Sludge Treatment Centre Permitting

Environmental Permit Application - Didcot STC Resubmission

TW_EPR_STC_24a_DDT_ASD | Resubmission

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Thames Water

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Contents

1. Introduction

This application relates to a new biological treatment permit for the Didcot Sludge Treatment Centre (STC), located at the Didcot 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 ('sludge') 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 sludge and Surplus Activated Sludge (SAS) separated from the main aerobic treatment flow, blending with imported waste of a similar nature to indigenous sludge and anaerobic digestion of sludge, through to the storage of digested sludge cake prior to recovery to land off-site, including biogas storage and utilisation, will fall within the scope of this permit application.

Didcot STC does not currently hold 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 indigenous 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 Area. 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 waste import point at the Works Inlet. The storage of biogas and upgrading of indigenous biogas to biomethane in a biomethane Gas to Grid plant, operation of boilers for the generation heat at the site, and two ground flares for control of biogas volume are classified as a Directly Associated Activity (DAA) to this main listed activity. These ' flares are used both for safety reasons and for non-routine operating conditions (e.g. start-ups, shutdowns). The final flare design may utilise a single bivalent flare which is capable of sharing one flare stack (one chimney) with two burners inside. Depending on the final detailed design, there may only be one ground flare. Both boilers fall outside of the scope of the Medium Combustion Plant Directive (MCPD) as they fall below the 1 MW threshold to be classified as a Medium Combustion Plant (MCP).

The Didcot STC is located within the Didcot STW, in the town of Didcot, Oxfordshire.

The STC comprises an offloading point for permitted imported waste at the Works Inlet of the STW. This material is passed to the Works Inlet to be treated by the UWWTD process. Sludge from the Primary Settlement Tanks (PSTs) is drawn off and pumped to the Picket Fence Thickeners (PFTs) for thickening and then pumped to the Sludge Blending Tank. Surplus Activated Sludge (SAS) from elsewhere in the aerobic treatment process is separately pumped to a SAS Buffer Tank, which is outside of the scope of this permit, before it is thickened in the SAS Thickening Plant with the aid of a polymer coagulant before the thickened SAS is pumped to the Sludge Blending Tank. Imported sludge from other works accepted into a Sludge Import Tank, is passed via Sludge

Screens and pumped to the Sludge Import Buffer Tank via Screen Sludge Pumping Station. Imported sludge is then pumped to the Sludge Blending Tank and mixed with indigenous sludge. Liquors from the PFTs and the SAS Thickening Plant is returned to the Works Inlet for treatment via Liquor Return Pumping Station 2 via site drainage. From the Sludge Blending Tank, mixed sludges are pumped to one of the two Primary Digester Tanks.

The two Primary Digester Tanks are of the same steel construction, aboveground tanks and fitted with Pressure Relief Valves (PRVs). Safety systems are also fitted to the biomethane Gas to Grid plant. Sludge within each Primary Digester Tank is heated via a dedicated heat exchange system which uses heat generated from the two site boilers.

Following treatment over an appropriate number of days within the Primary Digester Tanks, sludge is transferred to one of the three above ground, open topped Secondary Digester Tanks. Digested sludge is held in these tanks for an appropriate retention time to ensure that the required level of pathogen kill is achieved in order to comply with digested sludge cake output quality requirements.

Digested sludge is then pumped to the Dewatering Feed Buffer Tank and further pumped to the Sludge Dewatering Plant where it is dewatered with the addition of a polymer coagulant. The liquor from dewatering is returned to the Works Inlet for additional treatment via Liquor Return Pumping Station 3 and 1 via the site drainage and the dewatered, digested sludge cake is conveyed to the Cake Pad and deposited on the engineered concrete bay. Digested sludge cake is temporarily stored on open cake pad prior to removal from the site under the Sludge Use in Agriculture Regulations 1989 (SUiAR), and in accordance with the Biosolids Assurance Scheme (BAS).

Biogas from the Primary Digester Tanks is captured and transferred to a double membrane Biogas Storage holder. 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. The Biogas Storage holder is 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 for upgrading to biomethane in the biomethane Gas-to-Grid plant or for combustion in one of two boilers at the site to generate heat for use within the site's Primary Digester Tanks, which are dual fuelled with natural gas from the public supply. Biogas is used within the biomethane Gas-to-Grid plant, where the biogas is subject to cleaning and moisture removal, carbon dioxide separation and injection into the medium pressure biogas network. The boilers are less than 1.0 MWth each and are too small to be considered as 'existing' combustion plant under the Medium Combustion Plant Directive (MCPD). In the event there is excess biogas, i.e. more than the biomethane Gas-to-Grid plant or boilers can utilise, or in the event that the boilers are unavailable or in the event of off-specification biogas, there are two ground mounted flares: one relating to the wider STC and another which will support the gas to grid plant. Flare use currently can exceed 10% of annual hours at Didcot to dispose of biogas in a controlled manner which explains the development of a consumptive solution (gas to grid).

This application includes the import of treated sludge cake from other works, for temporary storage in the Cake Pad, pending offsite recovery. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import, including checking whether the incoming cake complies with the requirements of SuiAR and BAS.

Imported treated sludge cake is offloaded in the Cake Pad, 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 Didcot 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 on an impermeable surface within the Cake Pad, for the shortest time practicable, the duration depending on factors such as prevailing weather and availability of the landbank.

A temporary centrifuge is also available at Didcot STC to dewater indigenous sludge from the PFTs or to dewater imported sludge. Dewatered sludge is deposited on the Cake Pad while dewatering liquors are transferred to Liquor Return Pumping Station 3 and returned to the Works Inlet via the Liquor Balancing Tank and Liquor Return Pumping Station 1.

There is also one emergency generator at the STW which is an emergency standby (below 50hrs/annum); is not caught by the MCPD at this time and is not a DAA

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 Urban Waste Water Treatment Directive (UWWTD) by the Environment Agency. It relates to a biological waste treatment permit for the Didcot STC, located at the Didcot STW, operated by Thames Water Utilities Limited (Thames Water).

Scope

The application covers the biological treatment of sewage sludge, both indigenous and imported from other waste water treatment sites, 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, along with the import of treated sewage cake from other sites for temporary storage pending offsite treatment on the cake pad. There are a number of DAAs, including the operation of biogas fuelled boilers for the generation of heat at the site, which are too small to constitute MCPs.. A biomethane Gas-to-Grid plant is also present at the site taking indigenous biogas and cleaning it prior to injection of biomethane into the medium pressure gas network. These flares are used for both safety reasons and for non-routine operating conditions (e.g. start-ups, shutdowns).**Site Location**

The site is located within a suburban area of Didcot, Oxfordshire with commercial and industrial premises located on all sides.

There are two statutory designated habitat sites within the relevant distances of the site, both of which are Special Areas of Conservation (SACs). Little Wittenham SAC is 4.8 km to the east of the site and Cothill Fen SAC is 9.8 km to the north-east. There are no Special Protected Area (SPA), Marine Protected Area (MPA) or Ramsar sites within 10 km of the site and no Sites of Special Scientific Interest (SSSIs), Local Nature Reserves (LNRs) or Local Wildlife Sites (LWSs) within 2 km of the site. There is one area of Ancient Woodland within 2 km of the site, comprising un-named Ancient and Semi-Natural Woodland located approximately 1km to the north-east. There are no identified local wildlife sites or designated species close to the site.

There are no designations for protected species or habitats within the specified screening distance of the site.

The area of the STC is located entirely within a Flood Zone 1, indicating there is a with a low probability of flooding (>1:1000 annual probability of flooding). The wider STW is bordered to the north by a Flood Zone 2 and Flood Zone 3 which indicated a higher risk of flooding associated with a drainage ditch.

The site is located outside of the boundaries of a Source Protection Zone (SPZ).

The site is not located within or adjacent to the boundaries of an Air Quality Management Area (AQMA).

A site plan, showing the permitted area of the Didcot 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.

Site tank inventory

Tank Purpose	Number	Operational Volume (m^3)	Total Operational Volume (m^3)	Construction
Sludge Import Tank	1	27.5	27.5	Steel
Sludge Import Buffer Tank	1	670	670	Steel

Tank Purpose	Number	Operational Volume (m^3)	Total Operational Volume (m^3)	Construction
Picket Fence Thickener 1	1	861	861	Steel
Picket Fence Thickener 2	1	525	525	Steel
Sludge Blending Tank	1	861	861	Steel
Primary Digester Tanks	2	1,304	2,608	Steel
Secondary Digester Tanks	2	865	1,730	Concrete
Secondary Digester Tank (GRP)	1	594	594	Steel
Dewatering Feed Buffer Tank	1	670	670	Steel
Liquor Balancing Tank	1	594	594	Steel

Waste Activities

The STC comprises of imports of waste for biological treatment and two additional waste activities (imports of non-hazardous waste to the head of the works and imports of non-hazardous waste to the cake pad). Biological treatment processes at the installation are for indigenous sludge separated from the UWWTD areas of the site and for treatment processes for imported sludge that arrives at Didcot STC by tanker 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 waste operation to the main listed activity and consist of portable toilet waste along with cess, septic tank and similar sewage derived materials to the head of the works for processing through the UWWTD treatment and of digested sludge to the cake pad. Imports to the cake pad are for temporary storage, pending recovery offsite; and are a contingency option primarily that will not be routinely used.

Waste imports to the head of the works consists of an offloading point for permitted imported wastes which can be found close to the entrance of the STW. These wastes are imported by tanker vehicles 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. No wastes are imported other than by tanker. 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 the site supplied flexible hose pipe (to prevent misconnections) and a data logger which records the volume of waste transferred. The waste is transferred to the Works Inlet and combines with the incoming main sewer and passes to the UWWTD route for aerobic treatment.

Imports of waste take place to an import point that is located on impermeable engineered concrete, which is bunded on by kerbing and connected to drainage, which returns to the Works Inlet. The import area is covered by a webcam and provided with barriers and bollard protection for site equipment.

A second additional waste operation at the same site is for the import of non-hazardous treated, dewatered sludge cake from other works, for temporary storage pending transfer offsite. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import, including checking whether 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 Didcot 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.

All imported cake will be stored on an impermeable surface within the cake pad, for the shortest time practicable, the duration depending on factors such as prevailing weather and availability of the landbank.

Sludge Processes

Indigenous sludge is drawn off the Primary Settlement Tanks (PSTs) and pumped to one of two Picket Fence Thickeners (PFTs) located at the site, which operate in parallel, and pump the thickened sludges to the Sludge Blending Tank. The PFTs are the first stage of the permitted installation with all processes prior to the tanks forming part of the UWWTD process. Both PFTs are aboveground tanks of steel construction located on a concrete base. A rotating arm scrapes sludge into a central sump and thickened sludge is then pumped from the PFT to the Sludge Blending Tank for mixing within indigenous Surplus Activated Sludge (SAS) and imported sludge. Liquor from the PFTs weirs out of the tank and gravitates to Liquor Return Pumping Station 2 via site drainage and is returned to the Works Inlet. PFT no.1 is odour abated via an Odour Control Unit (OCU) that is shared with other tanks and PFT no. 2 has its own OCU.

Alternatively, thickened sludge from the PFTs can also be pumped to a Temporary Centrifuge located at the site for dewatering and export from the STC.

Surplus Activated Sludge (SAS) from the aerobic process is pumped to an aboveground SAS Buffer Tank, which is outside of the scope of this permit. SAS is then thickened in the SAS Thickening Plant with the addition of a polymer coagulant that is made up from a powder (mixed with final effluent/potable water) and stored within a day tank for dosing into each belt. Thickened SAS is pumped to the Sludge Blending Tank for mixing within indigenous thickened sludge and imported sludge. Liquor from the SAS Thickening Plant s gravitates to site drainage before it is returned to the Works Inlet via Liquor Return Pumping Station 2.

The Sludge Blending Tank is an aboveground tank that is of steel construction, is connected to an OCU and pumps the blended sludge to one of the Primary Digester Tanks. The Sludge Blending Tank acts both as a mixing tank for different types of sludges and a balancing tank to smooth the process of inputs to the Primary Digester Tanks.

Didcot STC also receives imports of sludge from other sites at a sludge import point. There is a single site supplied flexible hose (to prevent misconnections) connected to sludge logger which records the volume of sludge transferred and the origin of the sludge. Access to the sludge logger is via a key fob that is issued to drivers and the logger records the volume of sludge transferred and the originating site. Sludge is discharged into an aboveground Sludge Import Tank that is of steel construction. From the Sludge Import Tank, sludge gravitates through Sludge Screens, to remove rag and inorganic content which is disposed of off-site. De-ragged sludge is pumped to the Sludge Import Buffer Tank via the Screen Sludge Pumping Station and further pumped to the Sludge Blending Tank where it is mixed with indigenous SAS and indigenous sludge. The Sludge Import Tank and the Sludge Import Buffer Tank are both connected to the same OCU as the Sludge Blending Tank. The sludge import area is located on impermeable engineered concrete, connected to drainage, which returns to the Works Inlet and provided with barriers and bollard protection for site equipment.

Digestion Processes

Mixed sludges are pumped from the Sludge Blending Tank via a subsurface sludge line to one of the two Primary Digester Tanks located at the site with a dedicated pump for each digester. Both Primary Digester Tanks are aboveground tanks, constructed from glass reinforced steel with fixed roofs. Each of the tanks is fitted with dual Pressure Release Valves (PRVs). Level alarms, monitored by the site SCADA system, would inhibit further pumping

in the event of a high-level alarm. Sludge is mixed through the heat exchange system and following digestion over 12 days, it gravitates out of the Primary Digester Tank through a limpet chamber and via an underground sludge line to one of the Secondary Digester Tanks at the site. Biogas that is produced within the Primary Digester Tanks is captured and transferred to the onsite Biogas Storage holder by a mainly aboveground biogas pipeline.

Heating is provided to the Primary Digester Tanks via a heat exchange system that is located inside of heat exchange kiosks adjacent to each Primary Digester Tank. The heat exchange system uses hot water, from two boilers located at the site which combust both biogas and natural gas, to heat sludge which is pumped to and from the heat exchange in insulated pipework.

There are three Secondary Digester Tanks at the site, two located next to each other and one located near to the Cess/Waste Import Point. Secondary Digester Tanks no.1 and no.2 are of concrete construction and Secondary Digester Tank no.3 is of steel construction. All three tanks are aboveground tanks and open topped. Sludge is pumped from each Secondary Digester Tank to the Dewatering Feed Buffer Tank via a subsurface sludge pipeline after four days.

The Dewatering Feed Buffer Tank is an aboveground tank that is of steel construction, located on a concrete base. It receives the digested sludge from each Secondary Digester Tank at a high-level and pumps the sludge out to the Sludge Dewatering Plant where it is dewatered. The Dewatering Feed Buffer Tank is fitted with monitors which measure the level of sludge within the tank and inhibit the feed pumps in the event of a high-level alarm.

The Sludge Dewatering Plant is located within the Digested Sludge Press House and uses a powdered polymer from a bulk bag. The Sludge Dewatering Plant works automatically based on sludge levels within the Dewatering Feed Buffer Tank with high- and low-level inhibitors. The polymer is made up using final effluent/potable water and automatically dosed to the belt. Liquor from the Sludge Dewatering Plant gravitates to Liquor Return Pumping Station 3, where it is pumped to the Liquor Balancing Tank where it is returned via Liquor Return Pumping Station 1 for treatment via the UWWTD route.

Cake Storage

Digested sludge cake is transferred via covered conveyor and is deposited on the engineered open Cake Pad. Digested sludge is transferred from under the conveyor belts and moved by a shovel loader or similar plant to another point on the Cake Pad for storage prior to removal from the site under the Sludge Use in Agriculture Regulations 1989 (SUiAR), and in accordance with the Biosolids Assurance Scheme (BAS).

In the event of non-compliant sludge being produced at Didcot STC, it is stored for an extended period of time and not removed the site. Although the risk from bioaerosols is considered to be low there are business receptors within 250 metres of the cake pad, with employees who may be present for more than six hours. A bioaerosol risk assessment is included in Appendix F.

Digested sludge cake imported from other STCs for temporary storage at Didcot STC provides contingency storage in the event of spreading to land being temporarily unavailable. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import.

Didcot STC also has a Temporary Centrifuge located on the Cake Pad. The Temporary Centrifuge can dewater indigenous sludge received from the PFTs, or, can dewater imported sludge delivered to Didcot from other sites. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import. The waste stream is the same as that arising from the thickening of sludge within the Didcot STC and as such, the infrastructure which is acceptable for use with indigenous sludge is appropriate for the imported material.

Dewatered sludge is deposited on the Cake Pad while dewatering liquors are transferred to Liquor Return Pumping Station 3 where it is pumped to the Liquor Balancing Tank. Liquors are then pumped to the Works Inlet via Liquor Return Pumping Station 1 for treatment via the UWWTD route.

Biogas

Biogas produced within the Primary Digester Tanks is captured and transferred to a double membrane Biogas Storage holder located at the site. The dual membrane Biogas Storage holder is fitted with a biogas detection system and Pressure Relief Valves (PRVs) that operate in an emergency as a safety precaution in the event of over pressurising the system. An ultrasonic level is fitted which measures the height of the Biogas Storage holder. Air blowers keep the Biogas Storage holder inflated and exhaust air is monitored by methane detectors to identify any leaks of biogas. The area surrounding the Biogas Storage is classified as a potentially explosive atmosphere, fenced off for security, provided with lightening protection and there are strict management provisions on the control of potential ignition sources in accordance with the site DSEAR assessment.

Biogas is transferred in a partially aboveground biogas pipeline that 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. Removing the condensate improves the quality of the biogas. Biogas is transferred for use in either the biomethane Gas-to-Grid plant, boilers or flares. A slam shut valve is present on the main biogas and would also automatically isolate the Biogas Storage in the event of an emergency situation.

Biogas upgrading plant

Didcot STC is introducing a biomethane Gas-to-Grid plant which uses indigenous biogas which is subject to upgrading and cleaning within a biogas upgrader plant followed by injection of biomethane from a Grid Entry Unit via a Remotely Operated Valve to the local gas distribution network. The Gas-to-Grid plant separates biomethane from the site generated biogas, following biogas drying to remove water and separation of CO_2.

Biogas upgrading is achieved via several steps, firstly, passing the biogas through a chilling unit, which removes moisture from the biogas. The condensate is drained from the process and returned via site drainage for treatment. The dried biogas is then pressurised and passed through a scrubbing column to remove carbon dioxide and create a higher concentration of methane.

The waste gas is then sent to an exhaust, where a biological filter removes hydrogen sulphite. The biogas then passes through a second bed of activated carbon beds to prevent aromatic hydrocarbons such as Xylenes of Siloxanes or odour masking substances passing through. The biomethane is continuously monitored to ensure it remains suitable for export to the grid.

Following checks on biomethane quality, including calorific value enhancement using propane (if calorific value is too low to meet requirements, propane will be blended into the biogas to raise its value), the biomethane is odourised and injected into the national gas grid for use offsite. The grid injection point is equipped with a remote slam shut valve. In the event of off-specification biogas that is not suitable for injection into the local gas network, waste biogas is subject to flaring within a Gas-to-Grid Ground Flare. As noted above, the biogas upgrader also has an emission point for waste gases (being mostly CO2). Effluent, consisting of biogas condensate, and surface water runoff are captured by site drainage and returned to the head of the works of the STW for further treatment. If the grid outlet is not available, biogas is utilised within the wider site combustion infrastructure.

Biogas combustion

Biogas from the Biogas Holder is boosted before being combusted in one of two Remeha P420/11 boilers. These are located within a boiler room with a thermal input of 0.6MWth each. Heat generated by the boilers is used to regulate the Primary Digester Tank temperature and supplies the site buildings with central heating. The boilers are dual fuelled combusting both biogas and natural gas. Emissions from the boilers are via two 6 m high stacks that exit via the boiler house roof. Both boilers are too small to be considered as 'existing' combustion plant and fall outside of the scope of MCPD.

When there is no requirement for heating the Primary Digester Tanks, due to the air temperature, and there is excess biogas which cannot be utilised within the biomethane Gas-to-Grid plant, biogas is combusted in a ground mounted flare.

Emergency Standby Generators

The STW has one emergency generator that is used for emergency purposes only and regular testing that does not meet the criteria under Guidance "Understanding the meaning of regulated facility "RGN2 to constitute a DAA.

BAT Considerations

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

2.1 BAT 3; 6; 7: Return Liquors

The site 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 at Didcot including the Secondary Digester Tanks and the Dewatering Feed Buffer 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 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 Didcot secondary containment, secondary containment options report (see Appendix G) is an outline solution that may be subject to change. Thames is not able to commit to secondary containment requirements by the stated deadline of December 2024 delivery timescales will be subject to the outcome of PR24 and subsequent price review discussions.

A figure showing the current site surfacing within the permit boundary is included within Appendix 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 Storage holders 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 Didcot 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. Didcot fits into the first row of the table.
- Dry solids feed: see table below, Didcot 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 Tank 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.

Cake imports 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 at Didcot is stored on a Cake Pad which is within 250 m of 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

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

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

An air dispersion model using ADMS has been prepared for the air emissions from combustion plants at the site and is provided as Appendix L to this application. The key findings are that the impact from the emissions are acceptable from an air quality perspective.

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 a biogas combustion plant (boilers). The plant is not within scope of Medium Combustion Plant Directive due to the plant being less than 1 MWth.

The site includes the following DAAs:

- Imports of waste, including sludge from other sewage treatment works for treatment;
- 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 head of the sewage treatment works;
- Transfer of surface water runoff back to the head of the sewage treatment works;

- Storage of dewatered digested sludge cake prior to offsite recovery;
- Storage of biogas;
- Transfer of biogas condensate via site drainage back to the head of the sewage treatment works;
- Combustion of biogas or natural gas in boilers;
- Operation of ground mounted flares;
- Operation of siloxane filter plant;
- Pressurisation of biogas in biogas compressors;
- Storage of fuels including: propane;
- Storage of wastes, and,
- Storage of raw materials;
- Upgrading of biogas to biomethane in a biomethane Gas to Grid plant;
- Operation of biogas filter plant using condensers, activated carbon filters and membrane technology; and
- Injection of biomethane to the medium pressure gas grid.

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 DAA of a biogas combustion plant. This comprises:

- 2x 0.6 MWth boilers.

Total thermal input of site is approximately 1.2 MWth, of which approximately 1.2 MW is in routine use.

At 0.6MWth each, both boilers are too small to be considered as 'existing' combustion plant under the Medium Combustion Plant Directive. The information provided below is solely to assist with asset descriptions.

2.5 Combustion Plant

Didcot Boiler 1 (too small to constitute a MCP)	
Specific identifier*	Didcot STC Boiler 1
12-digit grid reference or latitude/longitude	SU 51967 91255
Rated thermal input (MW) of the plant	0.6
Type of plant (diesel engine, gas turbine, other engine or other plant)	Boiler

Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas, landfill gas	Dual fuelled (Biogas and natural gas)
Date when the new plant was first put into operation (DD/MM/YYYY)	Pre- 2016
Sector of activity of the plant or the facility in which it is applied (NACE code**)	E37.00
Expected number of annual operating hours of the plant and average load in use	c. 3,500 up to 100% load
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 plant will not be operated more than the number of hours referred to in this paragraph	n/a

Didcot Boiler 2 (too small to be a MCP)	
Specific identifier*	Didcot STC Boiler 2
12-digit grid reference or latitude/longitude	SU 51965 91253
Rated thermal input (MW) of the plant	0.6
Type of plant (diesel engine, gas turbine, other engine or other plant)	Boiler
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas, landfill gas	Dual fuelled (Biogas and natural gas)
Date when the new plant was first put into operation (DD/MM/YYYY)	Pre- 2016
Sector of activity of the plant or the facility in which it is applied (NACE code**)	E37.00
Expected number of annual operating hours of the plant and average load in use	c. 3,500 up to 100% load
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 plant 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

The pre-application process is currently not available due to Environment Agency resourcing issues, discussions have been held with the local area Environment Agency staff. 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?

Didcot Sludge Treatment Centre

Didcot Sewage Treatment Works,

Basil Hill Road,

Didcot,

Oxfordshire,

OX11 7HJ.

NGR SU 51987 91233.

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 Utilities Limited	Lewes Crown Court	3rd & 4th 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

Event Name	Court	Date of hearing	Fine	Summary
				contravened condition 12 of environmental permit CNTM.1402 by 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.

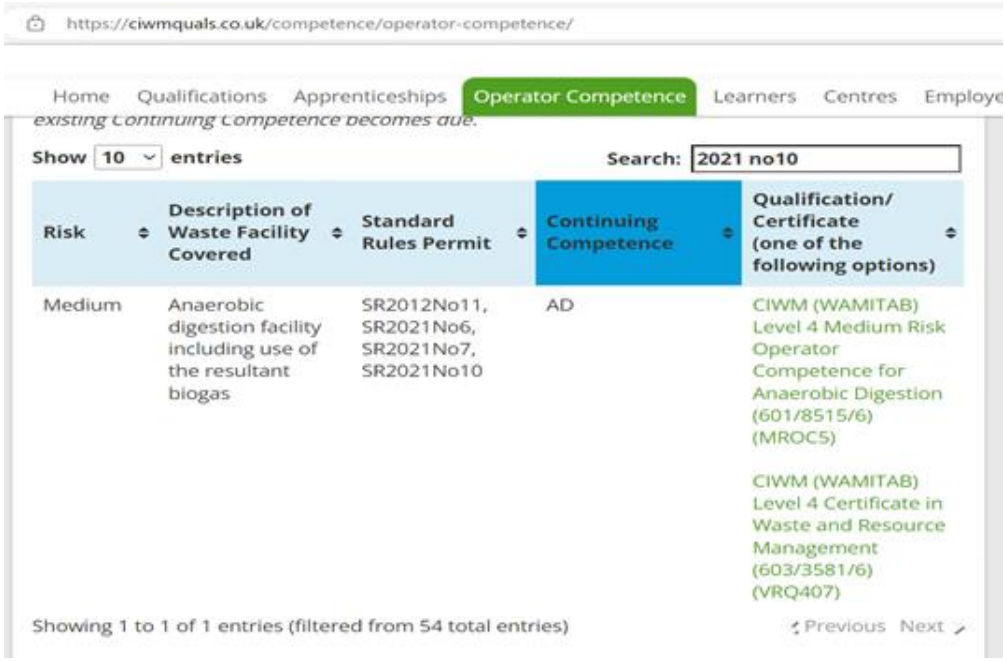
3b Technical ability

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

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.

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.

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:

- A.1 Site Location Plan
- A.2 Installation Boundary and Air Emission Points
- A.3 Site Impermeable And Permeable Surface 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

Yes. See Appendix C for the Site Condition Report.

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
Little Wittenham	SAC	East	4,800 m
Cothill Fen	SAC	North-East	9,800 m
n/a	SSSI	n/a	n/a
n/a	Ramsar	n/a	n/a
n/a	SPA	n/a	n/a
n/a	MPA	n/a	n/a
n/a	LNR	n/a	n/a
Un-named	Ancient & Semi-Natural Woodland	North-East	1,000 m
n/a	LWS	n/a	n/a

Data taken from MAGIC.gov.uk website, accessed July 2022 and also from the EA Pre-Application Nature and Heritage Conservation Screening Report (February 2022). For habitat sites, the relevant distance for consideration are: International designations (SAC, MPA, SPA and Ramsar - 10km); National designations (SSSI – 2km); LNR and NNR, LWSs and Ancient Woodland (2km).

The nearest designated habitat to Didcot STW is the Little Wittenham SAC, which is located approximately 4.8 km to the East of the site. The nearest LNR, namely Mowbray Fields, is located in excess of 2 km from the site and the nearest SSSI is Little Wittenham, also located in excess of 2 km from the site. There are no SPA, MPA or Ramsar designated sites within 10 km of the site.

There are also no LNR, NNR or LWS located within 2 km of the Didcot STW. There is one area of Ancient Woodland within 2 km of the site, comprising an un-named Ancient and Semi-Natural Woodland located approximately 1km to the North-East of the Didcot STW. There are no protected habitat or species records within the specified screening distance (within 500m) of the site.

The site sits outside the boundaries of a Source Protection Zone (SPZ).

The permitted area of the site sits within Flood Zone 1 (<1:1000 annual probability of flooding), although is bordered to the North by Flood Zone 2 (area with medium risk of flooding, with between a 1:100 and 1:1,000 annual probability of river flooding) and Flood Zone 3 (area with high risk of flooding indicating a 1:100 or greater annual probability of river flooding) associated with a prominent drainage ditch, which runs parallel to the northern boundary.

The site is not located within or in close proximity to an Air Quality Management Area (AQMA) with the nearest AQMA (Abingdon AQMA) located approximately 5.7km to the North 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 in a sub-urban area with commercial and industrial premises located on all sides of the site. The nearest residential dwellings are located within a private, mobile home estate, approximately 200 m to the South of the STC, separated by an area of woodland. Ecological receptors: There are no SPAs, MPAs or Ramsar sites within 10km of site. There are no SSSI, NNRs or LNRs within 2km of the site. There are no LWSs located within 2 km of the Didcot STW. Two SACs are located within 10 km of the site namely Little Wittenham, which is located approximately 4.8 km to the East of the site and Cothill Fen, which is located approximately 9.8 km to the North-East of the site. There is one area of Ancient Woodland within 2 km of the site located approximately 1km to the North-East.	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 bioaerosol	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. For bioaerosols this distance is 250m.	The wastes handled at the site are liquids, sewage sludges and sewage cake, along with UWWTD derived material delivered by sewer. The site will not be handling inherently dusty or powdery wastes. Digested sludge cake retains a high moisture content and is not dusty and is not dusty and the cake pad is located on the Northern side of the site, away from residential receptors but in close proximity to several industrial and commercial units. Roads will be maintained to avoid the production of dust. Digested sludge cake has sufficient moisture content to ensure it does not give rise to dust. Anaerobic digestion of sludge takes place within a closed system. Digested sludge cake is stored on the cake pad comprising an area of engineered hard standing surrounded by a low-level wall. The cake pad is situated less than 250 m away from the nearest	✓

Consideration	Receptors	Discussion	Detailed Environmental Risk Assessment?
		sensitive receptors (several industrial and commercial units located approximately 50m to the East) who may be present for more than 6 hours. There are no residential receptors within 250 m of the cake pad. A bioaerosol risk assessment is presented in Appendix F.	
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 in close proximity to the boundaries of an AQMA. ADMS modelling indicates that boilers are unlikely to result in unacceptable impacts on air quality; full details can be found in Appendix L. The ground mounted Flares are used during periods when there is a larger volume of biogas than the Gas-to-Grid plant and boilers are able to utilise and the Biogas Storage holder is able to temporarily store. Fugitive emissions to air are assessed in Table B3-3b(i).	X
Assessment of point source and fugitive emissions to water	There are no major rivers near to the site, with the River Thames 3 km North of the site and Moor Ditch on the northern perimeter. Some minor drainage channels and balancing ponds are within the vicinity of the site, but the entire STC and permitted area sits within a Flood Zone 1 area indicating low probability of annual river flooding (less than 1:1000), although the wider site is bordered to the North by Flood Zone 2 and Flood Zone 3 indicating a higher probability of flooding in this area of the site. Surface water drainage within the site drains to the inlet of Sewage Pumping Station No. 1.	The main product of the process is a digested sludge cake, which is stored within Flood Zone 1, on an engineered concrete pad equipped with drainage that returns to the Works Inlet. Other aqueous discharges generated by process are limited (comprising only biogas condensate, liquor and surface water run off). These sources are discharged to the on-site drainage system where they are transferred to main sewage Works Inlet. Due to the nature and small quantity of these emissions no further assessment of point source emissions is deemed necessary.	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 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, procedures and monitoring to control fugitive emissions of odour at the plant. Odour from the STC cannot be considered in isolation from the	X

Consideration	Receptors	Discussion	Detailed Environmental Risk Assessment?
	The impact of emissions from odour on human receptors will depend on the distance and wind direction.	wider works. The sewage treatment works has an odour management plan, which is appended as Appendix E. Odour emissions are assessed in Table B3-3b(ii).	
Energy	Global atmosphere (direct and indirect emissions)	Use of biogas on site within the boilers minimises the need to import non-renewable gas from the National Grid. Use of biogas, which is upgraded to biomethane within the biomethane Gas to Grid plant, introduces a renewable methane to the local gas network which can be consumed by off-site sources and lowers the carbon intensity of gas. Good maintenance procedures will help the plant run efficiently and reduce energy consumption. Use of LED lighting minimises electricity imports and 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 drift).	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 in a sub-urban area with commercial and industrial premises located on all sides of the site. The nearest residential dwellings are located within a private, mobile home estate, approximately 200 m to the South of the STC, separated by an area of woodland. Ecological receptors: There are no SPAs, MPAs or Ramsar sites within 10km of site. There are no SSSI, NNRs or LNRs within 2km of the site. There are no LWSs located within 2 km of the Didcot STW.	Site design has been chosen to minimise the impact of noise on offsite receptors through building orientation, finishes and location of openings. Combustion plant is located internally and away from nearby receptors. Noise from plant and equipment will be minimised through purchasing decisions and a robust preventative maintenance programme. Waste deliveries are only accepted during operational hours. Operation of shovel loaders and similar vehicles predominantly takes place on the cake pad. There will be no sources of vibration within the facility.	X

Consideration	Receptors	Discussion	Detailed Environmental Risk Assessment?
	Two SACs are located within 10 km of the site namely Little Wittenham, which is located approximately 4.8 km to the East of the site and Cothill Fen, which is located approximately 9.8 km to the North-East of the site. There is one area of Ancient Woodland within 2 km of the site located approximately 1km to the North-East.	Noise and vibration emissions are assessed in Table B3-3b(iii).	
Other issues (including visual impact)	Protected Habitat and Species	There are no protected habitat or species records within the specified screening distance (within 500m) of the site.	X
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.	Primary Digester Tanks may require reduced heat input to digester via heat exchange system and Primary Digester Tanks 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. Pre-digestion tanks are already covered and OCUs to be utilised as appropriate. OCUs may require oversizing compared to current use.	X
	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 to vary?

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
Didcot 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 five 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).	217 wet tonnes per day (Throughout based on 2,608 m3/12 = 217.33 m3 per day)	R3: Recycling reclamation of organic substances which are not used as solvents	Maximum waste throughput 280,000 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 fo**r treatment**				
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 head of the sewage treatment works				
AR7	Transfer of surface water runoff back to the head of the sewage treatment works				
AR8	Storage of dewatered digested sludge cake prior to offsite recovery				

AR9	Storage of biogas
AR10	Transfer of biogas condensate via site drainage back to the head of the sewage treatment works
AR11	Combustion of biogas or natural gas in boiler
AR12	Operation of ground mounted Flares
AR13	Operation of siloxane filter plant
AR14	Pressurisation of biogas in biogas compressors
AR15	Storage of fuels including: propane;
AR16	Storage of wastes
AR17	Storage of raw materials
AR18	Upgrading of biogas to biomethane in a biomethane Gas to Grid plant
AR19	Operation of biogas filter plant using condensers, activated carbon filters and membrane technology; and
AR20	Injection of biomethane to the medium pressure gas grid.

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**
AR21	Imports of waste: 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 20,000 wet tonnes

AR22	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 wet tonnes per annum
For all Waste Operations		**Total capacity**	**10,390.5 wet tonnes**	**[a] + [b]**
		Total STC treatment capacity (tank volume)	9,140.5 wet tonnes	[a]
		Total cake pad storage capacity	1,250 wet tonnes	[b]
For waste imports to the head of the works		Annual throughput (tonnes each year)	Imports 20,000 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: **Unthickened Primary : 4.98 tds/day: worse case 1.20% dry solids = 415 m3/day = 151,500 m3/year** **Unthickened SAS: 2.74 tds/day: worse case 1.00% dry solids = 274 m3/day = 99,990 m3/year** **Imports - Liquid: 0.58 tds/day: worse case 0.80% dry solids = 73 m3/day = 26,513 m3/year** **Total combined import calculation: 278,003 m3/year, rounded to 280,000 m3/year**				

Table 1b Types of waste accepted

Table B3-1b(i): Waste accepted into Anerobic Digestion import point

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 wastewater
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 or treatment

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	Auxiliary Boiler 1	Oxides of Nitrogen (NO and NO_2	No limit set	-	-	-	-

		expressed as NO_2)					
		Carbon Monoxide	No limit set	-	-	-	-
A2	Auxiliary Boiler 2	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	No limit set	-	-	-	-
		Carbon Monoxide	No limit set	-	-	-	-
A3	Flare [Note 1]	-	-	-	-	-	-
A4	Primary Digester Tank PRV	-	-	-	-	-	-
A5	Primary Digester Tank PRV	-	-	-	-	-	-
A6	Biogas Storage PRV	-	-	-	-	-	-
A7	OCU 1	-	-	-	-	-	-
A8	OCU 2	-	-	-	-	-	-
A9	Biogas Upgrade Exhaust Stack	No parameter set	No limit set				
A10	Gas-to-Grid Ground Flare [Note 1]						

Note 1: Monitoring to be undertaken in the event the flare has been operational for more than 10 per cent of a year (876 hours).

Table B3-2b – Emissions to Sewer

Emission point reference and location	Source	Parameter	Limit	Unit
T1 (NGR: SU 51901 91259)	Picket Fence Thickener Liquor, SAS Thickening Plant Liquor, Sludge Dewatering Plant Liquor, Temporary Centrifuge Liquor. OCU Waste Water, Biogas Condensate, Gas-to-Grid Waste Water, Surface Water Run Off	No parameters set	No limit set	-
T2 (NGR: SU 51975 91194)	Head of Works Import	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

	Consequence		
Likelihood ↓	**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), point source emissions to air (boilers, Gas to Grid upgrader stack, and flare stacks) have emission limits as required. Flares stack height of approx. 4 m and boiler flues approx. 6 m each (exiting through boiler house roof). Air emissions modelling concluded that the operation of the assessed combustion plant are acceptable from an air quality perspective.	Low
Biogas transfer systems, biogas storage, flare or PRVs failure causing emissions of biogas	Abnormal	Emissions to air and dispersion leading to: inhalation by local human and animal receptors. Odour impact. Global warming potential. Risk of fire and explosion	Low	Medium	Low	The plant is designed to capture and utilise all biogas possible, either combusting the biogas or upgrading it for grid injection, 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 occurring. The system is also protected with a comprehensive array of methane monitors, pressure and flow sensors and isolation valves	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						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. Flares are utilised for the safe disposal of surplus biogas in the event of boiler breakdown, unavailability of Gas-to Grid plant, or a surplus of biogas above the level that can be safely stored or utilised Use of the Flares is recorded Pressure Release Valves (PRVs) are in place on the Biogas Storage holder to be operated in the event of failure of the flares to prevent over pressurisation and catastrophic failure.	
Catastrophic loss of biogas emissions from biogas transfer systems, biogas storage, flares or PRVs	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, either combusting the biogas or upgrading it for grid injection, 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 occurring. The system is also protected with a comprehensive array of methane monitors, pressure and flow sensors and isolation valves	Medium

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						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. Flares are utilised for the safe disposal of surplus biogas in the event of boiler breakdown, unavailability of Gas-to Grid plant, or a surplus of biogas above the level that can be safely stored or utilised. Use of the flares is recorded. Pressure Release Valves (PRVs) are in place on the Biogas Storage holder to be operated in the event of failure of the flares to prevent over pressurisation and catastrophic failure.	
Combustion of biogas or natural gas within boilers Combustion of biogas within flares.	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 provide heat to the Primary Digester Tanks. Boiler flues are located centrally, approx. 110 m from the nearest sensitive receptors, which can be found towards the south-west. The flares are located towards the north of the installation and approx. 60 m from the nearest receptors, located north of the flares.	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 an open engineered cake pad. The cake pad is located towards the north of the site. The nearest sensitive receptors are approximately 50m to the east of the cake pad. Digested sludge cake on the pad retains a high moisture content and is not prone to windblown dispersion leading to the generation of dust. Roads are made from concrete/asphalt and not prone to the generation of dust. A bioaerosol risk assessment is presented as Appendix F.	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	Staff responsible for site housekeeping and cleaning of spillages in a timely manner. Sludge retains a high moisture content and is not prone to windblown dispersion which could cause the generation of dust in the event of a spillage. Internal site roads are made from concrete/asphalt and not prone to the generation of dust.	Low
Spillage of liquids, including	Abnormal	Emissions to surface waters close to and downstream of site. Acute effect resulting	Low	Medium	Low	The closest surface water body is a small drainage ditch which is potentially within 10 m of the south of the STC perimeter. The nearest	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
chemicals and oils.		in loss of flora and fauna. Chronic effect resulting in deterioration of water quality Emissions to ground and ground water.				named watercourse is Moor Ditch, on the STW perimeter and approx. 30 m north of the STC. The site is located outside the boundaries of a groundwater Source Protection Zone (SPZ). Chemicals and oils all stored within suitably bunded tanks and IBCs with rainwater removed as required to maintain 110% capacities. Handling and use of chemicals and oils is carried out by trained personnel. COSHH data sheets available. Spill kits available on site. Staff are trained in their use.	
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 installation is located outside the boundaries of a groundwater Source Protection Zone (SPZ). The closest surface water body is a small drainage ditch which is potentially within 10 m of some tanks towards the south of the STC perimeter. The nearest named watercourse is Moor Ditch, on the STW perimeter and approx. 30 m north of the STC. Provision of suitably structurally integral tanks constructed from steel and glass reinforced plastic or concrete. All tanks are subject to asset inspection and proactive maintenance	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						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.	
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
H2S/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. The nearest receptors are located approx. 80 m to the east of the Primary Digester Tanks. Biogas is also generated in smaller quantities within Secondary Digester Tanks, which are uncovered tanks. The nearest Secondary Digester Tanks are located approx. 70 m from the nearest sensitive receptors. H_2S production is controlled through the digestion process which can be manually overridden if required.	Low
Loss of containment from biogas holders 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 double membrane 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 sensors and isolation valves to minimise the potential for release if a leak is detected. The biogas pipelines are predominately aboveground with a short subsurface section between the Biogas Storage holder and the boilers.	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 around the Biogas Storage holder, including fencing and lightning protection and some pipework is guarded, as required. Pressure Release Valves (PRVs) present on the Biogas Storage holder to safely manage biogas pressures 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	Pressure Release Valves (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 are subject to monitoring via visual checks by site personnel. Biogas is principally stored within the double membrane Biogas Storage holder which is suitably sized to manage biogas generation. Biogas is used within the biomethane Gas-to-Grid plant. Site also has two boilers, and two flares.As there are two boilers, there is resiliency to planned / unplanned downtime.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						Boilers are subject to regular maintenance to maintain maximum use of outlets, with flares maintained in good working order should it need to be used. The nearest receptor is located approx. 90 m to the north-east of the Biogas Storage holder.	
H2S/biogas emitted when biogas cannot be combusted in boilers or 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 double membrane Biogas Storage holder which is suitably sized to manage biogas generation and act as buffer storage when biogas cannot be combusted. Site has multiple outlets to use biogas including the biogas upgrading plant for Gas to Grid and multiple combustion sources- two boilers and two flares, which are used in order of preference to maximise recovery. The nearest receptors are located approx. 90 m to the north-east of the Biogas Storage holder. The boilers are subject to regular maintenance to maintain maximum use of outlets, with the lares maintained in good working order should it need to be used.	Low
Storage of treated digested sludge cake	Normal	Emissions to air and dispersion leading to inhalation by local human receptors	High	Low	Medium	Digested sludge cake is stored on open, engineered cake pads towards the north of the site.	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
		Loss of amenity from odour nuisance				The nearest sensitive receptor to the cake pad are located approx. 50 m to the east of the cake pad. 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.	
Failure of odour control units	Abnormal	Emissions to air and dispersion leading to inhalation by local human receptors Loss of amenity from odour nuisance	Low	High	Medium	The odour control units are subject to regular preventative maintenance. Media is replaced in line with the manufacturer's recommendations	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

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
Biogas upgrade plant	Normal	Generation of noise with air transportation, causing loss of amenity to local human receptors	Low	Low	Low	The biogas upgrader plant has been designed and specified as a low noise plant and is subject to a manufacturer led preventative maintenance programme, including a LDAR plan.	Low
Operation of site vehicles	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	Vehicle movements across the site subject to speed limit and one way system is in place within some areas, to reduce generation of noise. Shovel loading of digested sludge cake takes place on the open, engineered pad during daytime hours only. Nearest receptors to the cake pad are shielded by the buildings and structures situated between the cake pad and receptor. Shovel loading is not a continuous operation. Tanker deliveries limited to daytime only. Impact of noise is considered against other industrial noise from nearby receptors and located away from sensitive residential receptors.	Low
Vehicle movements - tanker deliveries of cess	Normal	Generation of noise with air transportation, causing loss of amenity to local human receptors.	High	Low	Medium	Imports are limited to daytime hours only to points towards the south of the installation. Nearby sensitive receptors are also other industrial sites being a logistics centre which	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
		Generation of vibration with ground transmission, causing loss of amenity to local human receptors.				will also be a source of vehicle movements. Residential receptors are located approx. 200 m to the south of the site. The impact of generated noise is reduced by the attenuation provided by buildings and tanks within the site and offsite buildings and vegetation. Vehicle movements across the site subject to speed limit to reduce noise.	
Vehicle movements - tanker deliveries of sludge and 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	Imports are limited to daytime hours only to points towards the south of the installation. Nearby sensitive receptors are also other industrial sites being a logistics centre which will also be a source of vehicle movements. Residential receptors are located approx. 200 m to the south of the site. The impact of generated noise is reduced by the attenuation provided by buildings and tanks within the site and offsite buildings and vegetation. Vehicle movements across the site subject to speed limit to reduce noise. Shovel loading of digested sludge cake takes place on an open cake pad. The nearest sensitive receptor to the cake pad is approx. 50	Low

Activity/Hazard	Normal or Abnormal	Environmental Impact (Pathway-Receptor)	Likelihood	Consequence	Risk	Risk Management	Residual Risk
						m to the east. There are no residential receptors within 250 m of the cake pad.	
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, causing loss of amenity to local human receptors.	High	Low	Medium	Deliveries likely to take place during daytime hours to delivery areas within the centre of the site. Vehicle movements across the site are subject to speed limit to reduce generation of noise.	Low
Operation of ground mounted flare	Abnormal	Generation of noise with air transportation, causing loss of amenity to local human receptors.	High	Low	Medium	Use of the flares is minimized by prioritizing consumption within the biomethane Gas-to-Grid plant and use of the boilers, with use of the flares recorded via SCADA. The flares arelocated approx. 60 m from the nearest sensitive receptor, comprising industrial premises to the north. The nearest residential properties are located approx. 400 m to the south.	Low

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

A site-specific Accident Management Plan is presented 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. A site-specific bioaerosol risk assessment (SSBRA) is 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

Air emission points A1 and A2 are to be monitored in accordance with EA guidance for boilers.

Hours of operation of the Ground Flares (A3 & A10) are recorded.

Emission points A7 &A8 (OCUs) will be monitored on a six-monthly basis.

There is no routine monitoring proposed for points A4 – A6 (PRVs) and A9 (Biogas Upgrader Exhaust Stack).

Table B3-4a- Emissions Monitoring

Monitoring point	NGR	Monitoring frequency	Methodology (standard)	Assessment procedures
A1 (Boiler 1)	SU 51964 91255	-	-	-
A2 (Boiler 2)	SU 51961 91251	-	-	-
A3 (Flare)	SU 52059 91368	-	-	-
A4 (Primary Digester PRV)	SU 51990 91227	No parameters set	n/a	n/a
A5 (Primary Digester PRV)	SU 52005 91220	No parameters set	n/a	n/a
A6 (Biogas Storage holder PRV)	SU 52006 91252	No parameters set	n/a	n/a
A7 (OCU1)	SU 51872 91223	Hydrogen Sulphide – Once every 6 months	CEN TS 13649 for sampling NIOSH 6013 for analysis OR US EPA M11	-
		Ammonia – Once every 6 months	EN ISO 21877 OR CEN TS 1369 for sampling NIOSH 6016 for analysis	-
A8 (OCU2)	SU 51914 91270	Hydrogen Sulphide – Once every 6 months	CEN TS 13649 for sampling NIOSH 6013 for analysis OR US EPA M11	-

		Ammonia – Once every 6 months	EN ISO 21877 OR CEN TS 1369 for sampling NIOSH 6016 for analysis	-
A9 (Biogas Upgrader Exhaust Stack)	SU 5201 9127	-	-	-
A10 (Gas to grid Ground Flare)	SU 52059 91368	-	-	-
S1 (Sampling point)	SU 51969 91191	n/a	MCERTS or ISO/IEC 17025 where available	

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. There are no MCPs present at the site.

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.

There are no MCPs present at the site. 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. A permanent sampling platform is not provided for the boilers; however, subject to applicability, 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 boilers are suitably sized to maximise heat production to maintain digester operations throughout the year.

Low energy lighting and LED lighting is installed across the plant. The heating water is located in close proximity to the digester heat exchangers and transferred in insulated pipes to minimise heat losses in transmission.

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

The site imports electrical energy from the public supply via National Grid to supply the treatment process.

Heat is supplied through the combustion of biogas in the two boilers on site, to meet heat demands from the Primary Digester Tanks. The boilers are dual fuelled and can also use natural gas when there is insufficient biogas.

The site also puts biomethane to the public supply via the biomethane Gas to Grid plant.

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 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 exchanger, boilers and Primary Digester Tanks 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 heat and maintenance of boilers, with the heat 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 Didcot 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.

Appendix 1, Question 13 Information to be provided by the operator to the competent authority for each Medium Combustion Plant as identified in Annex I of Medium Combustion Plant Directive (EU/2015/2193)
See information within MCP Tables in Technical Summary, Section 2.3

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 for?, Waste operations which do not form part of an installation

This permit application is for physical treatment 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 process and dewatering process liquors within the installation. Lower volume constituents will include rainfall; biogas condensate; boiler blowdown water; 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 works.

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?

464.24 Cubic metres

3c What is the maximum rate of discharge?

5.37 Litres / second

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

464.24 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, based on 464,240 litres (464.24 x 1,000) divided by 86,400 seconds (24 x 60 x 60)from sources such as thickening and dewatering. This gives a value of 5.373148rounded to 5.37 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 sewage 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 sewage 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 Didcot 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 sewage treatment works is specified in Environmental Permit TH/CATM.3651/009.

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 within 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.

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)

Final effluent discharge.

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

SU 51940 91420.

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

Moor Ditch 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.

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 A. Figures

A.1 Site Location Plan

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

A.2 Installation Boundary and Air Emission Points

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

A.3 Site Impermeable and Permeable Surface Plan

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

A.4 Site Drainage Plan

See documents: TW_STC_EPR_24a_DDTS1ZZ-DPL-001

A.5 Process Flow Diagram

See document: B22849AZ-DIDCS1ZZ-LSX-DR-P-0003

A.6 Site Photographs

See document: TW_STC_EPR_24a_DDT_APPA.6

Appendix B. CoTC

See document: TW_STC_EPR_24a_DDT_APPB

Appendix C. Site Condition Report – H5

See document: TW_STC_EPR_24a_DDT_APPC

Appendix D. BAT Assessment

See document: TW_STC_EPR_24a_DDT_APPD

Appendix E. Odour Management Plan

See document: TW_STC_EPR_24a_DDT_APPE

Appendix F. Bioaerosol Risk Assessment

See document: TW_STC_EPR_24a_DDT_APPF

Appendix G. Containment Assessment

G.1 Containment Options Report (CIRIA 736)

See document: B22849AZ-JA-DIDCS1ZZ-100-RP-Z-0001

G.2 Containment Assessment

See document: B22849AZ-JA-DIDCS1ZZ-100-CA-P-0001

Appendix H. Leak Detection and Repair Plan (LDAR)

See document: TW_STC_EPR_24a_DDT_APPH

Appendix I. Residue Management Plan

I.1 Residue Management Plan

See document: TW_STC_EPR_24a_DDT_APPI.1

I.2 MSDS Zip File

See zip folder: TW_STC_EPR_24a_DDT_APPI.2

Appendix J. Accident Prevention and Management Plan

See document: TW_STC_EPR_24a_DDT_APPJ

Appendix K. Acceptance of Third-Party Waste Imports

K.1 Acceptance of Third-Party Waste Imports

See document: TW_STC_EPR_24a_DDT_APPK.1

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

See document: TW_STC_EPR_24a_DDT_APPK.2

Appendix L. Air Quality Assessment

See document: TW_STC_EPR_24a_DDT_APPL

Appendix M. Liquor Proposal

See document: TW_STC_EPR_24a_DDT_APPM