

Bioresources - Tankered Trade Waste			
Document Title	SOP 17 Biosolids TTW Acceptance & Delivery		
Document Owner Role	Process Manager	Version Number	2.0
Date of Last Review	14/02/22	Date of next Review	14/02/24
Identified Risks			
<ul style="list-style-type: none"> • HS&W risks associated with unsuitable / volatile / hazardous waste streams. • Excessive solids could damage the pipework infrastructure • Activated Sludge Process lanes collapse: from Overloading of nutrients <ul style="list-style-type: none"> ○ Inhibition of the microbial activity through the introduction of too many inhibitory compounds such as metals or cyanide or pH concentrations are too extreme • Digesters inhibits Methane (CH₄) generation due to: <ul style="list-style-type: none"> ○ excessive volume of heavy metals such as Chromium (Cr III) and Cadmium (Cd) ○ They can poison the active bacteria and inhibit the methanogenic bacteria ○ This leads the presence of organic acids • Combined Heat Power process impacted by: <ul style="list-style-type: none"> ○ High concentrations of Hydrogen Sulphide (H₂S) can damage engines ○ High concentrations of Siloxanes (Si) pas through the biogas and result in silica deposits. ○ These damage the engine valves, oil life etc. leading to greater downtime and more equipment to be replaced • Compliance risks • Loss of waste permits if waste not listed on them permitted or waste does not have the appropriate EWC. • Final effluent discharge consents missed due to high solids or heavy metals or Phosphorus (P) • BAS Compliance for Bio-solids non-conforming if too high metal content • Wider environmental damage from failures of the treatment processes due to unsuitable waste streams being accepted. 			
<p>If this is a printed version please ensure that it is still within the current review period, if not 'DO NOT USE' and contact your line manager for a new version</p>			
<p style="text-align: center;">Remember – If you can't do the job safely, don't do it.</p> <p style="text-align: center;">'DO NOT CARRY OUT THE PROCEDURE' And seek advice from your line manager</p>			

Introduction

This document outlines the acceptance procedure for biosolids (Cake) and the procedure for offloading.

Key Roles and Responsibilities	
Tankered Trade Waste Manager (TWM):	<ul style="list-style-type: none"> ○ Ensure that the operating procedures are followed ○ Ensure that the Tankered Trade Waste Technicians (TTWT) have undergone appropriate training ○ Can make approval decisions if they have been deemed as technically competent ○ Investigate HSW & Environmental concerns from the TTWT
Tankered Process Team (TPT):	<ul style="list-style-type: none"> ○ Ensure that the operating procedures are followed ○ Assess non-conformance risks to treatment process and make suitable decisions to ensure process is not adversely affected ○ Notifying the commercial team once a decision has been made to reject a delivery
Tankered Trade Waste Technicians (TTWT)/Technical Competent Persons(TCP):	<ul style="list-style-type: none"> ○ TTWT have undergone appropriate training and have a valid CMS certificate ○ Has a valid gas monitor training certificate ○ TTWT have been deemed as technically competent ○ Follow the non-conformance procedure if a waste is not suitable and do not permit the load to discharge
Commercial Team:	<ul style="list-style-type: none"> ○ Liaise with TTWT regarding non-conformance issues ○ Contact customer if more information is required about a non-conformance ○ Contact customer if waste delivery is rejected
Tanker Driver:	<ul style="list-style-type: none"> ○ Tanker driver must have a STW induction card, or be given an induction by the TTWT ○ Must adhere to STW PPE and safety regulations whilst on site ○ Must give a representative sample from his waste delivery
Biosolids Team:	<ul style="list-style-type: none"> ○ Confirm Cake Limits ○ Available to support the Tankered Process Team with approval & cake expectations
THP Team:	<ul style="list-style-type: none"> ○ Aware of current health and capacity for THP ○ Be knowledgeable of current Status of THP e.g. if Enhanced product is feasible

Required Training	
Tankered Trade Waste	<ul style="list-style-type: none"> ● In date CMS training ● Gas monitor training

Technicians (TTWT)	<ul style="list-style-type: none"> • At least 6 months experience in the waste industry (if they are approving low risk wastes) HNC Chemistry, University Degree in a Scientific Area or similar experience • Experience undertaking sampling and lab testing • How to use CWID
Tankered Process Team (TPT)	<p>The requirements for the TTWT in addition to:</p> <ul style="list-style-type: none"> • Tankered Waste experience or 12 months experience in the waste industry • CIWM Hazardous Waste Classification course • Cranfield University Biological Processes/Activated Sludge Treatment course • University degree or similar level of experience and knowledge in a Scientific Area
Tankered Trade Waste Manager (TWM):	<ul style="list-style-type: none"> • In date EMS training • Experience of working in the Waste Industry • Understanding of Health, Safety, Wellbeing and Environmental Compliance

Documentation & Resources

Standard Operating Procedures (SOP)

- CWID (Commercial Waste Information Database)
- Sample of the waste
- Gas monitor
- STW Interworks logger fob
- JRP WASP portal

Biosolids (Cake) Pre-Acceptance

A discussion is undertaken between various stakeholders including those from THP team, Bioresources and the Tanker Trade Waste team. Commonly the enquirer will be from another water company, but this might not always be the case. Part of the discussion includes the key requirements such as duration of the task and frequency and when to undertake the Duty of Care audit. If this is a new site or enquirer, a duty of care is undertaken. For more frequent customers duty of care audits are arranged periodically.

As part of the Duty of Care audit a sample of the waste is obtained and sent to a certified lab for analysis. Elements of the assessment include reviewing where the waste is currently being stored, analysis of any existing results, how the site runs, any health and safety or environmental pollution events.

The samples are sent off and tested for the determinants outlined in table 1.

Table 1: For Biosolids (Cake)

Description	Units
Mercury [Hg] (total) as Hg dry weight	mg/kg
Arsenic [As] (total) as As dry weight	mg/kg
Selenium [Se] (total) as Se dry weight	mg/kg
pH sludges and soils	pH_unit
Nitrogen as N % Dry weight	% DW
Phosphate as P % Dry weight	% DW
Potassium as K % Dry weight	% DW
Molybdenum (total) as Mo dry weight	mg/kg
Solids Total at 105c	%
Loss on Ignition dried solids	%
Cadmium (total) as Cd dry weight	mg/kg
Chromium (total) as Cr dry weight	mg/kg
Copper (total) as Cu dry weight	mg/kg
Lead (total) as Pb dry weight	mg/kg
Nickel (total) as Ni dry weight	mg/kg
Zinc (total) as Zn dry weight	mg/kg
Sulphur as SO ₃ % Dry weight	% DW
Sulphur as S % Dry weight	% DW
Magnesium as MgO % Dry weight	% DW
Magnesium as Mg % Dry weight	% DW
Potassium as K ₂ O % Dry weight	% DW
Phosphate as P ₂ O ₅ , % dry weight	% DW
Available Fluoride as F (mg/kg)	mg/kg

Results & Review

Once the results are returned a review is undertaken of the availability of requested reception site, requirements of product site e.g. thickness, if the results are within the safe limits.

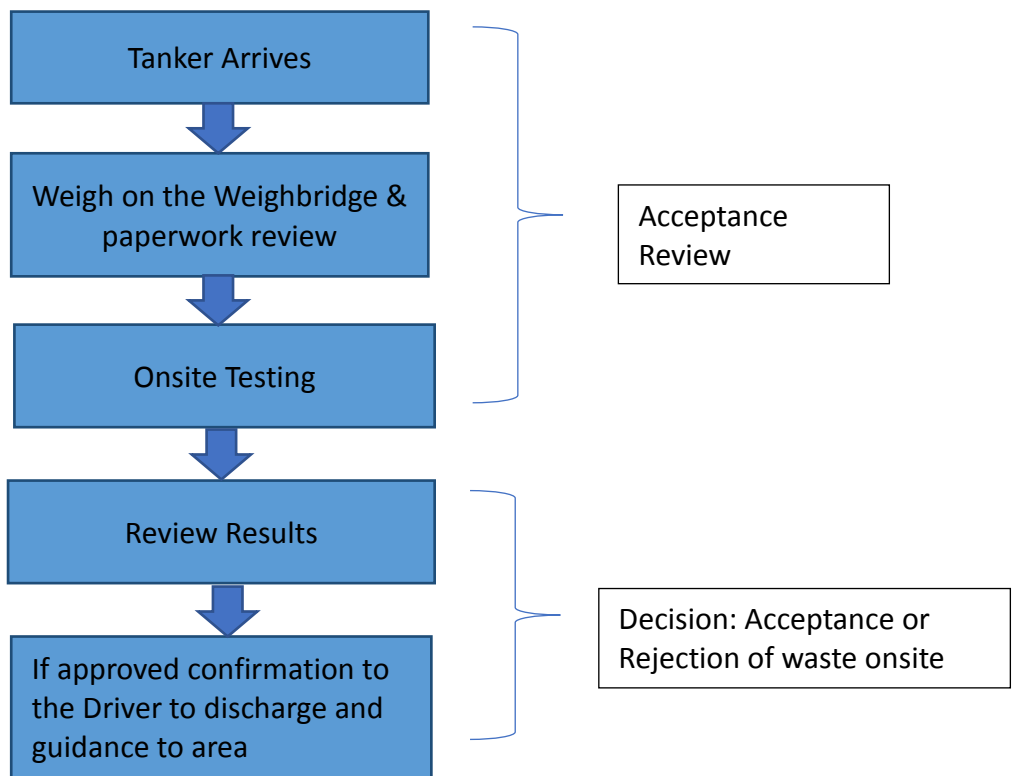
Then a full review of the information is undertaken including a review of the risk calculation:

- Risk Calculator – Risk level for sites, paying close attention to the destination sites.
- Suitability for Biological Treatment:
 - Inhibition values
 - Biodegradability through BOD/COD results
 - Current performance of the treatment process
 - Other site variables such as weather, maintenance work, projects
- Site Loadings/Chemical Limits - need to be considered for discharge conditions

- Biosolids/BAS (Biosolids Assurance Scheme) compliance - in particular, metal concentrations are considered in line with current cake PTE (potentially toxic elements) concentrations
- Review WAF:
 - Confirmation all require information is present
 - Ensure SIC code is correct
- Review EWC code & compare with site permit codes
- A check must be completed to ensure a customer account is in place.
- BAS compliance – particular focus on metal concentrations to ensure that the PTE (potentially toxic elements) match the limits in the biosolids

If this waste is accepted for a short duration, then a seasonal permit is issued. All the details are recorded on the database CWID. Bookings are determined by the stakeholders and booked accordingly through the booking office.

Biosolids (Cake) Onsite Acceptance



Once the delivery vehicle reaches site, the Tanker Trade Waste Technician (TTWT) confirms that the driver has completed a Severn Trent site induction and if required, performs a site induction with them. Vehicles must “weigh in” prior to discharge and “weigh out” post discharge to ensure that an accurate delivery weight is recorded.

A representative sample is taken as part of the onsite testing protocol (SOP 10 and SOP 13). Depending on the length of the agreement, the frequency of sampling will be increased

accordingly. Paperwork is reviewed includes a copy of the season ticket which is held on CWID.

Waste Transfer Note

The waste transfer note should include:

- EWC code
- SIC code
- Haulier's carrier registration number
- Name and address of waste producer
- Name and address of disposal site
- The waste hierarchy confirmation must be signed
- Driver name and signature should be pre

The technician then fills out the required sections and ensures that a copy is captured as part of the waste receipting records. The sample jar is labelled with the waste producer, TW ticket number, waste stream reference number and date received on a small sticker and place it on the sample container lid. A sample will be stored safely as required until disposed off or sent for analysis.

Offloading Biosolids

As per the standard Tanker Trade Waste technician protocol, the driver is asked to confirm the last load to ensure it's suitable with the site permit. If the last load carried was unsuitable for the sewage treatment works, there must be either a wash out certificate or declaration from the haulier / waste producer that the vehicle was cleaned prior to loading the current material. Providing the waste is suitable, the driver is permitted to offload the waste and a Severn Trent representative will be available to support the driver and monitor the discharge. Upon returning, the driver is issued with the updated Waste Transfer Note/ticket and directed to weigh on the weighbridge.

References:

- Technical Guidance WM3: Waste Classification – Guidance on the Classification and assessment of Waste
- BREF for Waste Treatment 2018
- Site Permits
- SOP 02 TTW Waste Acceptance
- SOP 03 TTW Non-conformance
- SOP 10 Standard Sampling Tests
- SOP 11 Sewage Sludge Acceptance Procedure
- SOP 13 Hach Lang: Completing on-site analysis using Hach Lang Cuvettes
- SOP 14 Moisture content sampling procedure
- SOP 22 How to use a JRP Logger

Version Control			
Version	Date	Details	Published By
3.0	13/01/22	Updated procedure to include references to testing, approval, and rejection for Biosolids	O.Boertje & C Bane