainwater TL 47285 61666	Uncontaminated roof water from buildings	Clean rainwater from building roofs only.		Rerouted to adjacent WRC
Rainwater TL 47285 61666	Run off from impervious surfaces	Clean rainwater from runoff		Rerouted to adjacent WRC
Sanitary Water TL 47285 61666	Domestic facilities	Foul waste	Negligible	Rerouted to adjacent WRC
Wash water TL 47285 61666	From the washing down of mechanical equipment during maintenance activities	Variable	Negligible	Rerouted to adjacent WRC
Condensate TL 47285 61666	Gas pipelines and new gas storage bags	Condensate with slightly elevated levels H2S dissolved from the biogas, resulting in a low level of acidity	Negligible	Rerouted to adjacent WRC

7.2.4 Emissions to land

There will be no point source emissions to land as part of the activities carried out on-site. Condensate from the gas system is collected in a sump and then discharged to the head of the works.

7.3 Question 3a: 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; and
- Measures implemented to control emissions to air, water, sewer and land.

Table 7.4 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 AWS Cambridge EnvMP, 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 7.2: Part C3, Question 3a, Table 3a: Technical standards

Installation name	Cambridge 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	<ul style="list-style-type: none"> • 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) 	<p>https://www.wiseenvironment.co.uk/wp-content/uploads/2020/07/How-to-Comply-with-Your-Environmental-Permit-Additional-Guidance-for-Anaerobic-Digestion.pdf</p> <ul style="list-style-type: none"> • http://eippcb.jrc.ec.europa.eu/reference/BREF/BATC_CWW.pdf • https://www.gov.uk/government/publications/sector-guidancenote-s506-recovery-and-disposal-of-hazardous-and-nonhazardous-waste

General		
	<ul style="list-style-type: none"> • How to comply with your environmental permit • Monitoring stack emissions: technical guidance for selecting a monitoring approach • M1 sampling requirements for stack emission monitoring • Environment Agency environmental permitting guidance, including: <ul style="list-style-type: none"> – 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 	<ul style="list-style-type: none"> • https://www.gov.uk/government/publications/how-to-comply-with-your-environmental-permit • 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-efficiency-for-combustion-and-energy-from-waste-power-plants • https://www.gov.uk/government/publications/environmental-permitting-h3-part-2-noise-assessment-and-control • https://www.gov.uk/government/publications/environmental-permitting-h4-odourmanagement • https://www.gov.uk/government/publications/environmental-permitting-h5-site-condition-report • https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit

Source: Mott MacDonald

A copy of the schematics describing the operation and process can be found in document reference 101265_MSD_Schematics_CAM as well as in section 3 above.

7.4 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 Cambridge STC, and the outcome of these conclusions can be found in document reference 101265_MSD_BAT_CAM. AWS can currently comply with the majority of the conclusions assessed against, with the exception of BAT19.

Further spill modelling and assessments are to be undertaken at a later stage to provide compliant solutions and these will be discussed with the Environment Agency prior to implementation. It is therefore, considered that this will be added as Improvement Conditions to the permit.

Details of the sampling undertaken at Site can be found in Appendix F. AWS aim to undertake the monitoring daily and have a target of 90-95% completion rate which allows for operational issues when sampling or if data isn't submitted.

7.5 Question 3b: General requirements

7.5.1 Overview

This section provides an overview of the measures in place at the Site for controlling fugitive emissions, noise and odour. An Environmental Risk Assessment (ERA) has been completed and is provided with the application (document reference: 101265_ERA_CAM). The response to this question relates to Table 4 in Part C3 form.

7.5.2 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 AWS follow with regards to the control of mud, debris and potentially polluting leaks and spillages are addressed in the EMS.

Air dispersion modelling has been undertaken document reference 101265_MSD_ADM_CAM.

7.5.2.1 Odour

The site is located approximately 3.5km to the north of Cambridge city centre. The site is bounded by Cowley Road to the south, the A14 to the north, Milton Road to the west (A1309) and a railway line to the east. Access is via Cowley road, west of the site.

The site currently hosts the Cambridge Water Recycling Centre (WRC). The first evidence of sewage treatment works on site is shown in 1904 historic mapping. There are several sensitive receptors within 250m of the Site, including Cowley road industrial estate, Cambridge golf driving range, as well as offices and residential properties to the east and north west of the Site. Further details of the sensitive receptors can be found in 101265_ERA_BioRA_CAM.

There are no proposed works to be undertaken on the Site in respect of this permit application, therefore, the activities on-Site are not anticipated to increase the off-site impact or result in adverse impact upon nearby sensitive receptors or the amenity of the area surrounding the Site. The site has previously received a very small number of complaints, details of which can be found in Appendix D.

There are two main odour control units (OCU) fitted on the Site, one controls the gases from the EEH buffer tank a second one controls the gases from the primary and SAS holding tanks. The units are manufactured by Bord Na Mona Monashell. There is a third unit on the primary sludge import tank. Shell media filters are used to treat the odorous air.

The Odour Management Plan (OMP) contains guidance of good practices for carrying out operational and maintenance activities, identifies specific measures for odour control and sets out procedures to monitor and respond to odour complaints.

The OMP was written in accordance with the Environment Agency's H4 Odour Management guidance (2011). Any leaks detected on the biogas system would always be fixed immediately by AWS due to the process safety risk posed by biogas.

The removal of biosolids off-site will be undertaken as soon as practically possible whilst considering prevailing weather and safe access to headlands.

Since the level of odour risk from the Site is considered to be low, as shown in Appendix C of the ERA, and the existing Master Odour Management Plan provides sufficient mitigation, a new Plan is not considered to be required. The existing Plan has been updated to incorporate the latest details and any further actions, procedures and investment which need to be implemented.

Odour mitigation measures implemented on-site are covered in the Environmental Risk Assessment (document reference 101265_ERA_CAM). An Odour Modelling Report has been prepared (document reference 101265_OMR_CAM), which provides more information about the current odour condition, and possible mitigation to be reviewed as part of a stepped improvement plan.

The Odour Management Plan can be found in document reference 101265_ERA_OdourMP_CAM. The Odour Modelling Report can be found in document reference 101265_ERA_OMR_CAM.

7.5.2.2 Noise

Initial screening has been carried out for the Site. The Site has not received any noise complaints and since the Site is not undergoing changes to equipment and vehicle movements prior to application submission, a Noise Impact Assessment (NIA) is not considered to be required. Appropriate mitigation for noise and vibration impacts are provided in the ERA. The ERA can be found in document reference 101265_ERA_CAM.

A Noise and Vibration Management Plan would be required whereby the NIA concludes that noise and vibration requires management, such as monitoring and maintaining abatement measures. Since noise and vibration impacts are considered to be appropriately mitigated in the ERA, a Noise and Vibration Management Plan is also not considered to be required.

No noise complaints have been received to date.

7.5.2.3 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 101265_ERA_CAM.

The Site has no historic records of dust complaints which indicates that the existing dust prevention measures are adequately mitigating the risk.

7.5.2.4 Bio-aerosols

A bio-aerosols risk assessment has been undertaken for the Site and considers there to not to be any significant risks. The Bio-aerosol Risk Assessment can be found in document reference 101265_ERA_BioRA_CAM.

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

It is not considered the Site has any fugitive emissions to surface water, sewers or groundwater. There is appropriate containment for the control of liquid wastes put in place to minimise any potential releases, as identified in the EMS.

7.5.4 Control of fugitive emissions to land

Solid waste

Waste generated by the Site includes the following:

Table 7.3: Waste recovery of different waste streams

Activity	Waste stream	Waste recovery/disposal
Sludge screening	Screenings	Organic and grit screenings sent to composting facilities
Sludge thickening and sludge dewatering	Centrate	Returned to the WRC for treatment
Anaerobic digestion	Biogas	Transferred to CHP unit or boilers for electricity and heat production
Anaerobic digestion	Sludge cake	Transferred offsite
CHP engines and generators	Oil filters and waste oil	Transferred offsite for disposal
CHP	Carbon from siloxane filter	Transferred offsite for disposal

Activity	Waste stream	Waste recovery/disposal
Waste generated from other Site activities (i.e. offices)	General waste	Recycled where possible at a materials recycling Site. Non-recyclable waste is disposed of to a designated landfill site.
	Scrap metal	Recycled at scrap metal recycling facilities
	WEEE	Recycled at WEEE recycling facilities

To reduce volumes of waste:

- All materials and consumables delivered to Site are inspected to ensure that they are fit-for purpose. Damaged items are refused and returned to the supplier.
- Sewage sludge is de-watered from the works to be treated at the Site. Treated sludge is then recycled to agricultural land as a soil fertiliser. The treated sludge meets the Biosolids Assurance Scheme Quality Standards. The volume of sludge recycled to agricultural land is monitored by the waste services team (Recycling Environmental Services).
- The biogas from the AD process is burned in a CHP engine and is used to provide power for the Site processes.
- Polymer intermediate bulk containers (IBCs) are sent back to the supplier for re-use.
- Grit is collected for transport to an Anglian Water site in the Great Billing site in Milton Keynes to be washed and sorted.
- WEEE, batteries, waste oils and oil contaminated items such as oily rags are treated as hazardous waste in accordance with legislation, these are removed from Site by an approved supplier, using approved waste carriers.
- Gas Cylinders for Nitrogen/Odorant/Calibration Gas etc. are collected by a 3rd party company from the Site as they deliver a batch of new cylinders.

Cambridge WRC has a designated waste management area that is located at National Grid Reference TL 47489 61678, which is currently gravel. In the future the waste management area will be located to TL 47414 61709 which is hardstanding. All skips and containers will then be located on a hardstanding to prevent leaching into the ground. Cake skips and containers are clearly labelled. All waste from the Site is sorted into this waste area at the main site other than the gas cylinders.

If a complaint is made with respect to litter the complaints procedure will be followed. The Site Manager will arrange for litter pickers to clear up as appropriate and will assess whether further control measures will be required to ensure that the risk of recurrence is minimised. The details of the complaint and actions taken to resolve the issue will be recorded in the Site Diary and the complaints log.

7.5.5 Site Security

Activities are managed and operated in accordance with the management system. Access to Site and waste is restricted by a 2.5m high palisade security fence. A galvanised steel, electronic gate secures the main access. The Site is manned during operational hours, 7am – 5pm, 7 days a week. The Site gates are either manually locked or have key coded entry. The Site also benefits from a CCTV camera system which covers the site perimeter and entrance. 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 is presented in Appendix C of the ERA, document reference 101265_ERA_CAM.

7.5.6 Complaints procedure

All complaints received relating to any aspect of the Site and its activities will be recorded and acted upon. Complaints, and actions taken, will be either recorded in the Site Diary or on a complaint record form. If a Site receives a complaint, this form should be completed and shown to the Environment Agency when they next inspect the Site. The forms will be used as evidence that any complaints received have been taken seriously and that actions have been taken to rectify any problems identified.

Complaints will be investigated promptly, and any appropriate remedial action taken. The complainant and anyone else likely to have been affected, should be informed about what has been found and actions taken in a timely manner. The details of the complaint and the actions taken will be recorded in the Site Diary or log.

The aim will be to undertake measures to prevent complaints from being raised. However, where this is not possible, proactive measures will be taken to prevent further complaints from being made. For example, if a complaint is made with respect to dust, the Site Manager will arrange for dust suppression equipment to be used. The Site Manager will assess whether further control measures will be required to ensure that the risk of recurrence is minimised. The details of the complaint will be recorded in the Site Diary and the complaints register. If a complaint is received AWS will be informed as soon as is practicable and the complaints procedure will be followed. Confirmation will be recorded in the Site Diary or inspection log. The Site Manager will inform the Environment Agency of the complaint, if appropriate.

Any drivers who regularly cause a dust or mud and debris nuisance as a result of mismanagement of their vehicles will be discussed and advice sought if relevant.

If a complaint is made with respect to insects the Site Manager will investigate whether any of the activities at the Site could be the source of the nuisance.

If a complaint is made with respect to litter the Site Manager will arrange for litter pickers to clear up as appropriate and will assess whether further control measures will be required to ensure that the risk of recurrence is minimised. The details of the complaint will be recorded in the Site Diary and the complaints log.

Any complaints relating to fugitive emissions and the actions taken will also be recorded in the Site Diary and copies of the incident reports (including those provided to the Environment Agency) retained on-Site.

If a complaint is made with respect to vermin or an infestation is suspected, where normal treatment activities appear to be unsuccessful, the Site Manager will discuss and agree any further measures required with the pest control firm. The complaint reporting procedure will be followed as described below.

If a complaint is made with respect to noise or vibration the Site Manager will assess the cause of the complaint and will report the findings. If the noise or vibration leading to the complaint has been caused by a continuing operation, additional noise or vibration surveys may be required to confirm the degree of impact upon the receptor. The Site Manager will make any recommendations for further noise or vibration control to the Management Team and shall inform the Environment Agency of the complaint as soon as it is practicable to do so.

In the unlikely event that a complaint is made with respect to odour the Site Manager will investigate the source of the odour and take steps to reduce its impact. If the source appears to come from the Site then appropriate actions to reduce the odour will be taken.

Complaints investigation procedure

In the event of any complaint, this section deals with the complaint assessment procedures. The primary role of this assessment will be to ascertain whether the complaint is associated with any Site operations and what action should be taken to prevent or minimise the probability of a recurrence.

It is important that any person acting on behalf of AWS is appropriately trained and that all steps and decisions are documented.

Step 1 – Complaint received

The Site operator or Environment Agency receives a complaint regarding the STC. Details logged within the complaints register.

Step 2 – How to respond

Complainant is contacted to inform them the complaint has been received and request further information, where required.

The primary reasons for investigation of complaints are to identify the likely cause and source for the complaint and it is important to gather as much information about the complaint as possible. At the outset of any investigation, the Site Manager is to determine the priority for responding to the complaint.

If possible, someone from the Environment Agency will attend after a complaint has been made so that they can carry out an effective and subjective appraisal of the complaints and note any results into the complaints register.

Step 3 – Determine what to record and how

The complaint details and the investigation outcomes and actions taken are to be recorded in the on SAP. This information must be filled in on Site at the time of notification of the complaint.

Step 4 – Follow-up investigation

In order to resolve any problems successfully, it is essential to understand fully the source, reason and the operational conditions that led to the complaint. The first step in the investigation will be to select the most appropriate methodology for assessment. All the information collected should be filled in on the internal complaints form and a note made referencing this in the complaints log.

Step 5 – Communication with the complainant

The Site Manager or contractor tasked with addressing the odour complaint is responsible for collecting all the information and providing feedback to the complainant, or the Customer Contact Centre will contact the complainant. Wherever possible an explanation of the actions taken and the reasons for the decision should be made to the complainant.

If it is decided that there was no ground for the complaint this should be clearly explained to the complainant, along with information about what they should do, if they are unhappy with the response.

Step 6 – Monthly odour complaints records

AWS will be developing a system to log and track complaints, so they are more easily accessible for site teams. Currently all complaints AWS receives are stored on a computerised system (SAP).

7.6 Question 3c: Types and amounts of raw materials

The list of types and amounts of raw materials for the Site is presented in Table 7.4.

Table 7.4: Part C3, question 3c, Table 5: Types of raw materials used on-site

Name of installation Cambridge STC				
Schedule 1 activity	Description of raw material and composition	Maximum amount	Annual throughput (tonnes each year)	Description of the use of the raw material including any main M
5.4, Part A (1), (b) and (i)	Gas oil	28,000 litres	45,000 litres	Used to fuel standby generators and also mechanical plant on Site i.e. telehandlers. Flammable if heated Vapour mists or fumes may cause irritation to eyes and respiratory tract Harmful if swallowed Prolonged contact may cause dermatitis or other skin disorders.
	Biogas	Direct feed used		Feed gas for biomethane enhancement. Hazard of fire/explosion and asphyxiation.
	Liquid polymer	15 tonnes	100 tonnes	Coagulant for thickening sludge. Dry product stored indoors on sealed hardstanding. Mild skin and eye irritation May cause irritation of mucous membranes slippery underfoot when spilt.
	Powder polymer	20 tonnes	65 tonnes	Used in the poly make up for dewatering. Storage only in break tanks to comply with water regulations. Mild skin and eye irritation May cause irritation of mucous membranes slippery underfoot when spilt and wet.
	Ferric sulphate	60 tonnes	1500 tonnes	Used for phosphorous removal. Harmful if swallowed. Irritating to the skin, eyes and respiratory system.
	Anti-foam	10,000 tonnes	35,000 tonnes	Used to prevent foaming in digestion plant. IBCs stored on sealed ground or bunds. May cause irritation to the respiratory system, if mists or sprays maybe inhaled. May cause slight irritation to the eyes. Spilled product is slippery underfoot.

Anti-scale	4000 litres	10,000 litres	Used to prevent scaling in the centrifuges. IBCs stored on sealed ground or bunds. Not classified as hazardous according to the EU directives. May cause slight skin irritation, especially with repeated or prolonged exposure. May cause irritation to the respiratory system, if mists or sprays may be inhaled. May cause some eye irritation which should cease after removal of the product. Spilled product is slippery underfoot.
Oil	4400 litres	4800 litres	Used for lubrication of the CHP engine. Stored in double bunded tanks in CHP enclosure. Flammable if heated Vapour mists or fumes may cause irritation to eyes and respiratory tract Harmful if swallowed Prolonged contact may cause dermatitis or other skin disorders.

Material safety data sheets can be found in Appendix B of this document.

7.7 Question 4: Monitoring

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

7.7.1 Emissions to air

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

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.

Two CHP engines and hot water boilers are already permitted at the Site and will be monitored in accordance with Table S3.1 in EPR/WP3535HT (to be consolidated), these monitoring requirements are included in Table 7.5 below. Once permitted monitoring will be undertaken in accordance with the relevant standards. It is anticipated the monitoring standards required are as follows:

Table 7.5: Monitoring of air emissions

Emission point type	Parameter	Reference period	Monitoring frequency	Monitoring standard or method
Stacks on engines burning biogas (CHP 1, CHP 2)	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	Periodic over minimum 1-hour period	Annual	BS EN 14792
	Carbon monoxide			BS EN 15058
	Total VOCs			BS EN 12619,

Emission point type	Parameter	Reference period	Monitoring frequency	Monitoring standard or method
	MVOCs			BS EN 13649
Stack on engine burning biogas (CHP 3)	Oxides of Nitrogen (NO and NO ₂ expressed as NO ₂)	Periodic over minimum 1-hour period	Every 3 years	M5
	Carbon monoxide			M5
	Sulphur dioxide			M5
Hot Water Boilers 3 No.	N/A - As per EPR/WP3535HT			
Channelled emission to air (odour control systems)	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 ₂ S			
	Odour concentration			
Auxiliary 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 and 6 month third party inspection and calibration	Operational record including date, time duration of pressure relief events and calculated annual mass release

Emission outputs from the boilers and the CHP engines are measured annually, but biogas inputs are measured monthly.

AWS acknowledge that the auxiliary flare is appropriate for emergency use (up to 10% of the operation hours), records from monitoring will be reviewed regularly to reduce the use of the flare.

The daily site walk around does include monitoring of the digester and CHP performance. This would highlight any significant passing of gas through the relief valves as a drop in measured performance would be observed.

7.7.2 Assessment of sampling locations

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

7.7.3 Emissions to water (other than sewers)

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

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

All condensate discharge directly to the site drainage system which diverts water to the head of the works of the adjacent Cambridge WRC. This condensate is clean, uncontaminated water

and occurs in small volumes. As such, no monitoring or reporting is required. There are no direct releases to public sewer or other transfers off site of emissions arising from the STC.

7.7.5 Emissions to land

There are no direct releases to land of emissions rising from the STC. As required by the AWS 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.

As required by the AWS 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 clearly stated on the transfer notes provided to licenced 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.

7.8 Question 5: 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).

7.9 Question 6: Resource efficiency and climate change

7.9.1 Basic energy requirements

AWS 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.

7.9.2 Question 6a: Basic measures for improving energy efficiency

Anglian Water has a company-wide programme for reducing carbon emissions from the activities undertaken, since 2010 it has set ambitious carbon reduction targets and has recently played a leading role across the water sector in developing a WaterUk routemap for net zero 2030. Anglian Water has recently published 'Routemap to Net Zero Carbon' report which can be found on the Anglian Water website. The recovery of energy and beneficial use through the generation of renewable energy from biogas has been and continues to be a corner stone of this strategy to meeting targets and to deliver on net zero goals by 2030.

AWSs goal is have the capacity to generate 44% of our energy demand from renewables by 2025. The CHP plants, like at Cambridge, will play a big part in achieving this alongside wind

and solar. Consumption of onsite renewables is a fundamental component in our ambition of being net zero by 2030.

AWS 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. AWS 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 NO_x 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; and
 - 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
- Use of solar panels and wind generation

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 building.

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 AWS Environmental Policy and EMS.

In addition, AWS 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.

The process is closely monitored in terms of energy used and energy generated. For energy generation a conversion rate measure is used (MWh/TDS) and tracked on a rolling daily basis against targets. A reduction in conversion rate prompts an improvement planning process, this

to identify and address root cause of the performance change and to put in place appropriate timely actions to rectify.

The site also has detailed operating cost models linked to throughput, this allows teams to compare actual consumption and production versus forecasts. These models cover projected power generation, power consumed and fossil fuel input per tds (tonne dry solids) of sludge processed.

Power generation is directly related to the biological performance of the EEH and digestion plant. Daily sampling to key process parameters such as pH, VFA, alkalinity and dry solids are undertaken. This data is captured and shared through a digital app giving the ability to share across sites and with biosolids experts, the app can also flag to operators where data is trending out of range and hitting action limits. This gives greater focus on asset and process health and is aimed at optimising the energy recovered from the sludge treated.

7.9.3 Question 6b: 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 as a result of this permit variation. The existing activities on site remain the same

7.9.4 Question 6c: Climate change levy agreement

AWS has an exemption to the Climate Change Levy (CCL) agreement for the power generated from the CHP engines on site.

7.9.5 Question 6d: Raw and other materials, other substances, and water use

The raw materials required to operate the installation are described in Table 6.6.

All materials will be handled and stored in such a way to ensure containment. Fugitive emissions to the environment are therefore negligible.

Biogas is the primary raw material. Its consumption will be monitored. The use of biogas as the fuel source offers the best environmental option and there is therefore no environmental incentive to reduce biogas consumption and consider an alternative source of fuel.

Biogas is stored within 1 No. double membrane inflatable bag type holders, constructed of PVC coated polyester fabric, which is resistant to UV and microbial degradation. The base of the holders is constructed from reinforced concrete treated to withstand the potentially acidic conditions within the holder. The gas bag is completely enclosed so the gas is not in contact with the concrete.

AWS ensure purchased items conform to specified requirements, including quality parameters, and review suitability for use, including efficiency and minimisation of use of raw materials.

All substances are assessed for COSHH (Control of Substances Hazardous to Health) compliance, where relevant. Material safety data sheets for all materials used and kept on Site will be maintained on the Site.

All raw materials are handled and stored within the confines of the buildings on Site, or in IBCs in banded areas, with the exception of biogas which is contained within the gas handling system.

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

Potable water usage on Site include:

- Poly make up – concerns over the impact of using final effluent for this purpose

- Boilers
- Heat exchanger system water – concerns over the impact final effluent for this purpose
- Eye baths and safety showers – potable water essential
- Limited wash-down points where it is uneconomic to extend the final effluent wash-water system
- Office messing facilities – kitchen, washing and welfare facilities etc.

Resource efficiency will be achieved through the minimum use of raw materials and water (where possible), and AWS will undertake the following:

- Maintain records of raw materials and water used;
- Routine resource efficiency audits;
- Review the feasibility of alternative materials that could reduce environmental impact or provide further opportunities to improve resources efficiency at least once every four years; and;
- Implement further appropriate measures identified from a review.

7.9.6 Question 6f: Reducing production of waste

AWS manages its waste in accordance with the Council Directive 2008/98/EC on waste (the Waste Framework Directive), legal requirements and the EMS (ISO 14001:2015), by maximising materials re-use, prevent waste, minimise waste generation and maximise recycling and recovery of waste generated from the operation of the Site. There will be a Waste Management Plan that includes details of the types of waste produced at site, how wastes are segregated, stored and removed from site. Only minimal volumes of waste shall be generated at the STC, with waste streams segregated and recovered for recycling where possible. All waste streams shall be managed in accordance with existing EMS and EnvMP, with any final off-site disposal to be carried out by licensed waste contractors in accordance with Duty of Care requirements, and the application of the waste hierarchy is central to any decision-making process.

Implementation of EMS procedures and the current Environmental Policy ensures optimum disposal of the wastes produced. Submission of a detailed assessment is not considered necessary due to the minimal quantity of waste produced.

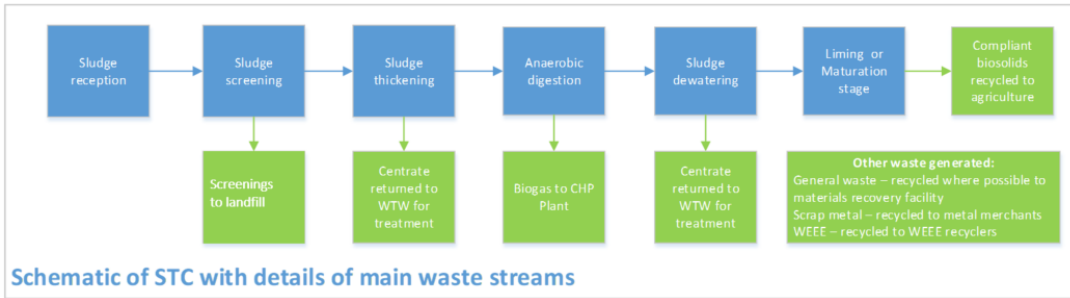
Further consultation with waste contractors will ensure that all waste streams have been considered. The sampling and characterisation of wastes will be covered under the Duty of Care requirements. The wastes are handled to a minimum and are stored in suitably designed containers prior to being removed from Site, to minimise releases of pollutants to the environment.

The main wastes produced by the installation are waste oils and filters associated with the operation and maintenance of the engines. Other wastes include from Site office (paper, packaging etc), waste collected from general housekeeping across the Site (debris, litter), scrap metals and waste electronic and electrical equipment (WEEE, such as computer equipment, printers etc).

Waste generation from the operation of the plant is minimal and limited only to essential maintenance fluids and materials. Waste streams are segregated and recovered for recycling where possible, as shown in Table 7.3 for different Site activities. General waste is sent for recycling, where possible, scrap metal is sent to metal merchants for recycling and WEEE sent to specialist WEEE recycling facilities. AWS apply a Duty of Care by ensuring waste is removed by a suitable licenced waster carrier.

The sampling and characterisation of wastes and the final off-Site transport of waste is carried out by licensed waste contractors in accordance with Duty of Care requirements. The implementation of EMS procedures and the current Environmental Policy ensures optimum disposal of the wastes produced.

A schematic of the main waste streams from the STC is shown below.



8 Part F1 – OPRA, charges and declarations

8.1 Question 1: Working out charges

Table 1, Table 2 and Table 3 are completed on the Part F1 form.

8.2 Question 2: Payment

Payment will be made by purchase order number PSCAPPANGLI002. The purchase order number has also been provided in the Part F1 form.

8.3 Question 4: Confidentiality and National Security

Anglian Water do not wish to claim confidentiality with this application.

8.4 Question 6: Application Checklist


Table 8.1: Part F, Question 6, Table 4: Application checklist

Question reference	Document title	Document reference
Part A – Q5c Part A – Appendix 1 Part C2 – Appendix 2	Details of Directors	101265_MSD_Main_CAM
Part C2 – Q3b	Competency Management System Certificate	101265_MSD_CMS_CAM
Part C2 – Q3d	Environmental Management System	101265_MSD_EMS_CAM
	Quality Management System Certificate	101265_MSD_MSD_QMS_CAM
Part C2 – Q5a	Site Location and Location Plan	101265_MSD_SiteLayoutPlan_CAM
	Drainage Plan	101265_MSD_DrainagePlan_CAM
Part C2 – Q5b Part C2.5 – Q4b	Site Condition Report	101265_MSD_SCR_CAM
Part C2 – Q6	Environmental Risk Assessment	101265_ERA_CAM
	Environmental Constraints Maps	Appendix A of 101265_ERA_CAM
	Bio-aerosols Risk Assessment	101265_ERA_BioRA_CAM
Part C3 – Q3b	Odour Management Plan	101265_ERA_OdourMP_CAM
	Odour Modelling Report	101265_ERA_OMR_CAM
Part C3 – Q3b	Waste Codes	Appendix A of 101265_MSD_Main_CAM
Part C2.5 – Q2a	Schematics	101265_MSD_Schematics_CAM
Part C3 – Q3a	BAT analysis	101265_MSD_BAT_CAM
Part A – Q7 Part C2 – Q2,3,5,6 Part C2.5 – Q1,2,3,4 Part C3 – Q1,2,3,4,6 Part F1 – Q1,2,6	Main Supporting Document	101265_MSD_Main_CAM

A. Waste Codes

Waste code	WM3 Description	Anglian Water Description	Where accepted	Indigenous or imported
16	Waste not otherwise specified in the list			
16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01	'Blue Loo' waste	At the works inlet (TPS)	Imported
19	Wastes from waste management facilities off-site waste water treatment plants and preparation of water intended for human consumption/industrial use			
19 02	wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)			
19 02 06	sludges from physico/chemical treatment of animal and vegetable waste	Raw cake	Not currently imported to site	Imported
19 06	wastes from anaerobic treatment of waste			
19 06 06	digestate from anaerobic treatment of animal and vegetable waste	Digested cake	For storage only.	Indigenous
19 08	wastes from waste water treatment plants not otherwise specified			
19 08 01	Screenings		At the works inlet (TPS)	Indigenous/Imported
19 08 02	Waste and desanding		At the works inlet (TPS)	Indigenous/Imported
19 08 05	sludges from treatment of urban wastewater	WRC sludges, sludges from other sites, and 3 rd party thin sludges requiring discharge at head of works for full treatment.	Sludge import point	Indigenous/Imported
19 08 09	grease and oil mixture from oil/water separation containing only edible oil and fats		At the works inlet (TPS)	Indigenous
19 09	wastes from the preparation of water intended for consumption or water for industrial use			
19 09 02	sludges from water clarification	WTW brine / water from clarification	At the works inlet (TPS)	Imported
19 09 03	sludges from decarbonation		Sludge import point	Imported
19 09 06	solutions and sludges from regeneration of ion exchangers		At the works inlet (TPS)	Imported
20	Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions			
20 03	municipal wastes (household waste and similar commercial industrial and institutional wastes) including separately collected fractions			
20 03 04	septic tank sludge	Domestic cess and septic	At the works inlet (TPS)	Imported
20 03 06	waste from sewage cleaning		At the works inlet (TPS)	Imported

B. Material Safety Data Sheets

safe well and occupational health & safety management system		love every drop anglianwater	
COSHH Assessment for FERRIC SULPHATE SOLUTION			
HAZARDS Circle as appropriate from Safety Data Sheet			
		Reacts with most metals producing hydrogen-explosive Could emit highly toxic oxides of sulphur if heated to decomposition	
SITE NAME: Cambridge Sludge Treatment		Uses of substance: Coagulant of water borne impurities	
WHO IS AT RISK?		EMPLOYEES Y	CONTRACTORS Y VISITORS Y
Control Strategy		Yes, No or N/A	Comments and Actions
Is there a safer alternative to the proposed substance?		No	
Are storage conditions suitable?		Yes	Stored in stainless steel or mild steel rubber lined tanks or plastic tanks
Is it possible to reduce the quantity of the stored substance?		No	
Is it possible to use a more diluted form of the substance?		No	
Is chemical / substance isolated from material it may react with? - Seek advice from process science		Yes	Keep away from most metals and hypochlorite's
Is ventilation adequate?		Yes	
Are delivery points clearly marked and locked?		Yes	
PPE required: (From the Safety Data Sheet)	Eye protection	Yes	
	Overalls	Yes	
	Boots	Yes	Rubber Boots.
	Safety gloves	Yes	Rubber or plastic gloves.
	Full or escape BA	No	
	RPE	No	
Other			Chemical Spill Suit
Are there safe working procedures for handling, transporting or storing the substance?		Yes	Wear PPE, use in naturally ventilated area
Are those using the substance trained and competent?		Yes	
Is health surveillance required?		No	
Are there defined disposal methods identified?		Yes	
Minimum on-site requirements: (From the Safety Data Sheet)	Emergency Shower	Yes	Next to delivery point
	Eye wash or protection	Yes	Various places on site/van
	Water for washing	Yes	
	Ventilation systems	No	Use in naturally ventilated area
	Gas monitors- fixed or portable	No	
	Visible or audible alarms	No	
Other			
Signage on site, identifying hazards (minimum) PPE, hygiene and first aid measures		Yes	
Fire extinguisher required at point of use? If so circle the extinguishers(s) provided		N/A	Not specifically required. Call emergency services if fire occurs. Water or dry powder may be used on fire in the vicinity.
Material safety data sheet available?		Yes	On HAWK and site blue box
Do the emergency services need to be made aware of hazardous substances on site?		No	
Other site specific requirements- give details			
First Aid requirements:		Spillage or Release requirements:	
Eyes and Skin: Irritation to skin and eyes. Prolonged or repeated contact to the skin may lead to dermatitis. Wash with lots of water. Remove and wash contaminated clothing. Rinse eyes for 15 minutes Inhalation: Move to fresh air. Ingestion: Harmful if swallowed. Rinse mouth out and give water to drink. Seek medical attention		<ul style="list-style-type: none"> Do not dispose of into drains, sewers or watercourses Wash small spillages away with large quantities of water Neutralise large spillages with lime or soda ash and dispose of in accordance with local authority regulations 	
Assessed by: Phil Seamons		Date assessed: 01.04.19	
Reviewed by: Philip Seamons		Date of Review: 14/04/2021	

Assessment to be reviewed at least every 3 years or when conditions change significantly



occupational health & safety management system



**COSHH Assessment for POLYELECTROLYTE (liquid or solid)
FLOPAM FO 4698 SSH, ZETAG 9048fs – 9148fs**

HAZARDS Circle as appropriate from Safety Data Sheet				Mild skin and eye irritant May cause irritation of mucous membranes Slippery underfoot when spilt	
SITE NAME: Cambridge Sludge Treatment			Uses of substance: Coagulant used in wastewater and water		
WHO IS AT RISK?		EMPLOYEES Y		CONTRACTORS Y VISITORS Y	
Control Strategy		Yes, No or N/A		Comments and Actions	
Is there a safer alternative to the proposed substance?		No			
Are storage conditions suitable?		Yes		Avoid extremes, especially frost / freezing	
Is it possible to reduce the quantity of the stored substance?		No		No – would incur manual handling risks	
Is it possible to use a more diluted form of the substance?		No			
Is chemical / substance isolated from material it may react with? – Seek advice from process science		Yes		Keep away from strong oxidising materials	
Is ventilation adequate?		Yes		Usually non odorous at ambient temperatures but avoid breathing vapours and/or dust	
Are delivery points clearly marked and locked?		N/A			
PPE required: (from the Safety Data Sheet)	Eye protection	Yes		Required where there is a risk of splashing e.g. during manual mixing operations, maintenance of equipment, etc. Use chemical resistant safety glasses, goggles or face shield.	
	Overalls	Yes			
	Boots	Yes		Rubber Boots.	
	Safety gloves	Yes		Rubber or plastic gloves.	
	Full or escape BA	No			
	RPE Other	No			
Are there safe working procedures for handling, transporting or storing the substance?		Yes		Wear PPE, use in naturally ventilated area	
Are those using the substance trained and competent?		Yes			
Is health surveillance required?		No			
Are there defined disposal methods identified?		Yes		If the container contains residue of a hazardous product, follow all MSDS and label precautions even after container is emptied.	
Minimum on-site requirements: (From the Safety Data Sheet)	Emergency Shower	No			
	Eye wash or protection	No			
	Water for washing	Yes			
	Ventilation systems	No		Use in naturally ventilated area	
	Gas monitors- fixed or portable	No			
	Visible or audible alarms Other	No			
Signage on site, identifying hazards (minimum) PPE, hygiene and first aid measures		Yes			
Fire extinguisher required at point of use? If so circle the extinguisher(s) provided		N/A		Not specifically required. Call emergency services if fire occurs.	
Material safety data sheet available?		Yes		On HAWK and site blue box	
Do the emergency services need to be made aware of hazardous substances on site?		No			
Other site specific requirements- give details					
First Aid requirements:			Spillage or Release requirements:		
Eyes and skin: Irritant. Wash with copious amounts of water Inhalation: Irritant. Seek medical attention Ingestion: If any materials swallowed, drink copious amounts of water. DO NOT INDUCE VOMITING. Seek medical attention.			<ul style="list-style-type: none"> Cover with sand, earth or granules, pick up and hold for waste disposal. Shovelled up material where possible. Small liquid spills wash away with water if it is known that the washings will return to the head of the sewage treatment works. CARE spilt material can be result in a very slippery surface! Do not allow the substance to enter watercourses 		
Assessed by: Phil Seamons			Date assessed: 01.04.19		
Reviewed by: Philip Seamons			Date of Review: 14/04/2021		



occupational health & safety management system



COSHH Assessment for POLYELECTROLYTE (liquid or solid)
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C. WAMITAB CoTC Certificate





D. Customer Complaints





Customer Identifier	Date	Area of concern	Action taken to rectify concern
Customer 1	19/08/2018	Odour	Site investigation identified an issue with the drying storm lagoon- customer contacted and updated
Customer 2	05/08/2017	Odour	Site investigation found no issues on site-customer updated
Customer 3	05/06/2017	Odour	Issues with gas holder-customer informed
Customer 4	16/12/2016	Odour	Chemical odours noticed by customer. Not confirmed as coming from STW
Customer 5	16/06/2014	Odour	Unhappy customer. No issues found on site customer did not want a call back

E. AMP 7 Strategy

AMP7 Strategy on a page



Our purpose is to bring environmental and social prosperity to the region we serve through our commitment to love every drop.

<p>Goals:</p>	 <p>To make life better for our customers, every single day</p>	 <p>To deliver our identified business priorities</p>	 <p>To deliver our AMP7 final determination</p>	 <p>To create a sustainable future for our region</p>		
<p>Strategies:</p>	<p>Deliver a personal, trusted and effortless experience</p>	<p>One team, thinking differently, working smarter</p>	<p>Drive efficiency, effectively balancing service, cost and quality</p>	<p>Enable sustainable growth, improve resilience, protect the environment and reduce carbon</p>		
<p>Priorities for AMP7:</p>	<ul style="list-style-type: none"> • Target leading CMEX, DMEX and Retailer satisfaction • Increase support for our most vulnerable customers, and those who struggle to pay • Position ourselves as a trusted brand that is constantly looking for new ways to meet everyday challenges 	<ul style="list-style-type: none"> • Deliver key performance commitments (ODIs) and targets • Maintain our nationally leading leakage performance • Deliver world-class innovation, exploiting leading technologies • Develop flexible ways of working that support areas of greatest business need, making best use of available investment 	<ul style="list-style-type: none"> • Achieve our Totex Delivery Plans • Improve our Relative Efficiency within the industry • Identify and exploit programme, portfolio and geographic overlaps, taking a whole-business approach to investment • Operate within our covenant constraints & remain financeable • Explore opportunities to increase revenue generation 	<ul style="list-style-type: none"> • Deliver our Business Plan commitments relating to resilience to flooding and drought, and sustainable growth • Hit our targets on the path towards carbon neutrality • Demonstrate that as a responsible business we act in the public interest 		
<p>What will help us get there?</p>	<p>Skilled, trusted and customer focused people</p>	<p>We're happier, healthier and safer</p>	<p>We're smart in our use of information and technology</p>	<p>World leading Alliances, working as one team</p>	<p>Collaborating inside and outside the organisation</p>	<p>Maximising opportunities from standardisation and centralisation</p>

F. Sampling

A number of the parameters are measured through the Sludge Treatment process (on the blend tank, digester feed, on the digester and post digestion, see details below) on a regular basis in order to ensure that AWS understand their process and are able to maintain healthy and efficient digestion, gas production and green energy production. AWS aim to monitor daily but have the target of a 90-95% completion rate which allows for operational issues when sampling or data isn't submitted. The data is captured from instrumentation on site or from manual lab tests carried out in the site lab and all data is submitted to a Microsoft share point list, Excel file and PowerBi dashboard which allows monitoring and trending of data.

MONSAL

Feed Thickness Dry Solids (%)

Feed Sludge pH

Feed Sludge VFA (mg/l)

Actual Feed Volume (M³/Day) Previous 24 hours

Solids Feed Rate (tDS/day)

DIGESTER FEED

Digester Feed Thickness Dry Solids (%) Monsal Stage 3

Digester Feed pH Monsal Stage 3

Digester Feed VFA (mg/l) Monsal Stage 3

DIGESTER 1

Dry Solids (%)

pH

VFA (mg/l)

Alkalinity (mg/l)

Ammonia (mg/l)

Temperature (°C)

Actual Feed Volume (M³/Day)

Feed Split (%)

Solids Feed Rate (tDS/day)

Digester retention time

Digester VS loading Calculation

DIGESTER 2

Dry Solids (%)

pH

VFA (mg/l)

Alkalinity (mg/l)

Ammonia (mg/l)

Temperature (°C)

Actual Feed Volume (M³/Day)

Feed Split (%)

Solids Feed Rate (tDS/day)

Digester retention time

Digester VS loading Calculation

DIGESTER 3

Dry Solids (%)

pH

VFA (mg/l)

Alkalinity (mg/l)

Ammonia (mg/l)

Temperature (°C)

Actual Feed Volume (M³/Day)

Feed Split (%)

Solids Feed Rate (tDS/day)

Digester retention time

Digester VS loading Calculation

DEWATERING

Cake Pad Fill Volume (%)

Centrifuge 1 Cake Dry solids (%)

Centrifuge 2 Cake Dry solids (%)

Avrg. dry solids (%)

BIOGAS

Methane content (%)

Hydrogen Sulphide (ppm)

Actual to Waste Gas Burner (M³/Day) Previous 24

Flare Stack Meter Read

POLY STOCK

SAS Liquid Poly IBC level (%)

Powder Poly Silo (%)

Liquid Poly Bulk Tank Level (%)



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