MOTT MACDONALD

Sandown Sludge Treatment Centre Environmental Permit Application

Main Supporting Document
790101_MSD_Main_SAN

July 2024

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Southern Water Services Ltd

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	15/12/20	Shannon Stone	Anita Manns	Ian Scott	Draft Issue
B	06/05/21	Alex Symeonidis	Anita Manns	Ian Scott	Second Issue
C	11/06/21	Alex Symeonidis	Shannon Stone	Anita Manns	Third Issue
D	23/06/21	Natalia Cunningham	Shannon Stone	Anita Manns	Final Issue
E	19/12/23	Shannon Stone	David Dray	Anita Manns	Updated for resubmission
F	21/06/24	Shannon Stone	Anita Manns	Anita Manns	Updated based on Not Duly Made Request for information June 2024
G	04/07/24	Shannon Stone	Anita Manns	Anita Manns	Updated based on Not Duly Made Request for information June 2024

Document reference: 790101_MSD_Main_SAN July 2024

Information class: Standard

Contents

1 Non-technical summary

1.1 Overview of the site and activities

Sandown is a Sludge Treatment Centre (STC) (also known as the “Site”) and an associated Wastewater Treatment Works (WTW), which is located to the south-east of the Isle of Wight. The address for the Site is East Yar Road, Sandown, Isle of Wight, PO36 9AX (National Grid Reference: SZ 6027 8523).

The WTW is operated under the Urban Wastewater Treatment (England and Wales) Regulations 1994 and has a standalone Water Discharge Activity Environmental Permit, this will remain an independent permitted activity. The STC operation is a non-hazardous waste activity which is currently carried out under a (registered T21 exemption).

The waste activity comprises imports, physio-chemical and anaerobic digestion (AD) treatment, and the storage of waste, all for recovery purposes. The STC solely handles waste derived from the wastewater treatment process, either indigenously produced on-site or imported from other Southern Water owned assets. The Site undertakes AD of sewage sludge from the on-site WTW and liquid imports from up to 18 satellite WTW Sites across the island, and will continue this operation under a new bespoke Industrial Emissions Directive (IED) installation permit.

As advised by the Environment Agency, through consultation at the WaterUK Waste and Recycling Network and a letter sent to all Water and Sewage Companies at director level in July 2019, Southern Water is applying for a Bespoke Installation Permit for the STC waste activity. This is because a joint Environment Agency and DEFRA decision has been made that AD treatment facilities at WTWs and STCs are covered by the Industrial Emissions Directive and can no longer operate under T21 exemptions.

The primary permitted installation activity will be the AD treatment facility. The AD facility will treat indigenously produced and imported sludges. Permitted Directly Associated Activities will be the import of waste from other WTW assets; the physio-chemical treatment of imported and indigenously produced sludges; the storage of indigenously produced sludges, 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 an on-site Combined Heat and Power plant (CHP). In the event the CHP cannot run in an emergency or due to operational issues, biogas will be combusted via an on-site flare stack and/or back-up boiler system.

The application is for the permitted of a Schedule Activity, for the anaerobic digestion of sludge, and to permit this activity’s directly associated activities. The application is also for the import of tankered wastes to the Head for Works, thus a waste operation. Sandown has two distinct tankered waste reception points. One reception point receives imports bound for the STC, and the other reception point receives WTW head of works imports. Both are separate and distinct points with separate pipework to their respective end points. Tanker drivers are directed to the appropriate reception point on arrival and both reception points have data loggers which only permit the specific EWC codes to be accepted at their respective reception points.

1.2 Overview of the process

The Site serves as the STC for the Isle of Wight. Imported sludge is pumped through the two. strain presses to one sludge reception tank. Both indigenous and imported sludge are pumped by two submersible sludge pumps through two strain presses. Screened sludge is transferred via one screened sludge transfer tank to two screened sludge storage tanks from where it is fed

to two gravity belt thickeners. Thickened sludge is stored in one digester feed tank and then fed to three conventional mesophilic anaerobic digesters. Digested sludge is stored in two post digestion storage tanks (also known as secondary digesters) after which it is dosed with lime and dewatered by two centrifuges. Dewatered cake is stored in “temporary” cake bays. The Site has a sludge dryer system which is mothballed. Sludge liquors from the belt thickeners and centrifuges are collected at the Site’s return pumping station and pumped upstream or downstream of primary treatment.

The biogas produced will then be burnt in the existing CHP engine to produce electricity and exported to the grid. The current waste biogas burner (or flare) will be retained and available to burn excess gas. The CHP units have an aggregated thermal rated input of 0.973MWth. The site has two auxiliary boilers that operate in the case of an emergency.

Table 1.1: Combustion plant details

	CHP1	Boiler 1	Boiler 2
Make/Model Number	MAN E2842 LE322 V12 SERIAL NUM: 49230668123050	Strebel RU2S-10 PID 23B500	Strebel RU2S-10 PID 23B600
Date that MCP became operational/was commissioned	2013	~2000	~2000
Thermal Input (MWth)	0.973	465 - 698kW (output)	465 - 698kW (output)
Stack height (m)	Est 10	8	14
Fuel used (biogas, diesel etc)	Biogas	Natural gas or biogas	Natural gas or biogas
Estimated total hours of operation per year	8147	Biogas - 37 Natural gas - 10	Biogas - 102 Natural gas - 102
MCPD and SG Regs status	Existing and excluded	Existing and excluded	Existing and excluded

The IED permit will include:

- 1 No. Sludge reception tank (83m^3)
- 2 No. Sludge strain presses
- 1 No. Screened sludge transfer tank (1,088m^3)
- 2 No. Screened sludge storage tanks (2,175m^3 total volume)
- 2 No. Gravity belt thickeners (duty/standby)
- 1 No. Digester feed tank (250m^3)
- 3 No. Digesters (1,285m^3 each)
- 2 No. Post-digestion storage tanks (225m^3 each)
- 2 No. Centrifuges (duty/standby)
- 1 No. Gas bag holder (780m^3)
- 1 No. CHP engine
- 2 No. Auxiliary boilers (both 465 – 698kW output). Dual fuel (biogas/natural gas).
- 1 No. Biogas burner (flare)

- 6 No Cake storage bays (4,100m^3).

The following are outputs from the process:

- Cake (dewatered post digestion sludge) - stored in cake bays before being shipped for use as a fertiliser;
- Bio-gas - stored in an existing 780m^3 gas holder, and is then either:
  - Burnt in CHPs, with the power exported to the grid;
  - Flared in the waste biogas burner.
- Grit and screenings (small amount) – deposited in skips before taken off-site.

A process flow diagram can be found in document reference 790101_MSD_Schematics_SAN

1.3 Summary of key technical standards

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

Table 1.2: Technical standards

Installation name	**Sandown STC**	
B3		
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	• Biological waste treatment: appropriate measures for permitted facilities • Non-hazardous and inert waste: appropriate measures for permitted facilities	• https://www.gov.uk/guidance/biological-waste-treatment-appropriate-measures-for-permitted-facilities/1-when-appropriate-measures-apply • https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities
• **B4**		
Description of the waste operation	• **Appropriate measure (TGN reference)**	• **Document reference**
Physical treatment of non-hazardous waste (Accepting cess and tankered wastes to Head of the Works)	• Non-hazardous and inert waste: appropriate measures for permitted facilities	• https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities
• **General**		
	• **Guidance**	• **Document reference**
	• Monitoring stack emissions: technical guidance for selecting a monitoring approach • M1 sampling requirements for stack emission monitoring • Environment Agency environmental permitting guidance, including: • Risk assessments for your environmental permit • Energy efficiency (Energy efficiency for combustion and energy from waste power plants) • Noise assessment and control • H4 Odour management • H5 Site condition report • Control and monitor emissions for 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/guidance/energy-efficiency-standards-for-industrial-plants-to-get-environmental-permits • https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits • https://www.gov.uk/government/publications/environmental-permitting-h4-odour-management • 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

1.4 Revisions since 2021 application submission

The application was first submitted in 2021. This Main Supporting Document includes details that have been updated following feedback received over the past three years in relation to IED

permit applications for the anaerobic digestion of sewage sludge. Table 1.3 provides a summary of the stand-alone documents included as part of this application, and the amendments where applicable. Where a document has not been amended due to it remaining applicable, the original reference number remains unchanged. Where a document has been updated this document will supersede any previous versions.

Table 1.3: Summary of revisions

Document name	Latest document reference	Summary of amendments
Main supporting document	790101_MSD_Main_SAN July 2024	Resubmitted – updated to include wider feedback from the Environment Agency and response to Request for Information June 2024.
Environmental Risk Assessment	790101_ERA_SAN	Resubmitted – updated to include complaints recorded since 2020 and completion of air quality risk assessment.
Environmental Constraints Maps	790101_ERA_Maps_SAN December 2023	Resubmitted. Human receptor map screening distance increased to 2km
Bio-aerosol Risk Assessment	790101_ERA_BioaRA_SAN December 2023	Resubmitted – updated to include bio-aerosol monitoring proposals and new windrose.
Odour Management Plan	790101_ERA_OdourMP_SAN July 2024	Resubmitted – updated to include new windrose, updated complaints recorded since 2020 and feedback from the Environment Agency, and response to Request for Information June 2024.
Climate Change Risk Assessment	790101_ERA_CCRA_SAN	No change. To be included as part of the management system for the site.
Site Condition Report	790101_MSD_SCR_SAN July 2024	Resubmitted – in response to Request for Information June 2024.
BAT analysis	790101_MSD_BAT_SAN December 2023	Resubmitted – updated to include changes by Southern Water and wider feedback from the Environment Agency.
Site Layout and Location Plan	790101_MSD_SiteLayoutPlan_SAN July 2024	Resubmitted – updated to reflect proposed secondary containment, liquor transfer point, liquor sampling point and changes to point source emissions.
Drainage Plan	790101_MSD_DrainagePlan_SAN	No change
Schematics	790101_MSD_Schematics_SAN	No change
Environmental Management System Certificate	790101_MSD_EMS_SAN December 2023	Resubmitted. Certificate has been renewed.
Relevant Offences	790101_MSD_RelevantOffences_SAN	Resubmitted – updated to reflect new offences since original submission.
Details of Directors	790101_MSD_Directors_SAN	Resubmitted – updated to reflect director changes since original submission
Competency assessment certificates	790101_MSD_CompetencyAssessmentCertificates_SAN December 2023	Retracted, and replaced with Competency Management System.

Competency Management System	790101_MSD_CMS_SAN December 2023	Substitutes CoTC WAMTAB assessment certificates
Material Safety Data Sheets	790101_MSD_MSDS_SAN	No change
Leak Detection and Repair Plan	790101_MSD_LDAR_SAN December 2023	Additional document for T2 sites.
Duty of Care	790101_MSD_DutyofCare_SAN December 2023	Additional document for T2 sites, but superseded by the Waste Acceptance document listed below.
Waste acceptance	790101_WasteAcceptance_SAN June 2024	Additional document in response to Request for Information June 2024.
Permeability of surfaces at the Site	790101_MSD_PermeablePlan_SAN December 2023	Additional document for T2 sites.
Existing containment features map	790101_MSD_ContainmentPlan_SAN December 2023	Additional document for T2 sites
CIRIA assessment and modelling	790101-MMD-IED-SAN-CA-C-001 – IED Risk Register Sandown June 2024 790101-MMD-IED-SAN-SIM-M-101 DoNothing(Rainfall Included) 790101-MMD-IED-SAN-SIM-M-102 DoNothing(Tank Failure Only) 790101-MMD-IED-SAN-SIM-M-103 Option1(Rainfall Included) 790101-MMD-IED-SAN-SIM-M-104 Option1(Tank Failure Only) 790101-MMD-IED-SAN-SIM-M-105 Option1A(Rainfall Included) 790101-MMD-IED-SAN-SIM-M-106 Option1A(Tank Failure Only) 790101-MMD-IED-SAN-SIM-M-107 Option2(Rainfall Included) 790101-MMD-IED-SAN-SIM-M-108 Option2(Tank Failure Only) 790101-MMD-IED-SAN-SIM-M-109 Option3(Rainfall Included) 790101-MMD-IED-SAN-SIM-M-110 Option3(Tank Failure Only)	No change, valid at the time of initial submission. Refinement of proposed solution in response to Request for Information June 2024.
Residue Management Plan	790101_MSD_RMP_SAN July 2024	Additional document for T2 sites.
H1 assessment	790101_H1 Tool v8_SAN December 2023	Resubmitted – reviewed with updated information
Air Quality Risk Assessment	790101_AQRA_SAN January 2024	Additional document awaiting approval – will submit in Jan 2024
Accident Management Plan	790101_MSD_AMP_SAN December 2023	Additional document for T2 sites.
Form Part A	790101_App_PartA_SAN	No change
Form Part B2	790101_App_PartB2_SAN	No change
Form Part B3	790101_App_PartB3_SAN	No change
Form Part B4	790101_App_PartB4_SAN June 2024	Additional document, in response to Request for Information June 2024.
Form Part B6	790101_App_PartB6_SAN	Additional document for T2 sites (not previously required)

Form Part F1	790101_App_PartF1_SAN	No change
Envirocheck Report	790101_MSD_SCR_SAN_AppB_Envirocheck	Additional document, in response to Request for Information June 2024.
Annual throughput summary	790101_AnnualThroughput_SAN June 2024	Additional document, in response to Request for Information June 2024.
Waste transfer notes	790101_WasteTransferNotes_SAN June 2024	Additional document, in response to Request for Information June 2024.
Sampling proposal	790101_Sampling proposal_SAN July 2024	Additional document, in response to Request for Information June 2024.

2 Introduction

2.1 Overview

This document has been prepared to support the application for a new bespoke installation Environmental Permit (hereafter referred to as 'the Permit') for the Sandown Sludge Treatment Centre (STC) ('the Site') on behalf of Southern Water Services Limited ('Southern Water' or 'the Operator').

The Site does not currently hold an Environmental Permit under the Environmental Permitting Regulations (EPR) 2016 for sludge treatment activities. Following the joint Environment Agency and Department for Environment, Food and Rural Affairs (DEFRA) decision that AD treatment facilities at WTWs 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 and proposed permitted activities and and Directly Associated Activities (DAAs), an assessment of the possible effects of these activities and responses to questions in Parts A, B2, B3, B6 and F1 of the application documentation (plus supporting information where required). Completed forms Part A, B2, B3, B6 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 790101_App_PartA_SAN)
- Part B2: New bespoke permit (Document reference 790101_App_PartB2_SAN)
- Part B3: New bespoke installation permit (Document reference 790101_App_PartB3_SAN)
- Part B4: New bespoke waste operation (Document reference 790101_App_PartB4_SAN June 2024)
- Part B6: New bespoke water discharge activity or groundwater activity (point source discharge) or point source emission to water from an installation (Document reference 790101_App_PartB6_SAN December 2023)
- Part F1: Charges and declarations (Document reference 790101_App_FormF1_SAN)

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 B2, Part B3, Part B4, Part B6 and Part F1 application forms for which there was insufficient space on the forms to answer the questions in full. The Environmental Permit application document ('the Main Supporting Document') consists of three main parts:

- Chapter 5 provides the general information required to inform Part B2 relating to the bespoke permit;
- Chapter 6 provides the more detailed information required to inform Part B3 and B4 relating to the bespoke installation and waste operations permit; and,
- Chapter 7 provides the more detailed information required to inform Part B6.

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

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

- Appendix A – European Waste Catalogue (EWC) Codes

3 Process Description

The Sandown catchment serves most of the Isle of Wight with a population equivalent to approximately 138,000, Sewage is transferred by gravity sewer and 89 No. wastewater pumping stations followed by rising mains with a total length of 41,481m. Sewage is received at 8 No. wastewater transfer pumping stations which transfer sewage in relays to Sandown WTW. The sewerage transfer rising mains have a combined length of 65,245m. Nutrix is dosed at 6 No. wastewater transfer pumping stations to prevent septicity.

All flows are received at the Site's WTW via 2 No. rising mains and 1 No. 900 mm gravity sewers. The rising mains discharge into a low lift pumping station where the flow is lifted by 3 No. duty, assist and standby low lift pumps to 1 No. balance tank. Attenuated flow from the balance tank is then jointed by flow from the gravity sewer and gravitates to the main inlet pumping station where sewage is lifted by 6 No. inlet pumps (5 duty and assist, 1 standby), rated at 632 l/s each, to 3 No. 6 mm, 2D band screens (duty, assist and standby). Screenings are washed and dewatered by 2 No. wash and dewater units (duty, standby). Screened sewage enters 2 No. grit channels (duty, standby) each with 1 No. grit pump.

Screened and de-gritted sewage pass through a storm separation channel. Flows in excess of 840 l/s overflow to 2 No. storm tanks (storm tanks 1&2). When storm tanks 1&2 are full, excess flow from the storm tank up to 165 l/s overflows to the final effluent chamber to be discharged with the final effluent via the long sea outfall. When storm tanks 1&2 are full incoming flows in excess of 1,005 l/s overflow further to 4 No. storm tanks (storm tanks 3, 4, 5 and 6). When storm tanks 3, 4, 5 and 6 are full, excess flow from these 4 storm tanks overflows to the storm outfall. When incoming flow is less than 2 dry weather flows (DWF) settled storm sewage from all six storm tanks is returned upstream of the primary treatment by the storm return pumping station.

After storm separation, flow to full treatment then combines with works return flows and gravitates along a splitter channel to 4 No. primary settlement tanks. The primary tanks are served by 2 No. Degremont Densadeg coagulation tanks and 4 No. flocculation chambers and fitted with counter-current flow lamella separators. Ferric and polyelectrolyte are dosed into the coagulation tanks and flocculation chambers respectively. All four primary tanks operate as duty tanks. Sludge is drawn towards central hoppers by a continuously operating bridge scraper and is removed from the hoppers by 4 No. desludge pumps. Part of the sludge is recirculated by 4 No. sludge recirculation pumps to the flocculation chambers to assist sludge settlement. The flocculation chambers are fitted with grease removal troughs which collect grease and scrum. Scum is pumped by 2 No. submersible pumps to the 1 No. grease (scum) tank.

Settled sewage passes through 2 No. 2 mm 2D secondary screens operating as duty, assist units, each rated at 1,478 l/s. Screened settled and screened sewage enters the inter-stage pumping station where it is lifted by 3 no. duty, assist and standby variable speed pumps, each rated at 739 l/s, to the inlet chamber of the Biofor Plant comprising 6 No. cells of the Degremont "Biofor C" technology. Each cell receives influent from a common inlet channel with even flow distribution by weirs. The cells contain a bed of biological support media (Biolite) supported on a bed of gravel. Fine bubble aeration is provided via Degremont "Oxazur" membrane fine bubble diffusers located in the gravel layer. Process air is provided by 2 No. duty, assist process air blowers; scouring air is provided by 2 No. duty, assist scouring air blowers; a shared standby blower serves for both process air and scouring air. During normal operation, influent is introduced underneath the floor of each Biofor cell and flows upwards through the Biolite media

towards the top surface. Each Biolite granule acts as a support for a coating of active biomass. Final effluent from the Biofor plant flows under gravity into the final effluent sump and then to the outfall pumping station or to the clean washwater tank. The number of cells that are on-line is regulated in proportion to the incoming flow from the inter-stage pumps and also ensures that the rising velocity through a cell never falls below 3 m/h and remains below 12 m/h. A cell has minimum and maximum flow rate thresholds that are applied to it. As the incoming flow rate changes, the number of on-line cells changes.

Accordingly, such that the minimum and maximum thresholds for each cell are respected, 3 No. backwash pumps, each rated at 356 l/s, provide backwash for the cells. Backwash water is drawn from 1 No. clean wash water tanks with a volume of 1,152m^3. Dirty backwash water is collected in 1 No. dirty backwash water tank with a volume of 1,395m^3. Dirty backwash water is returned to primary treatment by 2 No. dirty backwash return pumps, operating as duty, assist, and each rated at 190 l/s. Effluent from the Biofor plant gravitates to the outfall pumping station. Treated effluent and storm sewage are pumped by 3 No. DWF pumps and 4 No. storm pumps to be discharged via the long outfall to the English Channel.

The Site serves as the STC for the Isle of Wight. Imported sludge is pumped through the 2 No.to 1 No. sludge reception tank. Both indigenous and imported sludge are pumped by 2 No. submersible sludge pumps through 2 No. strain presses. Screened sludge is transferred via 1 No. screened sludge transfer tank to 2 No. screened sludge storage tanks from where it is fed to 2 No. gravity belt thickeners. Thickened sludge is stored in 1 No digester feed tank and then fed to 3 No. conventional mesophilic anaerobic digesters. Digested sludge is stored in 2 No. post digestion storage tanks (also known as secondary digesters) after which it is dosed with lime and dewatered by 2 No. centrifuges. Cake is stored in “temporary” cake bays. The Site has a sludge dryer system which is mothballed. Sludge liquors from the belt thickeners and centrifuges are collected at the Site’s return pumping station and pumped to upstream or downstream of primary treatment.

The main odour control package at the Site comprises a two-stage chemical scrubbing plant and a polishing carbon filter. The chemical scrubbing plant includes a first stage acid scrubber for the removal of odorous basic compounds such as ammonia and a second stage alkali scrubber for the removal of acidic odorous compounds such as hydrogen sulphide. The Inlet Works Building, Sludge Building and Sludge Recirculation Kiosk contain process plant likely to produce odour and have separate ventilation systems. The air from areas ventilated in this way is extracted and treated in local carbon filters.

The site also includes a CHP unit, installed in 2013, powered by biogas and with a thermal rated input of 0.973MWth. Therefore, the Site does not fall within the scope of specified generator controls and currently the Medium Combustion Plant Directive (MCPD) since the thermal rated input of the CHP unit does not exceed 1MWth.

4 Part A – About you

4.1 Question 5c: details of directors

4.2 Question 7: Contact details

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

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 B2 - General – new bespoke permit

5.1 Question 3a and Appendix 2: Relevant offences

Details of the relevant convictions are provided in the document reference 790101_MSD_RelevantOffences December 2023.

5.2 Question 3b and Appendix 2: 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
- 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.

Southern Water is currently working on an accredited Competency Management System under the Competent Operator Scheme, based on the Anglian Water Services developed technical competency course, to demonstrate that personnel have the appropriate technical skills and knowledge to manage the activities undertaken. This will be independently certificated and audited, through a third-party certification body (yet to be determined) to ensure it meets the requirements of the Competence Management System Standard, developed by Energy & Utility Skills[1]. 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.

A signed licence agreement between Southern Water and Anglian Water in 2021 relating to Anglian Water Training Manuals, for the purpose of the CMS, is provided in document reference 790101_MSD_CMS_SAN December 2023. An e-learning course is being developed and certification is due to be undertaken by LRQA. The CMS is to be certified within the first 12 months from issue of a permit for the STC.

5.3 Question 3c: Finances

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

[1] Energy and Utility Skills (2023) Competence Management System. Available online at: https://www.euskills.co.uk/about/our-industries/waste-management/competence-management-system

5.4 Question 3d: Management System

The Site operates under the company-wide Environmental Management System (EMS 684981), which is certified to ISO 14001:2015 and is applicable to water supply and wastewater treatment assets at operational sites (wastewater treatment works, water supply works and water booster stations). The EMS is effective for three years from July 2023 and is accredited by the British Standards Institution (BSI).

Demonstrable procedures are outlined in the Site Process Activity Manual (SPAM) and Operating Plan. Where suitable and available, any monitoring of emissions to air, land and water is undertaken according to Monitoring Certification Scheme (MCERTS) Standards by accredited contractors.

As a part of the EMS the Operator has an internal audit programme that takes places every 12 months. During this annual programme operational sites are selected as a subsample and audited. Suppliers and business areas are also audited. An annual report is produced as part of the management review, and this is signed off by Senior Management. In addition, the EMS is subject to audit by the inspection and certification company BSI (for accreditation purposes) each year, and a full certification audit is conducted every three years.

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

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

To accompany the Site's environmental permit, the Site will have its own Management System in line with the Environment Agency guidance. This identifies all the applicable procedures under the accredited EMS but includes additional site-specific information and procedures.

One of the key tasks for Southern Water during the permit determination process is the development of the management system arrangements to cover additional requirements in relation to the permitted operations. This may include the Climate Change Risk Assessment (CCRA) document reference 790101_ERA_CCRA_SAN to address measures to adapt to predicated additional pressure from changes in external operational conditions (such as weather and flooding), if required. Climate change and climate resilience will be included in the ongoing future updates to the EMS.

In addition to the Environmental elements of the management system, Southern Water also has a health and safety management system which includes relevant procedures to follow with regards to accidents and the reporting of incidents and near misses. The health and safety manual is designed to comply with the Health and Safety Executive's (HSE) Managing for health and safety guide (HSG65)[2].

[2] Health and Safety Executive (2013), Managing for health and safety (HSG65). Available online at: https://www.hse.gov.uk/pubns/books/hsg65.htm.

The EMS certification can be found in Document reference 790101_MSD_EMS_SAN December 2023.

5.5 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 790101_MSD_SiteLayoutPlan_SAN July 2024
- Drainage Plan - Document reference 790101_MSD_DrainagePlan_SAN (drawing no IWJS-
- Schematics - Document reference 790101_MSD_Schematics_SAN

5.6 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 3 of the Environment Agency template[3]):

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

A copy of the SCR can be found as document reference 790101_MSD_SCR_SAN July 2024 June 2024.

5.7 Question 6: Environmental risk assessment

As part of the application for an environmental permit, operators must assess the risk to the environment and human health from the activities that they propose to undertake. Using the methodology outlined in the Environment Agency's 'Risk assessments for your environmental permit'[4].

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

The ERA assesses the impacts from the following environmental concerns:

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

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

[4] Environment Agency (2020) Risk assessments for your environmental permit. Available online at: https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

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

A copy of the ERA can be found as document reference 790101_ERA_SAN December 2023. Constraints maps have been updated to demonstrate human receptors to a radius of 2km, as shown in document reference 790101_ERA_Maps_SAN December 2023.

6 Part B3 and B4 – New bespoke installation permit and new bespoke waste activity

6.1 Question 1: Table 1a: Activities applied for

Table 6.1: B3: Table 1a: Activities applied for

Installation name	Schedule 1 or other references	Description of the Activity	Activity capacity	Annex I (D codes) and Annex II (R codes) and descriptions	Hazardous waste treatment capacity	Non - hazardous waste treatment capacity
Sandown STC	S5.4, Part A (1), (b) and (i)	Anaerobic digestion	Annual: 211,067tonnes Daily: 380tonnes	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) R13 - Storage of waste pending any of the operations numbered R 1 to R 12.	0	Annual: 211,067tonnes Daily: 380tonnes

Installation name	Schedule 1 or other references	Description of the Activity	Activity capacity	Annex I (D codes) and Annex II (R codes) and descriptions	Hazardous waste treatment capacity	Non - hazardous waste treatment capacity
Directly associated activities						
	Waste reception	Import of sludge from satellite sites and commercial waste (future)		R3 D9		
	Gas combustion to produce heat and power.	Use principally as a fuel or other means to generate energy		R1		
	Use of biogas	Use principally as a fuel or other means to generate energy.		R1		
	Use of auxiliary standby flares	Incineration on land		D10		
	Standby boilers	Used for emergency only, do not export electricity to the grid		D10		
	Use of pressure release values	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.		R05		
	Discharge of condensate	Condensate from the CHP exhaust, flare gas pipelines, gas storage bag From collection to the point of discharge at the adjacent WTW.				

Installation name	Schedule 1 or other references	Description of the Activity	Activity capacity	Annex I (D codes) and Annex II (R codes) and descriptions	Hazardous waste treatment capacity	Non - hazardous waste treatment capacity
For installations that take waste	Total storage capacity	8,983 m^3				
	Annual throughput	211,067 wet tonnes for indigenous sludge and sludge imports				

Table 6.2: B4: Table 1a: Activities applied for

Description of the waste operation	Annex I (D codes) Annex II (R codes) and description	Hazardous waste treatment capacity	Non-hazardous waste treatment capacity
Tankered wastes to Head of the Works	R3 - Physical treatment of waste. Recycling/ reclamation of organic substances which are not used as solvents.	None	30,000
For all waste operations	Total storage capacity	N/A	
	Annual throughout (tonnes per year)	30,000	

6.1.1 Types of waste accepted

None of the requested wastes are hazardous. The types of waste proposed to be accepted are shown in Appendix A.

Part B3- installation/scheduled activity

Southern Water requires a permit for the Site to be authorised to accept sludge waste to undergo anaerobic digestion. It is requested that the annual quantity of waste to be accepted is 211,067 wet tonnes.

Part B4- waste operation

The application is to allow for up to 30,000tpa of 16 10 02 code wastes (cess and chemical toilet waste) to be accepted at the Head of the Works. This waste stream has been accepted at the Site previously, evidenced by waste transfer notes (document reference 790101_WasteTransferNotes_SAN June 2024).

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

6.2.1 Emissions to air

Table 6.3: Part B3, Question 2, Table 2: Point source emissions to air

Installation name	Sandown STC			
Point source emissions to air				
Emission point reference and location	**Source**	**Parameter**	**Quantity**	**Unit**
Stack 1 SZ 60257 85378	CHP engine exhaust stack burning biogas	Oxides of Nitrogen (as NO_2)	500	Mg/m^3
		Carbon Monoxide	1400	Mg/m^3
		Sulphur Dioxide	350	Mg/m^3
		Total VOCs	1000	Mg/m^3
Stack 2 SZ 60331 85398	Waste gas burner (flare stack)	Operational hours	No limits set	Mg/m^3
Dual fuel standby boiler (No.1) SZ 60265 85350	Dual fuel stand by boiler exhaust stack – operating on Biogas or Natural	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	250	Mg/m^3
		Sulphur Dioxide (if burning biogas)	200	Mg/m^3
Dual fuel standby boiler (No.2) SZ 60265 85350	Dual fuel stand by boiler exhaust stack – operating on Biogas or Natural	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	250	Mg/m^3
		Sulphur Dioxide (if burning biogas)	200	Mg/m^3
Gas holder SZ 60323 85321	Gas holder pressure relief valve	Biogas release and operational events	No limits set	
Odour control unit SZ 60241 85226	Channelled emissions to air as identified on the Site plan including tank vents and/or scrubbing system	Ammonia	20	Mg/m^3
		H_2S	No limit specified	
		Odour concentration	1000	Oue/Nm^3
Pressure relief valves on Digester 1 SZ 60292 85352	Biogas release and operational events	Operational hours Recorded duration and frequency.	No limit set	
Pressure relief valves on Digester 2 SZ 60298 85334	Biogas release and operational events	Operational hours Recorded duration and frequency.	No limit set	
Pressure relief valves on Digester 3 SZ 60304 85316	Biogas release and operational events	Operational hours Recorded duration and frequency.	No limit set	

Table 6.4: Part B4, Question 2, Table 2: Point source emissions to air

Waste operation	Sandown, Imports to Head of the Works			
Point source emissions to air				
Emission point reference and location	**Source**	**Parameter**	**Quantity**	**Unit**
Odour control unit		Ammonia	20	Mg/m^3

Waste operation	Sandown, Imports to Head of the Works			
SZ 60241 85226	Channelled emissions to air as identified on the Site plan including tank vents and/or scrubbing system	H_2S	No limit specified	
		Odour concentration	1000	Oue/Nm^3

The emission points are shown in drawing reference 790101_MSD_SiteLayoutPlan_SAN July 2024.

6.2.2 Emissions to water (other than sewers)

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

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

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

There are no direct potentially contaminated discharges to groundwaters.

Accidental releases of materials to the environment are controlled through adequate containment measures and working procedures in accordance with the EMS. Spill procedures are in place under EMS363 and 364 as well as a pollution prevention procedure EMS360. All spillages are recorded in the site diary including actions taken.

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

A list of the point source emissions to sewers, effluent treatment plants and other transfers off-site is included as Table 6.4. The quantity of parameters will be determined by a H1 assessment once the wastewater inventory is undertaken. In addition, the table demonstrates that a number of sources are monitored from a shared monitoring point (Monitoring Point M1) where flows are combined due to existing infrastructure. The Implementation Plan (document reference 790101_MSD_Implementation Plan December 2023) includes a programme for a Waste water & Digestate plan to produce an inventory, and establish a need and feasibility for further monitoring points. Any changes to monitoring points are to be added in future permit variations once the required assessment and surveys are complete in terms of compliance with BAT. Any liquid waste will either be reused or discharged to the drainage system of the adjacent Sandown WTW and will undergo treatment through the works before being discharged under an existing water discharge permit. On-site WTW effluent will meet the requirements of the existing environmental permit for discharges to water. 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 WTW.

Condensate from the CHP exhaust, biogas system and flare stacks are contained within the sealed drainage system on the Site and pumped to the head of the adjacent Sandown WTW.

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 WTW. A drainage plan of the Site is provided with the application, document reference 790101_MSD_DrainagePlan_SAN (drawing no IWJS-148445 rev 2, dated 28/08/21).

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 creation of a new hardstanding area.

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

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 WTW internal drainage system and are returned to the head of the works for treatment prior to discharge as final effluent.

Table 6.5: Part B3 and Part B4, Question 2, Table 2: Point source emissions to sewers, effluent treatment plants or other transfers off-site

Emission point reference, and location	Source	Characteristics*	Monitoring of emission point
Scheduled activity			
Return to inlet works of Sandown WTW SZ 60222 85254 as W1 on site layout plan	Condensate from the gas pipelines and gas storage bag, collated in buckets	Condensate with potentially slightly elevated levels of H2S dissolved from the biogas, resulting in a low level of acidity	Discharge to adjacent WTW. Monitoring point for sampling as M1 on site layout plan (SZ 60233 85262)
Boiler Maintenance SZ 60222 85254 (W1 on site layout plan)	Boiler blow down to minimise damage from high mineral content water.	High purity water with traces of chemicals (used for boiler dosing).	Infrequent emission to the inlet works. Discharged to adjacent WTW via inlet works. Monitoring point for sampling as M1 on site layout plan (SZ 60233 85262)
Drain down of plant SZ 60222 85254 (W1 on site layout plan)	Occurs during maintenance when it is necessary to drain down the feed water, hot well or boiler shell.	High purity water with traces of chemicals (used for boiler dosing).	Infrequent emission to the inlet works. Discharged to adjacent WTW via inlet works. Monitoring point for sampling as M1 on site layout plan (SZ 60233 85262)
Rainwater via gutters and into road drain system. SZ 60222 85254 (W1 on site layout plan)	Uncontaminated roof water from buildings.	Clean rainwater from building roofs only.	Discharged to adjacent WTW via inlet works. Monitoring point for sampling as M1 on site layout plan (SZ 60233 85262)
Rainwater SZ 60222 85254 (W1 on site layout plan)	Run off from impervious surfaces	Clean rainwater from runoff	Discharged to adjacent WTW via inlet works. Monitoring point for sampling as M1 on site layout plan
Washwater SZ 60222 85254 (W1 on site layout plan)	From the washing down of mechanical equipment during maintenance activities	Variable.	Discharged to adjacent WTW via inlet works. Monitoring point for sampling as M1 on site layout plan (SZ 60233 85262)
STC Liquors SZ 60233 85252 (S1 on site layout plan)	Process liquors from the STC (dewatering liquors, cess liquors, road drainage, de-grit drain)	Variable, from processes	Discharged to adjacent WTW via inlet works. Monitoring point for sampling as M1 on site layout plan (SZ 60233 85262)

STC Liquors SZ 60231 85368 (S4 on site layout plan)	Process liquors from the STC (belt thickener filtrate, road drainage, centrifuge supernatant and cake storage area runoff)	Variable.	Discharged to adjacent WTW via inlet works. Monitoring point for sampling at M4 on site layout plan (SZ 60231 85368)
Wastes import activity permit			
Cess waste to sewer SZ 60216 85233 (S2 on site layout plan)	Cess waste entering from reception point	Raw cess waste	Discharged to adjacent WTW via inlet works. Monitoring point for sampling at M2 (SZ 60216 85233)
Tankered waste to sewer SZ 60221 85224 (S3 on site layout plan)	Tankered waste entering from reception point	Variable.	Discharged to adjacent WTW via inlet works. Monitoring point for sampling at M3 (SZ 60221 85224)

Note: *The stated characteristics are not currently verified via a wastewater inventory, as required under BAT 1. The Implementation Plan (document reference 790101_MSD_Implementation Plan December 2023) includes a programme for a Waste water & Digestate plan to produce an inventory and understand the volumes.

Please refer to the ERA (doc ref 790101_ERA_SAN December 2023) on the environmental risk the water emissions pose and how these are mitigated, where relevant.

6.2.4 Emissions to land

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

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

Discharges will be minimal, typically arising from periodic maintenance/cleaning operations, and is captured in spill trays.

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

6.3 Question 3: Operating techniques

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

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

Table 6.6 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 Southern Water's Sandown Site Working Plan, as part of the EMS to be made available to staff to ensure compliance with a permit, which covers the following:

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

Table 6.6: Technical standards

Installation name	**Sandown STC**	
B3		
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	• Biological waste treatment: appropriate measures for permitted facilities • Non-hazardous and inert waste: appropriate measures for permitted facilities	• https://www.gov.uk/guidance/biological-waste-treatment-appropriate-measures-for-permitted-facilities/1-when-appropriate-measures-apply • https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities
B4		
Description of the waste operation	**Appropriate measure (TGN reference)**	**Document reference**
Physical treatment of non-hazardous waste (accepting cess and tankered wastes to Head of the Works)	• Non-hazardous and inert waste: appropriate measures for permitted facilities	• https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities
General		
	Guidance	**Document reference**
	• Monitoring stack emissions: technical guidance for selecting a monitoring approach. • M1 sampling requirements for stack emission monitoring. • Environment Agency environmental permitting guidance, including: • Risk assessments for your environmental permit • Energy efficiency (Energy efficiency for combustion and energy from waste power plants) • Noise assessment and control • H4 Odour management • H5 Site condition report • Control and monitor emissions for 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/guidance/energy-efficiency-standards-for-industrial-plants-to-get-environmental-permits • https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits • https://www.gov.uk/government/publications/environmental-permitting-h4-odour-management

Installation name	Sandown STC	
		• 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 790101_MSD_Schematics_SAN 2024.

6.3.1 BAT Assessment

An assessment against the BAT Conclusions set out in the 2014/738/EU: Commission Implementing Decision of 9 October 2014 establishing best available techniques (BAT) conclusions, under the Industrial Emissions Directive 2010/75/EU has been undertaken for all the 16 sites, as a whole, and the outcome of these conclusions can be found in document reference 790101_MSD_BAT_SAN December 2023. This document reflects the existing arrangement at site and any commitments Southern Water has already made during the ongoing application process. It is acknowledged that it does not fully meet BAT in some instances. Changes to site will be undertaken and completed to meet BAT, where applicable. The changes required will be submitted to the Environment Agency, in plans to be submitted as part of Improvement Conditions within the permit, for their agreement and Southern Water's subsequent implementation.

Supplementary documents for the BAT assessment are provided:

- BAT 1 Accident Management Plan (AMP) is provided in 790101_MSD_AMP_SAN December 2023. Catastrophic failures, of tanks for example, will be included in the AMP once final designs are agreed.
- BAT 1 Residues Management Plan (RMP) is provided in 790101_MSD_RMP_SAN July 2024.
- BAT 2 Description of the Duty of Care procedures provided in 790101_WasteAcceptance_SAN June2024
- BAT 3 Sampling commitment is provided in 790101_Sampling proposal_SAN July 2024
- BAT 14 Leak Detection and Repair Plan (LDAR) is provided in 790101_MSD_LDAR_SAN December 2023.
- BAT 34: Reducing channelled emissions, addressed in the Odour Management Plan (OMP), provided in 790101_ERA_OdourMP_SAN July 2024.
- BAT 53: Reducing emission of hydrochloric acid (HCl), ammonia (NH_3) and organic compounds to air addressed in the Odour Management Plan (OMP), provided in 790101_ERA_OdourMP_SAN July 2024.

6.3.2 Appropriate measures

In addition to the Bref and associated BATc, the appropriate measures will form part of the technical standards the Site operates, in particular activities not addressed as Scheduled Activities (ie the acceptance of 16 10 02 waste to the head of the works activity addressed in Part B4 form):

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

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

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

As per document reference 790101_Sampling proposal_SAN July 2024, sampling and analysis in relation to permitted waste operations, other than those related to Scheduled Activities, will be undertaken in line with ‘Non-hazardous and inert waste: appropriate measures for permitted facilities’ guidance text, using a UKAS accredited, or equivalent, laboratory, where available. This commitment is related to the acceptance of imported wastes to the head of the works at Sandown.

6.4 General requirements

6.4.1 Overview

This section provides an overview of the measures in place at the Site for controlling fugitive emissions, noise and odour. An ERA has been completed and is provided with the application (Document reference: 790101_ERA_SAN December 2023). The response to this question relates to Table 4 in the Part B3 and B4 form.

6.4.2 Control of fugitive emissions to air

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

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

Overall impacts of all air pollutants are considered to be low from the activities undertaken on the Site based on the results of the high-level initial air quality review. The existing approaches and relevant procedures presented in the EMS and operational procedures are considered to adequately address the emissions that may present a risk, and, therefore, an Emissions Management Plan (EMP) is not considered to be required.

An updated H1 assessment has been completed and can be found in 790101_H1 Tool v8_SAN December 2023.

An Air Quality Risk Assessment has been undertaken to assess the impacts from point sources emissions to air from the site. This is currently being approved for issue and will be submitted by 12th January 2024.

6.4.2.1 Odour

The Site is located at the north-eastern extent of Sandown town. It has been in the current location since around 1940. To the west of the Site is a caravan park and small industrial estate, as well as a limited number of residential properties. The area to the north and east of the Site remains as undeveloped fields.

The closest sensitive receptor is an estate agent (place of work), which lies 50m west of the Site. Another workplace and a residential property lie within 65m and 70m southwest of the Site.

21 odour complaints have been received between 2018 to 2023. No further information is available on the description of complaints, actions taken or the timescale for rectification. The complaints have not been confirmed as substantiated or relating to the STC.

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 an OMP, reviewed and updated in December 2023, which identifies potential odour emissions from site operations and procedures to manage, control and minimise odour impacts. It sets out the procedures for engaging with neighbours and how the Operator will manage complaints, and the actions to be taken in the case of pollution events. The OMP also describes the monitoring and maintenance procedures to maintain the control measures. It was written in accordance with the Environment Agency's H4 Odour Management guidance (2011). The EMS 341 air quality and odour management also sets out the process for responding to odour complaints arising from customer contact.

The majority of Site operations are fully enclosed and perimeter sprayers are used in certain operational areas of the Site. All sludge treatment processes are covered or enclosed. Odour is controlled via one current Odour Control Unit (OCU). This is equipped with carbon filters for air treatment and abatement to reduce odours and the generation of other gaseous compounds.

A two-stage chemical scrubbing plant is used at the WTW to control odour from the sludge treatment building. The first stage consists of an acid scrubber to remove odorous basic compounds, such as ammonia, while the second stage consists of an alkali scrubber to remove acidic odorous compounds such as hydrogen sulphide. The system utilises sodium hypochloride and sodium hydroxide.

Separate ventilation systems are attached to the inlet works building, sludge building and sludge recirculation kiosk where air is extracted and treated with carbon filters. Treated air is released to the atmosphere via stacks to assist dispersion.

Odour is monitored in the cess and sludge import area via odour loggers. Other odour mitigation measures implemented on-site include placing covers on containers and limiting the height of rising sludge.

Perimeter sprayers are present and operational in certain areas of the Site and all waste is imported in covered lorries or contained in tankers.

Leak detection (methane gas analyser) is also installed on biogas holders to ensure any leaks from the inner bag are detected. Any leaks detected on the biogas system would always be fixed immediately by Southern Water due to the process safety risk of posed by biogas.

The use of odour atomisers during unloading of waste into the system is to be considered.

The removal of biosolids off-site will be undertaken as soon a practically possible.

Management of the odour risks at the Site is also addressed in the Sandown WTW Odour Management Risk Assessment, document reference 790101_ERA_OdourMP_SAN July 2024.

The level of odour risk from the Site is considered to be low, as shown in Appendix B of the ERA, and the Site's Odour Management Plan provides sufficient mitigation. The Plan incorporates any additional mitigation, information and procedures to support the permit application.

6.4.2.2 Noise

Initial screening has been carried out for the Site. 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 790101_ERA_SAN December 2023.

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.

Historically, the Site received noise complaints which were due primarily to the operation of one of the centrifuges. This has since been rectified with improved maintenance and servicing, and only one noise complaint has been received in the last eight years.

6.4.2.3 Dust and particulates

There are not considered to be any significant dust or particulate sources from the Site as identified in the ERA document reference 790101_ERA_SAN December 2023.

6.4.2.4 Bio-aerosols

A bio-aerosols risk assessment has been undertaken for the Site and considers there to not be any significant risks. The Bio-aerosol Risk Assessment can be found in 790101_ERA_BioaRA_SAN December 2023.

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

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

6.4.4 Control of fugitive emissions to land

Details of waste generated at the site is demonstrated in document reference 790101_MSD_ResidueMP_SAN December 2023.

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.
- The sludge from the post digestion sludge storage tanks is dewatered by two centrifuges to reduce its volume. Dewatered digested cake is stored in the cake storage bays, before being transported off-site for storage prior to being 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.
- The biogas from the AD process is burned in a CHP engine and is used to provide power for the Site processes. Surplus power is exported to the grid.
- Polymer intermediate bulk containers (IBCs) are sent back to the supplier for re-use.
- Grit is collected by MTS and taken to Composting Facilities Services Ltd (CFS) for composting and used as a soil conditioner. This process is licensed and controlled via the Environment Agency.
- 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 procured through MTS, using approved waste carriers.

Sandown WTW has a designated waste management area that is located on the eastern side of the WTW. All skips and containers are located on a hardstanding to prevent leaching into the ground. Skips and containers are clearly labelled. All waste from the Site is sorted into this waste area.

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 register.

6.5 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 chain link security fence. A galvanised steel, electronic, pallisade gate secures the main access and is controlled by the control room. The Site is manned 24 hours a day, 7 days a week. For visitors and unauthorised personnel an intercom system at the Site entrance is used. The Site also benefits from a CCTV system, comprising up to 18 cameras. Regular inspections of the boundary fencing and buildings are undertaken to ensure that these have not been compromised and continue to prevent easy access to Site. Repairs are undertaken in accordance with the EMS requirements.

Other risks relating to human health and the environment are presented in Appendix B of the ERA, document reference 790101_ERA_SAN December 2023.

6.6 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

complaints 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, will 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, Southern Water 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.

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 register.

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.

If 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.

6.6.1 Complaints investigation procedure

This section deals with the complaint assessment procedures. The primary role of this assessment will be to ascertain whether a 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 Southern Water 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 CSMS.

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 required, 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 CSMS.

Step 3 – Determine what to record and how

The complaint details and the investigation outcomes and actions taken are to be recorded in the CSMS. 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 CSMS.

Step 5 – Communication with the complainant

The Site Manager or contractor tasked with addressing the 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 complaints records

A full report of the complaints logged within the CSMS is produced to present to the relevant Technician to allow a review of potential trends.

6.7 B3 Question 3c: Types and amounts of raw materials

Details of raw materials is demonstrated in document reference 790101_MSD_ResidueMP_SAN December 2023.

6.8 Monitoring

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

6.8.1 Emissions to air

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

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

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

Table 6.7: Monitoring of air emissions

Emission point type	Parameter	Reference period	Monitoring frequency	Monitoring standard or method
Stacks on engines Burning biogas	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	periodic over minimum 1-hour period	Annual	In accordance with TGN M5 – Monitoring of stack emissions to air
	Carbon monoxide			
	Sulphur dioxide			
	Total volatile organic compounds including methane			
Boilers (dual fuel)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	periodic over minimum 1-hour period	Annual	In accordance with TGN M5 – Monitoring of stack emissions to air
Channelled emissions to air (biofilter and scrubbing system)	Ammonia	periodic over minimum 1-hour period	Once every 6 months, or more frequent if stated in the permit	Emissions of pollutants into the environment through any kind of duct, pipe, stack, etc
	H_2S			
	Odour concentration		Once every 6 months, or more frequent if stated in the permit	BS EN 13725
Auxiliary flare	Operational hours	Recorded duration and frequency.	Continuous	Operational record including

Emission point type	Parameter	Reference period	Monitoring frequency	Monitoring standard or method
				date, time and duration of use shall be recorded
Pressure relief valves	Biogas release and operational events	Recorded duration and frequency.	Daily inspection	Operational record including date, time duration of pressure relief events and calculated annual mass release

Southern Water acknowledges that the auxiliary flare is appropriate for emergency use (such as breakdown and maintenance), records from monitoring will be reviewed regularly to reduce the use of the flare.

6.8.1.1 Assessment of the sampling locations

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

6.8.2 Emissions to water (other than sewers)

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

6.8.3 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 Sandown WTW. Condensate from the CHP exhaust discharges to a container, which is emptied at least fortnightly to the drainage system of the adjacent Sandown WTW and will undergo treatment through the works before being discharged under an existing environmental permit for discharge to water. 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 Site.

6.8.4 Emissions to land

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

In accordance with the Southern Water EMS Policy solid waste is disposed of in accordance with ‘Duty of Care’ Regulations. The composition of the waste, its hazard characteristics and any relevant precautions are clearly stated on the transfer notes provided to licensed waste contractors removing waste from Site for recycling and/or disposal. Records are maintained on-site and will be reported to the regulator as required by the Permit.

6.9 B3 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).

6.10 B3 Question 6: Resource efficiency and climate change

6.10.1 Basic energy requirements

Southern Water 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. Biogas or natural gas for running the boilers, where required.

6.10.2 B3 Question 6a: Basic measures for improving energy efficiency

Biogas is a renewable gas, produced from organic waste and is reused on-site to power its energy requirements. A key objective of the Southern Water EMS is to reduce energy consumption from the grid. Southern Water has a specific Energy and Carbon Manual which contains objectives for the energy consumption. Southern Water recognises 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. Southern Water is currently in the process of better understanding economic levels of energy efficiency, renewable energy generation and carbon reduction (embodied and operational), which will help the company develop and set company and project level reduction targets.

Southern Water deals with the measurement and reporting of operational carbon emissions in existing installations through:

- Monitoring of energy use from electricity meters
- Annual estimation and reporting of operational carbon emissions for regulatory reporting (Southern Water Annual Report, Ofwat and SECR (Streamlined Energy & Carbon Reporting)
- ESOS audit reporting – the Energy Savings Opportunity Scheme (ESOS) is a regulatory requirement to undertake a company-wide audit of energy efficiency opportunities. This is approved by a Lead Assessor and completion is subsequently registered with the Environment Agency. Reporting is every four years. The last report was December 2019. The next one is due December 2023.

Energy efficiency measures implemented at the Site include (but are not limited to) the following:

- The combustion temperature is maintained relatively constant for reduced NOx emissions and increased efficiency
- The engines are equipped with turbochargers, further increasing energy efficiency
- Consideration of energy recovery and the deployment of renewable energy systems – opportunities relating to CHP, wind and solar power generation opportunities for the Site are currently being reviewed
- The Field Performance Manager can request advice from the Optimisation Team to improve efficiency of plant if required.

Biogas is a renewable gas, produced from organic waste. 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.

Southern Water carries out planned maintenance as a means to ensure operations are energy efficient. Overall, the energy use is relatively low and the purpose of the installation is to produce energy by supplying biogas, no further measures are identified at this stage to improve upon energy efficiency. Nevertheless, Southern Water will regularly review energy use and disclose potential opportunities to reduce energy consumption from the four-yearly (or more frequent) energy reviews as required by a varied permit.

In addition, Southern Water 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.

6.10.3 B3 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.

6.10.4 B3 Question 6c: Climate change levy agreement

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

6.10.5 B3 Question 6d: Raw and other materials, other substances and water use

Details of raw materials is demonstrated in document reference 790101_MSD_ResidueMP_SAN December 2023.

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 one double membrane inflatable bag type holder, constructed of PVC coated polyester fabric, which is resistant to UV and microbial degradation. The base of the holder 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.

Secondary raw materials include chemicals used in processes, such as water treatment, polymers and natural gas/diesel for the boilers. Their consumption will be monitored, based on purchase records. Natural gas is not stored on-site, but taken direct from the mains supply.

Water treatment chemicals are stored on impermeable surfaces in a contained area. Polymer is stored in sealed IBC/bags located on bunded areas.

The Southern Water purchasing procedures are included in EMS. The procedures 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 bunded 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:

- Polymer make up - concerns over the impact of using final effluent for this purpose.
- Heat exchanger system water - concerns over the impact of using final effluent for this purpose.
- Eye baths and safety showers - potable water essential.
- Limited wash-down points where it would be uneconomic to extend the final effluent wash-water system.
- Office messing facilities - kitchen, washing and welfare facilities etc.
- Odour control odorisers - dilution of chemicals to correct concentration.

To ensure appropriate use of raw materials to prevent releases of substances to the environment and limit environmental impact, Southern Water will follow quality assurance procedures for the purchasing of materials. The raw materials will be selected from specialist suppliers determined by their pre-established material specifications; these are to include environmental considerations. Priority choice of purchased raw material will be given to those with the least environmentally harmful chemicals compared to their alternatives, wherever practicable.

Resource efficiency will be achieved through the minimum use of raw materials and water (where possible), and Southern Water 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.
- Implement further appropriate measures identified from a review.

6.10.6 B3 Question 6e: Reducing production of waste

Southern Water 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, preventing waste, minimising waste generation and maximising recycling and recovery of waste generated from the operation of the Site.

There are procedures in the EMS which include details of the types of waste produced on-site, how wastes are segregated, stored and removed from Site. Only minimal volumes of waste shall be generated at the Site, with waste streams segregated and recovered for recycling where possible. All waste streams shall be managed in accordance with existing EMS', with any final off-site disposal to be carried out by licensed waste contractors in accordance with Duty of Care requirements. 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.

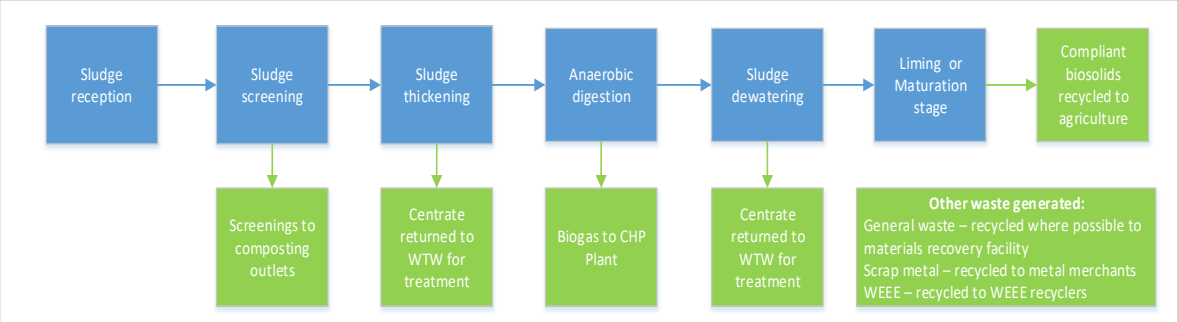
Further consultation with waste contractors will ensure that all waste streams have been considered. The sampling and characterisation of wastes will be covered under the requirements of Duty of Care. The wastes are handled to a minimum and are stored in suitably designed containers prior to being removed 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 waste (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. 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. Southern Water applies 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.



Schematic of STC with details of main waste streams

7 Part B6 – New bespoke water discharge activity or groundwater activity (point source discharge) or point source emission to water from an installation

The form responds to question listed in Table 1 of the B6 application form for the last listed option 'Effluent and/or contaminated surface water run-off arising from the operation of an installation.

Therefore, only the following questions have been responded to:

Type of effluent	Charge band	Please tick box	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Effluent and/or contaminated surface water run-off arising from the operation of an installation	No additional charge, as already included as part of the installation variation application charge	✔	a, b, d	c	b, c, d, f		a, b2	a, b, c	b, c, d, e, f, g	d*, e*, f	a, b, d, e, f, h, i	a, b, c

* Check the relevant question and our guidance notes on part C6 to see if you need to give an answer.

Note Question 6c is not within the application form, despite being listed as being required by Table 1 of the application form.

7.1 Question 1 About the effluent

Effluent description: Return liquors from the STC process and condensate from the gas pipelines and gas storage bag.

Effluent name: STC return liquors.

7.2 Question 2 How long will you need to discharge for?

Start date: from date of IED permit issuance.

The discharge will not be time limited, will take place all year and continuously (e.g. for more that six day in any year)

7.3 Question 3 How much do you want to discharge?

Southern Water is not aware of the quantity of water sent to the inlet works from the STC because it is not currently monitored, therefore no details have been provided for Question 3. An implementation plan (document reference 790101_MSD_Implementation Plan December 2023) has been developed as part of the accompanying IED permit application.

7.4 Question 4 Intermittent sewage discharges

It is not possible to answer Q4a-o. These do not seem applicable to the process.

7.5 Question 5 Should your discharge be made to the foul sewer?

The discharge point (inlet works (emission point W1)) (document reference 790101_MSD_SiteLayoutPlan_SAN July 2024) is located within the operator's own wastewater treatment works, therefore, the distance to the nearest foul sewer is 0m and response to Question 5b2 is not applicable.

7.6 Question 6 How will the effluent be treated?

Effluent is not treated before reaching the inlet works because once leaving the inlet works the effluent will be treated through the Wastewater Treatment Works. The process description is provided in Section 3. An implementation plan (document reference 790101_MSD_Implementation Plan December 2023) has been developed as part of the accompanying IED permit application. It is expected that Improvement Conditions in the IED permit will provided and Southern Water will identify how it will monitor and characterise the liquors returning to the head of the adjacent Sandown WTW.

7.7 Question 7 What will be in the effluent?

Southern Water is not aware of the composition of the effluent discharged to the inlet works from the STC because it is not currently monitored, therefore, no details have been provided for Question 7.

The temperature of effluent is not known, but since the water is not direct from processes, it is expected to be ambient.

An implementation plan (document reference 790101_MSD_Implementation Plan December 2023) has been developed as part of the accompanying IED permit application. It is expected that Improvement Conditions in the IED permit will be provided and Southern Water will identify how it will monitor and characterise the liquors returning to the head of the adjacent Sandown WTW.

Where suitable and available, any monitoring, sampling and analysis of emissions to water is undertaken according to MCERTS, or equivalent standards, by MCERTs accredited contractors.

7.8 Question 8 Environmental risk assessments and modelling

Discharges to lakes, estuaries, coastal waters or bathing waters.

Southern Water is not aware of the composition of the effluent discharged to the inlet works from the Site because it is not currently monitored, therefore, screening cannot be undertaken at this time.

An implementation plan (document reference 790101_MSD_Implementation Plan December 2023) has been developed as part of the accompanying IED permit application. It is expected that Improvement Conditions in the IED permit will be provided and Southern Water will identify how it will monitor and characterise the liquors returning to the head of the adjacent Sandown WTW.

Where suitable and available, any monitoring, sampling and analysis of emissions to water is undertaken according to MCERTS, or equivalent standards, by MCERTs accredited contractors.

7.9 Question 9 Monitoring arrangements

Effluent monitoring will be in line with permit conditions. An implementation plan (document reference 790101_MSD_Implementation Plan December 2023) has been developed as part of

the accompanying IED permit application. It is expected that Improvement Conditions in the IED permit will provided and Southern Water will identify how, and the final locations of where, it will monitor and how it characterise the liquors returning to the head of the adjacent Sandown WwTW.

Where suitable and available, any monitoring, sampling and analysis of emissions to water is undertaken according to MCERTS, or equivalent standards, by MCERTs accredited contractors.

7.10 Appendix 4 Discharges to tidal river, tidal stream, estuary or coastal waters

The final effluent discharge from the WwTW is permitted under the permit reference A726/IOW/97, from ‘A1 Secondary treated sewage effluent’, ‘A2 Settled storm sewage’ and ‘A3 Settled storm storage’ within the English Channel (Long Sea Outfall) at SZ 6288 8245 and SZ 6127 8469. The permit authorises the discharge of secondary treated sewage effluent and settled storm sewage only.

8 Part F1 – 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 BACS.

8.3 Question 5: Confidentiality and National security

Southern Water does not wish to claim confidentiality with this application.

8.4 Question 6: Application checklist

Table 8.1 provides a list of section/document references included in the application.

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

Question reference	Document title	Document reference
Part A – Q5c	Details of Directors	790101_MSD_Directors_SAN
Part B2 – Q3a	List of Relevant Offences	790101_MSD_RelevantOffences_SAN
	BAT analysis	790101_MSD_BAT_SAN December 2023
Part B2 – Q3b	Competency Management System agreement	790101_MSD_CMS_SAN December 2023
	Environmental Management System Certificate	790101_MSD_EMS_SAN December 2023
Part B2 – Q5a	Site Location Pan	790101_MSD_SiteLayoutPlan_SAN July 2024
	Site Layout Plan	
	Drainage Plan	790101_MSD_DrainagePlan_SAN
Part B2 – Q5b	Site Condition Report	790101_MSD_SCR_SAN July 2024
Part B2 – Q6	Environmental Risk Assessment	790101_MSD_ERA_SAN December 2023 790101_MSD_Maps_SAN December 2023
Part B2 – Q6b	Climate Change Risk Assessment	790101_ERA_CCRA_SAN
Part B3 – Q1b	Waste Codes	Appendix A of 790101_MSD_SAN December 2023
Part B3 – Q3a	Schematics	790101_MSD_Schematics_SAN
Part B3 – Q3b	Odour Management Plan	790101_ERA_OdourMP_SAN July 2024
Part B3 – Q3b	Bio-aerosol Risk Assessment	790101_ERA_BioaRA_SAN December 2023
Part B3 – Q3c	Material Safety Data Sheets	790101_MSD_MSDS_SAN
Part B6 – Q1-Q10	Discharges	Section 7 - 790101 790101_MSD_Main_SAN July 2024
Part F1 – Q6	Main Supporting Document	790101_MSD_Main_SAN July 2024

A. Waste codes

A.1 Wastes to be included in a varied permit

A.1.1 Part B3: Wastes imported for Anaerobic Digestion

It is requested that the annual quantity of indigenous sludge and liquid sludge imports to be accepted is 211,067 tonnes (wet).

EWC Code	Description	Where accepted	Indigenous or imported	Justification for use
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**			
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05 (sewage sludge only)	AD pre-digestion	Raw/digested cake – imported	
19 08	**wastes from waste water treatment plants not otherwise specified**			
19 08 05	sludges from treating urban wastewater	AD pre-digestion	Indigenous/ Imported	

A.2 Part B4: Wastes to import under a waste activity permit

EWC Code	Description	Where accepted	Indigenous or imported	Justification for use
16 10	**aqueous liquid wastes defined for off-site treatment**			
16 10 02[5]	aqueous liquid wastes other than those mentioned in 16 10 01; cess waste, chemical toilet and portable shower waste only.	Head of works	Imported	The waste for this code will be cess waste, chemical toilet and portable shower waste only.

A.3 Other wastes accepted to the site

A.3.1 Wastes received under the Controlled Waste Regulations 2012*

EWC Code	Description	Where accepted	Indigenous or imported	Justification for use
20 03	**Other municipal wastes**			
20 03 04	septic tank effluent and sludge	Head of works	Imported	
20 03 06	waste from sewage cleaning	Head of works	Imported	

*Southern Water acknowledge these waste codes will not be included in a permit

[5] Cess, septic, chemical toilet and portable shower waste

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