MOTT MACDONALD

Millbrook Sludge Treatment Centre Environmental Permit Application

Main Supporting Document

December 2024

Mott MacDonald
4th Floor
Mountbatten House
Grosvenor Square
Southampton SO15 2JU
United Kingdom

T +44 (0)23 8062 8800
mottmac.com

Millbrook Sludge Treatment Centre Environmental Permit Application

Main Supporting Document

December 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	April 2022	Shannon Stone	Anita Manns	Anita Manns	First Draft
B	May 2022	Olivia Ellson	Shannon Stone	Anita Manns	Second Draft
C	June 2022	Olivia Ellson	Shannon Stone	Anita Manns	Final Issue
D	June 2024	Isobel Moss Shannon Stone	Anita Manns	Anita Manns	Revision for client comment
E	Sept 2024	Isobel Moss Shannon Stone	Anita Manns	Anita Manns	Final for resubmission to the Environment Agency
F	Dec 2024	Anita Manns	Claire Cowdrey	Anita Manns	Updated in response to NDM Dec 2024

Document reference: | 790101_MSD_Main_MIL December 2024

Information class: Standard

Contents

Tables

1 Non-technical summary

1.1 Overview of the Site and activities

1.1.1 Millbrook Sludge Treatment Centre

Millbrook Sludge Treatment Centre (STC), accepts sludge that is pumped via an underground pipe from the pumping station at Slowhill Copse, sludge reception area (SHCSR) located on the opposite bank of the Western Docks. These two sites have a 'technical connection' due to the presence of an underground pipe, and therefore, these two facilities are collectively referred to as the "Site".

The address of the Millbrook STC is Millbrook Wastewater Treatment Works (WTW), Western Docks, Millbrook, Hampshire, SO15 0HH.

National Grid reference: SU 38755 12378.

The Millbrook WTW, adjacent to the STC, is operated under the Urban Wastewater Treatment (England and Wales) Regulations 1994 (UWWTR), and has a standalone Water Discharge Activity Environmental Permit, which will remain an independent permitted activity.

The STC operation is a non-hazardous waste activity, which has been operating under a registered T21 exemption. The waste activity comprises imports, physio-chemical and anaerobic digestion treatment (AD), and the storage of waste, all for recovery purposes. The STC handles waste derived from the wastewater treatment process, either indigenously produced on-site or imported from other Southern Water owned assets.

The Millbrook site currently has an Environmental Permit, EPR/CP3535XU, which allows for the running of 2 No. Combined and Heat Power engines (CHPs) (1 No Tranche B specified generator and Tranche A CHP), both utilising biogas, to generate electricity and 2 No. back-up boilers. The Site has 3 No. standby diesel generators, which are not Directly Associated Activities (DAAs) for the permit variation, and therefore, not referenced therein for the remaining application.

1.1.2 Slowhill Copse sludge reception area

Slowhill Copse WTW, adjacent to SHCSR, is operated under the UWWTR, and has a standalone Water Discharge Activity Environmental Permit. The SHCSR also has a bespoke permit (EPR/GP3792HY) for tankered waste imports (domestic and sludge), as the site is classed as 'A23' Biological Treatment Facility[1]. It is understood that this permit will have to be varied to enable the inclusion of the 'technically connected' sludge assets to be included in the Millbrook STC IED permit and to consolidate the waste activities, if appropriate.

The SHCSR is situated on Bury Road which is approximately 1.1km to southeast of the Site. The SHCSR is bordered by green spaces to the east, south, west, and River Test.

Site address: Slowhill Copse Wastewater Treatment Works, Bury Road, Marchwood, Southampton SO40 4UD.

National grid reference: SU 38396 11159.

[1] Environment Agency (2017) Opra for EPR version 3.91 Annex B – Opra Scheme for Waste Facilities April 2017. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/782755/LIT_6663.pdf

Southern Water wishes to vary permit EPR/CP3535XU into an installation permit for the Site, and consolidate the permit EPR/GP3792HY into a single consolidated permit, as the updated permit boundary surrounds Slowhill Copse and Millbrook s it is connected by pipeline. The permit will include the:.

- Anaerobic digestion of sludge activity undertaken at Millbrook STC
- Imported of liquid sludge into Slowhill Copse currently permitted under EPR/GP3792HY
- Storage and screening of imported sludges at Slowhill Copse
- Transfer of sludges from Slowhill Copse, via an underground pipeline, into Millbrook STC
- The acceptance of cess to the Head of Works at Slowhill Copse currently permitted under EPR/GP3792HY.

The 3 No. standby generators permitted under EPR/CP3535XU will be removed and a separate permit applied for these MCP/SG as they currently do not meet the requirements of a DAA to the Installation activity. All other assets will be incorporated, as DAA's into the IED permit.

Anaerobic digestion of sludge

As advised by the Environment Agency through consultation at WaterUK Waste and Recycling Network and a letter sent to all Water and Sewage Companies at director level in July 2019. Following a joint decision made by Environment Agency and Department for Environment, Food and Rural Affairs (DEFRA) that AD treatment facilities at WTW STCs are covered by the Industrial Emissions Directive and can no longer operate under standard environmental permits or exemptions.

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

- the import of waste from other WtW assets into Slowhill Copse;
- the transfer of imported sludges, through the pipeline, to Millbrook STC;
- the physio-chemical treatment of imported and indigenously produced sludges and raw cake;
- the storage of indigenously produced sludges, imported sludges and raw cake (pre-digestion), and the digested 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 CHP plant.

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.

Acceptance of waste to the head of the works

Southern Water wishes to remain able to accept cess to the head of the works at Slowhill Copse. The cess is discharged to 2 No. dedicated cess reception facilities, before joining the incoming, indigenous flows, from the sewer network, into the head of works to be treated through the WtW.

The application will retain the import of sludges to the sludge reception point and the tankered wastes (cess) to the head for works at Slowhill Copse, as a waste operation.

1.2 Overview of the STC process

SHCSR serves as a liquid sludge transit centre, receiving around 3477m^3 per week of liquid sludge from local sites. Tanker imports enter the SHCSR via the sludge import reception. At the reception point, co-settled primary sludge and imported sludge passes into 3 No. unscreened sludge tanks (total volume 5,999m^3) before being screened by 2 No. strain presses. Screened

sludge is then pumped to 2 No. post-screened storage tanks (PSST) (1,141m^3 each) before being pumped to Millbrook STC for treatment.

Millbrook serves as a regional STC, accepting both indigenous and imported primary sludge and raw sludge cake for anaerobic digestion, which is received in the sludge cake reception and blending facility.

Sludge is screened and pumped by a sludge pumping station at SHCSR via a sludge rising main to Millbrook STC. 8,200m^3 of additional sludge storage capacity is provided at SHCSR. This helps to balance the sludge throughput at Millbrook STC.

Indigenous and imported sludge are pumped through 3 No. sludge screens and stored in 2 No. post screened storage tanks (PSST) (2,500m^3 each). Pumped sludge from SHCSR is discharged directly into the PSSTs). This screened sludge is fed to 2 No. belt thickeners and dosed with flocculant polymer.

Thickened sludge with 7-8% total dissolved solids (TDS) is stored in 2 No. thickened sludge storage tanks (TSSTs) (639m^3 each) where it is mixed with imported cake. It is then fed to 4 No. anaerobic digesters (total volume 10,751m^3). Digested sludge discharges into 2 No. post digestion storage tanks (PDST) (535m^3 each) from where it is fed to 3 No. centrifuges for dewatering. Lime is dosed into digested sludge before the centrifuges to achieve the required sludge quality for recycling.

Digested cake is stored in a silo (240m^3) and transported by covered skips to recycle to agricultural land. When the silo is not in operation, an alternative cake bay (a skip within the building housing the conveyor) (max 15 tonne) is used and removed from Site.

Biogas produced by the digestion process is stored in a double skinned gas bag (1,040m^3). Biogas is fed to the 2 No. CHP plants (2.02MWth and 3.23MWth) where it is used to generate heat (i.e. to control the temperature of the digestion process) and electricity to power the STC's electrical equipment and processes. The CHP units have an aggregated thermal rated input of 5.25MWth. Excess biogas is burned off in the flare. The specifications of the combustion plant are presented in Table 1.1.

At Millbrook STC, odour control is provided for the sludge reception tanks, cake blending building, PSSTs, gravity belt thickeners, thickened sludge storage tanks (TSSTs) and centrifuges. Foul air is treated by a caustic and hypochlorite wet chemical scrubber. At Slowhill Copse, the inlet screens, cess reception system, all sludge holding tanks and the sludge pumping station wet wells, are covered and odour controlled by a biofilter system.

Liquors from the STC are pumped from the liquor buffer storage tank (572m^3). No treatment takes place within this tank. From here the liquors are pumped, by the liquor pumping station, upstream of the primary settlement tanks.

Table 1.1: Combustion Plant Details

	CHP 1	**CHP 2**	**Boiler 1**	**Boiler 2**
Make/Model Number	Jenbacher JMC 412	Caterpillar G3516	Strebel Eurograde RU2S-11	Strebel Eurograde RU2S-11
Date that MCP became operational/was commissioned	After 1st December 2016 and before 20 December 2018	2008	Before 1st December 2016 and before 20 December 2018	Before 1st December 2016 and before 20 December 2018
Thermal Input (MWth)	2.02	3.23	0.81	0.81
Stack height (m)	8.3	15	10	10

	CHP 1	CHP 2	Boiler 1	Boiler 2
Fuel used (biogas, diesel etc)	Biogas	Biogas	Biogas (and natural gas for testing ~ 1 hour in a year)	Biogas (and natural gas for testing ~ 1 hour in a year)
Estimated total hours of operation per year	Unlimited	6,570	<870 (emergency use only if CHP 1 is offline)	<870 (emergency use only if CHP 1 is offline)
MCPD and SG Regs status	Existing MCP Tranche B	Existing MCP Tranche A	Existing asset. Not MCP/SG	Existing asset. Not MCP/SG

The IED permit will include the following. Note that some assets have two names according to site staff. These have been included to maximise efficient interpretation of this document.

Slowhill:

- 2 No. Sludge strain press
- 1 No. Sludge reception point
- 2 No. Post-screened storage tanks (1,141m^3 each) (covered)
- Grit and screening unit
- 1 No. Odour control unit (OCU) (biofilter)
- 3 No. Unscreened sludge tanks (covered)
  - 2 No. 2,055m^3 each
  - 1 No. 1,889m^3 each

Millbrook:

- 1 No. Raw cake reception area (covered)
- 1 No. Cake silo (240m^3) (covered)
- 2 No. Thickened sludge storage tanks (TSSTs) (639m^3 each) (covered)
- 2. No Post screened storage tanks (PSSTs) (2,500m^3 each) (covered)
- 2 No. Post digestion storage tanks (PDSTs) (535m^3 each) (covered)
- 1 No. Alternative cake bay (15 tonnes) (covered)
- 1 No. Cake blending area (covered)
- 2 No. Gravity belt thickeners (GBT) (covered)
- 1 No. Liquor buffer storage tank (572m^3) (covered)
- 4 No. Anaerobic digesters (covered)
  - 3 No. 2,500m^3 each
  - 1 No. 3,251m^3 each
- 3 No. Centrifuges within the former dryer building (covered)
- 1 No. Gas bag holder (1,040m^3)
- 2 No. CHPs powered by biogas

  - 1 No. 2.02MWth
  - 1 No. 3.23MWth
- 1 No. Biogas burner (flare)
- 2 No. Boilers powered biogas (0.8MWth each)
- 1 No. Odour control unit (OCU) (wet scrubber with non-operational carbon filter)

The following are the outputs from the process:

- Screenings and grit – deposited into skips before being removed off-site.
- Biogas – stored in an existing gas holder, then either:
  - Burnt in the CHP or back-up boilers to generate electricity for use onsite
  - Flared in the waste biogas burner
- Digested cake – recycled to agriculture (soil conditioner).

A process flow of the process can be found in 790101_MSD_ProcessFlow_MIL&SHC December 2024.

The layout of the site is presented in 790101_MSD_SitelayoutPlan_MIL&SHC December 2024.

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: Key Technical Standards

Installation name	**Millbrook STC**	
C3		
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
C4		
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**

Installation name	Millbrook STC	
	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

1.4 Revisions since 2022 application submission

The application was first submitted in 2022. 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 being 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_MIL December 2024	Resubmitted – updated to include wider feedback from the Environment Agency and response to Request for Information December 2024
Environmental Risk Assessment	790101_ERA_MIL September 2024	Resubmitted – updated to include complaints recorded since 2020 and dealing with fire water.
Environmental Constraints Maps	790101_ERA_Maps_MIL August 2024	Resubmitted. Human receptor map screening distance increased to 2km.
Bio-aerosol Risk Assessment	790101_ERA_BioaRA_MIL September 2024	Resubmitted – updated to include bio-aerosol monitoring proposals and new windrose.
Odour Management Plan	790101_ERA_OdourMP_MIL September 2024	Resubmitted – updated to include new windrose, updated complaints recorded since 2020 and feedback from the Environment Agency.

Document name	Latest document reference	Summary of amendments
Climate Change Risk Assessment	790101_ERA_CCRA_MIL	No change. To be included as part of the management system for the site.
Site Condition Report	790101_MSD_SCR_MIL August 2024	Site scope defined and screening distances clarified in relation to STC permit boundary.
Envirocheck Report	790101_SCR_MIL_App B Envirocheck	Additional document
BAT analysis	790101_MSD_BAT_MIL August 2024	Resubmitted – updated to include changes by Southern Water and wider feedback from the Environment Agency.
Site Layout and Location Plan	790101_MSD_SiteLayoutPlan_MIL& SHC October 2024	Resubmitted – updated to reflect proposed secondary containment, liquor transfer point, liquor sampling point and changes to point source emissions. To extend the boundary to Slowhill Copse sludge reception area and show the pipeline connection.
Drainage Plan - Millbrook	790101_MSD_DrainagePlan_MIL November 2021	No change – shows the Millbrook STC
Drainage Plan – Slowhill Copse	790101_MSD_DrainagePlan_SHC April 2008	Additional document to cover Slowhill Copse
Schematics	790101_MSD_Schematic_MIL August 2024	Resubmitted – updated to reflect connection to Slowhill Copse
Environmental Management System Certificate	790101_MSD_EMS December 2023	Resubmitted. Certificate has been renewed.
Relevant Offences	790101_MSD_RelevantOffences_February 2024	Updated. It is up to date to August 2024
Details of Directors	790101_MSD_Directors August 2024	Updated to time of resubmission. Sent separately by Southern Water
Competency assessment certificates	790101_MSD_CompetencyAssessmentCertificates_MIL	Retracted, and replaced with Competency Management System.
Competency Management System	790101_MSD_CMS December 2023	Substitutes CoTC assessment certificates
Material Safety Data Sheets	790101_MSD_MSDS_MIL	Updated documents
Leak Detection and Repair Plan	790101_MSD_LDAR_MIL August 2024 790101_MSD_LDAR_SHC August 2024	Additional documents
Waste Acceptance and Pre-acceptance	790101_WasteAcceptance_MIL August 2024	Updated based on Environment Agency feedback.
CIRIA assessment and modelling	790101-MMD-IED-MIL-CA-C-001-IED ADBA tool P03	Additional document. updated as part of response to Request for Information December 2024 Supersedes: 790101-MMD-IED-MIL-SIM-M-101 Do-nothing(Tank Failure Only).mp4 790101-MMD-IED-MIL-SIM-M-102 Do-nothing(With Rainfall).mp4 790101-MMD-IED-MIL-SIM-M-103 Option1(Tank Failure Only).mp4 790101-MMD-IED-MIL-SIM-M-104 Option1(With Rainfall).mp4

Document name	Latest document reference	Summary of amendments
		790101-MMD-IED-MIL-SIM-M-105 Option1A(Tank Failure Only).mp4 790101-MMD-IED-MIL-SIM-M-106 Option1A(With Rainfall).mp4
Residue Management Plan	790101_MSD_ResidueMP_MIL September 2024	Additional document
Accident Management Plan	790101_MSD_AMP_MIL September 2024	Additional document.
Revised containment plan (ABDA Tool)	790101-MMD-IED-MIL-CA-C-001 - IED Millbrook ADBA Tool P02	Updated document – to be read in conjunction with the CIRIA assessment and modelling above. Additional detail included in tab 6 Revised containment plan
Implementation Plan	790101_MSD_ImplementationPlan December 2023	Additional document
Annual throughput summary	790101_MIL&SHC Annual Throughput Diagram September 2024	Additional document
Waste transfer notes	790101_WasteTransferNotes_MIL August 2024	Additional document – evidence of acceptance of requested waste streams.
Sampling proposal	790101_Sampling proposal_MIL December 2024	Additional document – showing proposed sampling and monitoring points.
Air Quality Risk Assessment	No required	Not required – justification text provided in MSD
H1 Assessment	Not required	Not required
Air Dispersion Modelling	As per existing MCP permit	No change
Form Part A	790101_App_PartA_MIL	No change
Form Part C2	790101_App_PartC2_MIL	No change
Form Part C3	790101_App_PartC3_MIL	No change
Form Part C4	790101_App_PartC4_MIL August 2024	Additional document
Form Part C6	790101_App_PartC6_MIL	No change
Form Part F1	790101_App_PartF1_MIL	No change

2 Introduction

2.1 Overview

This document has been prepared to support the application to vary permit EPR/CP3535XU. It is intended that non-hazardous imported effluent waste disposal activity under T21 exception, combustion activities and AD installation waste recovery activity will be separate listed activities on a single consolidated Installation permit. The permit will cover Millbrook Sludge Treatment Centre (STC) and Slowhill Copse sludge reception area (SHCSR), as both facilities comprise the permitted activities. From herein, the two facilities are collectively referred to as the "Site".

This document has been prepared on behalf of Southern Water Services Limited ('Southern Water' or 'the Operator'), following the joint Environment Agency and Department for Environment, Food and Rural Affairs (DEFRA) decisions 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, the proposed permitted activities and DAAs, an assessment of the possible effects of these activities and responses to questions in Parts A, C2, C3, C4, C6, E2 and F1 of the application documentation (plus supporting information where required). Completed forms Part A, C2, C3, C4, C6, E2 and F1 are included as separate documents.

2.2 Document content and structure

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

- Part A: About You (document reference 790101_App_PartA_MIL)
- Part C2: Varying a bespoke permit (document reference 790101_App_PartC2_MIL)
- Part C3: Variation to bespoke installation permit (document reference 790101_App_PartC3_MIL)
- Part C4: Varying a bespoke waste operation permit (document reference 790101_App_PartC4_MIL August 2024)
- Part C6: vary a water discharge activity, groundwater activity, or point source emission to water from an installation (document reference 790101_App_PartC6_MIL)
- Part E2: Surrender application (installations, waste operations, mining waste operations, medium combustion plant/specified generator and mobile plant only) (document reference 790101_App_Part_E2_MIL December 2024)
- Part F1: Charges and declarations (document reference 790101_App_PartF1_MIL)

The main body of the Permit application document ('the Main Supporting Document') includes all the supplementary information required in response to relevant questions within the Part A, Part C2, Part C3, C4 Part C6 and Part F1 application forms for which there was insufficient space on the forms to answer the questions in full.

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

- Chapter 5 provides the general information required to inform Part C2 relating to the variation of bespoke permit; and
- Chapter 6 provides the more detailed information required to inform Part C3, Part C4 and Part E2 relating to the variation of a bespoke installation and waste operations permit.

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

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

Appendix A – European Waste Catalogue (EWC) Codes

3 Process Description of the STC

3.1 Wastewater Treatment Works

This subsection has been provided for context only, and is not part of the proposed permitted activities.

3.1.1 Slowhil Copse WtW

Imported cess and settled storm sewage enters the storm return pumping station and pumped to the reception chamber. The combined sewage is then screened by two 6mm 2D screens, rated at 900 l/s each, and passed to two balancing tanks where flows that are more than the permitted FFT of 422 l/s are separated and passed to five storm tanks. Flows up to the permitted FFT pass forward to grit removal in a cross-flow grit detritor.

Screened and de-gritted sewage, combined with surplus activated sludge (SAS) are settled in two rectangular primary settlement tanks (PSTs). Settled sewage is biologically treated in two Modified Ludzack-Ettinger (MLE) anoxic zones followed by four MLE aeration lanes and then settled in four final settlement tanks (FSTs). Return activated sludge (RAS) flow is withdrawn from FSTs and lifted by a RAS screw pumping station with two Archimedean screw pumps, each capable of 280 l/s, to the inlet of the anoxic zones. SAS is withdrawn downstream of the RAS pumps by two duty, standby SAS pumps, each rated at 25 l/s and is returned to the head of the PSTs for co-settlement. The biological nutrient removal (BNR) plant is operated as a MLE process with real time control on mixed liquor suspended solids (MLSS), ammonia and nitrate. Internal recycling of MLSS is provided by three FLYGT pumps, operating as duty, assist and standby units, each rated at 283 l/s. Aeration is provided by 16 surfaced aerators with a total installed power of 326kW. The anoxic zone to total ASP volume ratio is 0.31. Final effluent is discharged into the estuary of River Test.

3.1.2 Millbrook WtW

Millbrook catchment serves parts of Southampton City. The sewage network is mainly gravity foul sewers and combined sewers. There are 23 No. wastewater pumping stations in the network however there is no terminal pumping station in the catchment.

Sewage is received at the inlet works from a 1,395mm diameter trunk sewer and an 825mm diameter sewer. Flows up to 2,699.81 l/s are lifted to a high-level inlet works by eight dry weather flow pumps, each rated at 110 l/s, and four storm pumps, each rated at 475 l/s. Flows pass through four 18mm bar screens (permit requires 18mm 1D minimum), complete with screenings handling and grit removal by two detritors. Flows in excess of the permitted flow to full treatment value (FFT), 850 l/s, overflow to four storm tanks where there are additional storm tanks. Settled storm sewage is returned to the inlet pumping station by gravity when storm subsides.

Flows up to 850 l/s combine with return flows of SAS and sludge liquors and are distributed to four radial PSTs equipped with auto-desludge by two duty standby PC pumps. Settled sewage flows to a RAS mixing chamber and mixes with RAS and lifted by four ASP lift pumps to a 4-stage Bardenpho process consisting of four aeration lanes. Process air is provided via a fine bubble diffused air system by four blowers, each rated at 13,500m^3/h. Each aeration lane is equipped with an internal mixed liquor recycle pump, rated at 617 l/s. Methanol dosing is provided by four duty pumps and a standby dosing pump. Mixed liquor from the aeration lanes is distributed to eight final settlement tanks via three distribution chambers.

The final tanks are of four different dimensions in diameter and depth. The largest two FSTs provide 23% of the total treatment capacity each. RAS is withdrawn from four FSTs by controlled bell mouth. RAS from FSTs 7&8 gravitates directly to the ASP lift pumping station. RAS from FSTs passes through RAS flow meters and via the SAS pumping station to a mixing chamber upstream of the ASP lift pumping station. SAS is pumped by two duty standby pumps, each rated at 40 l/s, upstream of the primary settlement tank (PST) distribution chamber. Final effluent combines in the final effluent chamber prior to discharge to the estuary water of River Test.

3.2 Overview of the STC processes

3.2.1 Slowhill Copse Sludge Reception

Acceptance of imported sludge to the sludge reception point

The site also serves as a liquid sludge transit centre receiving around 3,477m^3 per week of liquid sludge from local sites. Tanker imports of raw and digested liquid sludge enter the SHCSR via the sludge import reception. A digital logger records the date and time that tanker imports are tipped into the reception point, the customer that completed the tip, the vehicle registration number, the capacity of the vehicle (m³) and the volume of sludge deposited (m³). The logger can also record tip duration, waste class, origin site of the waste and the amount of solid in the waste.

At the reception point, co-settled primary sludge and imported sludge are passed to 3 No. pre-screening (unscreened) sludge tanks (total volume 5,999m^3). Combined sludge is screened by 2 No. strain presses. Screened sludge is pumped to 2 No. post-screened storage tanks (1,141m^3 each) before being pumped to Millbrook STC for treatment. As some of the imported sludge is already partially thickened and liquid sludge is pumped rather than tankered off site, minimum sludge decants, or liquor are returned during normal operation.

The inlet screens, cess reception system, all sludge holding tanks and the sludge pumping station wet wells, are covered and odour controlled by a biofilter system.

Acceptance of waste to Head of Works

The cess is accepted into Slowhill Copse and discharged to 2 No. dedicated cess reception facilities, before joining the incoming, indigenous flows, from the sewer network, into the head of works to be treated through the WtW.

The application will retain the import of sludges to the sludge reception point and the tankered wastes (cess) to the head for works at Slowhill Copse, as a waste operation.

Acceptance of digested sludge into sludge reception point

The import of digested sludge into Slowhill Copse is required as a contingency arrangement for a periodically occurring issue at Fullerton. Millbrook STC does not have the facility to directly accept digestate for dewatering, therefore, it has to go through the Slowhill Copse sludge import and storage process and mix with raw sludge before being transferred to Millbrook. Millbrook accepts sludge from SHCSR for digestion. If required, the cake produced is sent to Fullerton and stored in cake bays for maturation.

During extended periods of heavy rain the cake bay drains at Fullerton can become blocked from cake washing out from bays, removing the sludge and transferring to Slowhill Copse significantly reduces the risk of overtopping and release to the environment.

This is planned to be resolved through a combination of measures including IED-related drainage improvements and provision of cake bay covers through a WINEP scheme (which may also require additional IED-related scope subject to the outcomes of the ongoing RBP testing).

The sludge is drawn-off to a tanker and taken to Slowhill Copse where it is received to the sludge reception point. The sludge ultimately returned to the digestion process at Millbrook and returned as cake.

This is acknowledged to be an inefficient solution and remains under review regarding further interim measures for improvement ahead of the planned capital investment.

This is a small proportion of the overall STC throughput and is considerably preferential to the risk of a release to environment.

3.2.2 Millbrook STC

Anaerobic digestion

The site serves as a regional STC. The STC handles the sludge from SHCSR, which serves as a sludge terminal receiving sludge from the New Forest area by tankers. Sludge is stored, screened and pumped by a sludge pumping station at SHCSR via a sludge main to Millbrook STC. There is a sludge cake reception and blending facility which receives approx. 90m^3/week. Imported sludge makes up 51% of the sludge loads to the STC.

Raw cake and liquid sludge is imported to the STC via road tankers. Indigenous sludge and imported sludge are pumped through sludge screens and stored in 2 No. post screened storage tanks (PSST) (2,500m^3 each) 8,200m^3 of additional sludge storage capacity is provided at SHCSR, which helps to balance the sludge throughput at Millbrook STC.

Indigenous or imported liquid sludge is pumped through the sludge screens. Imported pumped sludge, screened at SHCSR, is discharged directly into 2 No. PSSTs (2,500m^3 each). Screened sludge from the PSSTs is fed to 2 No. belt thickeners and dosed with polymer. Thickened sludge with 7% total dissolved solids (TDS) is stored in 2 No. thickened sludge tanks (639m^3 each) where it is mixed with imported cake. It is then fed to 4 No. anaerobic digesters (total volume 10,751m^3). Digested sludge discharges into 2 No. post digestion storage tanks (PDST) (535m^3 each) from where it is fed to 3 No. centrifuges for dewatering. Lime is dosed via a liming plant into digested sludge before the centrifuges to achieve required sludge quality for land spreading.

Biogas produced by the digesters are stored in 1 No. gas holder (1,040m^3) and fed to 2 No. CHP engines (2.02MWth and 3.23MWth) for power and heat generation. Excess gas is burned off by a gas flare.

Digester hydraulic retention time at the Site is 23 days.

Digested cake is stored in 1 No. silo (240m^3) and transported by covered skips to agricultural land. When the silo is not in operation an alternative cake bay (a skip within the building housing the conveyor) is used and removed from the Site.

Digested sludge cake is subjected to regular quality assurance (QA) sampling in line with the Biosolids Assurance Scheme (BAS). If digested sludge cake is non-compliant and does not meet the correct standards, then the material will need to be quarantined before it can be recycled to land. Non-compliant digested sludge cake is transported off site and held at an alternative Southern Water site located at Fullerton, Wiltshire, to ensure compliance. Further details on the quarantine procedure are provided in document reference 790101_MSD_ResidueMP_MIL September 2024.

Odour control is provided for the sludge reception tanks, PSSTs, gravity belt thickeners, TSSTs, centrifuges, and sludge liquor buffer tank. Foul air is treated by 1 No. caustic and hypochlorite wet chemical scrubber.

The works return pumping station collects various drainage flows associated with ASP3 and return upstream of the PSTs for treatment. The return liquors from the STC, therefore, enter the adjacent WTW, after storm separation and there is no discharge of wastewater from the STC during storm conditions. All flows received at the site go through the treatment process.

Liquors from the sludge treatment centre is discharged to a liquor buffer storage tank (572m^3) and pumped by the liquors pumping station upstream of the primary settlement tanks.

4 Part A – About you

4.1 Question 5c: Details of Directors

The details of directors at Southern Water Services Limited (Company number: 02366670) are provided in stand-alone document 790101_MSD_Directors_MIL August 2024.

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: Claire Cowdrey

Address: Mott Macdonald, Mountbatten House, Grosvenor Square, Southampton, S015 2JU.

Phone number: 023 8062 8523

Email: Claire.cowdrey@mottmac.com

5 Part C2 – General – Varying a new bespoke permit

5.1 Question 2: Table 1: Changes to existing activities

The variation application is to vary permit EPR/CP3535XU and consolidate Slowhill Copse's permit EPR/GP3792HY. It is intended that non-hazardous imported effluent waste disposal activity under T21 exemption, combustion activities and AD installation waste recovery activities at Millbrook will be separately listed activities on a single consolidated Installation permit.

5.2 Question 3a: Relevant offences

Details of the relevant convictions are provided in the document reference 790101_MSD_RelevantOffences_MIL February 2024 (produced by Southern Water).

5.3 Question 3b: Technical ability

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

Future 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[2]. 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.

An e-learning course is being developed and certification is due to be undertaken by LRQA (see document reference 790101_MSD_CMS December 2023). The CMS is to be certified within the first 12 months from issue of a permit for the STC.

[2] Energy and Utility Skills (2021) Competence Management System. Available online at: https://www.euskills.co.uk/about/our-industries/waste-management/competence-management-system/

5.4 Question 3c: Finances

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

5.5 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, until July 2026. The EMS is accredited by the British Standards Institution (BSI).

Demonstrable procedures are outlined in the Site Process Activity Manual (SPAM) and Operating Plan. Any monitoring of emissions to air, land and water is undertaken according to Monitoring Certification Scheme (MCERTS) Standards where the permit requires it, and where suitable and available.

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

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

To accompany the 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_MIL) to address measures to adapt to predicted 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 updated 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)[3].

5.5.1 Accident Management Plan

The Site operates under an Incident Management Plan (IMP) which is incorporated into Southern Water's Environmental Management System to prevent and manage environmental related accidents.

The IMP includes an inventory of substances stored at the site, details on storage facilities, inventory of pollution prevention equipment (spill kits and fire extinguishers), inventory of waste and storage capacities, contact details of internal contacts (Site manager, Environmental Governance Manager and key HSE staff), national and regional (where appropriate) contact details of emergency services and environmental regulators. The IMP is distributed to key staff, to supervise the implementation of the Plan, and shared with external contacts (emergency services and the Environment Agency). The IMP is accompanied by a site plan that identifies the locations of designated storage areas (and their maximum storage capacity), location of spill kits and fire extinguisher and storage locations and hazards posed by chemical substances.

The IMP references procedures to comply with environmental legislation and protect the environment and human health in regard to potential accidents:

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

There are several different document types referenced in the IMP. These have been listed below:

- EMS – Environmental Management System
- FEC – Field Event Co-ordinator's Manual
- IMP – Incident Management Plan
- BCP – Business Continuity Plan
- CCM – Control Centre Manual
- SIB – Safety Instruction Book
- CAT – Catastrophe Plans

Table 5.1 below provides a list along with a brief description of each of the procedures which form part of the IMP.

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

Table 5.1: Summary of IMP

SUPPORTING EMERGENCY PROCEDURES – IMP	
Procedure Reference	**Brief summary**
EMS 234 Chemical and Oil Storage	Specifies the standard for storage of chemicals and oils. Outlines the amounts of substances that can be stored on site without consent from the Local Authority, and details how these substances should be safely stored. Also includes Information on the auditing, training requirements and any associated documents.
EMS 260 Pollution Prevention (standard)	Specifies the standard for managing and reducing the risk of land contamination. Outlines the tasks a manager should complete i.e., ensuring spill kits are available, and who to contact in the event of an incident. The document also lists the measures that Southern Water should take to prevent pollution incidents. Also includes Information on the auditing, training requirements and any associated documents.
EMS 265 Discharges (Standard)	Sets the minimum standard of operation in managing effluent and potable water process discharges. Details definitions which relate to the procedure and outlines the standard. Also includes Information on the auditing, training requirements and any associated documents.
EMS 360 Pollution Prevention Procedure	Outlines the responsibilities of staff in relation to the procedure. The Procedure includes details on items such as site drainage, working on or near watercourses and excavations. As well as addressing different spill types; chemical, oil and sludge/sewage. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 361 Chemical Risk Assessment (Procedure)	Defines the procedure for assessing the environmental risk from bulk chemicals. Outlines the procedure for undertaking a risk assessment, and where required which EMS procedures need to be followed. Also addresses risk mitigation and employee awareness as well as the auditing, training requirements, reporting forms and any associated documents.
EMS 362 Environmental Fire Risk Assessment Procedure	Specifies the procedure for minimising the environmental consequence of a fire. Outlines the responsibilities of staff in relation to the procedure and provides a procedure for an Environmental Fire Risk Assessment. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 363 Procedure for Managing oil spills on sites	Outlines the responsibilities of staff in relation to the procedure. The procedure details how to determine the severity of the spill for different scenarios; land, inland waters and coastal waters/beaches, and how to prevent, control and remediate the environmental damage caused by spillages from the site. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 364 Lime Spill Management Procedure	Outlines the procedure for managing lime chemical spills at STCs. Defines the responsibilities of staff, and the procedure for managing the spill including the spill assessment and notification and escalation. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 365 Discharges Procedure	Defines the procedure that must be adopted when managing intermittent discharges. Outlines the responsibilities of staff in relation to the procedure and outlines the procedure where an emergency discharge is foreseeable for both emergency and stormwater and potable water. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 381 Operational Waste Procedures	Specifies the procedure for managing wastes. The procedure addresses the definitions of different waste types and outlines a general procedure for managing waste. Identifies where further procedures should also be followed for specific

SUPPORTING EMERGENCY PROCEDURES – IMP

	waste types e.g., asbestos, WEEE and waste oils. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 382 Hazardous Waste Procedures	Specifies the procedure for moving hazardous waste between different sites. The procedure addresses identifying hazardous waste, storage of hazardous waste, consignment notes and record keeping. Information on the auditing, training requirements, reporting forms and any associated documents.
EMS 461 Chemical Risk Assessment (Form)	A template for a chemical risk assessment including the following: • Site details • Chemical details • Chemical classification • Risk activity • Risks for health, fire/DSEAR and environment • Handling, usage and storage requirements • Management of spills • Disposal And the safety data sheet.
EMS 480 Waste Descriptions	Provides written descriptions of different waste types covering the following: • Process giving rise to the waste, • Waste characteristics, • Handling advice, • Containment • Disposal. • Name of waste • Waste classification • Producer and registered office details • EWC • Controlled Waste Regulations 2012 description • Waste type • Form • Temperature; and • SIC code. Information on the auditing, training requirements, reporting forms and any associated documents.
FEC 307 Reporting of Unauthorised Access, Including Loss, Theft and Vandalism	Outlines the responsibilities of staff in relations to the reporting these incidents, and the procedure to be followed. Also includes Information on the auditing, training requirements and any associated documents.
FEC 320 Process Related Incidents	Specifies the procedures to follow in responding to process-related pollution incidents. Responsibilities of staff are outlined in the procedure, as well as contacting the FEC, FEC actions and reporting procedures. Information on the auditing, training requirements, reporting forms and any associated documents.
FEC 322 – Spillage Procedure	Outlines the responsibilities of staff in relation to the procedure. The procedure outlines the process for handling spillages on site including: • Spillage assessment • Notifications and Escalation • Containment • Awareness and Training

SUPPORTING EMERGENCY PROCEDURES – IMP	
	Information on the auditing, training requirements, reporting forms and any associated documents.
IMPO_101 – Overview of the Incident Management Plan	This document sets out the overall structure of the Incident Management Plans and provides a short overview of each of the main plans.
IMP 217 and IMP 218 Team Roles – Objectives and Responsibilities	Sets out the Objectives and Responsibilities for roles within the Incident Management Team and provides guidance for the ELT Representative. IMP 217 identifies when Southern Water should contact the Environment Agency, and IMP 218 identifies the process for contacting other authorities.
BCP 415 Guidance on Reporting Potential Media Interest	Sets out the types of incidents to be reported back by Field Operations Staff & Contract staff working on behalf of Southern Water that will potentially attract media interest, including contact numbers.
CCM 302 Procedure Following the Receipt of a Fire Alarm	Provides a consistent regional approach to dealing with any formal notification of a fire alarm within the Company. Outlines the responsibilities of staff, the procedure for when a fire alarm notification is received, inspections/audits, training and any associated documents.
SIB 603 Risk Assessment and Safety Instructions for Fire Awareness	Covers the following: • Training needs of staff and fire wardens • What Managers must provide (i.e. fire safety meetings, plans) • Inspections • Safety instructions for occupied sites, unoccupied sites, and company vehicles • Firefighting procedure • Records to be completed
CAT 303 Actions Following Severe Weather or Flood Warnings	Outlines the plan of actions that should be undertaken following severe weather or floor warnings and the responsibilities of the staff under these circumstances. The procedure details checklists for the following scenarios: impending severe weather, flood watch, flood warning, severe flood warning, and an all-clear checklist. Also includes Information on the auditing, training requirements and any associated documents.
Environmental Emergencies Poster (EMS)	A poster which should be displayed on all sites. The poster lists the type of emergency (fires, spills etc) and both the action which should be undertaken the contact phone number which should be called. The poster also highlights a list of things which should be checked prior to work starting such as the H&S notice boards, environmental notice boards and continuity plans.
Pollution 30 Minute Plan	Outlines a five-step plan for responding to a pollution incident in 30 minutes and outlines what should be done at each of the five stages.
Site Chemical Risk Register	Southern Water electronic database containing an inventory of hazardous substances used and stored by Southern Water and those relevant to individual sites, helping Southern Water to control substance use and comply with the COSHH regulations.
Alternative Response Coordinators Booklet	These documents provide flowcharts and a step-by-step guide for completing the Alternative Response tasks. Section 5: Resilience Guidance identifies criteria on when to contact local authorities and other first responders.

The current EMS certificate can be found in document reference 790101_MSD_EMS Certificate December 2023.

5.6 Question 5a: Site layout plan and process diagram

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

- Site Layout and Location Plan – Document reference 790101_MSD_SitelayoutPlan_MIL&SHC December 2024.
- Drainage Plan – Document reference 790101_MSD_DrainagePlan_MIL November 2021 and 790101_MSD_DrainagePlan_SHC April 2008.
- Process Flow – Document reference 790101_MSD_ProcessFlow_MIL&SHC December 2024.

5.7 Question 5b: Site condition report

In accordance with Environment Agency requirements, a Site Condition Report (SCR) has been produced to demonstrate the condition of the land and groundwater at the Site on issue of the proposed permit. The SCR included the following details (section 1 to 4 of the Environment Agency template)[4].

- Site details
- Condition of the land at permit issue
- Permitted activities and
- Changes to the activity

A copy of the SCR can be found as document reference 790101_MSD_SCR_MIL August 2024.

5.8 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'[5].

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

The ERA assesses the impacts from the following environmental concerns:

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

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

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

[5] Environment Agency (2023) Risk assessments for your environmental permit. Available online at: https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit

A copy of the ERA can be found as document reference 790101_ERA_MIL September 2024. Constraints maps have been updated to demonstrate human receptors to a radius of 2km, as shown in document reference 790101_ERA_Maps_MIL August 2024.

6 Part C3 – Variation to a bespoke installation permit

6.1 Question 1: Table 1a: Activities applied for

Table 6.1: C3 Question 1, 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
Millbrook STC	S5.4, Part A (1), (b) and (i)	Anaerobic digestion	Annual: 692,848 (wet) tonnes Daily: 1898 (wet) tonnes	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 is anaerobic digestions. R3 – Recycling/ reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes) R13 – Storage of waste pending any of the operations numbered R1 to R12.	0	Annual: 692,848 (wet) tonnes Daily: 1898 (wet) tonnes
	Schedule 25B – Specified generator	Biogas CHP engine As per EPR/CP3535XU	2.02MWth	R1		
	Schedule 25B – Specified generator	Biogas CHP engine As per EPR/CP3535XU	3.23MWth	R1		
Directly associated activities						
	Waste reception at SHCSR and Millbrook STC	Import of liquid sludge and cake		R3 D9		
	Use of biogas	Use principally as a fuel or other means to generate energy As per EPR/CP3535XU		R1		
	Use of auxiliary	Incineration on land		D10		

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
	standby flares					
	Standby boilers	Used for emergency only		D10		
	Use of pressure release values	Used for emergency only, do not export electricity to the grid.				
	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.				
For installations that take waste	Total storage capacity	27,192m^3 across MIL&SHC				
	Annual throughput*	127,928 wet tonnes for indigenous 55,281 wet tonnes imported liquid sludge 224,889 wet tonnes imported via pipeline 7,469 wet tonnes imported cake 277,281 additional capacity 288,160 wet tonnes to digester Total 692,848 wet tonnes into Site				

*see document reference 790101_AnnualThroughput MIL&SHC December 2024

Table 6.2: C4 Table 1a: Activities applied for (waste operation activity)

Name of waste operation	Description of the waste operation	Annex I (D codes) and Annex II (R codes) and descriptions	Hazardous waste treatment capacity	Non - hazardous waste treatment capacity
Head of works activity	Existing activity under permit EPR/GP3792HY	No change	N/A	No change
For all waste operations	Total storage capacity	No change		
	Annual throughput (tonnes each year)	No change (375,000 wet tonnes)		

The variation application is to vary permit EPR/CP3535XU to include the current combustion activities and add AD installation activity, and consolidate EPR/GP3792HY in a single consolidated installation permit (no other changes to be made to this permit), where appropriate and including the relevant sludge assets into the installation permit.

6.1.1 Part C3 and Part C4, Question 1: Table 1b: Types of waste accepted

The types of waste accepted at Millbrook are shown in Appendix A. None of the requested wastes are hazardous.

Southern Water requires the permit for Millbrook STC to be authorised to accept sludge waste to undergo anaerobic digestion to comply with the Industrial Emissions Directive. It is requested that the annual quantity of indigenous sludge and liquid imports to be accepted is 539,687 (wet) tonnes.

Slowhill Copse is currently permitted to accept under EPR/GP3792HY. The variation to the waste activity permit is to bring the sludge storage assets into the installation permit as DAAs for Millbrook. The current permitted EWC codes accepted into Slowhill Copse are shown in Table 6.3.

Table 6.3: EWC codes currently accepted at Slowhill Copse under permit EPR/GP3792HY

EWC Code	Description
19 08	**wastes from waste water treatment plants not otherwise specified**
19 08 01	screenings
19 08 05	sludges from treating urban wastewater
19 09	**Wastes from the preparation of water intended for human consumption or water for industrial use**
19 09 01	Solid waste from primary filtration and screenings
19 09 02	Sludges from water clarification
20 03	**Municipal waste (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions**
20 03 03	street cleaning residues (from SWS sewer network only
20 03 04	septic tank sludge – domestic tankered waste
20 03 06	waste from sewage cleaning
20 03 99	Cesspool liquors

Waste listed in EPR/GP3792HY relating to Slowhill Copse will be modernised as part of this variation. The EWC codes will be updated, and some codes removed as they are not relevant to the permitted activity. These new EWC codes are presented in Appendix A.

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

6.2.1 Emissions to air

Table 6.4: Part C3, Question 2, Table 2: Point source emissions to air

Installation name	Millbrook STC			
Point source emissions to air				
Emission point reference and location	**Source**	**Parameter**	**Quantity**	**Unit**
Stack 1 (A01) SU 38739 12424	2 No. 0.8MWth back-up boilers As per EPR/CP3535XU	No parameter set	No limit set	
Stack 2 (A02) SU 38788 12479	CHP engine (Jenbacher JMC 412) exhaust stack burning biogas As per EPR/CP3535XU	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500	mg/m^3
Stack 3 (A03) SU 38762 12373	CHP engine (Caterpillar G3516) As per EPR/CP3535XU	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	500	mg/m^3
		Carbon monoxide	1,700	mg/m^3
		Total VOCs	1,000	mg/m^3
		Sulphur dioxide	20	mg/m^3
Stack 4 (A04) SU 38829 12369	Waste gas burner (flare stack) As per EPR/CP3535XU	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	150	mg/m^3
		Carbon monoxide	50	mg/m^3
		Total VOCs	10	mg/m^3
Odour Control Unit (A05) SU 38738 12455	Channelled emissions to air	Ammonia	20	Mg/m^3
		H_2S	No limit specified	
		Odour concentration	1000	Que/Nm^3
Pressure relief valves Gas holder (A06) SU 38774 12393	2 No. gas holder pressure relief valves.	Biogas release and operational events	No limit set	
Pressure relief valves Digester 1 (A07) SU 38772 12455	2 No. AD pressure relief valves.	Biogas release and operational events	No limit set	
Pressure relief valves Digester 2 (A08) SU 38791 12452	2 No. AD pressure relief valves.	Biogas release and operational events	No limit set	
Pressure relief valves Digester 3 (A09) SU 38789 12432	2 No. AD pressure relief valves.	Biogas release and operational events	No limit set	

Installation name	Millbrook STC		
Pressure relief valves Digester 4 (A10) SU 38755 12490	2 No. AD pressure relief valves.	Biogas release and operational events	No limit set

Standby generators are currently not included in the AD installation application**,** as DAAs**.** Southern Water **is** in the process of undertaking a survey to identify whether they meet the RGN2 DAA test.

The air blast chiller is excluded, as an emission point, as this is a closed loop system.

Table 6.5: Part C4, Question 2, Table 2: Point source emissions to air

Waste operation	Slowhill Copse Tankered Waste Imports			
Point source emissions to air				
Emission point reference and location	**Source**	**Parameter**	**Quantity**	**Unit**
Odour control unit A01 SU 38456 11137	Channelled emissions to air	Ammonia	20	Mg/m^3
		H_2S	No limit specified	
		Odour concentration	1000	Oue/Nm^3

The emission points are shown in drawing reference 790101_MSD_SiteLayoutPlan_MIL&SHC December 2024.

6.2.2 Emissions to water (other than sewers)

For Millbrook STC, the drainage network sends water to the head of the works for treatment.

For SHCSR, all drainage around waste reception points within the site boundary are captured by on site systems and are returned to head of works for treatment.

There will be no point source emissions from the Site and no direct discharge of wastewater to controlled waters from SHCSR or the STC.

There are no direct potentially contaminated discharges to groundwaters from either site.

Accidental releases of materials to the environment are controlled through adequate containment measures and working procedures in accordance with the EMS and accident management plan (doc ref: 790101_MSD_AMP_MIL September 2024). Spill procedures are in place under EMS363 and 364 as well as 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.

The release of liquors from the sludge treatment process is considered to be a point source emissions or direct discharges to controlled waters or public sewers, as part of the permit operation. The site layout plan, drawing reference 790101_MSD_SiteLayoutPlan_MIL&SHC December 2024, identifies the point at which liquors leave the site to enter the WTW at the inlet. Sampling locations have also been identified on the site layout plan, although sampling will be undertaken as part of a wider implementation plan under BAT and IED. The quantity of parameters will be determined by an H1 assessment once the wastewater inventory is completed. The Implementation Plan (document reference 790101_MSD_Implementation Plan December 2023) includes a programme for a Wastewater and Digestate plan to produce an inventory, and establish a need and feasibility for more or less 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 Millbrook WTW and will undergo treatment through the works before being discharged under the existing water discharge permit.

On site WTW effluent will meet the requirements of the existing water discharge activity permit. 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 presented in document reference 790101_MSD_DrainagePlan_MIL November 2021 and 790101_MSD_DrainagePlan_SHC April 2008.

The surface water 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 and secondary containment.

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.

A list of the point source emissions to sewers, effluent treatment plants and other transfers off-site is included as Table 6.6.

Table 6.6: Part C3 and Part C4, 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			
Millbrook STC			
Gas condensate (S6) SU 38778 12400	Condensate from the gas pipelines and assets	Condensate with slightly potentially elevated levels of H_2S dissolved from the biogas, resulting in a low level of acidity	Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M6 (SU 38778 12400) on site layout plan
Gravity belt thickeners (GBT) (S13) SU 38740 12443	Process liquors from drum thickener	Variable, from processes	Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M13 on site layout plan (SU 38740 12443)
Centrifuges (S10) SU 38750 12399	Process liquors from centrifuges	Variable, from processes	Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M10 on site layout plan (SU 38750 12399)

Emission point reference and location	Source	Characteristics*	Monitoring of emission point
Boiler maintenance (S11) SU 38756 12511	Boiler blow down to minimise damage from high mineral content water	High purity with traces of chemicals (used for boiler dosing)	Infrequent emission to the inlet works. Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M11 (SU 38756 12511) on site layout plan.
Drain down of plant (S11) SU 38756 12511	Occurs during maintenance when it is necessary to drain down the feed waste or hot well.	High purity water with traces of chemicals (used for boiler dosing).	Infrequent emission to the inlet works. Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M11 (SU 38756 12511) on site layout plan.
Rainwater (W!) SU 38878 12600 (W1 on site layout plan)	Uncontaminated roof water from buildings.	Clean rainwater from building roofs only.	Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600
Sludge and cake reception (S12) SU 38741 12561	Import of cake and sludge for AD	Process waters from cake blending	Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M12 (SU 38741 12561) on site layout plan
Bund water (Rainwater) 1, 2 & 3 (S7) 1 SU 38733 12579 (S8) 2 SU 38765 12509 (S9) 3 SU 38723 12458	Run off from impervious surfaces (within the secondary containment).	Potentially contaminated rainwater from bund	Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M7 (SU 38733 12579), M8 (SU 38765 12509) and M9 (SU 38723 12458) on site layout plan
Washwater (S11) SU 38756 12511	From the washing down of mechanical equipment during maintenance activities.	Variable	Infrequent emission to the inlet works. Discharge to adjacent WTW. Return to inlet works of Millbrook WTW (W1 on site layout plan) SU 38878 12600 Monitoring point for sampling as M11 (SU 38756 12511) on site layout plan.
Slowhill			
Bund water (Rainwater) 1 & 2 (S2) 1 SU 38422 11158 (S3) 2 SU 38379 11169	Run off from impervious surfaces (within the secondary containment).	Potentially contaminated rainwater from bund	Discharged to adjacent WTW via inlet works. Return to inlet works of Slowhill Copse WTW (W1 on site layout plan) SU 38381 11089) Monitoring point for sampling as M2 (SU 38422 11158), and M3 (SU 38379 11169) on site layout plan
Sludge reception (S1) SU 38395 11174	Import of sludge for AD	Process waters from cake blending	Discharges to Millbrook STC via pipeline (E1) SU 38771 12363. No liquors discharged to Slowhill Copse Monitoring point for sampling as M1 (SU 38395 11174) on site layout plan
Waste import activity permit			
Slowhill			
Cess reception 1 (S4)	Discharge and sampling for	Variable	Discharged to adjacent WTW via inlet works. Return to inlet works of Slowhill Copse WTW (W1 on site layout plan)

Emission point reference and location	Source	Characteristics*	Monitoring of emission point
SU 38367 11210	waste acceptance		SU 38381 11089) Monitoring point for sampling as M4 (SU 38367 11210) on site layout plan
Cess reception 2 (S5) SU 38387 11268	Discharge and sampling for waste acceptance	Variable	Discharged to adjacent WTW via inlet works. Return to inlet works of Slowhill Copse WTW (W1 on site layout plan) SU 38381 11089) Monitoring point for sampling as M5 (SU 38387 11268) on site layout plan

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 (document reference 790101_ERA_MIL September 2024) on the environmental risk the water emissions pose and how these are mitigated, where relevant.

6.2.3.1 Incidents of storming

Slowhill Copse

The works return pumping station collects the various drainage flows and pumps to the inlet works before the screens. These screens are upstream of storm separation and therefore, any potentially contaminated water can enter the environment during a storm event.

Millbrook

The works return pumping station collects various drainage flows associated with ASP3 and return upstream of the PSTs for treatment. The return liquors from the STC, therefore, enter the adjacent WTW, after storm separation and there is no discharge of wastewater from the STC during storm conditions. All flows received at the site go through the treatment process.

Liquors from the sludge treatment centre is discharged to a liquor well and pumped by the liquors pumping station upstream of the primary settlement tanks.

Digestate and effluent from the STC are returned to the process downstream of storm separation.

Wastewater and digestate buffer storage plan

Southern Water will provide a wastewater and digestate buffer storage plan (listed in regard to BAT 4 in the Implementation Plan**,** document reference 790101_MSD_Implementation Plan December 2023). The Plan's purpose is to propose and describe site contingency arrangements to provide appropriate storage capacity or other appropriate measures to prevent or minimise emissions of wastewater or digestate being discharged off site during any occasions when the receiving wastewater treatment works is in storm overflow operating conditions. It is understood the Plan will be required to include, but not be limited to:

- Proposals for additional storage capacity with secondary containment within the site boundary for wastewater and/or other digestate during any occasions when the receiving wastewater treatment works is in storm overflow operating conditions.
- Procedures to cease discharges during these conditions.
- Calculation of a reasonable contingency capacity of waste water and/or other digestate during any occasions when the receiving wastewater treatment works is in storm overflow operating conditions.

- A description and design specification of the buffer storage infrastructure and secondary containment measures. The design shall be completed by an appropriately qualified engineer and secondary containment shall be designed in line with CIRIA C736.
- A program of works with timescales for the implementation and construction of the buffer storage.
- A preventative maintenance and inspection regime.

6.2.4 Emissions to land

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

Grit and screenings generated from the sludge and tankered waste reception points are collected in separate skips and removed off-site by road vehicle and transported to a suitably permitted facility.

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

Please refer to the ERA (doc ref 790101_ERA_MIL September 2024) on the environmental risk the water emissions pose and how these are mitigated, where relevant.

6.3 Question 3a: Operating techniques

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

- The technology to be used
- The process, in terms of how it will be operated and controlled
- In-process controls and Best Available Techniques (BAT) Assessment
- 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 Millbrook Management Plan, as part of the EMS, to be made available to staff to ensure compliance with a permit, which covers the following:

- Management of activities, including security and staffing
- Emissions and monitoring, including:
  - Point sources to air, water and land
  - Fugitive emissions
  - Site drainage
  - Storage of waste
  - Odour, noise and vibration

- Site record keeping

Table 6.7: Part C3, Question 3a, Table 3: Technical standards

Installation name	**Millbrook STC**	
C3		
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
C4		
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

A copy of the schematics describing the operation and process can be found in document reference 790101_MSD_ProcessFlow_MIL&SHC December 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_MIL October 2024. 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. An implementation plan has shown in document reference 790101_MSD_ImplementationPlan December 2023.

Included in the Implementation Plan is for the wastewater inventory monitoring to be undertaken as per BAT 2, and further information is addressed in section 6.2.3. On-going monitoring is proposed to be in line with BAT AELs and monitoring frequencies are applicable to treatment of water-based liquid waste and biological treatment of waste, these are outlined in Table 6.1 and Table 6.2 of the BAT assessment.

The Odour Management Plan (document reference 790101_ERA_OdourMP_MIL_December 2024) has also been prepared in accordance with the following BAT conclusions, additional to the H4 guidance:

- BAT 1: Environmental Management System to include the Odour Management Plan
- BAT 10: periodically monitor odour emissions
- BAT 12: Implement and regularly review an odour management plan, as part of the environmental management system, including protocols for:
  - Actions and timelines
  - Conducting monitoring
  - Response to identified odour incidents
  - Odour prevention and reduction
- BAT 13: Reducing odour emissions through the use of techniques
- BAT 14: reducing diffuse emissions to air
- BAT 33: control of odour emissions through pre-acceptance, acceptance and sorting the waste
- BAT 34: reduce channelled emissions
- BAT 53: Reducing emission of hydrochloric acid (HCl), ammonia (NH_3) and organic compounds to air

Supplementary documents for the BAT assessment are provided:

- BAT 1, 21 and 38: Accident Management Plan (AMP) is provided in 790101_MSD_AMP_MIL August 2024. Catastrophic failures, of tanks for example, will be included in the AMP once final designs are agreed based on the findings in CIRA/ABDA assessment.
- BAT 1, 11, 22 and 35: Residues Management Plan (RMP) is provided in 790101_MSD_ResidueMP_MIL August 2024.
- BAT 1, 8, 10, 12, 13, 14, 33, 34 and 52: Odour Management Plan (OMP) is provided in 790101_ERA_OdourMP_MIL December 2024.
- BAT 1: Environmental Management System is provided in 790101_EMS Certificate December 2023.
- BAT 2 and 52: Description of the waste acceptance and pre-acceptance procedures provided in 790101_WasteAcceptance _MIL August 2024.
- BAT 3, 6, 7 and 20: Sampling commitment and proposal for characterisation is provided in 790101_Sampling proposal_MIL December 2024.

- BAT 14: Leak Detection and Repair Plans (LDAR) are provided in 790101_MSD_LDAR_MIL August 2024 and 790101_MSD_LDAR_SHC August 2024.
- BAT 14: Bio-aerosols Risk Assessment (BRA) is provided in 790101_ERA_BioRA_MIL_September 2024.
- BAT 17: Environmental Risk Assessment (ERA) is provided in 790101_ERA_MIL September 2024.
- BAT 19 and 38: ABDA Tool and proposed containment solution is provided in 790101-MMD-IED-MIL-CA-C-001 - IED Millbrook ADBA Tool P02 and the site layout plan 790101_MSD_SitelayoutPlan_MIL&SHC December 2024.
- BAT 19: Covering of tanks is provided in the Implementation Plan, 790101_MSD_Implementation Plan December 2023.
- BAT 19: Drainage is provided in 790101_ERA_Drainage Plan_SHC April 2008 and 790101_MSD_DrainagePlan_MIL Nov 2021.
- BAT 23: Energy Efficiency is provided in 790101_MSD_Main_MIL December 2024
- BAT 34: Reducing channelled emissions, addressed in the Odour Management Plan (OMP), provided in 790101_ERA_OdourMP_MIL December 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_MIL December 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 C4 form):

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

As the Site's activities are existing and evidence can be provided in the form of Waste Transfer Notes then the need to complete an Appropriate Measures assessment will not currently apply; the Site was built and operated prior to the issue of the guidance.

Southern Water are committed to developing 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_MIL December 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 Millbrook and Slowhill.

6.4 Question 3b: 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_MIL September 2024). The response to this question relates to Table 4 in the Part C3 and C4 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 operations.

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

The Millbrook STC includes two biogas CHP engines (3.23MWth Caterpillar G3516 & 2.02MWth Jenbacher JMC 412), and two JMC 412 0.8MWth auxiliary biogas boilers. These boilers are only run in emergency scenarios as a back-up when the Jenbacher JMC 412 engine is offline, and are used to maintain the digester temperature when the Jenbacher engine is offline. These boilers were first put into operation prior to 20 December 2018 and are, therefore, classed as existing MCP. These boilers are only employed in emergency scenarios, therefore, no ELVs are required for this plant.

The CHPs and boilers do not operate concurrently. The Air Quality Assessment which accompanied the environmental permit application for this site, dated 28/11/2018, included only the emissions from the two CHPs and did not include emissions from the boilers to avoid double-counting. This approach is still valid and no update to the Air Quality Assessment is necessary. As combustion activities are already permitted on the Site and the Air Dispersion Modelling (ADM) is still applicable, it is not anticipated that the ADM will require updating at this time.

The standby generators were also excluded from the Millbrook assessment on the basis that they are for emergency use. Although at this time is it is unclear whether the generators are DAAs at Millbrook. After Southern Water complete the RGN 2 DAA test, this information will be known and if required the generators will be included in the permit as a variation.

The information on the combustion plant can be found in document reference 790101_CombustionPlant_MIL September 2024.

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 Emission Management Plan is not considered be required.

6.4.2.1 CHP and flare

Southern Water acknowledges that the flare is appropriate for emergency use (such as breakdown and maintenance). Southern Water confirms that they plan to replace one or both of the existing CHPs, but retain the existing flare at Millbrook as it meets the requirements for biogas combustion. The flare has been tested and the emissions are compliant.

Gas modelling shows the site experiences flaring greater than 10%, available data shows this to be around 14.3%.

The CHP solution will be revised to provide the required capacity (either both or one replaced).

Additional work is required to ensure all BAT requirements are met (e.g. access platforms for testing, the required testing is fully adopted into BAU and related processes, ensure all required signals for data collation and reporting are provided, all specific requirements are met for MCERTs and M1 & M2 guidance).

The detail of this is under review and any identified scope will be completed in AMP8.

The flare use data forms part of wider data collation and reporting (IT) system improvements planned to meet BAT 2c for inventory, BAT 11 energy and has an influence on BATs 15b, 16b and 21c for incident reporting (re. PVRVs and gas system management).

Further information is being collated in line with discussions with the SSD LIA (KS) on 3/12/24 and will be provided in due course (regarding asset replacement plans and timescales but will be provided for all sites even though no asset replacements are required here).

6.4.2.2 Odour

The Site has an Odour Management Plan (OMP), updated in September 2024, 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. The EMS 341 air quality and odour management also sets out the process for responding to odour complaints arising from customer contact.

The OMP was written in accordance with the Environment Agency's H4 Odour Management guidance (2011).

No complaints have been substantiated to the Millbrook STC and SHCSR in the past five years (2018-2023).

Odour control for Millbrook STC is provided for the sludge reception tanks, cake blending building, PSSTs/ sludge reception tanks, gravity belt thickeners, TSSTs/ digester feed tank and centrifuges. All assets on the relevant STC assets are covered or enclosed and foul air is treated by 1 No. caustic and hypochlorite wet chemical scrubber.

Odour control for SHCSR is provided for the inlet screens, cess reception system, all sludge holding tanks and the sludge pumping station wet wells. All assets are covered and odour is controlled by a 1 No. biofilter system.

The OMP provides mitigation measures to be followed by all staff to ensure normal operation does not result in odours leaving the STC boundary. The Odour Management Plan can be found in document reference 790101_ERA_OdourMP_MIL September 2024.

The level of odour risk from the Site is considered to be low to medium, as shown in Appendix B of the ERA (document reference 790101_ERA_MIL September 2024) and the OMP provides sufficient mitigation.

6.4.2.3 Noise

No complaints have been substantiated to the Millbrook STC and/or SHCSR in the past five years (2018-2023).

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 by the ERA.

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.

6.4.2.4 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_MIL September 2024.

6.4.2.5 Bio-aerosols

A bioaerosols risk assessment has been undertaken for the Site and considers there not to be any significant risks. The Bio-aerosol Risk Assessment can be found in 790101_ERA_BioRA_MIL September 2024.

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

There are not considered to be any fugitive emissions to land.

Details of waste generated and raw materials used at the Site is demonstrated in document reference 790101_MSD_ResidueMP_MIL September 2024.

6.5 Site security

Activities are managed and operated in accordance with the management system.

Access to Millbrook STC is restricted by automatically operated gates which are closed during operating hours. Access is by a telecom system prior to entry or key fob. The Site perimeter is comprised of 8ft chain-link fencing. The site is manned during opening hours (7am – 7pm), and staff are on call. The Site has CCTV at the inlet, gas holder and access gate.

Access to the SHCSR is restricted by secure, 6ft palisade perimeter fencing and an padlocked gate at the main entrance of the site. Visitors are required to sign in at the Site entrance. A

locked gate policy is adhered to. There are six CCTV cameras at the SHCSR, spread between the inlet, diesel tanks and sludge reception points. The SHCSR is manned only on weekdays, 07:30-16:00 Monday to Wednesday, and 07:30-15:00 Thursday to Friday.

Regular inspections of the boundary fencing and buildings are undertaken at both sites 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 the ERA in document reference 790101_ERA_MIL September 2024.

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, should be informed about what has been found and actions taken in a timely manner. The details of the complaint and the actions taken will be recorded in the Site Diary or log.

The aim will be to undertake measures to prevent complaints from being raised. However, where this is not possible, proactive measures will be taken to prevent further complaints from being made. For example, if a complaint is made with respect to dust, the Site Manager will arrange for dust suppression equipment to be used. The Site Manager will assess whether further control measures will be required to ensure that the risk of recurrence is minimised. The details of the complaint will be recorded in the Site Diary and the complaints register. If a complaint is received 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 will be sought from the Site Manager, if relevant.

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

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

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

It is important that any person acting on behalf of 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 are logged within the Customer Services Management System (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 possible, someone from the Environment Agency will attend after a complaint has been made so that they can carry out an effective and subjective appraisal of the complaints and note any results into the 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 C3 Question 3c: Types and amounts of raw materials

Details of raw materials is demonstrated in document reference 790101_MSD_ResidueMP_MIL September 2024.

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 CHP 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 6.8: 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			BS EN 13725
Flare	Operational hours	Recorded duration and frequency.	Continuous	Operational record including date, time and duration of use shall be recorded
Pressure relief valves	Biogas release and operational events	Recorded duration and frequency.	Daily inspection	Operational record including date, time duration of pressure relief events and

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

Southern Water acknowledges that the flare is appropriate for emergency use (such as breakdown and maintenance), records from monitoring are reviewed regularly to reduce the use of the flare. Further investigation are being undertaken on the CHPs see section 6.4.2.1.

6.8.1.1 Assessment of the sampling locations

Southern Water will, where suitable and available, undertake any monitoring, sampling and analysis of emissions to air or water in accordance with MCERTS, or equivalent agreed standards, by relevant and appropriately accredited contractors. An assessment of sampling locations is not appropriate as this will be the responsibility of the sub-contractors.

6.8.1.2 Sampling locations and BS EN 15259

The requirements of BS EN 15259 have been met, however, Southern Water does not believe the BS EN 15259 applies at the Site due to the diameter of circular ducts. Under Environment Agency's Method Implementation Document for EN 15259:2007[6], circular ducts with diameters <1.13m are not required to meet BS EN 15259.

Summary responses to the questions answered no for Question 4 of Part C3:

Question	Response
If horizontal, is the duct square or rectangular (unless it is less than or equal to 0.35 m in diameter)	Not applicable, as ducts are circular

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

The release of liquors from the sludge treatment process is considered to be a point source emissions or direct discharges to sewers, as part of the permit operation. The site layout plan, drawing reference 790101_MSD_SiteLayoutPlan_MIL&SHC December 2024, identifies the point at which liquors leave the site to enter the WTW at the inlet. A sampling location has also been identified on the site layout plan, although sampling will be undertaken as part of a wider implementation plan under BAT and IED.

Southern Water confirm that they will undertake a chemical analysis of their wastewater, from the STC entering the adjacent WTW, which tests all pollutants they expect to find in the discharge to fully characterise the emissions to water. They propose a minimum of 12 sampling runs over a 12-month period (1 full sampling spec per month) initially to establish a baseline, in accordance with the surface water pollution risk assessment guidance or other applicable guidance such as MCERTS or ISO standards, where appropriate. Southern Water will then take an informed viewpoint of the determinants the samples contain demonstrating those that are not in the sample. An H1 assessment to screen out any that are not applicable or relevant will be completed. Sampling and analysis will be undertaken using a UKAS accredited, or equivalent, laboratory. This commitment falls within the Implementation Plan for meeting BAT

[6] Environment Agency (2019). Method Implementation Document for EN 15259:2007: stationary source emissions –Requirements for the measurement sections and sites and for the measurement objective, plan and report. Available at: http://www.s-t-a.org/Files%20Public%20Area/MCERTS-MIDs/MID%20EN15259.pdf

and IED compliance, and further expressed in the Sampling Proposal document reference 790101_Sampling proposal_MIL December 2024. An implementation plan is shown in document reference 790101_MSD_ImplementationPlan December 2023. It is therefore, considered that this will be added as Improvement Conditions to the permit.

Condensate from the CHP exhausts (discharges into two condensate pots, which are discharged directly to the drainage system of the adjacent Millbrook WTW and will undergo treatment through the works before being discharged under an existing environmental permit for discharge to water. There are no direct releases to public sewer or other transfers off-site of emissions arising from the STC.

6.8.4 Emissions to land

There are no direct releases to land of emissions arising from the STC. 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 reported to the regulator as required by the Permit.

6.9 C3 Question 6: 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 C3 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.

6.10.2 C3 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 have a specific Energy and Carbon Manual which contains objectives for the energy consumption. Southern Water recognise that target setting

for, and measurement of, energy and carbon reduction is pivotal to reducing energy use and carbon emissions in new and existing installations. 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 is dealing with the measurement and reporting of operational carbon emissions in existing installations through:

- Monitoring of energy use from electricity meters.
- Quarterly estimation and reporting of operational carbon emissions for internal reporting purposes.
- Annual estimation and reporting of operational carbon emissions for regulatory reporting (Ofwat and CRC).
- 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.

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

- The combustion temperature is maintained relatively constant for reduced NOx emissions and increased efficiency
- The engines are equipped with turbochargers, further increasing energy efficiency
- Ongoing monitoring of plant operating parameters is carried out to ensure process is operating optimally and to enable constant optimisation to increase the plant's efficiency
- Good housekeeping measures are employed, and regular preventative maintenance will ensure the operations, and therefore energy efficiency is optimised
- Low cost measures in place to avoid inefficiencies of excessive heating or cooling include:
  - Insulation of main hot water pipes
  - Insulation of heating equipment such as hot water heat exchanger, boiler feed water tank and boiler feed water pumps and pipework
- Utilising low energy equipment for lighting such as:
  - High frequency fluorescent lighting, high pressure sodium or LED
  - Allowing for local or modular switching, where appropriate
- Consideration of energy recovery and the deployment of renewable energy systems, including:
  - Micro-hydro applications
  - Advanced sludge digestion
  - CHP
  - Use of solar panels and wind generation

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.

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

Southern Water carry 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 meet optimal and efficient operating requirements.

6.10.3 C3 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 C3 Question 6c: Climate change levy agreement

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

6.10.5 C3 Question 6d: Raw and other materials, other substances and water use

Raw materials required is detailed in section 2 of document reference 790101_MSD_ResidueMP_MIL September 2024.

6.10.6 C3 Question 6e: Reducing production of waste

The wastes produced is detailed in document reference 790101_MSD_ResidueMP_MIL September 2024

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 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_MIL&SHC October 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 **Error! Reference source not found.**. An implementation plan 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 Millbrook 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 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 Millbrook 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 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 Millbrook WTW. Southern Water will also provide H1 assessments for any new wastestreams introduced into the STC (and where appropriate the head of works under a waste permit), to assess whether there will be any impacts to the watercourse upstream of final effluent discharge.

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 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 Millbrook 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 WTW is permitted under the permit reference COPA/5586, from ‘A1 Secondary treated sewage effluent’, ‘A2 Settled storm sewage’, ‘A3 Storm sewage’ and ‘A4 Sewage in an emergency’ within the River Test (via Outfall 1) at SU 3871 1176. The permit authorises the discharge of secondary treated sewage effluent and settled storm and storm sewage and sewage releases in an emergency 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 4: Confidentiality and National Security

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

8.4 Question 6: Application checklist

Table 7.1 provides a list of section/document references included in the application.

Table 7.1: Part F, Question 6, Table 4: Application checklist

Question reference	Document title	Documents reference
Part A – Q5c Part A – Appendix 1 Part C2 – Appendix 2	Details of Directors	790101_MSD_Directors August 2024
Part C2 – Q3a Part C2 – Appendix 2	List of Relevant Offences	790101_MSD_RelevantOffences February 2024
Part C2 – Q3b	Competency Management System Agreement	790101_MSD_CMS December 2023
Part C2 – Q3d	Environmental Management System Certificate	790101_MSD_EMS December 2023
Part C2 – Q5a	Site Location Plan	790101_MSD_SiteLayoutPlan_MIL&SHC December 2024
	Site Layout Plan	
	Drainage Plan	790101_MSD_DrainagePlan_MIL November 2021 790101_MSD_DrainagePlan_SHC April 2008
Part C2 – Q5b	Site Condition Report	790101_SCR_MIL August 2024
Part C2 – Q6	Environmental Risk Assessment	790101_MSD_ERA_MILSeptember 2024 790101_MSD_Maps_MIL August 2024
	Climate Change Risk Assessment	790101_ERA_CCRA_MIL
Part C3 – Q1b Part C4 – Q1b	Waste Codes	Appendix A of 790101_MSD_MIL December 2024
	Annual throughput data	790101_AnnualThroughput_MIL&SHC December 2024
	Waste Transfer Notes	790101_MSD_WasteTransferNotes_MIL December 2024
Part C3 – Q3a Part C3 – Q3c Part C4 – Q3a	Schematics	790101_MSD_ProcessFlow_MIL December 2024
	BAT Analysis	790101_MSD_BAT_MIL December 2024
	Implementation Plan	790101_MSD_Implementation Plan December 2023
	Leak detection and repair Plan	790101_MSD_LDAR_MIL August 2024 790101_MSD_LDAR_SHC August 2024
	Residues Management Plan	790101_MSD_ResidueMP_MIL September 2024
	Accident Management Plan	790101_MSD_AMP_MIL September 2024
	Duty of care (waste acceptance)	790101_MSD_WasteAcceptance_MIL August 2024
Part C3 – Q3b	Odour Management Plan	790101_ERA_OdourMP_MIL December 2024

Question reference	Document title	Documents reference
Part C4 – Q3b	Bioaerosol Risk Assessment	790101_ERA_BioRA_MIL September 2024
Part C4 – Q4a	Monitoring	790101_Sampling proposal_MIL December 2024
Part C3 – Q3c, Table 5	Materials Safety Data Sheets	790101_MSD_MSDS_MIL August 2024
Part A – Q7 Part C2 – Q2,3,5,6 Part C3 – Q1,2,3,4,6 Part C4 – Q1,2,3,4 Part F1 – Q1,2,6	Main Supporting Document	790101_MSD_Main_MIL December 2024

A. Waste Codes

A.1 Wastes to be included installation permit

A.1.1 Part C3: Wastes imported for Anaerobic Digestion

It is requested that the annual quantity of indigenous sludge and liquid sludge imports to be accepted is 700,000 (wet) tonnes.

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 cake – imported	
19 06	**Wastes from anaerobic treatment of waste**			
19 06 06	Digestate from anaerobic treatment of animal and vegetable waste	AD pre-digestion	Digested cake - imported	Contingency for Fullerton cake bay drainage clean out, whilst IED upgrade works at Fullerton take place.
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 Wastes to import direct to Slowhill Copse under a waste activity permit

The waste codes listed in the permit EPR/GP3792HY will change to those listed below. It is requested the annual quantity of sludge and cess imports will be 375,000 wet tonnes (as per the existing 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	It is understood this will be modified from 20 03 99 in existing permit
19 09	**Wastes from the preparation of water intended for human consumption or water for industrial use**			
19 09 02	Sludges from water clarification	Head of works	Imported	Imported to Head of Works otherwise it is co-digestion

A.3 Wastes received under the Controlled Waste Regulations 2012*

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

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

mottmac.com