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Environmental Permit Variation Application Response to Request for Further Information

Severn Trent Water Ltd

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100109168/002/RPT/001

MINWORTH SLUDGE DIGESTION AND CHP PLANT

EPR/BP3631SW

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Introduction

This document provides additional information in support of Severn Trent Water Limited's (STW) application for a variation to its Environmental Permit for the Minworth Sludge Digestion and Combined Heat and Power (CHP) Plant (the 'Installation').

The Installation treats sewage sludge by anaerobic digestion to produce a stabilised sludge product and biogas. The sludge product is taken off site for land spreading or to alternative outlets. The biogas is exported to the natural gas transmission network via gas to grid facilities and also combusted to generate heat and power for use in the installation and the wider wastewater treatment works (WWTW).

The installation, which is operated solely by Severn Trent Water Limited, is currently regulated by the Environment Agency (EA) under Consolidated Installation Permit EPR/BP3631SW/V010. The variation application was made to request changes to the current Permit to reflect changes in operation and other amendments to the permit.

STW received an Environment Agency Request for Information from Sarah Raymond on 18 February 2026, see Appendix A, requesting several pieces of further information in connection with Permit Variation Application EPR/BP3631SW/V013 - Minworth Sludge digestion & CHP Plant. This report responds to Items 5 and 7 of this request which are set out below.

5. Site layout plans

You have stated that "We do not wish to amend the permit boundary as part of this application. There is no change in permitted boundary, it remains as permit V010. Appendix B2 shows the accurate full extent of the boundary, so use this as the definitive installation boundary. Please only refer to the location plan B1 as showing the context of the site and its surrounds only, and not for inclusion in the permit." Appendix B2 does not reflect the current boundary in V010 and looks to increase the site boundary which you have not applied the relevant documents for. This question has not been addressed, and this boundary plan still needs to be updated.

7. Explanation of the dewatering and digested cake storage activities being applied for

We requested in response to questions 5 that you provide further details on the activities being applied for to ensure that we can accurately permit your activities and ensure that there is adequate information to undertake consultation. On review of your response, you have not provided the below;

- *A full assessment of how you will meet the requirements of Biological waste treatment: appropriate measures for permitted facilities, and highlight where you currently do not meet the requirements.*
- *A non-technical summary that includes Storage arrangements, volumes and timescales for storage and waste handling processes.*

You have clarified that these are existing activities following your response to the question raised, however we do need the above information to accurately permit the activities requested and consult. Also in light of the above change in activity type we will also require full process flows that identify the activity processes, addition of raw materials and waste inputs and outputs to ensure clarity on what will be undertaken at site. This question remains outstanding and we will need a response to duly make your application. If you fail to provide this information, we will return your variation as not duly made and proceed with the regulation 61 notice.

In response to these parts of the request for information, this report includes:

- An amended Site Location Plan and Installation Boundary, see Appendix C.
- An addendum to the non-technical summary to provide the information described above, see Section 1.
- An assessment of dewatering and digested cake storage activities against the EA's Biological waste treatment: appropriate measures for permitted facilities, last updated 25 November 2024, see Section 3
- Process Flow Diagrams, see Appendix B.

1. Non-Technical Summary Addendum (Dewatering and Digested Cake Storage Activities)

1.1 Proposed changes to operations and permit

Digestate sludge arising from the anaerobic digestion processes carried out on-site is dewatered and stored on cake pads within the Installation. Whilst there are no physical changes to any infrastructure, a change to the permit is proposed whereby the Installation accepts sludge and cake from other STW-operated sewage treatment sites. This is essential to the contingency arrangements of the other sewage treatment sites to ensure that STW has sufficient storage capacity across its assets during times when digestate cannot be spread onto the land.

The imported digestate from other STW facilities will be transported to the Minworth Installation where it will be stored in tanks, then, dewatered and stored on the existing cake storage area. In addition, previously dewatered cake, also from STW sewage treatment sites, may also be transported directly onto the cake storage pads. The cake may then be subjected to a 'liming' process where required to comply with the Biosolids Assurance Scheme (BAS), which is carried out in-situ on the cake storage pads.

No physical changes are required to any infrastructure or waste types, and there will be no increase in storage capacity compared to current permitted levels.

Table 1-1 below summarises the proposed changes to the Permit relating to the dewatering and digested cake storage

Table 1-1 – Addition of Waste Activity in Permit

Activity reference	Description of activities for waste operations (new activity)	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
AR12	Treatment and temporary storage of digestate and digested cake from other STW facilities	R3: Recycling/reclamation of organic substances which are not used as solvents R13: Storage of waste pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)	From receipt of the waste to the production of treated waste, including: <ul style="list-style-type: none"> • Gravity belt thickeners; • Centrifuges; • Dewatering Plant. Waste types suitable for acceptance are limited to non-hazardous wastes. Storage and treatment of digestate cake on an impermeable surface with



Activity reference	Description of activities for waste operations (new activity)	Description of specified activity and WFD Annex I and II operations	Limits of specified activity and waste types
			sealed drainage system; including mixing with lime, if necessary, to achieve pathogen kill prior to despatch of site.

1.2 Point source emissions

The receipt of digestate from other STW facilities will not change the emissions profile as wastes are similar in nature, form and constituents to the digestate currently dewatered and stored on-site. There will be no increase in treatment or storage capacity.

Effluent is generated by the dewatering process which is treated and discharged back to the head of the sewage treatment works (HoW) via existing emission point S1. As the overall throughput will remain the same and within the permitted limits, the nature and volume of effluent discharged to the HoW will also not change.

There are no point source emissions to air or land from the dewatering and digested cake storage activities.

1.3 Fugitive emissions

The receipt of digestate from other STW facilities will not change the emissions profile as wastes are similar in nature, form and constituents to the digestate currently dewatered and stored on-site. Potential impacts from fugitive releases were assessed as part of the original Application's ERA with the conclusion that the risk of fugitive emissions impacts arising from transfers of digestate from off-site sources is 'low'.

1.4 Storage arrangements, volumes and timescales for storage and waste handling processes

This section provides a non-technical summary of waste storage arrangements. Further technical detail describing the processes is provided in Section 2.

Digestate sludge from off-site STW treatment plants is transferred into one of 11 secondary digestion tanks along with digestate arising from the on-site AD processes. It is then dewatered and transferred to the cake pads where it is subject to liming.

The characteristics of the storage arrangements for cake and sludge are described in Table 1-2 below. The nature of the indigenous and any off-site derived digestate sludge or cake is similar and remains unchanged from current operations; therefore, there will be minimal impact resulting from this change.



Table 1-2 – Storage Arrangements, Volumes and Timescales for Storage and Waste Handling Processes

Aspect	Storage Tanks for Liquid Sludge	Cake Storage Pad and Liming Activity	Dewatering
Purpose and Contents	Temporary storage of digestate sludge generated on-site and imported digestate sludge.	Temporary storage in 11 bays of digestate cake generated on-site and imported digestate cake (12 bays on-site, 11 are used for storage). Liming is carried out directly on the cake pads.	Dewatering of cake by belt press and centrifuges.
Typical Residence Time	<5 days	Up to 12 months	No storage, treatment only
Materials of Construction	Steel	Concrete hardstanding	Steel/various materials
Size	11 post digestion tanks – 5200 tonnes each 2 dewatering buffer tanks (locally referred to as ‘MAFF’ tanks 2x 1000 tonnes Total Capacity – 59,200 tonnes	Bay 1 – 1500 tonnes (. Bay 1 is used for unloading of cake from centrifuge not used for storage of digestate Bay 2 – 2200 tonnes Bay 3 – 2200 tonnes Bay 4 – 2200 tonnes Bay 5 – 3000 tonnes Bay 6 – 3000 tonnes Bay 7 – 3000 tonnes Bay 8 – 3000 tonnes Bay 9 – 3200 tonnes Bay 10 – 2000 tonnes Bay 11 – 2000 tonnes Bay 12 – 1200 tonnes Total Capacity: 28,500	3000-6000 tonnes/day dewatering throughput
Description of Secondary Containment	Not bunded, see proposed improvements in Section 4.	NA, concrete slab	Belt press dewatering plant is within building Centrifuge operates externally on concrete hardstanding.
Description of Tertiary Containment	Concrete hardstanding with curbs. Impermeable surface.	NA, concrete slab	Concrete hardstanding with curbs. Impermeable surface.



Aspect	Storage Tanks for Liquid Sludge	Cake Storage Pad and Liming Activity	Dewatering
Drainage arrangements	Drains in the area are returned to the HoW. Any potential spills will be treated prior to release.	Slabs are laid to falls to ensure any residual liquid is captured, which is then transferred to the HoW via emission point S1.	Drains in the area are returned to the HoW. Any potential spills will be treated prior to release.
Other Pollution Controls	Level sensor. Checked prior to filling. SCADA. Fill point is provisioned with a collection receptacle during tank filling.	See Cake Pad Management SOP in Appendix F	See Import Dewatering and Storage of Digested Sludge and Cake SOP in Appendix D
Inspections	Tanks are inspected visually by on site technicians weekly. External tank inspections carried out every 3 months.	See Cake Pad Management SOP in Appendix F	See Import Dewatering and Storage of Digested Sludge and Cake SOP in Appendix D

Note 1: Calculations are based on $1\text{m}^3 = 1$ tonne for both cake and sludge as the main content of both forms of digestate is water.

Whilst preparing the table above, a review of the original application report was conducted. Since the application was made, there have been slight changes to the plant which has resulted in a change to the Application Report Table 4-5 – On-site Storage Capacity. An updated table is presented below.

Table 1-3 – Original Permit Application Table 4-5 –On-site Storage Capacity

Element	Capacity	Total Capacity
Raw sludge balancing tanks (x3)	2 x 1,000m ³ 1 x 250m ³	2,250m ³
SAS balancing tank	130m ³	130m ³
Reception/ blending tanks (x3)	760m ³ each	2,280m ³
Raw dewatering buffer tanks (x2)	1,375m ³ each	2,750m ³
Imported cake bin	30m ³	30m ³
THP feed silos (x3)	300m ³ each	900m ³
THP streams (x3)	Pulper Tank 18.73m ³ Flash Tank 18.73m ³ Each reactor 7.6m ³	203.58 m ³



Element	Capacity	Total Capacity
	(4 reactors per stream)	
Digesters (x16)	Approx. 5,300m ³ each	84,800m ³
Gas Holders (x2)	4,000m ³ each	8,000m ³
Post digestion tanks (x11)	5,200m ³ each	57200m ³
Buffer tanks	1000m ³ each	2000m ³
Anammox	Balance tank 700m ³ Pre aeration tank 785m ³ 2 x pre clarifiers 235m ³ 2 x reactors 1706m ³	5,367m ³
Digestate Cake Pad (x12 Bays, 11 operational) – no change as a result of accepting digestate from off-site sources.	28,500m ³ (total)	28,500m ³
	Total	194, 410.58m³



2. Description of Dewatering and Cake Storage Activities

2.1 Introduction

Digestate sludge is currently generated on-site by the AD Installation under the current permit. STW also seek to include the import and treatment of digestate sludge in the permit, which is then mixed with the indigenous sludge, and import digestate cake where it is directed to the cake pad. The imported cake may also be subject to treatment by liming if required.

This section provides a detailed description of the digestate sludge storage and dewatering activities and digestate cake storage and treatment activities. To support the information in this section, an overall process flow diagram is included in Appendix B which shows the whole sewage treatment site to provide context for the sludge treatment activities. Figure 2-1 below illustrates the main items of plant involved in the storage and treatment of imported digestate sludge.

Figure 2-1 – Digested Sludge Storage and Treatment Activities Layout

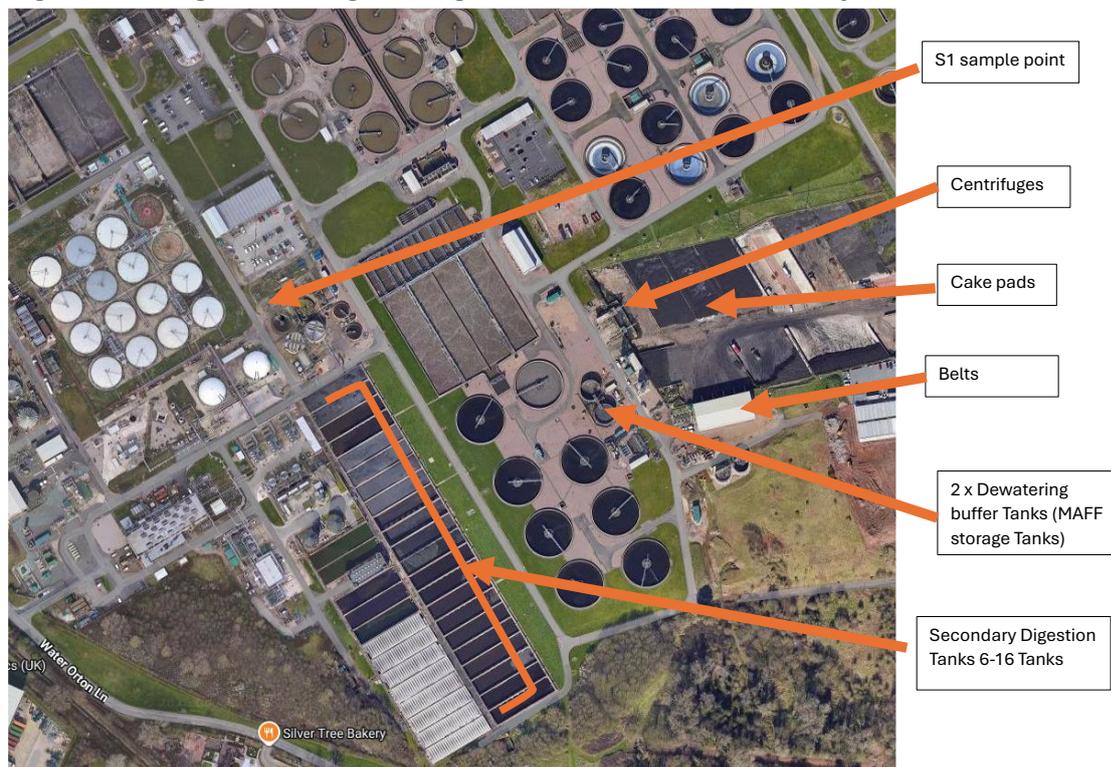
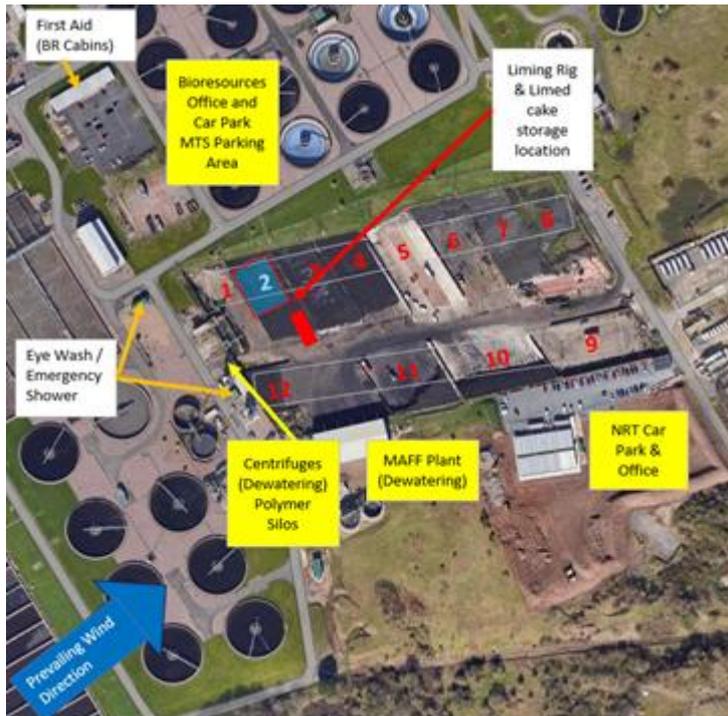


Figure 2-4 below is an extract from the Liming SOP which provides further detail of operations within the cake pad.

Figure 2-2 – Cake Pad and Liming Activity



2.2 Purpose of Change in Operation

Sewage treatment plants require additional contingency storage for digestate as a result of the Sludge (Use in Agriculture) Regulations (SUIAR) tightening controls on sludge quality, treatment standards, and land application practices. Where regulatory changes restrict spreading during certain periods, impose lower contaminant thresholds, or require enhanced treatment and validation before agricultural use, outlets for digestate can become temporarily constrained. This can create a logistical challenge due to the continuous digestate production arising from the continuous generation of wastewater, and reduced or delayed disposal routes, particularly during wet weather, no-spread windows.

To remain compliant, sewage plant operators such as STW may therefore need increased on-site storage capacity or access to alternative storage arrangements. This has been raised as a requirement within the Water Industry Environment Programme (WINEP). Contingency storage provides resilience against regulatory hold-ups, outlet disruption, and seasonal spreading limitations and climate-related issues (e.g. high rainfall or hard ground), ensuring digestate can be retained while awaiting suitable landbank availability.

Biological treatment of sewage sludge by anaerobic digestion occurs on 24 of Severn Trent Sludge Treatment Facilities which may all require contingency arrangements provided by selected STW facilities such as Minworth Sewage Works. In some cases where the STW Sewage Treatment Works does not have the capacity to dewater or to store digested sludges, the STW Sludge Planning Office organise movements of digestate to other works, including Minworth WwTW, that can undertake these activities. The inclusion of imported digestate in the Minworth's permit is therefore essential for ensuring the resilience of STW's operations.

2.3 Imported Digestate Pre-Acceptance and Acceptance Checks

Imported digestate sludge and cake is accepted in accordance with the site's Standard Operating Procedure (SOP) 'Import, Dewatering and Storage of Digested Sludge and Digested Cake' which is supplied in Appendix D and the key controls are outlined below.

2.3.1 Digested Sludge

All interworks sludges originate from WwTW directly owned and operated by STW. Various standard assurance checks are carried out throughout:

- the wastewater treatment process to align with Urban Wastewater Regulations,
- the digestion process to align with the EPR permit,
- the full process to assure a resulting sludge would not fail BAS compliance when treated on-site or at a receiving site.

STW refers to these checks as Golden Measures.

Only compliant digested liquid sludge which adheres to these 'golden measures' can be exported via road tanker from the production site coordinated by STW's interworks team. Any compliance issues identified throughout the previous processes would be raised with the in-house process scientist to advise on appropriate next steps. The tanker driver loading the sludge will also undertake a visual and odour check to identify any issues with thickness, any oils or septicity prior to leaving the production site. Any compliance issues are again fed back to the process scientist for advice.

Biosolids team operatives confirm that the incoming material:

- Meets the receiving works acceptance criteria.
- Complies with regulatory and permit conditions.

And they also

- Confirm delivery schedule and quantities.
- Verify that sufficient storage and/or dewatering capacity is available.

Loads would only be transported to a STW owned and operated sludge treatment facility that holds an appropriate environmental permit for dewatering imports, which is the purpose of this variation application for the Installation at the Minworth WwTW. All loads are discharged directly into mixture where it is combined with indigenous digestate.

The loading of digested liquid sludge is performed using the dataloggers from the post digestion storage tanks on the production site. The datalogger system captures data related to each collection including the collection time, date, volume, average dry solids, vehicle and destination. As digestate sludge is only accepted from other STW facilities, STW has full control over this process and data capture.

If there are any last-minute restrictions on the receiving site which are raised following these initial checks, then the indigenous digestate would be given priority, and any imports would be diverted to another suitably permitted site and offloading at the Minworth Installation would not be allowed.



2.3.2 Digestate Cake

Digested cake imported from other STW sites for storage is brought in by lorry tipper and discharged into a specified bay at the Minworth cake pad, however, it could be any of the 11 operational cake pads depending which pad is empty at the time of acceptance. This ensures segregation from indigenous cake being produced at that site. Digested cake produced at different sites is not mixed on the cake pad.

2.4 Imported Digestate Quality Control

Each STW site operates within its own Hazard Analysis and Critical Control Point (HACCP) compliance plan and Biosolids Assurance Scheme (BAS) certification which provides confidence in the production process, and conformance to relevant guidance, Codes of Practice and other important management and quality control procedures.

Sampling is performed in line with individual site HACCP Plans to ensure compliance with the Biosolids Assurance Scheme (BAS). Under strict adherence to the SUIAR and to align with STW's HACCP plan, STW would quarantine any material at the site where the sludge is produced that fails these factors and follow appropriate corrective action plans, which are specific to the failure. Sludge that would be non-compliant with BAS standards following dewatering and liming processes at the Minworth Installation would not be transported off-site and therefore would not be transferred to Minworth Installation.

STW has full visibility of the processes and acceptance of digestate sludge from STW satellite sites, which has comparable characteristics and risks as those sludges produced at the Minworth Installation.

2.5 Storage of Digestate

2.5.1 Digestate Sludge

The imported digestate sludge is offloaded into the 'duty' digestate storage tank at the Minworth Installation where it is blended with digested sludge produced on-site. There are 11 operational secondary digestate storage tanks (termed 'secondary digestion' in the process flow diagram in Appendix B) on site numbered from 6 to 16 which help to buffer the flow of sludge through the plant and provide assurance that required pathogen kill levels have been achieved. This storage phase of operation helps to ensure the material satisfies treatment standards before it is exported for agricultural use. Storage tanks are illustrated in Figure 2-3 below.



Figure 2-3 – Digestate Sludge Storage Tanks



The 'duty' tank refers to a tank which has completed this holding time. Imported sludge does not require any holding time as it has already been stored at the treatment site and isn't released until the pathogen kill levels have been achieved. For this reason, imported sludge can be transferred into one of the digestate tanks which has already met the storage requirements and achieved pathogen kill criteria. Once the storage requirements have been met and the pathogen kill criteria has been achieved, digestate is transferred to the dewatering process. These processes are tightly controlled on-site under the HACCP plans at both the digestion production site and the receiving site.

The imported digestate sludge is blended with indigenous digestate sludge prior to dewatering and Sludge is stored within the 'duty' tank for a maximum of 5 days to buffer the flow into the dewatering process. As the 'duty' tank may change from day to day, the imported sludge may be stored in any one of the tanks prior to treatment.

Sludge is pumped into one of two dewatering buffer tanks, then on to the belts or centrifuges for dewatering which is described in Section 2.6.1 below.

2.5.2 Digestate Cake

Imported digestate cake is stored in a dedicated cake pad which is separate from the indigenous cake stored on-site, which could be any one of the 11 operational cake pads. There is an additional cake pad which is not used for storage (Cake Pad 1) and is used for the deposit of cake from the

centrifuge process. The cake pad bays are numbered and clearly labelled on site and on the cake pad plan which also includes operational capacities of each bay, see Liming of Biosolids SOP in Appendix E. Stocks are checked daily and recorded weekly on the Site Stocks sheet which records the quantity and status of each bay to ensure the maximum storage capacity of each bay is not exceeded (see Table 1-2 for capacity of the cake pad).

Digested cake will be stored on site for a maximum of 12 months and the layout of each cake pad is illustrated on Figure 2-4 below.

Figure 2-4 – Digestate Cake Pad Layout

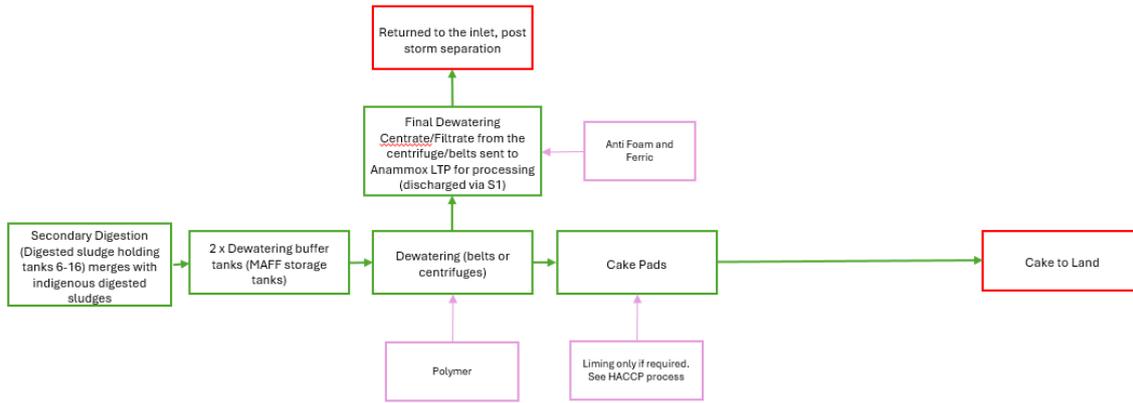


2.6 Treatment of Digestate

Digested sludge received on-site is transferred from the digestate storage tanks to the two dewatering buffer tanks and then to the dewatering processes which comprise either belt or centrifuge dewatering with no specific preferred route. If further treatment to comply with BAS is required, then the addition of lime will be carried out within that bay by hired in plant that holds the required HACCP plan.

The process flow chart Figure 2-5 below illustrates the key process steps involved in the treatment processes carried out following acceptance of digestate sludge and its combination with sludge produced at the Minworth Installation. The treatment stages are explained in the sections below. The process flow chart in Appendix B shows where imported digestate sludge and cake are accepted onto site within the wider context of the Minworth WWTW.

Figure 2-5 – Treatment Activities Flow Chart



2.6.1 Dewatering

Belt dewatering is a mechanical process used to reduce the water content of treated sewage sludge prior to storage, transport or recovery. Digestate sludge and polymer are fed onto a continuously moving porous belt where free water drains by gravity. The sludge is then conveyed between two permeable belts and passed through a series of progressively tightening rollers which force the water (filtrate) through the belt mesh. The filtrate is collected, treated and returned to the treatment works (via S1), while the resulting dewatered sludge cake is transferred to the cake pad.

Centrifuge dewatering is a high-speed mechanical process that separates water from treated sewage sludge using centrifugal force. Conditioned sludge and polymer is fed into a rapidly rotating cylindrical vessel. Centrifugal forces drive the denser solid particles outward against the vessel wall, while the lighter liquid phase forms an inner layer. Compacted solids (cake) is removed at the discharge end and transferred to the cake pad and the centrate is transferred to the HoW for further treatment (via S1).

2.6.2 Transfer to Cake Pads

Loading shovels are used to move cake from where it is dewatered via belts or centrifuges onto the allocated cake pad.

2.6.3 Liming

Liming may be carried out on dewatered cake, which may include cake resulting from both indigenous or imported sludge, or it may be carried out on imported cake. Liming is only carried out if it is required to comply with BAS requirements or to improve the stability of the cake. This decision is based on analysis carried out by the Biosolids and Process Teams.

Liming of digestate cake is a chemical stabilisation step applied after mechanical dewatering. Lime (calcium oxide) is mixed into the dewatered sludge cake using a pug mill. A pugmill is a horizontal mixing unit that uses twin, counter-rotating shafts fitted with paddles to blend the cake and lime continuously. As material enters the trough, the paddles lift, fold and shear it, ensuring thorough and uniform mixing along the length of the chamber. The mixed product is then discharged at the outlet in a homogeneous form.

The addition of lime raises the pH typically above 12 and generates heat creating alkaline and thermal conditions that inactivate residual pathogens and reduce biological activity. This process

improves hygienic quality, limits odour generation, and enhances compliance with agricultural use standards. Liming also improves the physical characteristics of the cake by increasing dry solids content and producing a more friable, stackable material that is easier to handle, store, and transport. The elevated pH provides short-term stability during storage and land application.

Liming is carried out in accordance with STW's Liming of Biosolids SOP, which is included in Appendix E, to ensure in compliance with BAS, HACCP and SUIAR requirements. The SOP requires that liming must only proceed following completion and review of the Work Authorisation, RAMS and Liming Checklist, with trained operators using appropriate PPE (including RPE and gas monitoring), validated equipment, supervised lime deliveries, and adherence to segregation of limed and non-limed biosolids. The SOP requires continuous monitoring of weather and potential nuisance impacts, immediate cessation of work if concerns arise, quarantine and signage for non-compliant material, accurate record keeping (including HACCP data and daily worksheets), secure equipment management, and formal communication with the Biosolids Team before, during and after operations.

2.6.4 Transfer of Digestate Cake Off-Site

Sampling is performed in line with STW's Minworth site HACCP Plan to ensure compliance with BAS. Once approved for transfer off-site, it is removed by road vehicles where it is applied to land under BAS.

2.7 Effluent Treatment

Effluent generated from the sludge dewatering process is managed to ensure that it is acceptable for treatment at the HoW. This effluent comprises final dewatering filtrate from the belt presses and centrate streams.

The final dewatering filtrate and centrate is directed to the on-site Anammox liquid treatment plant, where it undergoes treatment to reduce ammonia concentrations before being discharged to the HoW via permitted emission point S1. Antifoam and ferric is added as required to facilitate the treatment. This liquid treatment plant is included in the Permit as activity reference AR1 'centrate liquor treatment plant'.

The returned effluents go from S1 back to the HoW inlet for treatment. The return point for this discharge is post-storm overflow, which ensures that effluent is treated before discharge under the WwTW plant's permit. Therefore, no effluent can be discharged to the HoW upstream of storm tanks or when storm tanks are in operation, which prevents effluent being discharged directly to watercourse. Surface water is also channelled to the HoW via S1 for treatment prior to release.

There are no changes to the effluent treatment processes as a result of importing digested sludge and cake.



3. Techniques for Process and Emission Control

3.1 Introduction

This section of the application reviews any implications of the changes to the permitted activities at the Installation, relevant to the import of digestate sludge and cake, with regard to compliance with EA regulatory standards, specifically addressing the measures in the relevant technical guidance: Biological waste treatment: appropriate measures for permitted facilities, Environment Agency, last updated 25 November 2024 (the 'Biowaste Appropriate Measures').

This section of the report reviews the main techniques that will be used to prevent, or where that is not practicable, minimise emissions from the storage and treatment of imported sludge, and demonstrates how the proposed facility will continue to prevent emissions as a priority.

The Biowaste Appropriate Measures is for permitted waste management facilities that handle organic waste and is therefore the most applicable guidance document for the acceptance and storage of imported sludge, which is received by and stored at the Facility following the biological treatment of waste at STW's WWTWs.

3.1.1 Application of the Biowaste Appropriate Measures Guidance

As the proposed changes relate only to the acceptance, storage and treatment of digestate sludge and cake, certain sections within the Biowaste Appropriate Measures are not relevant to this Application. Table 3-1 below presents a review of the Biowaste Appropriate Measures and provides justification for the exclusion of certain measures.

Table 3-1 – Application of Biowaste Appropriate Measures Guidance

Section in Biowaste Appropriate Measures Guidance	Applicability	Included in Application?
3. Bespoke wastes suitable for biological treatment	Not applicable as no new wastes are proposed to be included in the Permit and no biological treatment processes are carried out.	No
4. Site location, design and capacity	Relevant measures included in assessment. Site and infrastructure is existing and not changing as a result of the proposed addition of imported digestate.	Yes, partially
5. General Appropriate Measures	Relevant measures included in assessment.	Yes, partially
6. Waste acceptance, pre-acceptance and tracking	Applicable to the acceptance of imported digestate sludge and cake.	Yes



Section in Biowaste Appropriate Measures Guidance	Applicability	Included in Application?
7. Waste storage, segregation, transfer and handling.	Relevant measures included in assessment.	Yes, partially
8. Waste Treatment	Most measures are not applicable as only dewatering and liming are carried out. Only relevant measures included in assessment.	Yes, partially
9. Outputs	Relevant measures included in assessment.	Yes, partially
10. The Control of Major Accident Hazard Regulations 2015 (COMAH)	Not applicable, not within the scope of the COMAH 2015 Regulations.	No
11. Emissions Control	Most measures are not applicable as there are no point source emissions. Only relevant measures included in assessment.	Yes, partially
12. Process efficiency	Most measures are not applicable as they apply to 'installations' to which the IED and the Waste Treatment BATc applies, whereas this facility is a 'waste operation'. Only relevant measures included in assessment.	Yes, partially
13. Bespoke waste assessment	Not applicable; this section applies to inhibition values for aerobic and anaerobic processes which are not carried out. Pre-acceptance and Acceptance procedures in Appendix D describe control of input wastes.	No

3.2 Section 4: Site location, design and capacity

Section 4 of the Biowaste Appropriate Measures requires operators to ensure that sites are designed to prevent emissions to the Environment.

- Measures 4.1.1 to 4.2.15 apply to new facilities and have not been included in this assessment.
- Measures 4.2.16 to 4.3.4 broadly apply to the proposed changes.

A comparison with Biowaste Appropriate Measures requirements is provided in Table 3-2 below.

Table 3-2 – Site location, design and capacity

Technique	Details	Implemented? Y/N?
4.2 Site Design		
4.2.16 & 4.2.17 Secondary containment should be	A containment review has been undertaken by STW which is included in Appendix J of	No – some improvements are



Technique	Details	Implemented? Y/N?
assessed against CIRIA standards.	the original application report 'Minworth Digesters and Sludge Tank IED Containment Assessment – Proposed Options Report, Jacobs, July 2024 (referred to as the 'Containment Review' in this report).	required to address deficiencies. See proposed improvements in Section 4.
4.2.18 Monitor underground pipe work or ducting and drainage	Pipework is subject to CCTV surveys.	Yes
4.2.19 Underground tanks should have secondary containment.	NA, no underground tanks.	NA, no underground tanks.
4.3 Site Capacity		
Determine the actual physical capacity needed to manage, treat and store waste on your site without causing pollution. Provide enough space on-site to operate your plant and equipment safely, and to allow easy and environmentally safe storage and treatment.	On-site storage capacity for the whole site was described in the original application report in Table 4-5. Capacity of the digestate storage tanks and cake pad is presented in Section 1.4 of this report.	Yes

In conclusion, the site's design and capacity broadly meet the requirements of the Biowaste Appropriate Measures Guidance with some deficiencies.

3.3 Section 5: General Appropriate Measures

Section 5 of the Biowaste Appropriate Measures requires operators to ensure that sites are managed to prevent emissions to the environment. The following sub-sections have not been included in this assessment:

- Measures within sections 5.7 and 5.8 do not apply as there are no combustible wastes.

The remaining measures apply to the proposed changes, but there are minimal changes to current management techniques associated the import of sludges.

A comparison with Biowaste Appropriate Measures requirements is provided in Table 3-3 below.

Table 3-3 – General Appropriate Measures

Technique	Details	Implemented? Y/N?
5.1 Management System	A summary of the EMS was included in Appendix E of the original application.	Yes



Technique	Details	Implemented? Y/N?
5.2 Inspection, maintenance and monitoring	<p>Inspections, maintenance and monitoring are implemented in accordance with EA guidelines. Planned preventative maintenance is implemented across the WwTW.</p> <p>Specific tasks relating to sludge storage and treatment are included in SOPs (see Appendix D, Appendix E and Appendix F).</p> <p>EMS includes PPM. A summary of the EMS was included in Appendix E of the original application.</p>	Yes
5.3 Staff Competence	<p>There are no changes to staff training and competency, which is implemented in accordance with EA guidelines. Appendix C of original application included EU Skills Certificate.</p>	Yes
5.4 Accident Management Plan	<p>The site has in place an Accident Management Plan, which will be updated to include the scenarios associated with the proposed changes.</p>	Yes
5.5 Preventing Accidental Emissions	<p>Potential accident scenarios and prevention measures are described in the original application (see Section 5, which will be incorporated into site procedures including the Accident Management Plan.</p> <p>Spill procedures in place.</p> <p>Safety features are connected to the site SCADA system which is monitored 24/7 with additional visual checks completed by site staff.</p> <p>Incident Response Standard Procedures are in place.</p>	Yes
5.6 Security	<p>Security measures prevent unauthorised access to the site, which are monitored 24/7 by STW's security gatehouse. Physical protection methods around vulnerable assets include fencing, bollards and kerbing.</p> <p>The site is protected from intruders by secure fencing and fob-activated gates.</p>	Yes
5.9 Record Keeping	<p>STW has procedures for incidents, non-compliances and environmental complaints.</p> <p>Incidents are managed through site specific procedures which ensure that all incidents are logged and that necessary preventative and/or corrective actions are taken.</p> <p>Complaints are managed by Customer Services, where all complaints are logged on the Complaints Records Online Storage System (CROSS).</p> <p>EA is informed of incidents in accordance with permit notification and reporting requirements.</p>	Yes

Technique	Details	Implemented? Y/N?
5.10 Contingency Plan	<p>The Minworth WwTW is continually operational and has measures in place to ensure this, given its strategic importance.</p> <p>If wastes cannot be accepted onto site, tankers will be turned away from site.</p> <p>Imported sludge / cake - non-compliant waste is returned to the STW sludge production site.</p> <p>If cake is later found to be non-conforming, the bay containing the non-conforming material is quarantined and an action plan will be put in place to rectify compliance (e.g. liming). No further cake would be added to that bay. Any bay could be allocated as a quarantine area due to the overall capacity of the cake pads.</p>	Yes
5.11 Plant Commissioning and Validation	The infrastructure is in situ and were subject to tests prior to operation.	Yes
5.12 Decommissioning and Mothballing	Site Closure Plan in place which includes these aspects.	Yes.

In conclusion, the site's management techniques meet the requirements of the Biowaste Appropriate Measures Guidance.

3.4 Section 6. Waste acceptance, pre-acceptance and tracking

Section 6 of the Biowaste Appropriate Measures describes waste pre-acceptance, acceptance and tracking requirements for operators. The following sub-sections have not been included in this assessment:

- Measures within sections 6.2, 6.4, 6.5 and 6.6 as there is no further biological treatment carried out.
- Measures within sections 6.7 and 6.8 as wastes are not contained, packaged or delivered in IBCs. All wastes are liquids (digestate sludge) or solids (cake) which are delivered by road vehicles and directly discharged at the installation.

A comparison with Biowaste Appropriate Measures requirements is provided in Table 3-4 below and see Section 2.3 of this report for details of the Operator's pre-acceptance and acceptance checks.

Table 3-4 - Waste Pre-acceptance, Acceptance and Tracking

Technique	Details	Implemented? Y/N?
6.0 General	<p>All waste feedstocks and outgoing wastes are fully characterised in accordance with the EA's WM3 guidance.</p> <p>No hazardous wastes are accepted.</p>	Yes



Technique	Details	Implemented? Y/N?
	Waste acceptance and pre-acceptance procedures in place. See Section 2.3 and SOP in Appendix D.	
6.1 Waste pre-acceptance and characterisation	Waste acceptance and pre-acceptance procedures in place. See Section 2.3 and SOP in Appendix D.	Yes
6.3 Waste acceptance and reception	Waste acceptance and pre-acceptance procedures in place. See Section 2.3 and SOP in Appendix D.	Yes
6.9 Waste tracking	<p>All waste accepted from off-site sources is from STW owned and operated sites, therefore there is full traceability of the origin of the waste and any prior treatment processes.</p> <p>The Operator maintains accurate, up-to-date records that trace the movement of waste into, within, and out of the Installation. This includes documenting the quantity, nature, origin, destination, and treatment of waste, adhering to waste duty of care requirements. Records are readily available for inspection and retained for six years as required by the permit. See SOP in Appendix D for details of waste tracking process.</p>	Broadly compliant however a full review of STW's acceptance procedures will be carried out to ensure compliance with Digital Waste Tracking by October 2026 and to review other aspects affecting the use of sewage sludge e.g. SUIAR review.

In conclusion, the waste acceptance techniques meet the requirements of the Biowaste Appropriate Measures Guidance.

3.5 Section 7: Waste storage, segregation, transfer and handling

Section 7 of the Biowaste Appropriate Measures requires operators to implement appropriate measures concerning waste storage, segregation, transfer and handling to prevent emissions to the environment. The following sub-sections have not been included in this assessment:

- Measures within sections 7.2 as there are no below ground tanks.
- Measures within section 7.3 as there are no lagoons.

The remaining measures apply to the proposed changes to the permitted activities. A comparison with Biowaste Appropriate Measures requirements is provided in Table 3-5 below.



Table 3-5 - Waste storage, segregation, transfer and handling

Technique	Details	Implemented? Y/N?
7 Waste storage, segregation, transfer and handling (general)		
7.0.1 Your facility must have enough physical and permitted capacity for the wastes, raw materials and 'end of waste' materials that you store on site.	Storage facilities are adequately sized, as demonstrated in Section 1.4.	Yes
7.0.2 You must comply with the limits set in your environmental permit and with any additional regulatory requirements that may apply.	Not applicable, no limits set in permit relating to sludge activities. STW commits to complying with Environmental Regulations in Environmental Policy .	Yes
7.0.3 Store all waste on an impermeable surface with contained drainage that meets the recommendations of CIRIA 736.	Digestate cake is stored on an impermeable surface, equipped with drainage channels. Dewatering operations are carried out on impermeable surfaces. Surfacing around digestate sludge storage tanks may not be impermeable to materials within the tanks. A Containment Review has been undertaken by STW which is included in Appendix J of the original application report, see Appendix B of the Containment Review for surfacing arrangements.	No – some improvements are required to address deficiencies. See proposed improvements in Section 4.
7.0.4 Storage area drainage must: <ul style="list-style-type: none"> contain all possible contaminated run off to prevent incompatible wastes coming into contact with each other; make sure that fire cannot spread; be designed to allow access for inspection and cleaning. 	Fire is not relevant to non-combustible liquid wastes. Waste materials with extreme pH, high solids or ability to precipitate or create vapours are not accepted and screened out by the pre-approval process. PPM is carried out in accordance with EMS and site maintenance procedures.	Yes, where relevant
7.0.5 Keep clean rainwater separate from wastes and waste waters.	There are limited non-operational site areas which could generate 'clean' rainwater. The site has a single existing drainage system for both foul and surface water flows, which returns water to the HoW for full treatment. See Section 2.7	NA



Technique	Details	Implemented? Y/N?
7.0.6 Store waste in locations that minimise handling waste.	Existing facility, NA.	NA
7.0.7 Locate storage areas away from watercourses.	Existing facility, NA.	Yes
7.0.8 Store all waste within the security protected area of your facility	Security measures prevent unauthorised access to the site, which are monitored 24/7 by STW's security gatehouse. Physical protection methods around vulnerable assets include fencing, bollards and kerbing. The site is protected from intruders by secure fencing and fob-activated gates.	Yes
7.0.9 EMS and OMP must clearly state maximum storage capacity.	Storage capacity is limited by tank and cake pad size. Capacity of tanks and cake pad are included in OMP and EMS.	Yes
7.0.10 Provide signage that clearly states the maximum quantity and types of waste.	Liquid sludge is limited by size of vessel. Level alarms in place. Cake pads are numbered and inspected to ensure storage capacity isn't exceeded.	Yes
7.0.11 Monitor the quantity of waste stored on the site	See SOP in Appendix D for details of waste tracking process.	Yes
7.0.13 to 7.0.19 Storage and treatment of putrescible wastes	Digestate cake is stored on an impermeable surface, equipped with drainage channels. Cake pad is uncovered. It is not practical to provide a cover as it would need to be in place for a total surface area of approximately 30,000m ² . As there are other WwTW with similar uncovered cake pads, which are critical to the operation of the WwTW, the EA has previously included an improvement condition to establish the risks of exposing digestate to the atmosphere within an uncovered cake pad storage area. The improvement condition focusses on the stability of the digestate and whether it could release pollutants into the atmosphere. A proposed condition is presented in Section 4 which has been included in similar Installation's issued permits. There are open topped sludge storage tanks present on-site which may give rise	No – some improvements are required to address deficiencies. See proposed improvements in Section 4.



Technique	Details	Implemented? Y/N?
	<p>to diffuse emissions. See Appendix J2 in the original application report which illustrates the location of open topped tanks.</p> <p>Belt dewatering operations are enclosed in a building and carried out on impermeable surfaces.</p>	
7.20 You must make your on-site waste inventory readily available.	Inventory is digitally tracked; records are available for inspection.	Yes
7.21 Safe pedestrian and vehicular access	<p>Walkways and roadways are clearly marked.</p> <p>Deliveries by new drivers are supervised by trained drivers.</p> <p>Limited operative duties within the vicinity, other than inspections or during abnormal operation (e.g. accidents or incidents).</p>	Yes
7.22 Design bunkers, bays and pits so that waste and debris does not build-up in inaccessible areas such as corners. You must regularly clean bunkers, bays and pits.	See Cake Pad Management, Inspection & Stock Levels SOP in Appendix F. The cake pad is inspected at least weekly to ensure its structure, drainage, equipment, signage, storage practices, contamination controls, and housekeeping remain safe, compliant, and free from risks to biosolids quality or site operations.	Yes
7.1 Above Ground Tank and 'Bulk Storage'		
7.1.1, 7.1.3, to 7.1.11 covering specific requirements for tank design.	<p>Belt dewatering operations are enclosed in a building and carried out on impermeable surfaces.</p> <p>Surfacing around digestate sludge storage tanks may not be impermeable to materials within the tanks.</p> <p>There are open topped sludge storage tanks present on-site. See Appendix J2 in the original application report which illustrates the location of open topped tanks.</p> <p>A Containment Review has been undertaken by STW which is included in Appendix J of the original application report.</p> <p>Inspections and PPM are carried out in accordance with EMS and site maintenance procedures.</p>	<p>No – some improvements are required to address deficiencies.</p> <p>See proposed improvements in Section 4.</p>



Technique	Details	Implemented? Y/N?
	<p>Valves are positioned close to the base of the tanks.</p> <p>There will be two isolation valves fitted prior to permit variation issue.</p> <p>There are no overflow pipes.</p>	
7.1.2 Drainage plan	Drainage plan is in place and has been submitted as part of the Permit Application Documentation.	Yes
7.4 Storage in containers, IBCs and drums		
7.4.1 to 7.4.20 Storage in containers, IBCs and drums	<p>Only water treatment chemicals (raw materials) are stored in proprietary containers (bunded IBCs).</p> <p>These containers are stored close to the point of use.</p> <p>No waste is stored in containers.</p>	Yes
7.5 Transfer of waste into and from sealed tankers and containers		
7.5.1 to 7.5.16 Transfer of waste into and from sealed tankers and containers	<p>Waste deliveries and collections are carried out in accordance with site waste acceptance and collection procedures. Procedures include coupling and decoupling instructions.</p> <p>Records of all deliveries and collections are maintained in accordance with duty of care requirements.</p> <p>Transfers only occur within a dedicated area.</p> <p>Level alarms and automated shut-off valves in place to prevent overfilling.</p> <p>Transfers are made using sealed pipelines.</p> <p>PPM is carried out in accordance with EMS and site maintenance procedures.</p> <p>Drainage within delivery/collection area can be isolated in the event of a spill.</p> <p>Spill kits in place.</p>	Yes
7.6 Drainage		
7.6.1 – 7.6.3 Drainage	<p>Drainage channels are inspected weekly, and defects, blockages or debris will be removed promptly and disposed of by authorised waste contractor.</p> <p>No liquors are sent off-site; all effluent is discharged into the HoW via S1.</p>	Yes
7.7 Tank Inspection and Maintenance		



Technique	Details	Implemented? Y/N?
7.7.1 You must monitor substrate levels in all storage tanks, vessels and lagoons used to hold liquids, sludge's and digestate.	Tank levels are monitored using SCADA.	Yes
7.7.2. Storage vessels used for liquids, sludges and digestate must have a freeboard as recommended by the plant manufacturer.	There are open topped sludge storage tanks present on-site which are unlikely to meet freeboard requirements. See Appendix J2 in the original application report which illustrates the location of open topped tanks.	No – some improvements are required to address deficiencies. See proposed improvements in Section 4.
7.7.3 Alarms	High level alarms installed on all tanks.	Yes
7.7.4, 7.7.5, 7.7.6, 7.7.10, 7.7.11 Inspections, monitoring and supervision	<p>Tanks are inspected at least weekly in accordance with PPM procedures. Tasks are assigned to Site Operators by the Regional Planners on the SAP/Sitemate system.</p> <p>PPM is carried out in accordance with EMS and site maintenance procedures. Defects will be repaired promptly with records maintained.</p> <p>New driver deliveries and collections are supervised.</p> <p>Transfers between treatment tanks are completed via pipeline.</p> <p>Plant and equipment is resistant to the materials stored within.</p> <p>Pipework is labelled or colour coded as appropriate to indicate their contents.</p>	Yes
7.7.8, 7.7.9 Plant design	Plant and equipment is resistant to the materials stored within. There are no corrosive or hazardous materials which may require specific materials. Tanks are predominantly concrete and pipework is predominantly stainless steel.	Yes
7.7.12 Inspections – using non-destructive testing	Plant and equipment, including tanks, is subject to PPM and daily inspections.	Yes
7.7.13 Removal of grit and sediment	Grit is removed via valved outlets on tanks that may be susceptible to the build-up of sediment. Outlets are low-positioned to ensure maximum draw-off of grit.	Yes



In conclusion, the waste storage, segregation, transfer and handling techniques broadly meet the requirements of the Biowaste Appropriate Measures Guidance with some deficiencies.

3.6 Section 8. Waste Treatment

Section 8 of the Biowaste Appropriate Measures requires operators to implement appropriate measures for waste treatment. Most measures are not applicable as treatment processes are not biological; therefore, only measures relevant to the proposed changes have been included in this assessment and the following sub-sections have not been included:

- Measures within section 8.2 as there are no pre-treatment processes
- Measures within section 8.4 as the mechanical processes listed are not relevant to dewatering of digestate sludge or liming of cake.
- Measures within sections 8.5 and 8.7 as there are no aerobic treatment processes.
- Measures within sections 8.6 as there are no composting treatment processes.
- Measures within sections 8.8, as there are no relevant mechanical and biological treatment (MBT) and mechanical heat treatment (MHT) processes.
- Measures within sections 8.9, 8.10, 8.11 and 8.12 as there are no anaerobic digestion processes – these processes are part of the existing Installation and are not relevant to the storage and dewatering of digestate.

A comparison with applicable Biowaste Appropriate Measures requirements is provided in Table 3-6 below.

Table 3-6 - Waste Treatment

Technique	Details	Implemented? Y/N?
8.0 Waste Treatment (general)		
8.0.1 Storage capacity	On-site storage capacity for the whole site was described in the original application report in Table 4-5. Capacity of the digestate storage tanks and cake pad is presented in Section 1.4 of this report.	Yes
8.0.2 Minimise process risks	STW's EMS includes procedures which covers process controls. Relevant SOPs are included in Appendix D, Appendix E and Appendix F. HACCP compliance plan in place at sludge production facilities and at Minworth WwTW.	Yes
8.0.3 Beneficial waste treatment	Waste treatment processes result improvements to the waste condition for its end use when applied to land under the BAS scheme.	Yes
8.0.4 Identify risks and characterise emissions from the process and abate them	No emissions directly into water, air or land other than emissions to water via sewer where effluent is directed to the Minworth HoW (via S1) from the storage, dewatering and liming activities.	NA



Technique	Details	Implemented? Y/N?
8.0 Waste Treatment (general)		
	Effluent treatment processes (Liquid Treatment Plant) reduce loading on SWSL's WwTW.	
8.0.5 Accurate and up-to-date written details of your treatment activities and process controls	<p>Process flow diagram included in Appendix B.</p> <p>HACCP compliance plan in place at sludge production facilities and at Minworth WwTW.</p> <p>Relevant SOPs are included in Appendix D and Appendix E.</p> <p>The process is controlled electronically via SCADA which can be accessed remotely. Any abnormal conditions will trigger automatic shut-down procedures.</p> <p>Records maintained.</p>	Yes
8.0.6, 8.0.7, 8.0.8, 8.0.9 Contaminants removal, process management	<p>HACCP compliance plan in place at sludge production facilities and at Minworth WwTW.</p> <p>Waste acceptance SOPs are included in Appendix D and Appendix E.</p> <p>Majority of contaminant removal occurs at the inlet of the original wastewater treatment works where screening and grit removal is undertaken as part of Urban Wastewater Regulations.</p>	Yes
8.0.10 clearly define the objectives and reaction (chemical, physical or biological) steps for each treatment process.	<p>HACCP compliance plan in place at sludge production facilities and at Minworth WwTW.</p> <p>Relevant SOPs are included in Appendix D and Appendix E.</p>	Yes
8.0.11 Define the suitable input to the process	See Appendix D. Waste acceptance and pre-acceptance procedures in place.	Yes
8.0.12 Sample and analyse the waste to check that you have reached an adequate end point.	HACCP compliance plan in place at sludge production facilities and at Minworth WwTW.	Yes
8.0.13 Manage the pre-treatment of waste and biological treatment activities in a way that minimises the risk of pollution	Not applicable to storage, dewatering or liming activities.	NA
8.0.14 You must use plant and equipment that you can contain to minimise fugitive emissions.	<p>Some open sources.</p> <p>OMP in place.</p>	Partially – some improvements are required to address deficiencies.



Technique	Details	Implemented? Y/N?
8.0 Waste Treatment (general)		
		See proposed improvements in Section 4.
8.1 Abnormal Operating Conditions		
8.1.1. You must assess the likelihood of abnormal operating conditions. You must make sure you continue to comply with permit conditions by taking steps to prevent, alert and mitigate these events. Abnormal operating conditions include: unexpected releases or loss of containment start up unplanned stoppages and breakdowns shutdown	ERA in Section 5 of Application Report describes abnormal operating scenarios and mitigation techniques. AMP in place to prevent and mitigate accidents.	Yes
8.3 Process Monitoring Systems		
8.3.1 You must install and operate a manual or automatic monitoring system that supports effective operational management and minimises operational difficulties.	SCADA employed to monitor key process variables. Golden Measures checks ensure performance variation is flagged at the earliest possible stage.	Yes
8.3.2 Calibration of process monitoring equipment.	Calibration of instrumentation is carried out in accordance with supplier instructions.	Yes

In conclusion, the waste treatment techniques broadly meet the requirements of the Biowaste Appropriate Measures Guidance with some deficiencies.

3.7 Section 9. Outputs

Section 9 of the Biowaste Appropriate Measures requires operators to implement appropriate measures for waste treatment. Most measures are not applicable as treatment processes are mechanical (dewatering), not biological; therefore, only measures relevant to the proposed changes have been included in this assessment and the following sub-sections have not been included in this assessment:



- Measures within sections 9.2 and 9.3 as there are no composting, MBT and MHT processes or pre-treatment processes.

A comparison with applicable Biowaste Appropriate Measures requirements is provided in Table 3-6 below.

Table 3-7 - Outputs

Technique	Details	Implemented? Y/N?
9 Outputs		
9.1 Record keeping for outputs and residues	Tracking system in place.	Yes
9.4 Outputs from anaerobic processes - digestate	Cake produced from whole digestate in accordance with BAS scheme and HACCP compliance plan. Final dewatering filtrate from the belts and centrate sent to Anammox liquid treatment plant for treatment prior to discharged to the HoW via S1.	Yes

In conclusion, the outputs techniques meet the requirements of the Biowaste Appropriate Measures Guidance.

3.8 Section 11. Emissions Control

Section 11 of the Biowaste Appropriate Measures requires operators to implement appropriate measures to prevent emissions to the environment. Most measures are not applicable as there are no point source emissions; therefore, only measures relevant to the proposed changes have been included in this assessment. Therefore, the following sub-sections have not been included in this assessment:

- Measures within sections 11 (general) 11.1, 11.2 and 11.6 as there are no point source emissions to air or abatement associated with the dewatering activities.
- Measures within section 11.7 as masking agents, chemical neutralising agents and topical barriers are not in use at the Facility.
- Measures within section 11.9 (Leak Detection and Review / LDAR) as there are no gases generated.
- Measures within section 11.11 as there are no material additional noise sources as a result of the proposed changes.
- Measures within section 11.8 relating to dust, ammonia, litter and particulates as they are not generated by the facility, including the proposed changes.
- Measures within section 11.13 relating to fugitive emissions to water where they have been covered in previous sections or are not relevant to the acceptance and storage of liquid waste.
- Several measures in this section have already been covered in other sections of this report (e.g. containment, surfacing etc). To avoid repetition, only additional measures have been included.

A comparison with Biowaste Appropriate Measures requirements sections 11.5 (odour), 11.8 (fugitive emissions to air, relevant measures only) and 11.13 (fugitive emissions to water) is provided in Table 3-8 below.



Table 3-8 – Emissions Control

Technique	Details	Implemented? Y/N?
11.3 Meteorological conditions		
Monitor meteorological conditions	Weather conditions are monitored by STW's using third party weather data sources and a wind sock situated on the cake pad.	Yes
11.4 Bioaerosols		
Document and minimise bioaerosol emissions.	Bioaerosol risk assessment was submitted with the application concluded that risks were low and bioaerosol levels were below industry thresholds. Cake pads are over 250m from receptors.	Yes
11.5 Emissions of Odour		
11.5.1 Develop and implement an odour management plan. 11.5.3 Review odour management plan.	OMP is in place and has been updated to include proposed changes. OMP is reviewed annually or following an incident. OMP includes odour monitoring, responding to incidents and complaints and a programme to reduce odour.	Yes
11.5.2 Odour monitoring	Odour monitoring is described in OMP and includes sniff testing on a routine basis. Odour monitoring to a recognised standard will be carried out if there are odour complaints associated with digestate storage and treatment.	Yes
11.8 Fugitive releases to air (relevant measures only)		
11.8.1., 11.8.2, 11.8.15 Prevent fugitive emissions to air	Cake pads are separated by bunker walls. SOP in Appendix F describes inspections and management controls to minimise emissions. Cake is 70% water therefore dust release is minimal. Cake is allowed to settle in place and the surface layer of cake forms a crust which prevents dust and minimises odour release. Movement is minimal once the cake is deposited in a bay. Wheel wash for vehicles to use before leaving site. Bioaerosol risk assessment was submitted with the application concluded	Yes



Technique	Details	Implemented? Y/N?
	that risks were low and bioaerosol levels were below industry thresholds.	
11.8.3 Use high integrity components.	Only high integrity components are installed which meet STW's purchasing policies.	Yes
11.8.4, 11.8.5, 11.8.13, 11.8.14 Measures concerning PPM and inspections (also covered in previous sections)	As described in previous sections, these measures are in place. See Appendix F for cake pad inspection programme.	Yes
11.8.6 and 11.8.7 Pre-acceptance checks, waste acceptance checks, site inspections	As described in previous sections, these measures are in place. See Appendix F for cake pad inspection programme. Waste acceptance and pre-acceptance procedures in place. See Section 2.3 and SOP in Appendix D.	Yes
11.8.8 Where necessary you must use a combination of one or more of emissions prevention measures listed	Belt dewatering is carried out within a building. Cake pad is uncovered. It is not practical to provide a cover as it would need to be in place for a total surface area of approximately 30,000m ² . As there are other WwTW with similar uncovered cake pads, which are critical to the operation of the WwTW, the EA has previously included an improvement condition to establish the risks of exposing digestate to the atmosphere within an uncovered cake pad storage area. The improvement condition focusses on the stability of the digestate and whether it could release pollutants into the atmosphere. A proposed condition is presented in Section 4 which has been included in similar Installation's issued permits. There are open topped sludge storage tanks present on-site which may give rise to diffuse emissions. See Appendix J2 in the original application report which illustrates the location of open topped tanks.	Partially – some improvements are required to address deficiencies. See proposed improvements in Section 4.
11.8.9. You must review the integrity and containment effectiveness of any building, covers and contained air systems	Where in place, this is carried out within PPM schedule.	Yes, where applicable



Technique	Details	Implemented? Y/N?
during commissioning. You must then do this periodically following manufacturers guidelines, or at least every 2 years. 11.8.10. You must carry out assessments to recognised standards, for example BS EN ISO 9972:2015.		
11.8.11. You must replace or repair damaged building, containers covers as soon as possible.	Where in place, this is carried out within PPM schedule.	Yes, where applicable
11.8.12 Stop using any vessel or tanks immediately if their integrity is compromised.	Inspections will identify defects and the use of tanks will cease if integrity is compromised.	Yes
11.8.17. You must stop outdoor processing activities, for example waste shredding or windrow turning when weather conditions may either: <ul style="list-style-type: none"> increase the risk of impact on local receptors cause wind-blown litter, dust, odour or bioaerosols 	Weather conditions monitored and actions taken in high wind, see Liming SOP in Appendix E.	Yes
11.10 Pests		
Pests	EMS includes provisions for pests. Framework Pest controller available with contractual SLA should issues arise.	Yes
11.12 Point source emissions to water (including indirect discharge to sewer)		
Reduce emissions to water	Effluent from the dewatering process and cake pad drainage is directed to the HoW via S1. There are no changes to emissions to sewer compared with the current rates as there will be no increase in waste throughput therefore no assessment has been carried out on emissions to sewer. The comparably small quantity of imported sludge accepted will not result in an increase in waste throughput limits in the permit and it is similar in nature to the indigenous sludge currently treated and stored on-site. Final dewatering filtrate from the dewatering belts and centrate is sent to	Yes



Technique	Details	Implemented? Y/N?
	Anammox liquid treatment plant for processing prior to discharged to the HoW via S1.	
11.13 Fugitive releases to water (relevant measures only where not already included in this review)		
11.13.12, 11.13.13, 11.13.14 You must have procedures and associated training in place to make sure that you deal with spillages immediately. Replenish spill kits.	Spill kits are in place and staff are trained in their use. Spill kits are replenished after use. Spill kits include materials relevant to the liquid waste: <ul style="list-style-type: none"> • Absorbent pipes • Absorbent mats • Oil absorbent pellets • Drain protector mats 	Yes
11.13.15 You must make sure your spillage response plan includes information about how to recover, handle and correctly dispose of all waste produced from a spillage.	Spill procedures are in place which cover these measures.	Yes
11.13.17 You must design appropriate surfaces and containment or drainage facilities for all operational areas, taking into account: <ul style="list-style-type: none"> • collection capacities • surface thicknesses • strength and reinforcement • falls (of the land) • materials of construction • permeability • resistance to chemical attack • inspection and maintenance procedures • available relevant standards of construction 	See 1.4 for tank characteristics and pollution prevention measures.	Partially – some improvements are required to address deficiencies. See proposed improvements in Section 4.

In conclusion, the emissions control techniques meet the requirements of the Biowaste Appropriate Measures Guidance.

3.9 Section 12: Process Efficiency

Section 12 of the Biowaste Appropriate Measures requires operators to implement appropriate measures to ensure that the process is operated efficiently. Most measures are not applicable as



they apply to installations (the process being assessed is a 'Waste Operation'); therefore, only measures relevant to the proposed changes have been included in this assessment. Measures within sections 12.1, 12.3, 12.4 (energy efficiency) have not been included in this assessment.

A comparison with Biowaste Appropriate Measures requirements sections 12.0 (general) and 12.2 (raw materials) is provided in Table 3-9 below.

Table 3-9 - Process Efficiency

Technique	Details	Implemented? Y/N?
12.0 Process efficiency (general)		
12.0. You must monitor and review how much: water, energy and raw materials you use each year residue and waste water you generate each year	Water, energy and wastes are routinely monitored. Resource efficiency is included in the site's EMS.	Yes
12.2 Raw materials		
12.2 Monitor and review raw material use.	There are minimal raw materials used to process digestate. The only raw materials comprise polymers, ferric and lime, which will be reviewed regularly to check whether there are alternatives with a lower environmental impact.	Yes

In conclusion, the process efficiency techniques meet the requirements of the Biowaste Appropriate Measures Guidance.



4. Proposed Improvement Conditions

Where this assessment has identified areas for improvement, STW proposes that the EA secures these through Improvement Conditions within the varied Permit, consistent with its recent approach at comparable STW wastewater treatment facilities' permits. Table 4-1 sets out the typical Improvement Conditions applied in those permits and proposed in this instance.

Table 4-1 – Proposed Improvement Conditions

Ref	Improvement Condition	Timescale
IC23	<p>The operator shall submit a written 'secondary containment implementation plan' and shall obtain the Environment Agency's written approval to it. The plan shall contain the finalised designs and an implementation schedule for the identified secondary containment systems proposed in the document 'IED Containment Assessment - Proposed Option Report' Jacobs, July 2024. The finalised design(s) and specifications shall be produced by appropriate competent individuals (qualified civil or structural engineer), in accordance with the risk assessment methodology detailed within CIRIA C736 (2014) guidance. The plan shall include but not be limited to the following components:</p> <ul style="list-style-type: none"> • An updated BAT assessment with specific regard to BAT 19 of the Waste Treatment BREF to confirm the finalised designs based on the systems proposed in the document 'IED Containment Assessment - Proposed Option Report' Jacobs, July 2024 meet BAT 19. • An assessment of the suitability for providing containment when subjected to the dynamic and static loads caused by catastrophic tank failure. • Finalised designs and specifications of the proposed secondary containment proposal completed by appropriate competent individuals. • A program of works with timescales for the commissioning of the secondary containment systems to comply with CIRIA C736 (2014) guidance, or equivalent. • An updated site and infrastructure plan. • A preventative maintenance and inspection regime. <p>The plan shall be implemented in accordance with the Environment Agency's prior written approval.</p>	<p>Within 12 months of permit issue or such other date as agreed in writing with the Environment Agency.</p>
IC24	<p>The operator shall submit a written report, with supporting evidence, on the stability of digestate stored within storage tanks, including the 'secondary digester tanks' and the two 'dewatering buffer tanks', and obtain the Environment Agency's written approval to it. The report shall assess whether an effective digestion process has taken place within the anaerobic digestion tanks and whether biogas emissions from post digestion storage or treatment are minimised. The report shall assess digestate stability</p>	<p>Within 6 months of permit issue or such other date as agreed in writing with the Environment Agency</p> <p>Further actions are also included in other STW permits depending on the</p>



Ref	Improvement Condition	Timescale
	<p>and the potential for biogas production. The report shall include but not be limited to:</p> <ul style="list-style-type: none"> ▪ An assessment of residual biogas potential in accordance with the OFW004-005 [N6] methodology specified by BSI PAS 110: Producing Quality Anaerobic Digestate or an equivalent methodology for assessing residual biogas potential. ▪ An assessment of the stability of the digestion process in the primary anaerobic digesters, to be undertaken in accordance with BAT 38 of the Waste Treatment BREF. The assessment shall be supported by process monitoring data recorded using an automatic and/or manual monitoring system (and sampling of the digester feed) for the following parameters over a period of one month: <ul style="list-style-type: none"> ▫ pH and alkalinity of the digester feed ▫ digester operating temperature ▫ hydraulic loading rate ▫ organic loading rate ▫ volatile fatty acids concentration ▫ ammonia ▫ liquid and foam levels in the digester 	<p>outcome of this initial assessment.</p>



APPENDICES

Appendix A. Communications with the EA

A.1 Email requesting further information

From: Sarah Raymond <Sarah.Raymond@environment-agency.gov.uk>
Sent: 18 February 2026 12:45
To: Joanne Chapman <Joanne.Chapman@severntrent.co.uk>
Cc: Angela Easton <Angela.Easton@severntrent.co.uk>
Subject: RE: Request for information and payment - EPR/BP3631SW/V013 - Minworth Sludge digestion & CHP Plant

Caution: This is an external email originating outside Severn Trent. Think before you click on links or open attachments.

Hello Joanne,

Following your response to our request for further information sent on the 03/02/2026 you have not fully answered the questions raised. Please note that our current position is that where questions have not been fully answered we would return your application as 'not duly made'. In light of the acknowledgement that these are existing activities being brought into regulation we will on this occasion provide you with one final opportunity to provide the information requested. As such you will need to provide the below information by the 25/02/2026.

1. Payment

You have stated that "Payment has been raised for the additional funds in order to progress this application, invoice reference PSCAPPSEVER090. Although there is a discrepancy between pre-application advice in that the advice was to 'vary' the permit to remove the 5.3 activity whereas this now says this needs to be 'surrendered'. We request some updated advice on what a 'surrender' process might involve, compared to a variation?"

We would refer you to section 5.1 of guidance [Environmental permits: when and how you are charged](#) which states under section 5 titled 'Surrender a permit' "To remove an activity from your permit that does not have an area of the site associated with it, you need to apply for a minor variation and pay the minor variation charge for that activity.

2. Separate charges for dewatering and Liming

You have stated "Clarification is also required on why the dewatering, storage and liming are two separate charges?" Please note that based on the information provided we confirmed this in the e-mail dated 04/02/2026 that the liming of imported digestate cake "is a chemical treatment that would not be able to be carried out under the 1.16.12 activity for the Physical treatment of non-hazardous waste." Currently the IED permits issued clarify the dewatering activity as a 'physical treatment' activity, however following your RFI response you have stated that dewatering will include the "occasional liming for contingency" of the digested cake produced. Therefore, this would now be the 'physical and chemical treatment of waste', under charging code 1.16.14. We would therefore look to permit this as one waste activity; however, you would need to clearly explain how these digested cake imports would be kept separate. As such your charging will be as follows:

- Surrender of activity AR3 for the Section 5.3 Part A(1) (a)(i) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving biological treatment and removal of hazardous waste codes – 1.16.1.1 - Charge £4,800

- Minor variation for Section 1.1 - combustion plant - rated thermal input of 50MWth or more to amend the permit to include the relevant section 1.1 activity – 1.10.1 - £5,731
- Waste activity for the dewatering of digestate – 1.16.14 - £7,930
- Normal variation of existing section 5.4 activity for changes to combustion plant, addition of indigenous tonnage and to undertake to Regulation 61 review – 1.16.2.1 - £6,992

Plans:

Bioaerosol Risk assessment – 1.19.5 - £1,241

Odour Management Plan – 1.19.6 - £1,246

Based on the above to date you have paid £26,267, which leaves an outstanding balance of £1,674 to pay.

3. Code 1.19.12

Please note this code was used in error and this activity was proposed to be charged under 1.16.12 but has now been clarified at 1.16.14

4. Director details

In future, please ensure that you provide the password on the same date that you provide your response to the request for information.

5. Site layout plans

You have stated that “We do not wish to amend the permit boundary as part of this application. There is no change in permitted boundary, it remains as permit V010. Appendix B2 shows the accurate full extent of the boundary, so use this as the definitive installation boundary. Please only refer to the location plan B1 as showing the context of the site and its surrounds only, and not for inclusion in the permit.” Appendix B2 does not reflect the current boundary in V010 and looks to increase the site boundary which you have not applied the relevant documents for. This question has not been addressed, and this boundary plan still needs to be updated.

6. Emission point in V010 identified as ‘Surface drainage – discharge from New CHP unit to the River Tame as shown in New drainage plan in EPR/BP3631SW/V005

In response to this question, you have stated that “We are undertaking further drainage investigation as part of BAT containment work, but no changes have yet taken place on site. The Site Layout Plan has been amended to re-include the Surface water discharge point.” On assessment of your revised site layout plans this has not been updated. We can only locate S1 “final release point to head of works”. This question remains outstanding and you will need to re-submit your site layout plan with this emission point included. We are unsure where this point is to be honest, so I’ll check the drainage plan again and try to get an educated guess.

7. Explanation of the dewatering and digested cake storage activities being applied for

We requested in response to questions 5 that you provide further details on the activities being applied for to ensure that we can accurately permit your activities and ensure that there is adequate information to undertake consultation. On review of your response, you have not provided the below;

- A full assessment of how you will meet the requirements of Biological waste treatment: appropriate measures for permitted facilities, and highlight where you currently do not meet the requirements.

- A non-technical summary that includes Storage arrangements, volumes and timescales for storage and waste handling processes.

You have clarified that these are existing activities following your response to the question raised, however we do need the above information to accurately permit the activities requested and consult. Also in light of the above change in activity type we will also require full process flows that identify the activity processes, addition of raw materials and waste inputs and outputs to ensure clarity on what will be undertaken at site. This question remains outstanding and we will need a response to duly make your application. If you fail to provide this information, we will return your variation as not duly made and proceed with the regulation 61 notice. (I'll get the biosolids team to confirm the process details)

8. Waste acceptance, pre-acceptance and non-conformance

You have provided document 'SOP Import Dewatering and Storage of Digested Sludge and Digested Cake' in response to question 6. On initial review this does not meet the requirement of a waste acceptance, pre-acceptance and non-conformance procedure. Further guidance on what this should include can be found in guidance [Biological waste treatment: appropriate measures for permitted facilities](#). As such this question remains unanswered and we still require you to submit a Waste acceptance, pre-acceptance and non-conformance procedure. (I'll get the biosolids team to confirm the process details)

Should you need any clarification on the above then please do not hesitate to contact me on the number below.

Kind regards

Sarah Raymond

Principal Permitting Officer – Installations

Environment Agency | Trentside Offices, Scarrington Road, West Bridgford, Nottingham NG2 5BR

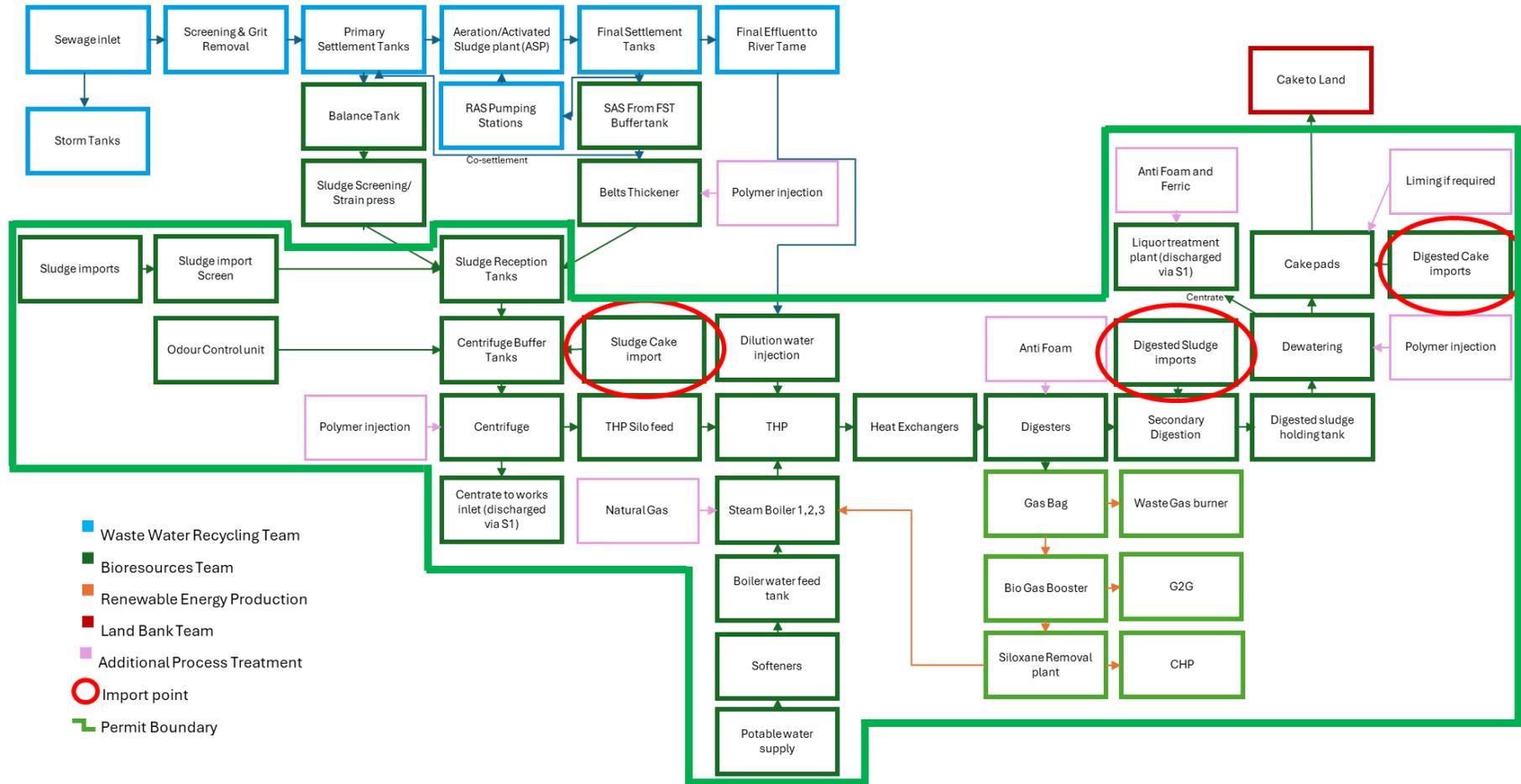
sarah.raymond@environment-agency.gov.uk

Mobile: 07557139052

Working days: Monday to Friday

Appendix B. Process Flow Diagram

MINWORTH PROCESS OVERVIEW



Appendix C. Updated Site Plans

C.1 Installation Boundary Including Site Location Inset



C.2 Site Layout Plans Including Emission Points



Appendix D. Waste Acceptance - Import, Dewatering and Storage of Digested Sludge and Digested Cake SOP



Appendix E. Liming of Biosolids SOP



Appendix F. Cake Pad Management SOP



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