WASTE WATER SERVICES	WORK INSTRUCTION
Date Modified: 12/12/2023	Version: 1
IED Waste Pre-Acceptance, Acceptance and Rejection	

A. PURPOSE

This work instruction details the Waste Stream Management process for permitted anaerobic digestion installations operating under the Industrial Emissions Directive (IED) i.e., biological treatment activities exceeding a capacity of 100 t/day. The work instruction includes the following:

- Waste pre-acceptance (including sampling and monitoring);
- Waste acceptance (including sampling and monitoring);
- Non-conformance criteria and waste rejection; and
- Waste reception.

This work instruction references systems and records used to document the process and demonstrate compliance, which are referred to within each 'step' of the process.

This instruction should be followed to demonstrate compliance with:

- Waste Duty of Care Code of Practice, last updated November 2018 ; and
- The Environmental Permit for the site, and associated requirements;
  - Best Available Techniques for Waste Treatment, last updated October 2018
  - Best Available Techniques Reference Document for Waste Treatment, last updated August 2018
  - Biological waste treatment: appropriate measures for permitted facilities, last updated 21 September 2022

Following this instruction will also ensure:

- Sludge waste is discharged to site safely; and
- Sludge waste is characterised and its effects on the treatment process understood, to facilitate high efficiency of the treatment process.

B. SCOPE

This work instruction applies to sludge waste received at SWW IED permitted sites which comprise of a waste activity and an IED installation consolidated within a single permitted boundary.

SWW IED permitted sites accept sludge produced from the adjoining effluent process (indigenous), sludge received from smaller satellite sites operated by SWW (interworks) and Commercial Tankered Waste (CTW). The acceptance of CTW is at the inlet to the on-site wastewater treatment works and forms part of the waste activity aspect of the permitted area and operates under separate procedures.

The pre-acceptance section of this work instruction will also apply directly to the sites sending waste to IED permitted installation sites (interworks).

Movements of interworks sludges are currently contracted and undertaken by SWW Interworks Contractor(s). All movements are managed by SWW with regard to managing risk and ensuring environmental compliance.

This work instruction includes information on how SWW will characterise (at pre-acceptance) and verify (at acceptance) waste sludges received at IED permitted installation sites. Pre-acceptance checks will be recorded to fully characterise waste, in order to ensure waste sludges can be treated effectively and to minimise the risk to the environment. Full characterisation of the waste sludges will include recording information, which will encompass sampling and testing. An overview of waste characterisation, which is split into two stages, is included below:

- Legal suitability checks, including:
    - Description of waste and assigning of appropriate List of Waste code (non-hazardous);
    - Checks to ensure List of Waste code is acceptable under the Environmental Permit;
    - Physical form and transport details; and
    - Estimated volumes expected annually.
- Technical checks, including:
    - Waste source;
    - Process producing the waste;
    - Predicted age (to identify potential septicity); and
    - Waste composition and characterisation, including testing to:
        - Assess treatment suitability / process optimisation; and
        - To account for variability, including seasonality.
    - Available capacity on site.

SWW currently accept waste from approximately 65 SWW operated sites for Hayle STF. Sludge accepted from these sites is considered to be consistent and therefore sampling for waste characterisation purposes is carried out on a risk-based approach at a ‘site level’. Additional information is provided within the Work Instruction.

C. CONTENTS

D. RESPONSIBILITIES

Job Title / Team	Responsibilities
Regional Sludge and Bioresources Manager	Document owner. Responsible for review of this work instruction on a 2 yearly basis, or sooner if required. Responsible for providing a monthly business report as part of the monthly Business Review Meeting (BRM) reporting.
Technically Competent Manager(s)	Responsible for the implementation of this work instruction and ensuring this instruction aligns with relevant legislation (Environmental Permitting Regulations, The Industrial Emissions Directive, and The Waste Duty of Care). Responsible for ensuring that the Waste Duty of Care and Installation Environmental Permit conditions are complied with for each site (alongside Waste Water Operators). Responsible for ensuring that reception at their operational sites is compliant with this procedure and the linked work instructions.
Waste Water Operators	Responsible for receiving waste sludges on IED permitted installation sites. Received loads are logged on a JRP Wasp logger connected to an external website and accessed via company systems. JR Pridham Services Ltd are contracted to provide and maintain the Wasp waste loggers on site, for receiving and keeping records of all loads booked and received. This information is made available to SWW via a web portal. Responsible for ensuring that reception at their operational sites is compliant with this procedure and the linked work instructions (alongside Technically Competent Manager).

E. INSTRUCTIONS

Pre-Acceptance

	Waste Characterisation	**Responsible person**	**Record / System**

1.	Full waste characterisation is required at pre-acceptance stage for waste proposed to be received at a IED permitted installation sites.
	
	Full waste characterisation is split into two stages and summarised below:
	• Legal suitability checks, including:
	  ○ Description of waste and assigning of appropriate List of Waste code (non-hazardous);
	  ○ Checks to ensure List of Waste code is acceptable under the Environmental Permit;
	  ○ Physical form and transport details; and
	  ○ Estimated volumes expected annually.
	• Technical checks, including:
	  ○ Waste source;
	  ○ Process producing the waste;
	  ○ Predicted age (to identify potential septicity);
	  ○ Waste composition and characterisation, including testing to:
	  ▪ Assess treatment suitability / process optimisation; and
	  ▪ To account for variability, including seasonality.
	  ○ Available capacity on site.
	
	The following steps in this work instruction include additional detail regarding waste characterisation.
		Technically Competent Manager(s)	Characterisation Form

2.	Ensuring waste streams accepted on to SWW IED permitted installation sites are non-hazardous sludges and are defined as: • Indigenous Sludges; and • Sludge Interworks Sludges. No Commercial Tankered Waste (CTW) is accepted on to the IED permitted installation area.	Technically Competent Manager(s)	Characterisation Form
3.	**Legal suitability checks** SWW will ensure the following information is recorded on the Characterisation Form as part of pre-acceptance suitability checks: • The physical form of the waste and transport details;	Technically Competent Manager(s)	Characterisation Form

	• The waste is accurately described e.g. sewage sludge arising from a wastewater treatment works; • Non-hazardous in nature; • A sludge from the above waste streams; • Assigned an appropriate List of Waste code; • That the appropriate List of Waste code for the sludge is listed in the Environmental Permit for the site (Schedule 2, Table 2.2) and reproduced in the table below; and • Estimated volumes annually expected to be imported on to the site. The completed Characterisation Form will act as a record and will be integrated as part of the SWW tracking system.		

List of Waste Codes (Hayle STF)

Waste Code	Description
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE
19 02	Physio/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)
19 02 06	sludges from physio/chemical treatment other than those mentioned in 19 02 05 (sewage sludge only)
19 06	Anaerobic treatment of waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste (sewage sludge only)
19 08	Wastes from waste water treatment plants not otherwise specified
19 08 05	sludges from treatment of urban waste water (sewage sludge only)
19 12	Mechanical treatment of waste not otherwise specified
19 12 12	wastes from mechanical treatment of wastes other than those mentioned in 19 12 11 (sewage sludge only)
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 03	other municipal wastes
20 03 04	septic tank sludge
20 03 06	waste from sewage cleaning (sewage waste only)

4.	**Technical Checks** SWW will ensure the following information is recorded on the Characterisation Form as part of pre-acceptance checks:	Technically Competent Manager(s)	Characterisation Form

	• Source / nature of waste (including location, name of procedure, what process has produced the waste, any notable industries / potential contaminants);
	• How the waste will vary over time (including seasonality);
	• Visual / physical – colour and odour, particle size distribution, and physical contaminants;
	• Level of acidity / alkalinity – pH;
	• Chemical and suitability* – sampling suite to analyse:
	  ○ Composition;
	  ○ Potential contamination; and
	  ○ Suitability for treatment (interactivity and effect on process efficiency).
	• Available capacity exists to accept the waste.
	
	* The Recommended Sampling Suite table below lists determinands as part of a sampling suite, including typical ranges. The recommended sampling suite may be amended following a review of the pre-acceptance information provided or based on previous known characteristics of the waste stream. Sampling will be undertaken in accordance with the IED Sampling Procedure.
	
	Reference numbers for test results are recorded on the Characterisation Form. At present SWW is undertaking a baselining exercise to characterise waste streams and the relevant sampling suite and frequencies.
	
	The completed Characterisation Form will act as a record and will be integrated as part of the SWW tracking system.
			IED Sampling Procedure

5.	The Technically Competent Manager (TCM) will review pre-acceptance information against acceptance criteria to ensure it meets technical suitability checks. The TCM will complete the Characterisation Form to record their review, and either: a) Confirm suitability of the waste; or b) Document non-conformance and notifying customer.	Technically Competent Manager(s)	Characterisation Form

Recommended Pre-Acceptance Sampling Suite Table

Category	Determinand	Testing Standard / Approach	Typical Range / Comments
Visual / Physical	Colour	Qualitative	Within typical colour range, and free of evidence of significant oil contamination.
	Odour	Qualitative	Free from odour indicating oil contamination or septicity.
	Particle size distribution and physical contaminants	Qualitative	Sludge to be free of significant amounts of large contaminants e.g., rags which are likely to impact on process. Note – process on site includes screening prior to AD treatment which will act to remove large contaminants.
	Total solids and volatile solids	UKAS accredited lab	Assessment completed by competent person to confirm suitability for treatment process.
	%DS	WaSP system records total solids (at acceptance)	Assessment completed by competent person to confirm suitability for treatment process.
Level of acidity and alkalinity	pH	BS EN 13037	pH range limit 6-10
Chemical	Potentially toxic elements - heavy metals Chromium Zinc Copper Nickel Cadmium Lead	Various EN standards	Heavy metals may cause toxic effects on digester biology if above acceptable levels. Assessment completed by competent person to confirm suitability for treatment process.
	Volatile Fatty Acids (VFAs)	UKAS accredited laboratory	Assessment completed by competent person to confirm suitability for treatment process.
	Ammonia & Total Nitrogen	EN 12260 & EN 11095-1	Assessment completed by competent person to confirm suitability for treatment process.
	BOD (Biochemical Oxygen Demand) COD (Chemical Oxygen Demand) Suspended Solids Chloride	Various EN Standards	Assessment completed by competent person to confirm suitability for treatment process.
	Oil and Grease (total)	WA29	Assessment completed by competent person to confirm suitability for treatment process.

6.	Samples will be taken for pre-acceptance analysis, as a minimum, on an annual basis for indigenous and interworks sludge. Biological Treatment: Appropriate Measures provides the following calculation recommending the number of samples that should be taken to generate a 'representative sample' of waste: *√(N)+1 (with N being no. of containers)* Sludge accepted on to Hayle STF originates from a number of SWW operated sites, with sludge considered to be consistent between these sites. In light of this, SWW propose adapting the above formula to determine the number of samples required to generate a representative sample. The calculation would therefore be as follows: *√(N)+1 (with N being no. of sites sending waste sludge to the STF)* Tables below outline the minimum number of samples to be taken to generate a representative sample for each site. Numbers of samples are provided for both interworks and indigenous sludges. <u>Hayle STF</u>	SWW Representative	IED Sampling Procedure

Waste Stream	No. of sites*	No. of sites Sampled
Sludge Interworks	65	8
Indigenous	1	1

* Data from sites serving STF during financial year 2022 – 2023.

The selection of sites to be sampled, and the number of samples to be taken at each site, will be determined by the TCM. A risk-based approach will be used.

The risk-based approach will have a focus on sites that have higher trade effluent inputs in the incoming sewage, and for sites producing larger quantities of sewage, see table below. Additional considerations in the risk-based approach include, but not limited to:

- The potential impact on the treatment process (e.g. inhibitory chemicals or attributes, and potential to reduce process efficiency);
- Likely age of sludge; and
- Seasonal variation within the sludge.

STF size population equivalent (p.e.)	Trade effluent in STF catchment	No. of characterisation samples
Low (<10,000)	No	1

	Low (<10,000) | Yes | 1-2 Medium (10,000 – 50,000) | No | 1-2 Medium (10,000 – 50,000) | Yes | 2 High (>50,000) | No | 2 High (>50,000) | Yes | 2-3 Sampling of waste sludges at pre-acceptance stage will be taken in accordance with the IED Sampling Procedure.		
7.	Details of sampling completed, including dates of samples, site name and sample numbers are recorded on a Sampling Record Log.	Technically Competent Manager(s)	Sampling Record Log
8.	The TCM will ensure the Characterisation Form is completed and will review information with a recommendation to send waste, or not send waste to an IED permitted installation site.	Technically Competent Manager(s)	Characterisation Form
9.	A copy of the completed Characterisation Form will form part of the tracking system for the site. Records will be kept for a minimum of three years.	Technically Competent Manager(s)	Characterisation Form
10.	SWW cannot send waste to an IED permitted installation site that has not followed the above process, or where the above process identifies: • The waste is hazardous; • The waste is not suitable for treatment, or would have a significant detrimental impact on the treatment process; • The waste has failed any of the other pre-acceptance checks e.g. errors on Waste Transfer Note, lapsed Waste Carriers License etc.; • There is not sufficient available treatment capacity; or • The site is closed due to adverse weather or breakdown.	Technically Competent Manager(s)	Characterisation form
11.	SWW will reassess information collected during pre-acceptance for each waste stream on an annual basis, and if the: • Waste changes; • Process giving rise to the waste changes; or • Waste received does not to conform to the pre-acceptance information. Reviews of pre-acceptance information will be documented on a Waste Characterisation Review form. These records will be kept for a minimum of three years.	Technically Competent Manager(s)	Waste Characterisation Review Form

12.	The TCM will ensure that a completed WTN / Annual WTN is in issue for waste being sent to an IED permitted installation sites.	Technically Competent Manager(s)	Annual Waste Transfer Note System (e-WTN)

Waste Acceptance

13.	Waste will only be considered for acceptance once pre-acceptance criteria have been met and recorded on the Characterisation Form. Waste acceptance is split into two phases to ensure waste that is accepted on to site is suitable for treatment: 1. Initial Acceptance – involving the necessary checks to verify pre-acceptance characterisation information, suitability of the waste, available capacity, and other legal suitability checks; and 2. Waste Reception – involving acceptance and offloading of waste into the treatment process. SWW will also accept emergency tankers from pumping stations etc. Waste received on to an IED permitted installation site (interworks sludges) is not typically rejected as waste is consistent and well understood. The waste rejection process is included in the steps below for use in the rare cases of rejection.	Technically Competent Manager(s)	Characterisation Form
	Initial Acceptance		
14.	All waste arriving on site to an IED permitted installation site must: a) Have a completed Waste Characterisation form confirming that the pre-acceptance process has been completed; b) Have authorisation from the TCM that the waste they are carrying can be discharged at the IED permitted installation site under the terms of the Environmental Permit, and that the waste has undergone full characterisation at pre-acceptance stage (and is deemed acceptable); c) Have a valid and complete Waste Transfer Note (WTN) for the load, or reference to a valid Annual Waste Transfer Note (AWTN) and comply with the Waste Duty of Care; d) Notify a WWS Operator of their arrival on-site; and e) Obey all site H&S requirements including speed restrictions.	Technically Competent Manager(s)	Characterisation Form Annual Waste Transfer Note System (e-WTN)

<table>
<tr>
<td>15.</td>
<td>The information provided in the Waste Characterisation form will be verified as part of the initial acceptance procedure.

Verification will include checking the information received at pre-acceptance stage to confirm the waste is consistent. In accordance with Section 6.8 of guidance produced by the Environment Agency on ‘Biological waste treatment: Appropriate measures for permitted facilities’ (September 2022), acceptance sampling requirements do not apply to sewage sludge and septic tank sludge. Instead, visual checks and periodic audits against pre-acceptance characteristics will be undertaken.</td>
<td>Technically Competent Manager(s)</td>
<td>Characterisation Form</td>
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<tr>
<td>16.</td>
<td>Inspections will be carried out to assess physical characteristics of the sludge to check the following:
• Colour – Within typical colour range and not heavily contaminated with oil;
• pH – Within typical range for sludge;
• Odour – Free from odour indicating oil contamination or septicity; and
• Particle size distribution / physical contaminants – sludge to be free of significant amounts of large contaminants e.g., rags*.

* Imported sludge will be screened as part of the waste treatment process. Visual checks will therefore be carried out to confirm the screening process would have capacity to remove physical contaminants.

Note – All tankers can dispense sludge via a tap to generate a sample for inspection. Visual inspection is possible on the majority of tankers via clear (sight) glass.

The frequency of these inspections is included below and is in line with Section 6.1.14 of Appropriate Measures: ‘If the customer has a number of containers holding the same waste, you can apply the industry standard applying the square root of (N)+1 rule to sampling those containers.’

<u>Hayle STF</u>
<table>
<tr><th>Waste stream</th><th>No. of tankers per day (rounded)*</th><th>Samples per day √ (N)+1</th></tr>
<tr><td>Sludge Interworks</td><td>7</td><td>4</td></tr>
</table>
</td>
<td>Tanker Driver (trained and competent)</td>
<td>Form / System</td>
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</table>

	Indigenous** | 11 | 4 * Data from financial year 2022 – 2023 ** Indigenous sludge 'tankers' calculated from the volume received in 2022 – 2023 divided by the average volume of a tanker received on site.		
17.	Waste will be deemed acceptable based on the visual inspection or will be rejected from the site. If not acceptable, then the rejection process below is followed.		
18.	Periodic audits of waste sludges against pre-acceptance characteristics will involve sampling as per the suite and frequencies included in the pre-acceptance section of this procedure. The recommended sampling suite may be amended following a review of the pre-acceptance information provided or based on previous known characteristics of the waste stream.	Technically Competent Manager(s)	Characterisation Form
	Waste Rejection		
19.	Waste may be rejected if tanker drivers (and their loads): a) Have not received authorisation from the TCM that the waste they are carrying can be discharged at the IED permitted installation site under the terms of the Environmental Permit, and that the waste has undergone full characterisation at pre-acceptance stage (and is deemed acceptable); b) Have failed to verify that waste is consistent with information received at pre-acceptance stage*; c) Do not have a valid and complete Waste Transfer Note (WTN) for the load, or reference to a valid Annual Waste Transfer Note (AWTN) and comply with the Waste Duty of Care; d) Have failed to notify a WWS Operator of their arrival on site; e) Have failed to obey any site H&S requirements including speed restrictions; and f) If the site is closed. * Waste sludges received on site are of known sources, received from SWW operated sites, and the waste is likely to be consistent in its characteristics. For these reasons, it is rare that waste will need to be rejected on the basis of its characteristics.	WWS Operator Technically Competent Manager(s)	
20.	In the event a load is rejected, SWW operators must: a) Ensure completion of Waste Characterisation form (especially if rejection is due to waste not meeting pre-acceptance information);	WWS Operator	Characterisation Form

	b) Ensure IED Rejection Form is completed; c) Contact the Technically Competent Manager (TCM) to confirm that the load is to be rejected; d) Confirm the rejection to the Technically Competent Manager; and e) The Technically Competent Manager should inform the Environment Agency as soon as reasonably practicable to report the rejection if rejecting hazardous waste and should act on any advice given.	Technically Competent Manager(s)	IED Rejection Form
	Waste Reception (Waste Acceptance)		
21.	Waste deemed acceptable during 'initial acceptance' is received on site and recorded using Gemini.	WWS Operator	Gemini system
22.	The Tanker Driver will liaise with the WWS Operator to ensure the WTN/AWTN is completed.	Tanker Driver	Annual Waste Transfer Note System (e-WTN)
23.	All waste reception issues including waste acceptability, maintenance, health and safety and actions to resolve will be reported to the Technically Competent Manager and/or Site Manager.	All	

F. REVIEW

This instruction will be reviewed on a 2 yearly basis, or sooner if required. Reviews will be conducted to ensure the instruction continues to align with relevant legislation (Environmental Permitting Regulations, The Industrial Emissions Directive, and The Waste Duty of Care. This will also include any updates to Best Available Techniques (BAT) and Biological Treatment: Appropriate Measures for Permitted Facilities.

The review will also include an audit of the details within the work instruction to ensure they remain accurate against current processes carried out by SWW.