Sludge Treatment Centre Permitting

Environmental Permit Application - Aylesbury Sludge Treatment Centre Resubmission

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Thames Water

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Contents

1. Introduction

This application relates to a biological treatment permit for the Aylesbury Sludge Treatment Centre (STC), located at the Aylesbury Sewage Treatment Works (STW), operated by Thames Water Utilities Ltd (Thames Water). It is being made due to sludge treatment operations within sewage treatment works requiring a suitable Environmental Permit under the Environmental Permitting Regulations 2016 (as amended), in order to comply with the requirements of the Industrial Emissions Directive.

Previously, sewage treatment sites operated by sewerage undertakers treating indigenous sewage sludges ('sludges') separated from the main urban waste water treatment stream at the site along with the importation of similar wastes such as cess wastes and interworks sludge and cake transfers, were regulated under the Urban Waste Water Treatment Directive (UWWTD) and Environmental Permitting Regulations as exempt or waste management activities, although some works had parts of the process, specifically biogas utilisation covered by the Environmental Permitting regime.

Now, all aspects of the sludge treatment process at the site, from the thickening of separated sludge from the main aerobic treatment flow, blending with imported waste of a similar nature to indigenous sludge, sludge pre-treatment, anaerobic digestion, through to the storage of digested sludge cake prior to recovery to land offsite, including biogas storage and utilisation will fall within the scope of this permit variation application.

Aylesbury STC does not currently hold an Environmental Permit but instead operates under a T21 waste exemption for recovery of waste at a waste water treatment works and with Regulatory Position Statement 109 allowing for operations of a combustion asset in the absence of an Environmental Permit.

A number of other sewage treatment related activities are undertaken at the site, outside of the scope of this permit, relating to the treatment of waste waters from the sewer network through aerobic processes. These activities are covered by the UWWTD.

1.1 Non-Technical Summary

This application is for a new bespoke installation permit for the biological treatment of sludge, by anaerobic digestion, with a capacity above the relevant thresholds.

The biological treatment of sludge includes treatment of the indigenous sewage sludges and Surplus Activated Sludge (SAS) from the onsite aerobic treatment process and treatment of imported sewage sludges from other sites, arriving by road to a sludge import point. The indigenous sewage sludges are generated from the aerobic treatment of both waste waters from the sewer network arriving into site at the works inlet, and, from imported waste materials, arriving by road transport into a dedicated waste import point near to the works entrance. There are a number of Directly Associated Activities (DAAs), including the storage of biogas and operation of a biogas fuelled Combined Heat and Power (CHP) engine and boilers for the generation of electricity and heat at the site, which are exempt from the requirements of the Medium Combustion Plant Directive.

The site is located to the west of the town of Aylesbury and close to two surface water courses. Open green space can be found on two sides of the site, industrial/commercial premises on one side and a railway line on the final side. Part of the wider site boundary runs alongside the River Thame.

The STC treats both indigenous sludges and imported sludges. Indigenous sludge is generated from the incoming flow to the STW, which passes to the Primary Settlement Tanks and through the aerobic treatment process under the UWWTD. Indigenous sludges from the main flow are then drawn off for thickening and blending in Primary Sludge Thickening Plant or SAS Thickening Plant. Imported sludge, arriving at the site, via a separate offloading point, from other works goes through sludge screens and is discharged into the Sludge Blending Tanks where it mixes with indigenous primary sludge. All such imports are subject to appropriate waste pre-acceptance and acceptance checks, prior to acceptance.

Liquors from thickening processes are returned via the site drainage system to the works inlet. Thickened primary sludge and SAS is pumped to the open, above ground Digester Feed Tank.

The STC includes an offloading point for permitted imported waste, consisting of cess, septic tank and similar sewage related wastes, at the entrance of the STW. Wastes are imported via tanker and incoming vehicles are directed to the offloading point, which is an impermeable surfaced area, equipped with sealed drainage and kerbing to reduce the risk of spillages. Incoming tankers park in the offloading area, and hook up to the offloading point, using the site supplied flexible hose pipes to prevent misconnection issues. The offloading then proceeds in line with Thames Water waste acceptance procedures.

Discharged wastes are passed from tankers to the inlet in a mixture with the sewer delivered urban waste water to the treatment processes on site. The inlet is located upstream of the rag and grit screens and storm offtake.

From the Digester Feed Tank, sludge is transferred to one of the two above ground Primary Digester Tanks and the sludge undergoes anaerobic digestion over an appropriate number of days. Both Primary Digester Tanks are externally clad with insulation and fitted with pressure relief valves for safety but are of different design and construction.

Following treatment over an appropriate number of days within the Primary Digester Tanks, digested sludge is transferred to one of five above ground, steel, uncovered Secondary Digester Tanks which operate in series. Following digestion, sludge is transferred to a Digested Sludge Buffer Tank, enabling sludge to be pumped to the Sludge Dewatering Plant. Digested sludge is held in the Secondary Digester Tanks for an appropriate retention time to ensure that the required level of pathogen kill is achieved and in order to comply with the digested sludge cake output quality requirements.

Digested sludge is then transferred to the Sludge Dewatering Plant where the sludge is subject to dewatering and is conveyed to the open cake pad for storage pending removal from the site under the Sludge Use in Agriculture Regulations 1989 (SUiAR), and in accordance with the Biosolids Assurance Scheme (BAS). Dewatering liquors are returned via the site drainage system to the works inlet.

Biogas from the Primary Digester Tanks is captured and transferred to the site Biogas Storage holders. Any moisture from the generated biogas drains back to the head of works via the liquor return pumping stations. The Biogas Storage holders and Primary Digester Tanks are fitted with pressure release valves (PRVs) as a safety precaution in the event of over pressurising the system.

The biogas is taken from the Biogas Storage holders for combustion in a CHP engine, generating electricity for use both within the site and for export to the grid, and heat to maintain Primary Digester Tanks temperature. In the event that additional heating is required for the Primary Digester Tanks, biogas may be used in the onsite boilers to provide heat to the Primary Digester Tanks. In the event there is excess biogas, i.e. more than the CHP or boilers can utilise, or in the event that the CHP and boilers are unavailable, there are two ground mounted emergency flares. These are utilised under 10% of the year or less than 876 hours per year. The CHP is currently operated under RPS 109, which would be superseded by this permit.

This application includes the import of treated, dewatered, sludge cake from other works, for temporary storage on the site cake pad pending offsite recovery. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import, including checking that the incoming cake complies with the requirements of both SUiAR and BAS prior to import. Cake is offloaded in an empty bay, so as to be stored separately to indigenous sludge cake. The waste stream is the same as that arising from the treatment of sludge within the Aylesbury STC with the same characteristics, composition and eventual end use – application to land. As such, the infrastructure which is acceptable for use for site cake is appropriate for the imported material.

Cake is stored, for the shortest time practicable, the duration depending on factors such as prevailing weather and availability of the landbank.

2. Technical Description

This application is for a new bespoke installation permit under the Environmental Permitting (England and Wales) Regulations 2016 (as amended), following a change of interpretation of the UWWTD by the Environment Agency. It relates to a biological waste treatment permit for the Aylesbury STC, located at the Aylesbury STW, operated by Thames Water Utilities Ltd (Thames Water).

Scope

The application covers the biological treatment of sewage sludge, both indigenous and imported from other waste water treatment sites, in a mixture with imported cess and septic tank derived wastes by anaerobic digestion, with a capacity above the relevant thresholds. It also permits the acceptance of portable toilet wastes along with cess, septic tank, and similar sewage derived materials, to the works inlet for processing through the UWWTD treatment route. There are a number of DAAs, including the operation of biogas fuelled CHP engine for the generation of electricity and heat at the site, which is classified as an 'existing' combustion source under the Medium Combustion Plant Directive. An additional waste activity, the import of treated sludge cake is also added to the permit by this variation.

Site Location

The site is located approximately 3 km to the west of the town of Aylesbury, within a commercial and industrial estate. A number of residential properties can be found near to the site entrance, sharing the site access road off the Rabans Lane Industrial Area, to the east. This industrial estate includes a number of light industrial units and warehouses close to the site perimeter. A local council Household Waste and Recycling Centre (HWRC) is located on the site's north-eastern perimeter while a railway line runs along the northern perimeter. Beyond the railway line is a large residential housing estate. The River Thame is on the site's western perimeter beyond which are two fields and a lagoon (forming part of the STW) which gives way to open green space and agricultural land. South of the site is an un-named drain, open green space and the Bear Brook surface water course.

The majority of the STW and area of the STC to be permitted sits within Flood Zone 1 with a very low probability of flooding (>1:1000 annual probability), although the area of the Secondary Digester Tanks on the west of the permitted area are within Flood Zone 2, with between a 1:100 and 1:1000 annual probability of flooding.

There are two designated statutory habitat sites within the relevant distances of the site. Stone Site of Special Scientific Interest (SSSI) is located approximately 2 km to the south-west of the site and the Chilterns Beechwood Special Area of Conservation (SAC) is located approximately 9 km to the south-east of the site. There is one non-statutory designated LWS within 2 km of the site, namely the Aylesbury Sewage Works LWS and it can be found adjacent to the north and west of the site. There are no Special Protection Areas (SPA), Marine Protection Areas (MPA) or Ramsar sites located within 10 km of the site and no National Nature Reserves (NNRs), Local Nature Reserves (LNRs) or Ancient Woodland sites located within 2 km of this site.

There are no protected habitat or species records within the specified screening distance of the site.

The site sits outside the boundaries of a Source Protection Zone (SPZ) and is not within an Air Quality Management Area (AQMA).

A site plan, showing the permitted area of the STC and the wider STW can be found in Appendix A.2 while a Process Flow Diagram summarising the sludge treatment process can be found in Appendix A.5. A site tank inventory is included below, followed by the site process description which identifies where tanks are located within the sludge treatment process.

Table 2.1 Site tank inventory

Tank Purpose	No.	Operational Volume (m^3)	Total Volume (m^3)	Material
Sludge Blending Tanks	2	549	1,098	Concrete
Digester Feed Tank	1	154	154	Steel
Primary Digester Tank	1	2,095	2,095	Steel
Primary Digester Tank	1	1,980	1,980	Steel
Secondary Digester Tanks	5	1,436	7,180	Steel
Digested Sludge Buffer Tank	1	1,436	1,436	Steel
Sludge Import Tank	1	33	33	Steel

Waste Activities

The STC comprises of biological treatment processes for indigenous sludges separated from the UWWTD permitted area of the site and treatment processes for imported sludge that arrives at Aylesbury STC by road tankers and consists of sludge from other Thames Water sites, which forms a waste activity for the site.

Imports of non-hazardous waste are considered a secondary wate operation to the main listed activity and consists of portable toilet wastes along with cess, septic tank, and similar sewage derived materials, to the head of the works; and digested cake imports to the cake pad. Imports to the cake pad are for temporary storage and transfer offsite.

Waste imports to the head of the works consists of an offloading point for permitted imported waste close to the main entrance to the wider STW on land owned by Thames Water. These wastes are imported by road, from tankers, and consist of liquids and associated sludges from domestic and municipal sources that are similar in composition to those materials derived from the sewer network and managed via the UWWTD route. Access to the offloading point is controlled by the issue of keys by Thames Water to approved contractors only, who have undergone appropriate waste pre-acceptance checks on the material they wish to import. These keys enable the delivery tankers to discharge waste into the works, through a data logger which records the volume of waste transferred. Deliveries of waste are allowed 24-hours per day.

All imports are assessed using the Thames Water standard waste pre-acceptance checks to ensure that they are appropriate for treatment via the UWWTD. Once approved as suitable for treatment via the UWWTD route, the waste carriers are authorised to access the waste import area. Wastes will be subject to appropriate waste acceptance checks in accordance with Thames Water procedures.

Imports

There is a site supplied import hose (to avoid misconnections) connected to the data logger and waste materials discharge via this data logger pass through a grit trap which removes stones, grit and similar materials, at which point it falls outside of the permitted activities on site and is pumped to the inlet for treatment via the UWWTD route. Vehicles discharging imported wastes are located on an impermeable engineered hardstanding which is equipped with kerbing to prevent runoff and surface drainage to capture spillages, which combines with incoming

wastes and is returned to the works inlet for treatment. The data logger is situated on made ground, protected from vehicle strikes by means of protective bollards and the area is covered by webcam.

This application includes a second additional waste operation at the same site for the import of non-hazardous treated (digested) sludge cake from other works for temporary storage on the site cake pad pending transfer offsite. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import, including checking that the incoming cake complies with the requirements of SUiAR and BAS. The waste stream is the same as that arising from the treatment of sludge within the Aylesbury STC with the same characteristics, composition and eventual end use – application to land. As such, the infrastructure which is acceptable for use for site cake is appropriate for imported material.

Cake is stored for the shortest time practicable, the duration depending on factors such as prevailing weather and availability of the landbank.

Sludge Processes

Indigenous primary sludge is removed from the Primary Settlement Tanks (PSTs) and pumped via subsurface sludge pipe to one of two concrete Sludge Blending Tanks, at which point it falls into the scope of this permit. The two Sludge Blending Tanks are interconnected, partially subsurface and uncovered. The two Sludge Blending Tanks act as both mixing tanks to prevent settlement of solids (using external mixer, chopper pumps) and balancing tanks, to smooth process inputs to the anaerobic digestion process. The Sludge Blending Tanks pipework is configured so that the tanks can be isolated and operate independently as required. Sludge in the Sludge Blending Tanks is pumped to the Primary Sludge Thickening Plant and subject to thickening in two drum thickeners, with the use of a powdered polymer mixed with final effluent water/ potable water, before the thickened sludge is transferred into the Digester Feed Tank. Liquors from the Primary Sludge Thickening Plant drains to the site drainage and is returned to the works inlet via two Liquor Return Pumping Stations, for additional aerobic treatment. Indigenous primary sludge is mixed with thickened SAS in the Digester Feed Tank.

SAS from the aerobic process is pumped into an uncovered steel holding SAS Tank before being pumped to the SAS Thickening Plant, at which point the SAS is within the scope of this permit. SAS is thickened in SAS Thickening Plant, with the use of liquid polymer from an Intermediate Bulk Container (IBC) made up with potable water / final effluent water. Liquors from the thickening drains to the site drainage and is returned to the works inlet via Liquor Return Pumping Station 1, for additional aerobic treatment. Thickened SAS is pumped to the Digester Feed Tank where the thickened SAS is mixed with thickened indigenous primary sludge.

There is a second import point at Aylesbury STC for permitted imports of sludge from other sites. Imported sludge is accepted through a data logger which measures both the transferred volume and records the originating site of the material. Access to the sludge logger is via a key fob that is issued to drivers. Imported sludge discharges into the Sludge Import Tank and is screened to remove inorganic material, which is deposited into a skip for removal from site and offsite disposal. Imported sludge is pumped to one of the two Sludge Blending Tanks where it is mixed with indigenous primary sludge and subject to thickening via the Primary Sludge Thickening Plant, as described above.

The Digester Feed Tank is an uncovered, glass coated steel tank. An ultrasonic level gauge measures the tank level and will inhibit the feed pumps to prevent overfilling of this tank. Dedicated feed pumps transfer mixed sludge to one of the two Primary Digester Tanks on site.

Digestion Processes

Pre-mixed sludge is pumped into two Primary Digester Tanks which have a similar volume but are of different types. One Primary Digester Tank is a shorter tank constructed of steel and has a conical shaped bottom while the other Primary Digester Tank is taller with a flat base of glass coated steel construction. Both tanks are fixed roof and fitted with PRVs to prevent over pressurisation and are subject to external sludge mixing via the heating system.

The Primary Digester Tanks operate on a continuous process, with fresh sludge pumped into the top of each tank via feed pumps that are controlled by a timer, and digested sludge is continuously transferred to the Secondary Digester Tanks. The volume of sludge within the tanks is monitored via the SCADA system with alarms to alert to releases and inhibitors on the digester feed pumps to prevent further transfers of sludge from the Digester Feed Tank. Following treatment over approximately 12 days, digested sludge is discharge from near the bottom of each Primary Digester Tank through a limpet chamber and gravitates via belowground sludge transfer pipes to the Secondary Digester Tanks.

Both Primary Digester Tanks are mixed via chopper pumps which draw sludge from towards the bottom of each tank and pass it through a heat exchange system. Heat to the digesters is provided from recovered heat from the site's CHP engine, which is supplemented via two auxiliary boilers. Cooler sludge is extracted near the bottom of each tank, passed through this heat exchange system before being mixed with fresh incoming sludge and fed in near the top of the tank. The temperature of the sludge in the Primary Digester Tanks is measured via a probe upstream of the heat exchange on the chopper pump line. Anti-foam is added into the Primary Digester Tanks from a 1,000 litre IBC as required.

There are five Secondary Digester Tanks at Aylesbury STC. All tanks are of steel construction, located on concrete bases with unmade ground between the tanks. The Secondary Digester Tanks are all above ground, flat bottomed and uncovered. The five Secondary Digester Tanks act as holding tanks while a sixth tank is a Digested Sludge Buffer Tank, for transfer of digested sludge to the Sludge Dewatering Plant. The five Secondary Digester Tanks are filled in series, the sludge is retained for the appropriate length of time before gravitating between the tanks via subsurface pipes to the Digested Sludge Buffer Tank. Secondary Digester Tanks are fitted with high level alarms to prevent overfilling and the Digested Sludge Buffer Tank is subject to external mixing. Fully treated sludge is then transferred via above ground pipes for dewatering in the Sludge Dewatering Plant.

Digested sludge is dewatered with Sludge Dewatering Plant, with the addition of a liquid-based polymer mixed with final effluent water/ potable water to aid coagulation, supplied via 1,000 litre IBCs which are located on bunds. The liquor drains to the site drainage and is returned to the UWWTD Process via a Liquor Return Pumping Station 2 for additional aerobic treatment via site drainage.

Cake Storage

Dewatered, digested sludge cake is transferred by covered conveyor and is deposited on the open cake pad for storage prior to removal from site under the SUiAR, and in accordance with the BAS. The cake pad is a walled area of engineered concrete with drainage, that is returned to the UWWTD process via a Liquor Return Pumping Station and the site drainage. Digested sludge cake from other STCs can also be imported for temporary storage at Aylesbury STC prior to removal from the site under the SUiAR, and in accordance with the BAS. This is intended to provide contingency storage in the event of spreading to land being temporarily unavailable.

A site specific bioaerosol risk assessment for the STC is provided in Appendix F

Biogas

Biogas from the Primary Digester Tanks is captured and transferred to one of two Biogas Storage holders. One is a floating roof design and one is a dual membrane design with both Biogas Storage holders fitted with PRVs in the event of over pressurising of the system. The level of biogas within the floating roof Biogas Storage holder is measured via a gauge that measures the height of the Biogas Storage holder via the site SCADA system. The dual membrane Biogas Holder has an inner and outer bag that is fitted with biogas detection systems and air blowers to maintain the inner and outer membranes at a constant pressure.

The area surrounding the Biogas Storage holders is classified as a potentially explosive atmosphere, fenced off for security and there are strict management provisions on the control of potential ignition sources. A slam shut valve is present on the main biogas line and would automatically isolate the Biogas Storage holders in the event of an emergency situation. The biogas transfer pipeline is equipped with condensate pots that capture entrained moisture from the generated biogas and allow it to be drained into the site drainage system for treatment via

Liquor Return Pumping Station 1. This improves the quality of the biogas and reduces impurities that could reduce the efficiency of the CHP engine.

Biogas is taken from the Biogas Storage holders and used, in order of preference, in a CHP engine, two auxiliary boilers or two emergency flares. A siloxane filter is located upstream of the CHP engine on the biogas line to remove impurities from the biogas prior to combustion in the CHP engine. Use of siloxane filters reduces incidence of operational issues for the CHP engine.

The biogas is taken from the Biogas Storage holders for combustion in a 0.94 MWth Caterpillar CHP engine, with an electrical output of 300 kW, generating electricity for use both within the site and for export to the grid, and heat to maintain Primary Digester Tanks temperature. In the event that additional heating is required for the Primary Digester Tanks, biogas may be used in the onsite boilers to provide heat to the digesters. There are two dual-fuelled Strebel boilers each with a thermal input of 0.67MWth which run on both biogas and diesel. In the event there is excess biogas, i.e. more than the CHP or boilers can utilise, or in the event that the CHP or boilers are unavailable, there are two ground mounted emergency flares. These are utilised under 10% of the year, less than 876 hours per year.

The CHP is currently operated under RPS 109, which would be superseded by this permit. The total thermal input of combustion plant at the site is below 5 MW. The CHP and boilers are below the MCPD threshold. Specified Generator Controls also do not apply since for all combustion plant there is (i) not a capacity agreement or an agreement to provide a balancing service and the CHP engine is not (ii) part of a specified generator group which in total has a rated thermal input of between 1MWth and less than 50MWth (i.e. the CHP engine is below 1MWth; the standby generators operate as an excluded generator and the boilers are not relevant to the definition).

Standby Emergency Generators

Three diesel fuelled standby emergency generators are located at Aylesbury STW which provide back-up power to the site in the event of a grid failure. Standby Emergency generators are all excluded generators and do not meet the criteria to be classified as DAAs.

BAT Considerations

A BAT gap analysis has been completed for the Sludge Treatment Centre against the associated BAT conclusions and this gap analysis is attached as Appendix D.

2.1 BAT 3; 6; 7: Return Liquors

The Aylesbury STC does not have a liquor treatment plant. Liquor treatment for waste waters arising within the permitted area is part of the waste water treatment process of the STW and does not fall within the permit boundary.

There are no direct emissions to water from the STC. The only indirect emissions are of the sludge related liquors, primarily sludge dewatering liquor, and surface (rain) waters, which are returned to the wastewater treatment works for aerobic treatment under Urban Wastewater Treatment Regulations.

Return Liquor Monitoring is included in Appendix M.

2.2 Management of Diffuse Emissions – BAT 14

There are open top tanks within the permit boundary at Aylesbury STC including the Sludge Blending Tanks, Digester Feed Tank, Secondary Digester Tanks, Digested Sludge Buffer Tank and Sludge Waste Import Tank.

Thames Water is committed to meeting the requirement of BAT. A full BAT risk assessment is required to determine the potential need to cover open topped tanks. Thames is not able to commit to covering tanks by the

stated deadline of December 2024 delivery timescales will be subject to the outcome of the PR24 and subsequent price review discussions.

2.3 Site Infrastructure

Management of emissions to water – BAT 19

Thames Water is committed to meeting the requirements of BAT. A full BAT risk assessment is required to determine the detailed design for Aylesbury secondary containment. The secondary containment report (see Appendix G) is an outline solution that may be subject to change. Thames is not able to commit to secondary requirements by the stated deadline of December 2024 delivery timescales will be subject to the outcome of the PR24 and subsequent price review discussions.

A figure showing the current site surfacing within the permit boundary is included within Appendix A, Figure A.3.

Process Controls

Anaerobic digestor operations are monitored automatically from the control centre at the site and outside of normal operational hours, from the regional control centre. Checks include digester health, temperature and operation. As described, tanks are equipped with appropriate high-level alarms and automatic cut off valves to minimise releases. The Primary Digester Tanks and biogas holder are also fitted with dual pressure relief valves which operate in an emergency to minimise releases from over- or under-pressurisation. Site operations are covered by Thames Water's management system, including the preventative maintenance programme for the site.

A range of process parameters are subject to routine monitoring or checking to ensure that the digestion process is operating optimally so that the required sewage cake output quality is achieved.

- pH: At a conventional digestion site such as Aylesbury the processes is maintained around pH 7 but within the range 6.72 – 7.6 (this is % dry solids and digester load dependant) for healthy operation.
- alkalinity: Levels dependant on feedstock characteristics (primary sludge: surplus activated sludge (SAS) ratio). Conventional digestion typically, 3,500 - 5,000mg/litre range.
- temperature: minimum target of 38° C. This is maintained within the range 36-40° C.
- HRT (hydraulic retention time): minimum target is 15-days, there is no upper limit. Retention times shall not be less than 12-days during plant outages to keep the product pathogen kill efficiency control.
- OLR (organic loading rate): see table below - this is dependent on the primary/SAS ratio. Aylesbury fits into the first row of the table.
- Dry solids feed: see table below, Aylesbury has a target of 6%DS, but this can vary between 3-8%DS and impacts the HRT.

Type of Digestion	0%- 35% SAS[x]	36%- 45% SAS	46%- 50% SAS	51%- 55% SAS	>55% SAS	Max Feed %DS
MAD* in Conventional Digestion	3	2.5	2	1.75	n/a	6
MAD after Pre-pasteurisation	4.5	4	3.5	3	n/a	7
MAD after Acid Hydrolysis	4.5	4	3.5	3	n/a	7

MAD after Thermal Hydrolysis	7	6.5	6	5.5	5.5	14

* mesophilic anaerobic digestion
[X] surplus activated sludge, arising from the UWWTD treatment route.

- VFA (volatile fatty acid) concentration: There is no specific range for VFAs as it depends on the feedstock. It is used as an indicator of digester health rather than a process control. The production of organic acids depends on the volume of solids fed to the digester. The typical range for VFAs in a primary digester is between 50 and 800 mg/L. When VFA concentrations climb above 1000 mg/L, the digester could be overloaded or experiencing other problems.

- Ammonia - Ammonia concentrations of 50 to 1000 mg/L are beneficial, but ammonia levels of 1500 to 3000 mg/L (pH greater than 7.4) could be inhibitory but not always. An ammonia concentration higher than 3000 mg/L for prolonged period is toxic.

- VFA to Alkalinity ratio: Very important parameter to monitor for digestion process. The VFA to alkalinity ratio of below 0.4 is good and above this threshold value means diminishing alkalinity and low pH i.e. sour digester content. As long as this ratio is maintained higher VFA, and alkalinity digester content can be acceptable, and the digestion process is deemed healthy. Anaerobic digestion process is always controlled based on holistic parameters but not based on single parameter.

Waste Tracking

Because of the nature of the waste accepted at the site for treatment, and the processes undertaken, the location of any specific load of waste cannot be tracked directly within the installation. Instead, tracking, if required, is based on the normal operational periods for treatment, which can locate the approximate location of the imported material with the process, based on the number of days post acceptance.

For digested cake imports, these are stored separately on the cake pad, and their location can be identified on this basis.

Odour

The facility has an odour management plan which is supplied as Appendix E.

Bioaerosols

Digested sludge cake is stored on a cake pad which is more than 250 m from the nearest sensitive receptor, where people live or work for more than 6 hours at a time. See Appendix F for the site specific bioaerosol risk assessment.

Other Items

A leak detection and repair (LDAR) plan has been prepared for the site and this is presented as Appendix H.

Please see Appendix A, A.6 for photographs of key plant infrastructure.

Other Risk Assessments

There is no requirement for a fire prevention plan, due to the nature of the wastes treated at the site and the processes utilised, in accordance with Environment Agency guidance.

2.4 Regulatory listing

The installation is permitted as a Schedule 1 listed activity under the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

The relevant listing under Schedule 1 is:

Section 5.4 Disposal, recovery or a mix of disposal and recovery of non-hazardous waste

Part A(1) (b); Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving one or more of the following activities, and excluding activities covered by Council Directive 91/271/EEC—

(i) biological treatment;

In addition to the listed activity at the site, there is a DAA of biogas combustion plant. The plant is excluded from the Medium Combustion Plant Directive due to the plant being less than 1 MWth and does not meet the definition of a Specified Generator.

The site includes the following DAAs:

- Imports of waste, including sludge from other sewage treatment works;
- Blending of indigenous sludges and imported wastes/waste sludge prior to treatment;
- Storage of digestate prior to dewatering;
- Dewatering of digested sewage sludge;
- Transfer of dewatering liquors back to the sewage treatment works inlet;
- Transfer of surface water run-off via site drainage back to the sewage treatment works inlet;
- Storage of dewatered digested sludge cake prior to offsite recovery;
- Storage of biogas;
- Combustion of biogas in a biogas CHP engine and boilers;
- Transfer of biogas condensate via site drainage back to the head of the sewage treatment works;
- Operation of emergency flares;
- Operation of siloxane filter plant;
- Storage of diesel;
- Storage of waste, including waste oils; and
- Storage of raw materials.

The waste activities at the site are:

- Imports of waste to the works inlet for treatment through the UWWTD route; and,
- Imports of digested sludge cake for temporary storage pending off-site removal.

In addition to the listed activity at the site, there is a directly associated activity of a biogas combustion plant. This comprises:

- 1x 0.94 MWth CHP engine;

- 2x 0.67 MWth boilers;

Total thermal input of the site is 2.28 MWth.

2.5 Combustion Plant

Aylesbury CHP 1	
MCP specific identifier*	Aylesbury CHP Engine 1 [Caterpillar G3412]
12-digit grid reference or latitude/longitude	SP 78966 14619
Rated thermal input (MW) of the MCP	0.94 (existing combustion plant below threshold of MCP)
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Other engine
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Biogas
Date when the new MCP was first put into operation (DD/MM/YYYY)	18/01/2014 (existing combustion plant below threshold of MCP)
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	E37.0.0
Expected number of annual operating hours of the MCP and average load in use	8,000
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	n/a

Aylesbury Boiler 1	
MCP specific identifier*	Aylesbury Boiler 1
12-digit grid reference or latitude/longitude	SP 78957 14607
Rated thermal input (MW) of the MCP	0.67 MWth (existing combustion plant below threshold of MCP)
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Boiler
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Dual fuelled (Biogas or diesel)
Date when the new MCP was first put into operation (DD/MM/YYYY)	Pre 2015
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	E37.0.0
Expected number of annual operating hours of the MCP and average load in use	8,000
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should	n/a

Aylesbury Boiler 1	
sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	

Aylesbury Boiler 2	
MCP specific identifier*	Aylesbury Boiler 2
12-digit grid reference or latitude/longitude	SP 78960 14610
Rated thermal input (MW) of the MCP	0.67 MWth (existing combustion plant below threshold of MCP)
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Boiler
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Dual fuelled (Biogas or diesel)
Date when the new MCP was first put into operation (DD/MM/YYYY)	Pre 2015
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	E37.0.0
Expected number of annual operating hours of the MCP and average load in use	8,000
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	n/a

3. Form B2 Questions

1 About the permit

1a Discussions before your application

There have been no specific pre-application meetings with National Permitting about this application. Nature and heritage conservation screening was requested and received via email from the pre-application advice service of the Environment Agency.

1b Is the permit for a site or for mobile plant?

No. This application relates to a site.

2 About the site

2a What is the site name, address, postcode and national grid reference?

Aylesbury Sludge Treatment Centre;

Aylesbury Sewage Treatment Works;

Rabans Lane Industrial Estate;

Rabans Lane;

Buckinghamshire;

HP19 8RU.

NGR: SP 78943 14657

2b What type of regulated facility are you applying for?

This application relates to a bespoke waste installation.

2c If you are applying for more than one regulated facility on your site, what are their types and their grid references?

This application is for a single regulated facility, namely an installation.

2d Low impact installations (installations only)

2d1 Are any of the regulated facilities low impact installations?

No, this application is not for a low impact installation.

2e Treating batteries

2e1 Are you planning to treat batteries?

No, this application is not for the treatment of batteries.

2f Ship recycling

2f1 Is your activity covered by the Ship Recycling Regulations 2015?

No, this application is not covered by the Ship Recycling Regulations 2015.

2g Multi-operator installation

No. This is not a multi-operator installation.

3 Your ability as an operator

3a Relevant offences

3a1 Have you, or any other relevant person, been convicted of any relevant offence?

Yes. The applicant has been convicted of a relevant offence within the last 12 months.

Event Name	Court	Date of hearing	Fine	Summary
EA v Thames Water – Crawley/River Mole	Lewes Crown Court	Hearing Date 03 - 04 July 2023.	Fine £3,334,000.00 Prosecution Costs £128,961.05 and victim surcharge of £120.00	Thames Water pleaded guilty to four charges under the Environmental Permitting (England and Wales) Regulations 2016. The detail of each summons is included below: Summons 1: Between 9 October 2017 and 14 October 2017 TW caused a water discharge activity, namely A discharge of sewage effluent from Crawley Sewage Treatment Works into the Gatwick Stream and the River Mole, except under and to the extent authorised by an environmental permit contrary to Regulation 38(1)(a) and Regulation 12(1)(b) of the Environmental Permitting (England and Wales) Regulations 2016. Summons 2: On and /or before 14 October 2017 TW did contravene condition 11 of environmental permit CNTM.1402 by failing to have capacity of not less than 11,000 m3 in the storm lagoon at Crawley Sewage Treatment Works contrary to Regulation 38(2) of the Environmental Permitting (England and Wales) Regulations 2016. Summons 3: Between 9 October 2017 and 14 October 2017 TW contravened condition 12 of environmental permit CNTM.1402 by

Event Name	Court	Date of hearing	Fine	Summary
				failing to discharge when the rate of flow at the inlet sewer at Crawley Sewage Treatment Works is in excess of 840 l/s due to rainfall and /or snowmelt contrary to Regulation 38(2) of the Environmental Permitting (England and Wales) Regulations 2016. Summons 4: On and /or before 14 October 2017 TW did contravene condition 13 of environmental permit CNTM.1402 by failing to empty the storm lagoon at Crawley Sewage Treatment Works and return the contents for full treatment as soon as practicable after cessation of the overflow to the lagoon contrary to Regulation 38(2) of the Environmental Permitting (England and Wales) Regulations 2016.

3b Technical ability

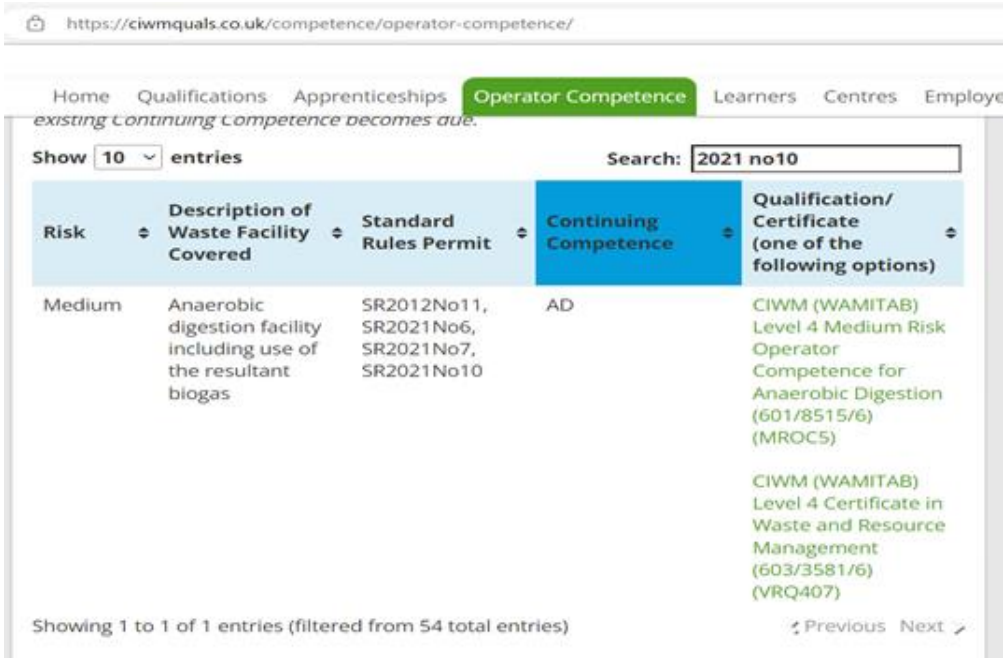
Thames Water uses WAMITAB qualified staff at their waste facilities. The relevant person for the site has been named below and full details have been provided separately on a spreadsheet:

.David Plowman

Please see Appendix B for evidence of competency.

Following discussions with CIWM (WAMITAB), Thames Water understands there are two routes to holding an appropriate CoTC for the permit as laid out in the screen shot below:

a) CIWM (WAMITAB) Level 4 medium risk operator competence for anaerobic digestion (MROC5)
b) CIWM (WAMITAB) Level 4 Certificate In waste and Resource Management – VRQ" and optional "VRQ407 – Principles and practices of managing a biological treatment processing facility (Anaerobic Digestion and Composting)"



Thames intend to follow option B at this site, as has previously been explained in the RFI for the previous application at Hogsmill (April 2022).

Thames Water understands from the CIWM website that the proposed option is acceptable.

3c Finances

Installations, waste operations and mining waste operations only.

Do you or any relevant person or a company in which you were a relevant person have current or past bankruptcy or insolvency proceedings against you?

No.

3d Management systems

What management system will you provide for your regulated facility?

Identify the form of the management system from the list:

• Own management system

Thames Water has a SharePoint based Environmental Management System, with site specific elements and procedures linked from across the organisation Thames Water also has an Asset Management System accredited to ISO 55001 and an Energy Management System accredited to ISO 50001.

Scope

Thames Water has an EMS in place for its permitted assets.

Environmental Policy

Implementation of Thames Water's Environmental Policy is approved by the Thames Water Executive Committee of the Thames Water Board and is the responsibility of all employees, with the Chief Executive being accountable

for its implementation. The policy covers all company activities, including this installation, and applies to all individuals who are employed by, or carry out work on behalf of, any Thames Water company including contractors, temporary staff and agency workers. The Management Systems Team is responsible for the implementation and assurance of the EMS, the site operations teams will be responsible for maintaining ongoing compliance with the EMS and managing the site.

Management and Responsibilities

The Management Systems Team (EMS specialists) have responsibility for the management and upkeep of the EMS. Compliance with specific elements of environmental legislation is managed by the relevant Business Areas across the Company. The Environmental Assurance Team maintain a Legal Register and, in consultation with Operations Teams, the environmental permitting team and other specialists, assess environmental risks for in-scope areas using a significance scoring method under normal, abnormal and emergency conditions. Significant environmental aspects and impacts consider legal and other requirements, cost to the business, scale of impact and interested parties.

Management Systems Team are responsible for setting internal environmental standards which are then implemented by the relevant business areas. The Standards and other relevant information are communicated through several routes. Incident and corrective action routes exist to promote continual improvement. The team run a programme of Management System Audits to determined adherence to the environmental policy and environmental standards.

Local operating procedures are the responsibility of the operational teams that operate the sewage works.

The defined roles and responsibilities are allocated to relevant personnel, depending on their job description, qualifications, knowledge, experience and training. Training and competency are based on specific roles.

Operational Control

Procedures are in place within the EMS to identify and control environmental issues arising from company activities. Each department is required to achieve operational control of its activities using standardised systems.

Routine sewage treatment operations and activities are recorded within the corporate management database, SAP. These include routine inspections, monitoring and maintenance tasks.

Non-routine activities, such as major overhauls/refurbishments, which involve the use of sub-contractors are assessed for health & safety concerns; relevant environmental risks and with accompanying method statements to respond to these. Contractors who are required to carry out major services are closely managed by operational or other staff to ensure that compliance with Thames Water's H&S and environmental policies is achieved. No contractors may work on site without having undergone a full site induction and being issued with a Thames Water Operational Safety Authorisation (TWOSA) for the task(s) they intend to complete.

Processes on site operate continuously, 24-hours per day, 7-days per week, apart from maintenance periods. The plant is designed to operate unattended with process parameters being monitored continuously. Operating logs are stored electronically.

Maintenance and Monitoring

Management will have the ultimate responsibility for the effective maintenance of plant throughout the company. The facility has named staff that are responsible for day-to-day maintenance operations and contractors are also used as required. All maintenance is logged on SAP. The following basic inspections and maintenance activities are indicative of those carried out on site:

- Daily operation of plant (24/7) involves visual inspection of operational assets;
- Daily inspection of temporary pipe work installed;

- Routine maintenance programme for plant; and
- Routine lubrication programme.

Personnel responsible for the inspection, testing and maintenance of pollution prevention infrastructure are trained to an appropriate level.

All regular maintenance of all plant and equipment will be completed on the time scale specified by the equipment manufacturer including routine inspections.

Environmental Improvement

Thames Water is committed to environmental improvements and has established environmental targets and plans relating to materials and waste management, transport, climate change mitigation and adaptation (energy efficiency and renewable energy generation), water resources, biodiversity, river water quality, and drainage asset performance. TWUL's Environmental Governance Board meets on a regular basis to provide strategic direction, and interrogative review, attached to any environmental issue of substantive concern including emerging risks as well as current topics.

Competence, Training and Training Records

Thames Water aims to ensure that all employees are in possession of the knowledge, skills and experience necessary to perform their role in accordance with the company's operating procedures and in full compliance with the law. Training needs are identified by the employee's immediate supervisor or line manager.

For those sites treating 'waste' as defined by the Waste Regulations 2011, coverage at all permitted sites by staff who hold the appropriate level of WAMITAB 'Certificate of technical Competence' is monitored centrally. This aspect of the staff training is currently being reviewed in light of the change in permitting requirements for sludge treatment centres.

For each internal training course held a Training Record is issued.

Induction training is carried out by the responsible line manager and consists of an introduction to the Company's Environmental Health and Safety Policy and description of emergency response and spill prevention procedures.

Staff receive specific training in the plant's operation and the environmental impact of the process as well as health and safety. The operators will have a detailed understanding of the operational procedures for the site for both normal and abnormal operation. As part of the training, operators will receive specific instructions relating to those aspects of plant operation that have the potential for a negative impact on the environment. This training will be provided by the equipment manufacturers or in-house staff as appropriate.

Contractors

There are several procedures to ensure contractors have the required skills and environmental competencies to carry out works at the site.

Initially, contractors are assessed by the procurement department for inclusion on the approved supplier list, which includes health and safety and environmental criteria for example, waste documentation such as waste carrier's licence/training certificates. Even when the contractors are on the approved supplier list, they are still further assessed for each specific contracted activity.

The contactor is required to submit a method statement prior to any commencement of work, identifying how work is to be undertaken and the associated risks. The method statement must be approved by the Site Manager, who will also identify any site hazards and issue an Authorisation to Work/Enter the site, following a site induction. When on-site, the contractor must carry this Authorisation to Work at all times.

Incidents, Non-Compliances and Complaints

Thames Water has procedures for incidents, non-compliances and environmental complaints.

Incidents are managed through corporate and site-specific procedures which ensure that all incidents are logged and that necessary preventative and/or corrective actions are taken.

Customer complaints are made via the Customer Services Centre which will log all complaints electronically. An action is raised to Waste Operations Control Centre (WOCC) who contact the CSM by telephone and email the complaint information to both the CSM and Performance Manager. The CSM and Performance Manager will review the complaint and take action to investigate the complaint. The CSM is responsible for contacting the customer and updating them on the outcome of the investigation and any actions taken. Where complaints relate to odour/noise/amenity, typical follow up action would include physical checks onsite of the operation of plant; offsite checks where needed; with all the actions taken being logged. Where appropriate, site management may contact the customer to discuss the outcome of the complaint, otherwise, there is a customer communication plan that identifies how and when contact will be made with customers and other stakeholders.

Information regarding complaints is recorded to allow determination of an appropriate response (corrective action) and identify what measures need to be taken in the future to prevent its reoccurrence (preventive action).

Communication

There are regular meetings held on site to discuss all aspects of the treatment works and performance against targets. These meetings include the operation and performance of the installation. Other communication methods to promote environmental management issues and continual improvement include: toolbox talks, environmental alerts, OSC portal forums, formalised event learning processes following an operational incident and compliance audits.

4 Consultation

Could the waste operation or installation involve releasing any substance into any of the following?

4a A sewer managed by a sewerage undertaker?

Yes. The site discharges into a drainage system of the wider sewage treatment works, controlled and operated by the applicant as sewerage undertaker.

4b A harbour managed by a harbour authority?

No.

4c Directly into relevant territorial waters or coastal waters within the sea fisheries district of a local fisheries committee?

No.

4d Is the installation on a site for which:

4d1 a nuclear site licence is needed under section 1 of the Nuclear Installations Act 1965?

No.

4d2 a policy document for preventing major accidents is needed under regulation 5 of the Control of Major Accident Hazards Regulations 2015, or a safety report is needed under regulation 7 of those Regulations?

No.

5 Supporting information

5a Provide a plan or plans for the site

Please see Appendix A for:

- A.1 Site Location Plan
- A.2 Installation Boundary and Air Emission Points
- A.3 Site Impermeable and Permeable Surfacing Plan
- A.4 Site Drainage Plan
- A.5 Process Flow Diagram
- A.6 Site Photographs

5b Provide the relevant sections of a site condition/baseline report if this applies

See Appendix C for the Site Condition Report for the site.

5c Provide a non-technical summary of your application

Please see earlier text in Section 1.

5d Are you applying for an activity that includes the storage of combustible wastes?

No. The site processes sit outside the scope of the Environment Agency fire prevention plan guidance, as set out in the Environment Agency guidance.

6 Environmental risk assessment

An environmental risk assessment of the site changes has been carried out in line with the requirements of the Horizontal Guidance Note H1 and Guidance given on gov.uk. This guidance specifies the following approach to carrying out an environmental risk assessment for a proposed activity:

- Identify potential risks that your activity may present to the environment;
- Screen out those that are insignificant and don't need detailed assessment;
- Assess potentially significant risks in more detail if needed;
- Choose the right control measures, if needed; and,
- Report your assessment.

Designated Site Review

Site Name	Designation	Direction from site	Distance from site
Stone	SSSI	South-west	2,000 m
Chilterns Beechwood	SAC	South-east	9,000 m
n/a	Ramsar	n/a	n/a
n/a	SPA	n/a	n/a
n/a	MPA	n/a	n/a
n/a	NNR	n/a	n/a
n/a	Local Nature Reserve	n/a	n/a
n/a	Ancient Woodland	n/a	n/a
List of Local Wildlife Sites			
Aylesbury Sewage Works			All sites <2,000 m

Data taken from MAGIC.gov.uk website, accessed June 2022 and also from the EA Pre-Application Nature and Heritage Conservation Screening Report (January 2023) for the site. For habitat sites, the relevant distance for consideration are: International designations (SAC, MPA, SPA and Ramsar - 10km); National designations (SSSI – 2km); LNRs and NNRs, LWS's and Ancient Woodland (2km).

The nearest statutory designated habitat site to the Aylesbury STW is the Stone SSSI, which is located approximately 2 km to the south-west of the site. There is one SAC within 10 km of the site, namely the Chilterns Beechwood SAC, which is located approximately 9 km to the south-east of the site. There are no SPA, MPA or Ramsar sites located within 10 km of the site and no NNRs, LNRs or areas of Ancient Woodland habitat located within 2 km of this site. There is one LWS located within 2 km of the site, which is the Aylesbury Sewage Works LWS situated adjacent to the north and west of the site.

There are no records of protected species or protected habitat located within the specified screening distance (within 500m) of the site.

The majority of the site sits within Flood Zone 1 with a very low probability of flooding (<1:1000 annual probability), although small areas on the periphery site are located within Flood Zone 2, with between a 1:100 and 1:1000 annual probability of flooding. A disused lagoon at the site is within Flood Zone 3, with a high probability of flooding (1:100 or greater annual probability). The majority of the area to be permitted for sludge treatment is within Flood Zone 1; however, the area of the Secondary Digester Tanks (found in the western area of the site) are situated within Flood Zone 2.

The site sits outside the boundaries of a source protection zone (SPZ).

The site is not located within or adjacent to the boundaries of an AQMA. There are three AQMAs in Aylesbury declared by Aylesbury Vale District Council for Nitrogen Dioxide (NO_2) – Annual Mean. The nearest is the Friarage Road AQMA, located approximately 2.2 km to the south-east of the site, the Stoke Road AQMA is located approximately 3.3 km to the south-east of the site and the Tring Road AQMA, which is located approximately 4 km to the south-east of the site.

Consideration	Receptors	Discussion	Detailed Environmental Risk Assessment?
Amenity issues: Litter, vermin and pests	Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, amenity and recreation areas such as playing fields and playgrounds. Industrial estates and rail stations. The site is located to the north-west of a large industrial estate directly adjacent to light industrial/commercial units with a HWRC located to the east. The nearest residential dwellings are located adjacent to the site entrance approximately 70 m from the main site gates. There is also a large housing estate approximately 75 m to the north-east of the site, separated from the site by a railway line. The site gives way to fields in the south and west. Ecological receptors: There is one SAC within 10 km of the site, namely the Chilterns Beechwoods SAC, which is located approx. 9 km to the south-east of the site. There is one SSSI within 2 km of the site, namely the Stone SSSI, which is located approx. 2 km to the south-west of the site. There is one LWS within 2k m of the site, namely the Aylesbury Sewage Works LWS situated adjacent to the north and west of the site. There are no SPAs, MPAs or Ramsar sites within 10 km of site. There are no NNRs, LNRs or Ancient Woodland sites within 2 km of the site.	The wastes handled at the site are primarily liquids and sludges, along with UWWTD derived material delivered by sewer. As such, there is no source of litter within the materials handled at the site. In the unlikely event pests or vermin are observed on site a suitable contractor is called in as soon as practicable.	X
Dust and bioaerosols	Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, recreation areas such as playing fields and playgrounds. Industrial estates and rail stations. For human health and ecological receptors, see notes for Litter above. The impact of dust on human health will depend on the distance and wind direction.	The wastes handled at the site are liquids, sewage sludges and digested sludge cake, along with UWWTD derived material delivered by sewer. The site will not be handling inherently dusty or powdery wastes. Digested sludge cake has sufficient moisture content to ensure it does not give rise to dust. Digested sludge cake is stored on a cake pad located within the north-western area of the site, approx. 240 m away from the nearest sensitive receptors, Roads will be maintained to avoid the production of dust. Anaerobic digestion of sludge takes place within a closed system. Digested sludge cake is stored on the open cake pad which is within 250 m of sensitive receptors however the risk from bioaerosols is considered	√

		to be of low risk. The nearest sensitive receptors are approx. 240 m south-east of the cake pad. Please see Appendix F for the site specific bioaerosol risk assessment.	
Assessment of point source emissions to air. Emissions deposited from air to land	Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, recreation areas such as playing fields and playgrounds. Industrial estates and rail stations. For human health and ecological receptors, see notes for Amenity issues above. The impact of emissions from air on human health will depend on the distance and wind direction.	The site is not located within or adjacent to the boundaries of an AQMA. ADMS modelling indicates that the assessed CHP engine and boilers are acceptable from an air quality perspective; full details can be found in Appendix L Use of the emergency flares is limited to emergency situations and during planned maintenance activities to either the CHP engine or boilers. Pressure relief valves are not used routinely to control biogas volumes and would only operate in an emergency. Fugitive emissions to air are assessed in Table B3-3b(i).	X
Assessment of point source and fugitive emissions to water	The Bear Brook runs at a distance of approximately 60m parallel with the south-western boundary of the site and an un-named drain runs along the south-western boundary of the site and flows in a north-westerly direction outfalling into the River Thame. The Bear Brook discharges into the River Thame, which runs along the north-western and parts of the northern perimeter of the STW, before passing under a railway line which borders the north and north-eastern permitter of the STW. The majority of the STW and central areas of the STC are in Flood Zone 1, indicating a very low annual probability of river flooding. Parts of the south-west and north-east boundary fall within Flood Zone 2 including the area containing the secondary digester tanks. Liquors and surface water drainage within the STC returns to the works inlet for full treatment prior to discharge.	The Secondary Digester Tanks within Flood Zone 2 are uncovered and surrounded by unmade ground. A raised kerb surrounds some of the Secondary Digester Tanks which may act as a bund in the event of tank-over-topping or failure. The main product of the process is a digested sludge cake, which is stored on an open cake pad within a Flood Zone 1 and at very low risk of flooding from rivers, however, the cake pad area is at a risk of pluvial flooding. Other aqueous discharges generated by process are, biogas condensate, thickening and dewatering return liquors and surface water runoff. These sources are discharged to the on-site drainage system where they are transferred to main sewage works inlet.	X
Assessment of odour	Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, recreation areas such as playing fields and playgrounds. Industrial estates and rail stations. For human health and ecological receptors, see notes for Amenity issues above. The impact of emissions from odour on human receptors will depend on the distance and wind direction.	The wider sewage treatment works, which includes the area of the STC to be permitted has processes in place to minimise odour which includes physical containment, management systems, procedures and monitoring to control fugitive emissions of odour at the plant. The STW has an odour management plan which is appended as Appendix E. Odour emissions are assessed in Table C3-3b(ii).	X

Energy	Global atmosphere (direct and indirect emissions).	Use of biogas on site within the CHP engine and/or boilers minimises the need to import non-renewable electricity from the National Grids or imports of diesel. Good maintenance procedures will help plant run efficiently and reduce site energy consumption.	X
Land and disposal of waste to other processes	Rivers and streams – see Assessment of point source and fugitive emissions to water above. Drainage systems/sewers. The site lies outside the boundaries of any groundwater Source Protection Zones (SPZ). Aquifers are classified as Unproductive (bedrock) and Secondary A (superficial deposits).	All waste streams are disposed of off-site for recovery or disposal and will continue to be transferred (and consigned where hazardous) to appropriately permitted facilities.	X
Noise and vibration	Human health receptors: Single houses or groups of houses (estates, villages etc.). Schools and hospitals. Footpaths, amenity and recreation areas such as playing fields and playgrounds. Industrial estates and rail stations. The site is located to the north-west of a large industrial estate directly adjacent to light industrial/commercial units with a HWRC to the East. The nearest residential dwellings are located adjacent to the site entrance approximately 70 m from the main site gates. There is also a large housing estate located approximately 75 m to the east of the site, separated from the site by a railway line. The site gives way to fields in the south and west. Ecological receptors: There is one SAC within 10 km of the site, namely the Chilterns Beechwoods SAC, which is located approx. 9 km to the south-east of the site. There is one SSSI within 2 km of the site, namely the Stone SSSI, which is located approx. 2 km to the south-west of the site. There is one LWS within 2k m of the site, namely the Aylesbury Sewage Works LWS situated adjacent to the north and west of the site. There are no SPAs, MPAs or Ramsar sites within 10 km of site. There are no NNRs, LNRs or Ancient Woodland sites within 2 km of the site.	Site design minimises the impact of noise on offsite receptors through building orientation, finishes and location of openings. The CHP engine and boilers are already located within an enclosed building away from nearby receptors. Noise from plant and equipment will be minimised through purchasing decisions and a robust preventative maintenance programme. There will be no sources of vibration within the facility. Noise and vibration emissions are assessed in Table B3-3b(iii).	X
Other issues (including visual impact)	Protected Species & Habitats	There are no records of protected species or protected habitat located within the specified screening distance (within 500m) of the site. The installation does not discharge directly to nearby watercourses and the	X

		final effluent discharge is regulated under a separate environmental permit.	
Climate Change	Risks of increased temperature impacts resulting in digesters heating beyond optimal operating temperature and increased odour potential from site process. For human health and ecological receptors, see notes for Amenity issues above.	Digesters may require reduced heat input to digester via heat exchange system and digesters are insulated against worse impacts. Warmer temperatures may require less boiler input/use as a result of less heat demand, or, increased heat dumping via air cooled radiator. If less biogas is used, the site may require a new consumptive biogas solution, e.g. a CHP engine or other technology that is appropriately sized to utilise additional biogas. However, the CHP engine will need to be replaced prior to 2050 when they reach the end of their operational lifespans.	X
Climate Change	Risks of increased storm events that causes surface water runoff exceeds capacity of site drainage system, or additional dewatering operations due to rainwater ingress, or caused bunds to infill. Increased precipitation may increase flooding on agricultural land, decreasing ability to spread digested sludge cake to land. For water environment receptors, see notes for Assessment of point source and fugitive emissions to water above	The STW design may require expansion or additional storm capacity; however, this would apply to UWWTD operations at the site rather than permitted activities. May need to increase bund or containment volume for sewage treatment works or individual assets. Land spreading activities could be restricted during very wet, winter months. Although the site has a large cake pad which would allow digested sludge cake to be stored prior to application, contingency plans to move digested sludge cake to other sites may be required.	X

Appendix 2 – Date of birth information for Relevant offences and/or Technical ability questions only

This information has been supplied separately for the ease of exclusion from the public register.

4. Form B3 Questions

1 – What activities are you applying for?

Table B3-1a – Types of activities

Installation name	Schedule 1 references	Description of the Activity	Activity Capacity	Annex I and II codes and descriptions	Non-hazardous waste treatment capacity
Aylesbury Sewage Treatment Works AR1	S5.4 A1 (b) (i) Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) involving biological treatment. Anaerobic digestion of permitted waste in seven Primary and Secondary Digester Tanks followed by combustion of biogas produced from the process.	From receipt of permitted waste through to digestion and recovery of by-products (digestate and biogas).	296 wet tonnes per day (throughput based on 3,546 m^3/12 = 295.5 m3 per day).	R3: Recycling reclamation of organic substances which are not used as solvents. R13 Storage of waste pending any of the operations numbered R1 to R 12 (excluding temporary storage, pending collection, on the site where the waste is produced).	Maximum waste throughput 370,000 wet tonnes per annum including indigenous UWWTD derived sludge from within the wider Sewage Treatment Works, as per volume, calculations in Note 1 below.
Directly Associated Activities					
AR2	Imports of waste, including sludge from other sewage treatment works and imports of municipal liquids or sludges similar in composition to UWWTD derived materials;				
AR3	Blending of indigenous sludges and imported wastes/waste sludge prior to treatment;				
AR4	Storage of digestate prior to dewatering;				
AR5	Dewatering of digested sewage sludge;				
AR6	Transfer of dewatering liquors back to the sewage treatment works inlet;				
AR7	Transfer of surface water run-off via site drainage back to the sewage treatment works inlet;				
AR8	Storage of dewatered digested sludge cake prior to offsite recovery;				

AR9	Storage of biogas;			
AR10	Combustion of biogas in a biogas CHP unit and boilers;			
AR11	Transfer of biogas condensate via site drainage back to the head of the sewage treatment works;			
AR12	Operation of emergency flares;			
AR13	Operation of siloxane filter plant;			
AR14	Storage of diesel;			
AR15	Storage of waste, including waste oils;			
AR16	Storage of raw materials.			
Waste Operations				
	Description of the waste operation	**Annex I (D codes) and Annex II (R codes) and descriptions**	**Hazardous waste treatment capacity**	**Non-hazardous waste treatment capacity**
AR17	Imports of wastes: to the works inlet for treatment through the UWWTD route.	D13: Blending or mixing prior to submission to any of the operations numbered D1 to D12	n/a	Maximum waste throughput 25,000 tonnes per annum
	digested sludge cake for temporary storage pending off-site removal	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). R3: Recycling or reclamation of organic substances which are not used as solvents	n/a	Maximum waste throughput 500 tonnes per annum
For all Waste Operations		**Total capacity**	**16,476 wet tonnes**	[a] + [b]
		Total STC treatment capacity (tank volume)	13,976 wet tonnes	[a]
		Total cake pad storage capacity	2,500 wet tonnes	[b]

For waste imports to the head of the works	Annual throughput (tonnes each year)	Imports: 25,000 wet tonnes
For waste imports of digested sludge cake for temporary storage	Annual throughput (tonnes each year)	Imports: 500 wet tonnes
Note 1: Treatment Calculation based on: Primary Sludge: 4.27 tds/day; worse case 1.00% dry solids = 427 m3/day = 155,985 m3/year SAS: 2.69 tds/day; worse case 0.70% dry solids = 384 m3/day = 140,069 m3/year Imports: 5.25 tds/day; worse case 3.00% dry solids = 175 m3/day = 63,880 m3/year Total Combined import calculation 359,934 m3/year; rounded to 370,000 m3/year		

Table 1b Types of waste accepted

Table B3-1b(i): Waste accepted for Anerobic Digestion

Waste Code	Description of Waste
19 02 06	sludges from physico/chemical treatment other than those mentioned in 19 02 05 (sewage sludge only)
19 06 06	digestate from anaerobic treatment of animal and vegetable waste (sewage sludge only)
19 08 05	sludges from treatment of urban waste water
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11 (sewage sludge only)

Table B3-1b(ii): Waste accepted at the head of the works import point

Waste Code	Description of Waste
16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01 [note 1]
Note 1: comprising but not limited to: Thickening and dewatering liquors, centrate and filtrate derived from TWUL processes Waste from a portable toilet	

Table B3-1b(iii): Waste accepted for temporary storage and transfer off site

Waste Code	Description of Waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste (sewage sludge only)

1c Recovery of hazardous waste on land

Are you applying for a waste recovery activity involving the permeant deposit of inorganic hazardous waste to land for construction or land reclamation?

No - Where the answer is no, there is no requirement to answer further questions in 1c.

2 – Point source emissions to air, water and land

Table B3-2a – Emissions to Air

Emission point reference and location	**Source**	**Parameter**	**Quantity**	**Unit**	Reference Period	Monitoring frequency	Monitoring standard or method
A1	CHP Engine 1 (existing combustion plant which are engines fuelled on biogas; too small to be a mcp)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No limit set	-	Average over sampling period	-	BS EN 14792
		Sulphur dioxide	No limit set	--		-	
		CO	No limit set	-	-	-	BS EN 15058
		Total VOCs	No limit set	-	-	-	BS EN 12619
A2	Auxiliary Boiler 1 fuelled on biogas (too small to be a mcp)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No limit set	-	-	-	Record of operating hours
		Sulphur Dioxide	No limit set	-	-	-	-
	Auxiliary Boiler 1 fuelled on diesel too small to be a mcp)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No limit set	-	-	-	Record of operating hours
		Carbon Monoxide	No limit set	-	-	-	-
A3	Auxiliary Boiler 2 fuelled on biogas (too small to be a mcp)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No limit set	-	-	-	Record of operating hours

Emission point reference and location	**Source**	**Parameter**	**Quantity**	**Unit**	Reference Period	Monitoring frequency	Monitoring standard or method
		Sulphur Dioxide	No limit set	-	-	-	-
		Carbon Monoxide	No limit set	-	-	-	-
	Auxiliary Boiler 2 fuelled on diesel (too small to be a mcp)	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No limit set	-	-	-	Record of operating hours
		Carbon Monoxide	No limit set	-	-	-	-
A4	Emergency Flare [note 2]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	150 [note 3]	mg/m^3	Average over sampling period	[Note 3]	BS EN 14792
		Carbon Monoxide	50 [note 3]	mg/m^3			BS EN 15058
		Total VOCs	10	mg/m^3			BS EN 12619
A5	Biogas Holder PRV	-	-	-	-	-	-
A6	Primary Digester Tank PRV	-	-	-	-	-	-
A7	Primary Digester Tank 2 PRV	-	-	-	-	-	-
A8	Emergency Flare [note 2]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	150 [note 3]	mg/m^3	Average over sampling period	[Note 3]	BS EN 14792
		Carbon Monoxide	50 [note 3]	mg/m^3	-	-	BS EN 15058
A9	Biogas Holder PRV	-	-	-	-	-	-

Note 1: These limits are based on normal operating conditions and load – temperature 0°C (273K); pressure: 101.3 kPa and oxygen: 5 per cent (dry gas). The measurement uncertainty specified in LFTGN08 v2 2010 shall apply.

Note 2: These limits are based on normal operating conditions and load – temperature 0°C (273K); pressure: 101.3 kPa and oxygen: 3 per cent (dry gas). The measurement uncertainty specified in LFTGN05 v2 2010 shall apply. These limits apply to the Emergency Flare on commissioning.

Note 3: Monitoring to be undertaken in the event the emergency flare has been operational for more than 10 per cent of a year (876 hours). Record of operating hours to be submitted annually to the Environment Agency.

Table B3-2b – Emissions to Sewer

Emission point reference and location	Source	Parameter	Limit	Unit
T1 (as per site plan, Appendix A2)	Primary Sludge Thickening Liquors, SAS Belt Thickening Liquors, Biogas Condensate, Surface Water Run Off	No parameters set	No limit set	-
T2 (as per site plan, Appendix A2)	Digested Sludge Dewatering Liquors, Surface Water Run Off	No parameters set	No limit set	-
T3 (as per site plan, Appendix A2)	Head of Works import, Surface Water Run Off	No parameters set	No limit set	-

There are no permitted emissions to water or land from the activities covered by this permit.

3 – Operating techniques

3a - Technical standards

Description of the schedule 1 activity or directly associated activity	Relevant technical guidance note or Best available techniques as described in BAT conclusions under IED	Document Reference
Anaerobic Digestion plant S5.4A1(b)(i); Storage of waste (DAA)	Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council (notified under document C (2018) 5070) (Text with EEA relevance.) BAT Conclusions for Waste Treatment	

3b - General requirements

If the TGN or H1 assessment shows that emissions of substances not controlled by emission limits are an important issue, send us your plan for managing them.

Although screened out of the detailed Risk Assessment (Question B2 Q6), due to the nature of the process the installation has the potential to generate fugitive emissions to air and water, which are subject to a number of process controls.

Risk Matrix and Terminology for Accident for Risk Assessment

Likelihood ↓	Consequence		
	Low	Medium	High
Low	Low	Low	Medium
Medium	Low	Medium	High
High	Medium	High	High

Classification	Likelihood	Consequence	Risk
Low	Probability of an event is low and likely only to occur in the long-term (a yearly basis or less frequent).	Impact is low or a minor, short-term nuisance. Minor release to a non-sensitive receptor or pollution of water course. Non-permanent health effects to human health (preventable by appropriate PPE). Minor surface damage to buildings; structures; services; or the environment which can be repaired immediately.	A level of harm is possible although this may not be noticeable to a receptor and would be a short-term event without lasting effects. Level of harm can be reduced using industry best practice and appropriate management techniques.
Medium	It is probable that an event will occur periodically in the medium-term (twice yearly basis).	Impact is noticeable in the short to medium-term. Large release impacting on the receiving media killing flora and fauna and requires remediation. Nuisance causing non-permanent health effects to human health. Damage to buildings; structures; services; or the environment preventing short-term use and/or requiring repair.	A level of harm may arise to a receptor which is noticeable although not long-lasting and may require some remedial actions in order to prevent re-occurrences.
High	An event is very likely to occur in the short-term (monthly or weekly basis) and is almost inevitable over the long-term OR there is evidence at the receptor of harm or pollution.	Impact is significant, wide-ranging and long-lasting effect. Has a chronic or acute impact on human health. Very large release that has a major impact on flora and fauna which may be very difficult to remediate. Significant damage to buildings; structures; services; or the environment which prevents use long-term and may require complete replacement. May cause a long-term impact or contribute towards a global issue due to releases of greenhouse gases.	A level of harm is likely to arise to a receptor that is severe causing significant harm to human health or the environment without appropriate remedial and mitigation measures being implemented. Remedial works to infrastructure and processes is required in the long-term.

Although screened out of the detailed Risk Assessment (Question B2 Q6), due to the nature of the processes, the anaerobic digestion operations and cake storage, along with biogas utilisation have the potential to generate fugitive emissions to air and water, which are subject to a number of process controls.

Table B3-3b(i) Fugitive emissions risk assessment

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
Emissions to air of NOx, SO_2, CO_2 and VOCs	Normal	Emissions to air and dispersion leading to inhalation by local human and animal receptors	High	Low	Medium	Activities are managed and operated in accordance with the site management system (including inspection and maintenance of equipment, including engine management systems), point source emissions to air (CHP engine, boilers and emergency flare stacks) have emission limits. Emergency flare stack height approx. 8 m, CHP engine stack approx. 6 m and boiler flues approx. 6 m. Site has a siloxane filter fitted on the main biogas pipeline connected to the CHP engine to remove impurities within the biogas. ADMS modelling concluded that emissions to air from the combustion plant at Aylesbury STC are acceptable from an air quality perspective.	Low
Biogas transfer systems, biogas storage holder, CHP engine, emergency flare or PRVs failure	Abnormal	Emissions to air and dispersion leading to: inhalation by local human and animal receptors. Odour impact. Global	Low	Medium	Low	The plant is designed to capture and utilise all biogas possible, combusting the biogas in order to maximise recovered value from the biological treatment of sludge.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
causing emissions of biogas		warming potential. Risk of fire and explosion				The biogas system utilised is subject to regular preventative maintenance including a LDAR plan to minimise the potential for leaks occurring. The system is also protected with a comprehensive array of pressure and flow sensors and with isolation valves to minimise the potential for release if a leak is detected. Personnel on site wear portable biogas detectors in order to alert staff to presence of biogas. Two emergency flares are utilised for the safe disposal of surplus biogas in the event of plant breakdown, or a surplus of biogas above the level that can be safely stored or utilised. Use of emergency flares is recorded. PRVs are in place on the biogas storage holder to be operated in the event of failure of the emergency flares to prevent over pressurisation and catastrophic failure.	
Catastrophic loss of biogas emissions from biogas transfer systems, biogas storage holder, CHP engine,	Abnormal	Emissions to air and dispersion leading to: inhalation by local human and animal receptors. Odour impact. Global warming potential. Risk of significant fire and explosion	Low	High	Medium	The plant is designed to capture and utilise all biogas possible, combusting the biogas in order to maximise recovered value from the biological treatment of sludge. The biogas system utilised is subject to regular preventative maintenance including a LDAR plan to minimise the potential for leaks	Medium

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
emergency flare or PRVs						occurring. The system is also protected with a comprehensive array of pressure and flow sensors and with isolation valves to minimise the potential for release if a leak is detected. Two emergency flares are utilised for the safe disposal of surplus biogas in the event of plant breakdown, or a surplus of biogas above the level that can be safely stored or utilised. Use of emergency flares is recorded. PRVs are in place on the biogas holder to be operated in the event of failure of the emergency flares to prevent over-pressurisation and catastrophic failure.	
Combustion of biogas within CHP engine and emergency flare. Combustion of biogas or diesel within boilers	Normal	Emissions to air and dispersion leading to: inhalation by local human and animal receptors. Global warming potential	High	Low	Medium	Combustion plant is regularly maintained and appropriately sized to manage volumes of biogas. Combustion plant operates within permitted ELVs subject to routine monitoring against permit compliance. Combustion plant is located on the north-western area of the site, away from sensitive receptors. The nearest receptors are domestic properties approx. 190 m to the south-east and commercial properties approx. 260 m to the south-east.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
Release of bioaerosols and dust	Normal	Emissions to air and dispersion leading to inhalation by local human and animal receptors. Odour impact of bioaerosols. Nuisance impact of dust.	High	Low	Medium	The risk of bioaerosol and dust is as a result of digested sludge cake storage within the open, cake pad. This is located towards the north-western side of the site, approx. 240 m from the nearest domestic properties and approx. 275 m from the council HWRC. Screening is provided by structures and buildings within the STW between the cake pad and the receptors. Digested sludge cake on the cake pad retains a high moisture content and is not prone to windblown dispersion that leads to the generation of dust. Internal site roads are made from concrete/asphalt and not prone to the generation of dust. Please see Appendix F for the site specific bioaerosol risk assessment.	Low
Release of bioaerosols and dust from spillages	Abnormal	Emissions to air and dispersion leading to inhalation by local human and animal receptors with potential harm to health. Odour impact of bioaerosols. Nuisance impact of dust.	Low	Low	Low	Sludge is mainly handled within the north-western area of the site away from sensitive receptors. Staff responsible for site housekeeping and cleaning of spillages in a timely manner. Spill kits available on site. Staff are trained in their use.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						Sludge retains a high moisture content and is not prone to windblown dispersion which could cause the generation of dust. Internal site roads are made from concrete/asphalt and not prone to the generation of dust.	
Spillage of liquids, including chemicals and oils.	Abnormal	Emissions to surface waters close to and downstream of site. Acute effect resulting in loss of flora and fauna. Chronic effect resulting in deterioration of water quality Emissions to ground and ground water.	Low	Medium	Low	The closest surface water body is an un-named drain and the Bear Brook, both running parallel to the south-western boundary of the site and the River Thame to the north of the site, both within close proximity or on the site boundary of the STW. Chemicals and oils are not generally stored within close proximity to these channels but within central areas. Combustion plant associated with the STC is found centrally and associated fuel tanks are on concrete hardstanding and suitably bunded. Oils and waste oils are bunded. Tanks and bunds are subject to regular inspection with defects addressed, e.g. rainwater removed as required to maintain 110% capacities. Chemicals such as poly and anti-foam are stored in suitable containers which are bunded or are placed on portable bunds. Handling and use of chemicals and oils is carried out by trained personnel. COSHH data sheets available.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						Spill kits available on site. Staff are trained in their use There are no point source emissions to water with drainage system pumping back to works inlet.	
Spillage from storage and digestion tanks, overtopping of tanks, leakage from same tanks and from buried pipes	Abnormal	Emissions to surface waters close to and downstream of site. Acute effect resulting in loss of flora and fauna. Chronic effect resulting in deterioration of water quality Emissions to ground and ground water.	Low	Medium	Low	The site lies outside the boundaries of any groundwater Source Protection Zones (SPZ). Some tanks are located in a Flood Zone 2 with an increased risk of flooding in this area. Provision of suitably structurally integral tanks constructed from pre-cast concrete or steel and glass reinforced plastic. All tanks are subject to asset inspection and proactive maintenance programme including regular visual inspection for cracks or weeping. Visual checks during regular day-to-day operations and scheduled preventative maintenance of equipment, such as pumps, pipes, joins etc. Biogas condensate discharged back to the works inlet through site drainage system. Spill kits available on site. Staff are trained in their use.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						There are no point source emissions to water with drainage system pumping back to works inlet.	
Generation of solid waste resulting in litter	Normal	Releases of litter to the environment. Visual nuisance and local loss of amenity	Low	Low	Low	Site operations do not give rise to large amounts of solid wastes and litter that would be prone to dispersion by wind. Rags are stored within skips and retain high moisture content. Waste is stored securely for collection by appropriately licensed approved contractors. Litter picking activities are completed as required.	Low

Where the TGN or H1 assessment shows that odours are an important issue, send us your odour management plan.

Due to the nature of the process, the installation has the potential to generate odorous emissions resulting from the permitted activities. Odour management is a key operational objective, as summarised in the risk assessment table below. A copy of the site-specific odour management plan has been appended to this application as Appendix E.

Table B3-3b(ii) Odour risk assessment

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
H_2S/biogas emissions from uncovered tanks	Normal	Emissions to air and dispersion leading to inhalation by local human receptors Loss of amenity from odour nuisance	High	Low	Medium	Biogas will principally be generated In Primary Digester Tanks which are covered with fixed roofs and stored within a biogas storage holder. The nearest residential properties are located approx. 200 m to the south-east from the Primary Digester Tanks and the nearest commercial buildings are located approx. 280 m to the south-east. Small amounts may be generated from within uncovered tanks pre- and post- digestion. H_2S production is controlled through the digestion process which can be manually overridden if required.	Low
Loss of containment from biogas storage holder and biogas pipework	Abnormal	Emissions to air and dispersion leading to inhalation by local human receptors Loss of amenity from odour nuisance	Low	Medium	Low	Biogas is principally stored within the biogas storage holder which is suitably sized to manage biogas generation. The biogas system utilised is subject to regular preventative maintenance including a LDAR plan to minimise the potential for leaks occurring. The system is also protected with a comprehensive array of pressure and flow sensors and with isolation valves to minimise the potential for release if a leak is detected.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						Personnel on site wear portable biogas detectors in order to alert staff to presence of biogas. Physical protection measures in place for biogas holder, including fence and pipework is guarded. PRVs available to safely manage pressures within the biogas holder and prevent under or over-pressurization.	
Activation of biogas pressure relief valve	Abnormal	Emissions to air and dispersion leading to inhalation by local human receptors Loss of amenity from odour nuisance	Low	Low	Low	PRVs are only activated in emergency situations to maintain safety within the biogas system and are re-seated/repaired promptly to minimize biogas emissions. PRVs subject to monitoring via SCADA and visual checks by site personnel. Biogas is principally stored within the biogas storage holder which is suitably sized to manage biogas generation and act as buffer storage for biogas. Site has one CHP engine, two boilers and two emergency flares which are used in order of preference to maximise recovery of energy. CHP engine and boilers are subject to regular maintenance to maintain maximum use of	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						outlets, with emergency flares maintained in good working order should it need to be used. The nearest residential properties are located approx. 230 m to the south-east of the biogas storage holder and the nearest commercial buildings are located approx. 300 m south-east of the biogas storage holder.	
H_2S/biogas emitted when biogas cannot be combusted in CHP engine, boilers or emergency flare	Abnormal	Emissions to air and dispersion leading to inhalation by local human receptors Loss of amenity from odour nuisance	Low	Low	Low	Biogas is principally stored within the biogas storage holder which is suitably sized to manage biogas generation and act as buffer storage when biogas cannot be combusted. Site has one CHP engine, two boilers and two emergency flares giving multiple outlets for biogas. The nearest residential properties are located approx. 230 m to the south-east of the biogas storage holder and nearest commercial buildings are located approx. 300 m to the south-east of the biogas storage holder. CHP engine and boilers are subject to regular maintenance to maintain maximum use of outlets, with emergency flares maintained in good working order should it need to be used.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
Storage of treated digested sludge cake	Normal	Emissions to air and dispersion leading to inhalation by local human receptors Loss of amenity from odour nuisance	High	Low	Medium	Digested sludge cake is stored on an open cake pad on the north-western side of the site away from sensitive receptors. The nearest receptors are domestic properties located approx. 240 m to the south-east of the cake pad and the council HWRC, which is located approx. 275 m to the east. Digested sludge cake is an inherently low odour material and air dispersion is reduced by shielding provided by site buildings and structures located between the cake pad and the receptors. Should any odorous sludge cake be produced, this will be subject to process checks undertaken to identify root cause of production and removed from site expediently.	Low
Storage of site generated wastes	Normal	Emissions to air and dispersion leading to inhalation by local human receptors Loss of amenity from odour nuisance	Low	Low	Low	Wastes generated on site are not inherently odorous and is stored securely for collection by appropriately licensed approved contractors.	Low
Odour emissions from cess waste imports	Normal	Emissions to air and dispersion leading to inhalation by local human receptors	High	Medium	High	Only pre-approved companies can deliver waste to the site and webcam monitors the discharges to ensure site rules are adhered to. Waste is accepted 24/7 and is subject to pre-acceptance as per Thames Water procedures.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
		Loss of amenity from odour nuisance				Operators who do not comply with site rules are banned from site. Nearest residential properties are located approx. 40 m away from the waste import point, with the nearest commercial buildings located approx. 100 m away. Each transfer of cess is a short duration process and not all transfers are a cause of odour with a short-term consequence subject to dispersion via prevailing meteorological conditions. Investigation of odour complaints against times of deliveries to identify sources with additional restrictions placed onto specific companies as required.	

If the TGN or H1 assessment shows that noise or vibration are important issues, send us your noise or vibration management plan (or both)

The installation has the potential to generate noise as a result of the permitted activities. Potentially noisy activities are subject to a number of process controls and noise management is a key operational objective, as summarised in the risk assessment table below.

Table B3-3b(iii)Noise risk assessment

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
Operation of CHP engine	Normal	Generation of noise with air transportation, causing loss	High	Low	Medium	The CHP engine is located within an enclosed building and therefore noise emissions are already low.	Low

		of amenity to local human receptors				CHP engine is located away from sensitive human receptors, approx. 200 m from the nearest residential properties and approx. 260 m from the nearest commercial buildings. Good inspection regimes and maintenance of plant to ensure that excessive noise levels are not generated. Regular checks of noise mitigation measures fitted to items of plant. Such measures include silencers and baffles fitted to specific areas of plant. Where repair or replacement is required, the plant will, where possible, be taken out of service until repair or replacement of parts has been undertaken.	
Operation of fans on air cooled radiators	Normal	Generation of noise with air transportation, causing loss of amenity to local human receptors	High	Low	Medium	Air cooled radiators do not give rise to high levels of noise and are only used as required. Such assets are located away from sensitive human receptors, approx. 200 m from the nearest residential properties and approx. 260 m from the nearest commercial buildings. Good maintenance of fans to ensure that excessive noise levels are not generated. Where repair or replacement is required, this will be completed promptly.	Low
Operation of site vehicles	Normal	Generation of noise with air transportation, causing loss of amenity to local human receptors.	High	Low	Medium	Vehicle movements across the site subject to speed limit and one-way system to reduce generation of noise.	Low

		Generation of vibration with ground transmission, causing loss of amenity to local human receptors.				Shovel loading of digested sludge cake takes place on the cake pad which is located away from sensitive receptors on the north-western area of the site. Operations take place during daytime hours only.	
Vehicle movements - waste deliveries, sludge deliveries and bulk collections of digested sludge cake	Normal	Generation of noise with air transportation, causing loss of amenity to local human receptors. Generation of vibration with ground transmission, causing loss of amenity to local human receptors.	High	Low	Medium	Delivery vehicles can visit site 24/7 to an import point located outside of the main site entrance close to sensitive receptors with domestic properties located approx. 40 m away from the import point. Vehicle movements across the site and on the private access road to the site are subject to speed limit to reduce generation of noise. Vehicle movements across the site subject to speed limit to reduce generation of noise. One-way system and wide turning circle at the waste import point limits reversing requirements. Shovel loading of digested sludge cake takes place on the open, engineered cake pad during daytime hours only. Bulk collections normally take place during daytime only.	Low
Vehicle movements - tanker deliveries of chemicals and raw materials	Normal	Generation of noise with air transportation, causing loss of amenity to local human receptors. Generation of vibration with ground transmission,	High	Low	Medium	Deliveries likely to take place during daytime hours to delivery areas within the central area of the site. Vehicle movements across the site subject to speed limit to reduce generation of noise.	Low

		causing loss of amenity to local human receptors.					
Operation of emergency flare	Abnormal	Generation of noise with air transportation, causing loss of amenity to local human receptors.	High	Low	Medium	Use of the emergency flares is minimized by prioritizing use of the CHP engine and boilers with use of the emergency flares recorded. The emergency flares are located away from sensitive receptors, in excess of 300 m from nearby residential properties and approx. 360 m from the nearest commercial property.	Low

Table B3-3b (iv) – Environmental Risk Assessment and Accident Management Plan

A site-specific Accident Management Plan (AMP) is located in Appendix J.

Table B3-3b (v) - Bioaerosol Risk Assessment

The installation has the potential to generate bioaerosols which may pose a risk to nearby sensitive receptors. Please see the site-specific bioaerosol risk assessment presented in Appendix F.

3c - Types and amounts of raw materials

Table B3-3c – Types and amounts of raw materials

Types and amounts of raw materials used by the installation are summarised in the site-specific Residue Management Plan (RMP) which is located in Appendix I.

4 - Monitoring

4a - Describe the measures you use for monitoring emissions by referring to each emission point in Table 2 above

The site has a number of emission points to air. Points A1 – A3 (1x CHP engine; 2x boilers) are monitored in accordance with the requirements of EA guidance where applicable.

Hours of operation of the emergency flares (A4 & A8) are monitored and logged. In the unlikely event that the total annual hours of operation exceed 10% of the hours in a year (876 hours), emissions from the emergency flare would be subject to monitoring in accordance with EA guidance.

There is no routine monitoring proposed on emission points A5-A7 & A9, (4x pressure relief valves) on the Biogas Storage holders and Primary Digester Tanks.

Table B3-4a – Emission Monitoring

Monitoring point	NGR	Monitoring frequency	Methodology (standard)	Assessment procedures
A1 (CHP engine)	SP 78968 14626	Oxides of Nitrogen (NO and NO_2 expressed as NO_2) – annual		
		CO – annual		
		Total VOCs – annual		
A2 (Boiler 1)	SP 78961 14608	No limit set	Record of operating hours	
A3 (Boiler 2)	SP 78958 14606	No limit set	Record of operating hours	
A4 (Emergency flare)	SP 78926 14730	Hours of operation – continuous and if over 876 hours then: Oxides of Nitrogen – Annual Carbon Monoxide – Annual	Record of operating hours BS EN 14792 BS EN 15058	
A5 (PRV – Biogas Holder)	SP 78943 14657	n/a	n/a	
A6 (PRV – Primary digester tank)	SP 78934 14621	n/a	n/a	

A7 (PRV – Primary digester tank)	SP 78921 14637	n/a	n/a	
A8 – (Emergency Flare)	SP 78858 14652	Hours of operation – continuous and if over 876 hours then: Oxides of Nitrogen – Annual Carbon Monoxide – Annual	Record of operating hours BS EN 14792 BS EN 15058	
A9 – (PRV – Biogas Holder)	SP 78891 14657	n/a	n/a	
S1 (Return Liquor Sampling Point – Primary Sludge Dewatering Liquors, SAS Thickening Liquors, Biogas Condensate, Surface Water Run Off)	SP 78964 14652	n/a	MCERTS or ISO/IEC 17025	
S2 (Return Liquor Sampling Point – Digested Sludge Dewatering Liquors, Surface Water Run Off)	SP 79006 14736	n/a	MCERTS or ISO/IEC 17025	

4b - Point source emissions to air only

4b1 Has the sampling location been designed to meet BS EN 15259 clause 6.2 and 6.3?

No.

4b2 Are the sample ports large enough for monitoring equipment and positioned in accordance with section 6 and appendix A of BS EN 15259?

No.

4b3 Is access adjacent to the ports large enough to provide sufficient working area, support and clearance for a sample team to work safely with their equipment throughout the duration of the test?

No.

4b4 Are the sample location(s) at least 5 HD from the stack exit

No.

4b5 Are the sample location(s) at least 2 HD upstream from any bend or obstruction?

No.

4b6 Are the sample location(s) at least 5 HD downstream from any bend or obstruction?

No.

4b7 Does the sample plane have a constant cross-sectional area?

No.

4b8 If horizontal, is the duct square or rectangular (unless it is less than or equal to 0.35 m in diameter)

No.

4b9 If you have answered 'No' to any of the questions 4b1 to 4b8 above, provide an assessment to how the standards in BS EN 15259 will be met.

As an existing operational site entering environmental permitting for the first time, sampling locations and sampling ports may not meet all of the requirements for BS EN 15259, but these are being checked onsite. Due to the size of the CHP and boilers, a permanent sampling platform is not provided, however, a temporary sampling platform is utilised to provide sufficient space, in accordance with standard industry practice, where sampling cannot be undertaken from the ground.

5 - Environmental impact assessment

5a Have your proposals been the subject of an environmental impact assessment under Council Directive 85/337/EEC of 27 June 1985 [Environmental Impact Assessment]?

No.

6 - Resource efficiency and climate change

6a - Describe the basic measures for improving how energy efficient your activities are

The Primary Digester Tanks are all suitably insulated. The CHP engine is suitably sized to maximise energy utilisation for the parasitic load, while minimising the use of the emergency flares.

Low energy lighting and LED lighting is installed across the plant. The heating water from the CHP engine and boilers is transferred across the site to the digester heat exchangers in heavily lagged pipes to minimise heat losses in transmission.

6b - Provide a breakdown of any changes to the energy your activities use up and create

The CHP engine at the site combusts indigenous biogas and supplies electrical power to treatment processes at the site. The Aylesbury site also exports electricity to the grid when in surplus. When in deficit, electricity used on site is supplemented by National Grid imports. The CHP also provides useable heat for hot water to the digesters, via heat exchangers.

The site boilers provide additional heat, when required by the digestion process, to supplement the heat recovered from the CHP engine. The boilers are dual fuelled using biogas or diesel. Use of heat from the CHP engine reduces the demand on fuel in the boilers.

6c - Have you entered into, or will you enter into, a climate change levy agreement?

No, the activities are not eligible to take part in the CCL Scheme.

Describe the specific measures you use for improving your energy efficiency

The production and use of biogas to generate electricity and produce heat (which is used into the digestion process) on site minimises the use of fossil fuels whilst recovering biological wastes. Location of the heat exchange, boilers, CHP and digesters within close proximity minimises transmission losses on site, improving the efficiency of the process.

Regular and proactive maintenance of pumps and insulation of pipework will improve efficiency and minimise the electrical demands and heat losses on site.

6d - Explain and justify the raw and other materials, other substances and water that you will use

See response to question 3c above.

The processes take digested sludge which would otherwise require additional disposal and recover energy and nutrients which can be put to beneficial use.

Small quantities of chemical raw materials are required to control and maintain the process. These are all proven materials that are extensively used within the water industry.

The other main raw materials are used in the generation of electricity and heat and maintenance of combustion plant which is supplied to the treatment process.

6e Describe how you avoid producing waste in line with Council Directive 2008/98/EC on waste

The facility is a waste treatment plant, and the primary wastes produced through the processes on site are maintenance wastes. Production of maintenance waste is minimised by ensuring that preventative maintenance is carried out based on a combination of manufacturers' best practice and operational experience.

7 – Installations that include a combustion plant (excluding waste incinerators)

7a - List all your combustion plant at the site and provide thermal input and operating hours for each

Please see the information provided within the Technical Summary which lists combustion plant at Aylesbury STC.

7b – Do any of your combustion plants have a net rated thermal input of 1 or more MW and is not an excluded MCP?

No, please see the following table from Appendix 1, Question 13

7c – Is the aggregated net thermal input of your combustion plant more than 20 MW?

No.

5. Form B4 Questions

1 About the permit

1a What waste operations are you applying to vary?

Waste operations which do not form part of an installation

The permit application is for is for two waste operations. One is for physical treatment of non-hazardous waste as a secondary activity waste operation to the main listed installation.

The second import is for temporary storage of non-hazardous waste as a secondary activity waste operation to the main listed installation.

1b –types of waste accepted and restrictions

The EWC list is included in the responses to form B3.

1c Deposit for recovery purposes

This is not a deposit for recovery application.

2 Point source emissions to air, water and land

Please see responses to form B3.

3 Operating techniques

3a Technical standards

Please see responses to form B3.

3b General requirements

Please see responses to form B3.

4 Monitoring

4a Describe the measures you use for monitoring emissions by referring to each emission point in Table 2 above

Please see responses to form B3.

4b Point source emissions to air only

Please see responses to form B3.

6. Form B6 Questions

The relevant questions within the form are those applicable to effluent and / or surface water run-off arising from the operation of an installation.

Q1About the effluent – details and type, continued

1a Give a brief description of the effluent discharge you want a permit for, for example, treated domestic sewage effluent

This effluent is a mixture of waste liquors from the operation of the installation for the anaerobic treatment of separated sewage sludge. It primarily comprises of thickening processes within the installation and dewatering processes within the installation. Lower volume constituents will include rainfall; biogas condensate; contaminated run off and washdown water. The only wastes treated within the installation are sewage related, either being separated from the UWWTD flow in the wider works, or comprise of waste imports, principally of sludge from smaller satellite treatment work.

1b Give this effluent a unique name

Liquor returns.

1d Have you obtained all the necessary permissions in addition to this environmental permit to be able to carry out the discharge (see B6 guidance notes for more details)?

Yes. The discharge is into the inlet of a sewage works controlled by the applicant.

Q2 About the effluent – how long will you need to discharge the effluent for?

2c Will the discharge take place all year?

Yes, the discharge will take place all year.

Q3 How much do you want to discharge?

3b What is the maximum volume of effluent you will discharge in a day?

1,286 Cubic metres

3c What is the maximum rate of discharge?

14.88 Litres / second

3d What is the maximum volume of non-rainfall dependent effluent you will discharge in a day?

1,286 Cubic metres

3f For each answer in question 3, show how you worked out the figure on a separate sheet

Q3b –The liquor arisings must come from the installation inputs as there is limited additional water inputs . The maximum volume of effluent discharged per day will consist of primary thickening liquors, post-digestion dewatering liquors and biogas condensate generated from the inputs and outputs to/from the Primary Digester Tanks.

Q3c – Maximum rate of discharge (L/second) is generated from the maximum volume of effluent per day [1,286 m^3 x 1000] / 86,400 (24 x 60 x 60) from sources such as thickening and dewatering. This gives a value of 14.884259litres, rounded up to 14.88 litres per second.

Q3d – The liquor arisings must come from the installation inputs as there is limited additional water inputs. The maximum volume of effluent discharged per day will consist of primary thickening liquors, post-digestion dewatering liquors and biogas condensate generated from the inputs and outputs to/from the Primary Digester Tanks.

Q4 No questions

Q5 Should your discharge be made to the foul sewer?

5a How far away is the nearest foul sewer from the boundary of the premises?

Not applicable, the site is located within the curtilage of a sewer treatment works and discharges into the works inlet via the site drainage system.

5b2 Discharges from all other premises including trade effluent

Not applicable, the site is located within the curtilage of a sewer treatment works and discharges into the works inlet via the site drainage system.

Q6 How will the effluent be treated?

6a Do you treat your effluent?

No. The Effluent generated by the process of treating sludge within the installation is returned to the inlet of the wider Aylesbury STW, where it is subject to aerobic treatment in a mixture with UWWTD related waste waters.

6b Fill in Table 2 for each stage of the treatments carried out on your effluent in the order in which they are carried out

Order of Treatment	Code Number	Description
First	09	Primary settlement within sewage works
Second	31	Activated sludge process
Third	21	Sand filtration

6c You must provide details on a separate sheet of the final effluent discharge quality that the overall treatment system is designed to achieve

The final effluent discharge from the wider Aylesbury STW is specified in Environmental Permit TH/CSSC.0315/010.

Q7 What will be in the effluent?

7b Are any of the specific substances listed in 'Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater' added to or present in the effluent as a result of the activities on the site?

At present, no sampling or analysis for all substances listed within the referenced risk assessment at the site has been undertaken. Only limited chemicals are added to the process within the installation boundary, primarily antifoam (in low doses, as required) and polymer to aid dewatering of sludge. A review of the appropriate MSDS data does not indicate the presence of 'specific substances' within those chemicals.

Sampling and analysis of the liquor returns to fully characterise the waste streams in accordance with BAT 3 will be undertaken at the site, in line with what is technically achievable, as per the commitment to undertake a chemical analysis of the installation's effluents as per "Return Liquors: BAT 3, 6, 7" within Appendix M.

7c Have any of the specific substances listed in 'Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater' been detected in samples of the effluent or in the sewerage catchment upstream of the discharge?

At present, no routine sampling or analysis for all substances listed within the referenced risk assessment at the site has been undertaken either for effluent from the installation or within the wider sewerage catchment. Thames Water commits to undertaking a chemical analysis of the installation's effluents as per "Return Liquors: BAT 3, 6, 7" within Appendix M.

7d Are there any other harmful or specific substances in your effluent not mentioned in 'Risk assessment for treated sewage or trade effluent discharges to surface water or groundwater'?

At present, no sampling or analysis for all substances listed within the referenced risk assessment at the site has been undertaken. A review of the MSDS sheets for chemicals used within the installation does not indicate the presence of any other harmful or specific substances. Thames Water commits to undertaking a chemical analysis of the installation's effluents as per "Return Liquors: BAT 3, 6, 7" within Appendix M.

7e If you have answered 'No' to any of questions 7a to 7d provide details on a separate sheet of how you have established that the effluent is not likely to contain specific substances

Thames Water commits to undertaking a chemical analysis of the installation's effluents as per "Return Liquors: BAT 3, 6, 7" within Appendix M.

A review has been undertaken of the relevant MSDS sheets for chemical used routinely within the installation to look for substances identified within the risk assessments listed.

7f What is the maximum temperature of your discharge?

20°C back into the sewage works.

7g What is the maximum expected temperature change compared to the incoming water supply?

0°C.

Q8 Environmental risk assessments and modelling

8b Discharges to lakes, estuaries, coastal waters or bathing waters

The installation does not discharge to lakes, estuaries, coastal waters or bathing waters.

8d Discharges to groundwater

The installation does not discharge to groundwater.

8e Discharges to freshwater (non-tidal) rivers from an installation, including discharges via sewer

No modelling has been undertaken on the output from the installation at present. The final effluent discharge from the wider works, which includes the installation arisings has previously been subjected to modelling as part of the environmental permitting discharge application process.

8f Environmental impact assessment

No environmental impact assessment has been carried out on the installation, as it is an existing facility.

Q9 Monitoring arrangements

9a What is the national grid reference of the inlet sampling point? (for example, SJ 12345 67890)

Not applicable to this installation.

9b What is the national grid reference of the effluent sample point?

No sampling point installed at present. Effluents will be sampled from the Sample points identified in Table B3-4a (approximately) within the installation:

9d What is the national grid reference of the flow monitoring point?

No flow meter installed.

9e Does the flow monitor have an MCERTS certificate?

No. No flow meter installed.

9f Do you have a UV disinfection efficacy monitoring point?

No. Not installed as part of this installation.

9h You should clearly mark on the plan the locations of any of the above that apply to this effluent

Please see site emission point plan.

Q10 Where will the effluent discharge to?

10a Where the effluent discharges to

Non-tidal river, stream or canal.

10b Is this effluent discharged through more than one outlet?

No.

10c If you answered yes to question 10b above make sure you show clearly on your discharge point appendix or appendices and site plan that this one effluent can discharge to more than one discharge point

N / A.

Appendix 5 – Discharges to non-tidal river, stream or canal

A5.1 Give the discharge point a unique name, for example, 'Outlet 1' (you must use this name to identify the discharge point on the plan)

Outlet 1.

A5.2 Give the national grid reference of the discharge point

SP 78990 14850

A5.3 Give the name of the watercourse, canal or the main watercourse it is a tributary of if you know it

The River Thame, via the wider UWWTD sewage treatment works.

A5.4 Is the discharge into a:

Non-tidal river.

A5.5 Does the discharge reach the watercourse or canal by flowing through a surface water sewer?

No.

A5.6 Does the watercourse dry up for part of the year?

No.

A5.61 If the watercourse does dry up for part of the year can you indicate a typical period when the surface water runs dry each year – start and finish (in months)

N / A.

A5.6.2 If the watercourse does dry up for part of the year, how many metres downstream of the discharge is it before the discharged effluent soaks in?

N / A.

A5.7 Is the discharge made to a roadside drain or ditch?

No.

Appendix A. Figures

A.1 Site Location Plan

See document: B22849AM-JAC-ABY-DR-0001

A.2 Installation Boundary and Air Emission Points

See document: B22849AM-JAC-ABY-DR-0002

A.3 Site Impermeable and Permeable Surfacing Plan

See document: B22849AM-JAC-ABY-DR-0003

A.4 Site Drainage Plan

See documents: TW_STC_EPR_10a_ ABYS1ZZ-DPL-001, -002, -003 & -004.

A.5 Process Flow Diagram

See document: B22849AZ-JA- ABYS1ZZ-LSX-DR-P-0003

A.6 Site Photographs

See document: TW_STC_EPR_10a_ ABY_APPA.6

Appendix B. CoTC

See document: TW_STC_EPR_10a_ ABY_APPB

Appendix C. Site Condition Report – H5

See document: TW_STC_EPR_10a_ ABY_APPC

Appendix D. BAT Assessment

See document: TW_STC_EPR_10a_ ABY_APPD

Appendix E. Odour Management Plan

See document: TW_STC_EPR_10a_ ABY_APPE

Appendix F. Bioaerosol Risk Assessment

See document: TW_STC_EPR_10a_ ABY_APPF

Appendix G. Containment Assessment

G.1 Containment Options Report (CIRIA 736)

See document: B22849AZ-JA- ABYS1ZZ-100-RP-Z-0001

G.2 Containment Assessment

See document: B22849AZ-JA- ABYS1ZZ-100-CA-P-0001

Appendix H. Leak Detection and Repair (LDAR) Plan

See document: TW_STC_EPR_10a_ ABY_APPH

Appendix I. Residue Management Plan

I.1 Residue Management Plan

See document: TW_STC_EPR_10a_ ABY_APPI.1

I.2 MSDS Zip File

See zip folder: TW_STC_EPR_10a_ ABY_APPI.2

Appendix J. Accident Prevention and Management Plan

See document: TW_STC_EPR_10a_ ABY_APPJ

Appendix K. Acceptance of Third-Party Waste Imports

K.1 Acceptance of Third-Party Waste Imports

See document: TW_STC_EPR_10a_ ABY_APPK.1

K.2 Acceptance of TWUL Inter-Site Sludge and Cake

See document: TW_STC_EPR_10a_ ABY_APPK.2

Appendix L. Air Quality Assessment

See document: TW_STC_EPR_10a_ABY_APPL.pdf

Appendix M. Liquor Monitoring