MOTT MACDONALD

Waste Acceptance and Pre-Acceptance Procedure

Afan Sludge Treatment Centre

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Afan Sludge Treatment Centre

September 2024

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1 Scope and Introduction

1.1 Scope and introduction

The scope of this document is to establish a waste acceptance procedure in order to define Dŵr Cymru Welsh Water (DCWW) approach to ensure wastes are appropriately characterised, as far as reasonably practicable. This is to give assurance that the receiving Afan Sludge Treatment Centre (STC) is not put at risk from any substances that have the potential to harm the treatment processes.

DCWW has a legal duty, under Section 34 of the Environmental Protection Act 1990[1], often referred to as The Duty of Care, to ensure that waste is disposed of (or recovered) in the correct manner, without harming human health or the environment. Under the Controlled Waste (England and Wales) Regulations 2012[2], sludges from sewage treatments works are excluded from the definition of controlled waste. Consequently, the sludge waste produced from other DCWW sites, accepted into the Afan STC, is excluded from the requirement to provide Waste Transfer Notes, as these are for Controlled Wastes.

Waste accepted by DCWW will be managed in a way to ensure that its handling:

- Complies with relevant legislation and site-specific permit requirements;
- Does not cause harm to the environment and/or human health;
- Does not cause a nuisance; and
- Does not adversely affect public amenities or ecological receptors.

The waste acceptance procedure will help:

- Ensure waste does not cause pollution and;
- Prevent waste arriving at the site that is not authorised by the permit.

Information obtained at Waste Pre-Acceptance (section 4) and Waste Acceptance (section 5) stages provides assurance that only suitable waste is received and meets the waste acceptance criteria.

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

This document is not concerned with imports from the sewer network as this is governed by the Urban Wastewater Treatment Directive (UWWTD). Similarly, Trade Effluent (TE) discharges into the sewer network are not included in this document.

1.2 Inter-site liquid sludge transfer

As well as indigenous primary and secondary sludge from Afan WwTW, Afan STC receives inter-site sludge produced at other DCWW sites across the region. All movements of inter-site liquid sludge and sludge cake are undertaken by DCWW's own fleet of tankers under the management of the Bioresources Team. Suitably licensed contractors can also be employed in

[1] Environmental Protection Act 1990, c. 34. Available at: Environmental Protection Act 1990 (legislation.gov.uk) (Last accessed June 2024).

[2] The Controlled Waste (England and Wales Regulations 2012, c. 3. Available at: The Controlled Waste (England and Wales) Regulations 2012 (legislation.gov.uk) (Last accessed June 2024).

times of need; these also come under control of the Bioresources Team. The Bioresources Team carries out monitoring of sludge volumes on each site to ensure there is no overcapacity.

The composition of the sludges is stable, consistent, and is well understood. The sludges are all capable of biological treatment. The volume and source of imports to the site is recorded by loggers. These also ensure that only appropriately authorised drivers can discharge. All sites supplying sludge to Afan have been reviewed to ensure that the typical sludge they produce is suitable and safe for anaerobic digestion.

Continuous improvement is maintained at all sites which helps to ensure the dry solids content is ideal for tankering. Sludge production problems are rare, but operators and tanker drivers are trained to identify contaminated sludges at source (e.g. oil odour or by visual check) and stop them being transferred to the digestion site. The site has Trade Effluent control which prevents harmful substances from entering the production process. Spot checks will be carried out on imported sludges to ensure they are within acceptable parameters and safe for the digestion process.

Imported sludge cake is delivered to the site by road and is received into the cake import centre, which comprises of two enclosed hoppers, both of which are connected to the Odour Control System. The imported cake is then transferred to the Thermal Hydrolysis Plant (THP) feed silo, where it combines with indigenous sludge cake previously held within the indigenous sludge cake silo.

Inter-site liquid sludges received are typically in the range of 1% to 8% dry solids, with the majority being between 3.5% and 6% dry solids.

Dry solids data is used to inform the safe and compliant movement of all sludges and cake between sites. Operationally, sludges are only accepted from sites where the effluent stream and resultant sludge stream is healthy as indicated by DCWW monitoring of the UWWT processes at each WwTW. Should this not be the case, sludges from those streams would be handled separately, and an assessment undertaken to determine the appropriate course of treatment.

DCWW's Bioresources Team also operates under a management system that is certified to the ISO14001:2015 standard. Within the Quality and Environmental Management System, procedures are in place to cover all aspects of the operation including:

- Product sampling to ensure compliance with regulations; and,
- Routine process testing i.e. process testing on commissioning of new plant to ensure that the treatment process meets all the requirements of the Hazard Analysis and Critical Control Point (HACCP) standard and will produce a product suitable to be sent to land.

A potentially non-conforming import of inter-site liquid sludge could be retrospectively identified in the event that it has a significant effect on the digestion process at a STC. The Bioresources Team would be informed and an investigation carried out.

2 Permitted Wastes

Figure 2.1 list the European Waste Catalogue (EWC) codes the Afan STC is permitted to accept and treat.

Figure 2.1: EWC Codes accepted into the Afan STC

Waste Code	Description
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTEWATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 02	**wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**
19 02 06	sludges from physico-chemical treatment other than those mentioned in 19 02 05 (sewage sludge only)
19 06	**description digestate from anaerobic treatment of animal and vegetable waste**
19 06 06	digestate from anaerobic treatment of animal and vegetable waste (sewage sludge only).
19 08	**wastes from wastewater treatment plants not otherwise specified**
19 08 05	sludges from treatment of urban wastewater
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 12	wastes from mechanical treatment of wastes other than those mentioned in 19 12 11 (sewage sludge only)

3 Waste pre-acceptance

Waste pre-acceptance procedures are implemented to ensure that enough is known about a waste before it arrives at the STC. This is done to assess and confirm the waste is technically and legally suitable to be accepted and processed at the site. Procedures follow a risk-based approach, considering various aspects including the risks of contamination and characteristics of the waste. This must be done in order to prevent the acceptance of unsuitable wastes which may lead to adverse reactions and uncontrolled emissions.

It should be noted that as the Afan STC only accepts waste indigenously produced on site or imported from other Welsh Water owned assets, the nature and characteristics of the waste are well understood.

3.1 Waste pre-acceptance records

Before waste arrives at the STC, the waste producer will be asked to populate a 'Waste Pre-acceptance Form'. An example of a Waste Pre-acceptance form can be found in Appendix A. The Waste Pre-Acceptance Form is required for a technical assessment of the waste to be carried out. This will determine a wastes suitability for processing and, if deemed suitable, how this will be processed. The following details must be obtained (in writing or electronic format):

- Waste producer details
- The source of the waste (the process giving rise to the waste)
- Waste description
- Age of the waste
- The odour characteristics of the waste
- The containment of the waste
- EWC code
- Physical form and any physical contaminants
- Estimated volumes, frequency and annual quantities
- Details of any representative analysis or provision of a suitable sample to enable analysis
- The description of any hazardous properties of the waste (If applicable)
- Information on the nature and variability of the waste and waste production process.

The assessment will include but is not limited to:

- Cross-referencing the waste description and EWC code with the permitted activities, any waste not permitted will be rejected from site.
- Confirm the waste is non-hazardous using the EWC code and where required using the WM3 technical guidance.
- Consider if the waste presents any potential hazards that may impact on the Health and Safety of staff, contractors or customers.
- Consider if the waste presents any hazards that may impact on the local environment or present any permitting issues.
- Verify the composition of the waste.
- Assess the type of containment, packaging and physical contamination and determine handling methods.
- Assess the odour of the waste and if applicable the requirement for any odour controls.

All records relating to pre-acceptance are held and accessible to allow for cross reference and verification at the waste acceptance stage. These records are kept for a minimum of 3 years.

3.2 Pre-acceptance sample assessment

To accompany the waste pre-acceptance records, all waste deliveries are subject to pre-acceptance testing to confirm their suitability for treatment at the site. A representative sample will be obtained from the waste producer (i.e., other Welsh Water sites) for analysis.

A representative sample must be provided for analysis. The technical appraisal will be carried out by a suitable qualified and experienced staff member. Using the waste information and analysis obtained, DCWW will establish a suitable treatment method for the waste. Where required the staff member will use the WM3 technical guidance on waste classification to verify the nature and classification of the waste.

The staff member will analyse the sample for:

- The potential for self-heating, self-reactivity or reactivity to moisture or air.
- The full characteristics of the waste, (waste's composition and characterisation must be based on representative samples).
- Verify if the waste displays any hazardous properties (If applicable).
- Verify the sample matches the information recorded on the Waste Pre-acceptance Form.

If either the information obtained from the Waste Pre-acceptance Form or the pre-acceptance sampling analysis suggest that the waste should not be accepted into site, the customer will be contacted by DCWW and a further review will take place.

4 Waste Acceptance – on-site verification

4.1 Visual Inspection and Sampling

All waste deliveries are pre-scheduled into the site. For all waste deliveries, operators and tanker drivers are trained to identify contaminated sludges at source. This includes inspecting the waste for any oil odours and conducting visual checks on the waste to ensure that the characteristics of the waste is consistent with pre-acceptance information. If there is a reason to believe this waste is contaminated, the operator or tanker driver will stop the waste being transferred to the digestion process.

All deliveries to site are discharged via a data logger to measure import volumes.

Random spot sampling will be carried out on waste accepted into the Afan STC. The purpose of the random sampling is to monitor and gain an understanding of the characteristics of the sludge accepted on to site. If the sample indicates that the waste should not be accepted into site, in this instance the customer will be contacted by DCWW and a further review will take place. The analysis suite the samples are tested against is:

- Total solids and volatile solids
- Biogas potential
- Total organic carbon (TOC)
- Chemical oxygen demand (COD)
- Nutrient analysis
- pH and alkalinity
- Volatile fatty acids (VFA)
- Ammonia and total nitrogen content – carbon to nitrogen (C to N) ratio
- Heavy metals and potentially toxic elements (PTEs)

This characterisation will take place over the first year after the permit is issued and will be reviewed at that point.

Sampling and analysis will also be carried out on any rejected load.

5 Non-conformance

5.1 Non conforming sludge

It is very likely that a non-conforming sludge would be picked up either at the original WwTW or at the pre-acceptance stage. A sample from the tanker will be placed in a bucket and checked against a standard sludge and also checked for odour. If there is a potential issue, the Process Technician will be notified. They will determine whether the sludge is accepted. This may be due to strong odour suggesting septicity, or presence of oil or other contaminant. If the sludge is rejected, the tanker will be sent to another suitably permitted site for treatment. A sample from the rejected load will be taken and analysis carried out in this case for Waste Acceptance Criteria.

A potentially non-conforming import of inter-site liquid sludge could be retrospectively identified in the event that it has a significant effect on the digestion process at a STC. If concerns are raised over the importation of inter-site liquid sludge, the following risks shall be understood:

- Potential downstream risks
- Permit compliance - a suitably trained operator shall provide support to retrospectively assess a suspected potentially non-conforming import of inter-site liquid sludge.

The Bioresources Team would be informed and an investigation carried out.

WM3 technical guidance on waste classification is used to assign the correct EWC code. As a result of all waste being from DCWW's own sites, the following are all known before the waste gets to the Afan STC:

- details of the waste producer (all DCWW)
- the source and nature of the waste, at the point of production (the process that gives rise to the waste)
- a description of the waste including its physical form
- the full characteristics of the waste including the variability of each waste (for example, liquid effluents must be individually assessed and tested, understanding of the waste's composition and characterisation must be based on representative samples)
- a description of any hazardous properties including potential risks to process safety, occupational safety and the environment (none)
- the odour potential
- the type of packaging and risks of contamination
- an estimate of the quantity you expect to receive in each load and in a year
- the potential for self-heating, self-reactivity or reactivity to moisture or air
- the age of the waste

Any change to the site (process change, additional Trade Effluent etc.) will be notified by the relevant DCWW team.

Non-conforming sludge will be transported to a suitably permitted site for treatment after sampling and analysis.

5.2 Waste Rejection

DCWW have clear criteria for the rejection of wastes, along with a written procedure for tracking and reporting the non-conformance.

Non-conformance will be identified from visual checks of the waste import. Waste imports will be rejected from site if:

- The waste does not comply with permit conditions e.g. the EWC code is not listed on the site permit.
- The pre-acceptance assessment has not been completed for the imported waste.
- The import is not expected or planned in to site.
- There is insufficient storage or capacity to process the import on the date planned.
- There are concerns raised on the suitability or compatibility of the import material (this may be triggered through spot checks or retrospective monitoring).
- Signs of contamination are present in the sludge, that are above the agreed level.
- Abnormal odour or colour that is not comparable to the pre-acceptance information.

The grounds for raising a non-conformance and the rejecting of waste will require a technical investigation to be carried out by a suitable qualified and experienced staff member. Details of this non-conformance will be recorded on WOF007.

If DCWW are alerted that a sludge import requires rejecting before it is discharged at the Afan site, the waste import will be prevented from discharging and directed to an appropriate sludge facility.

5.3 Incidents

If upon inspection an incident has occurred, an investigation will be undertaken. Where loads are rejected, a record will be kept on ENF 007 form.

The site is operated in a manner to minimise odour release during general day-to-day operations. The site is monitored for spillages as part of routine inspections. If a spillage occurs, it is washed into site drainage or removed to an appropriate disposal location as soon as possible. If spillages are a recurring incident, investigations into the cause of such occurrences are undertaken, and action taken to minimise these occurrences.

The site uses a sludge logistics system to monitor and track waste imports received on site. As detailed in section 6, a key fob is needed to access the system. If a fob becomes faulty, and the driver cannot discharge waste, the Biosolids Operations Team will advise the site Operations Team to use the Operations Supervisor key fob. In this instance it is the responsibility of the Operations Supervisor to ensure that they obtain the vehicle registration, the name of the Domestic Waste Tanker Company and the details of the load for any load that bypasses the companies fob and/or discharge logger.

6 Waste Recording

6.1 Tracking system

The site uses a sludge logistics system which governs the feedstocks on site as part of Ofwat reporting. The system is robust and provides measurements of feedstocks received and removed from the site.

The Biosolids Operations Team are responsible for issuing a Sludge Waste Tanker Pack to all Sludge Tanker Drivers that are responsible for transporting waste imports into the site. The pack contains the below information:

- Information on fobs and access cards
- Induction requirements
- Instructions for drivers on how to use the sludge import system logger
- A mobile number is requested in order to receive sms text alerts on site closures, openings, site induction dates and domestic waste open days

Once the pack has been completed, the completed pack is reviewed by the Biosolids Operations Team prior to forwarding on to the Logger Equipment Service Provider to set the customer up on the system. DCWW bio resources team sends a key fob to the customer by recorded delivery, which is required for discharging at the waste import loggers at DCWW's domestic waste sites.

A. Waste Pre-acceptance Form

A.1 Waste Pre-acceptance Form

Waste Pre-acceptance Form	
Waste Producer	
Address	
Post Code	
Phone Number	
Email	
Details of waste	
Waste description	
EWC Code	
Process Generating Waste	
Expected approximate Total Dissolved Solids (TDS) %	
Volume of waste	
Total Annual Volume	
Frequency of tanker delivery to STC	
Pre-Acceptance Sampling Information	
Sample received	
Sampling Location Point	
Sample Taken By	
Sample Date	

Composition					
Determinand	Y/N or N/A	Details	Determinand	Y/N or N/A	Details
Chemical Oxygen Demand COD			pH		
Total Organic Carbon			Iron		
Suspended Solids			Aluminium		
Volatile Solids			Arsenic		
Volatile Fatty Acids			Chromium		
Fats, Oil, or Greases			Copper		
Carbohydrates			Lead		
Calorific Value			Magnesium		
Biochemical Methane Potential			Nickel		
Fluoride			Selenium		

Ammonium compounds			Zinc		
Total Nitrogen			Cobalt		
Phosphate			Molybdenum		
Total Sulphur			Cadmium		
			Mercury		
			Potassium		

I hereby confirm that the information provided is accurate to the best of my knowledge and the sample is representative	
NAME (Print)	
SIGNATURE	
POSITION	
DATE