

Response to Maple Lodge RFI 27th January 2023

Date: 10 February 2023
Project name: Thames Water STC IED
Project no: B22849AZ
Attention: Sarah Raymond, Environment Agency
Prepared by: James JK Killick

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Dear Sarah,

Please see below the answers to your questions raised on the "Application Variation RFI and Payment request 27012023" document emailed on 27th January 2023.

1) Bioaerosol

Your facility is within 250 meters of a sensitive receptor (defined under guidance Bioaerosol monitoring at regulated facilities - use of M9: RPS 209 - GOV.UK (www.gov.uk) as "a place where people live or work for more than 6 hours at a time"). You provided 'Maple Lodge STC Bioaerosol risk assessment, dated 7 July 2022'. Within this you have provided section '3 Conclusions' 'advising that you will carry out bioaerosol monitoring, however you have not provided information on how this will be carried out in line with M9 guidance, or provided information on sampling locations. Update your Bioaerosol risk assessment to confirm the sampling locations (National Grid references) and methodology to be used in line with guidance Bioaerosol monitoring at regulated facilities - use of M9: RPS 209 - GOV.UK (www.gov.uk).

Answer 1

Thames Water confirms it will use MCERTS accredited providers or equivalent for the sampling of bioaerosols from location TQ 03755 92551 (NGR for the OCU stack). Samples will be delivered to the testing laboratory within 24 hours of sampling. In addition, sampling will also take place in relation to TQ 03923 92407 (approx. NGR of centre of cake pad) which is a diffuse source and hence will be monitored purely by agar plates.

Downwind samples will tend to be towards the north of the site, as the closest receptors to the cake pad is point R1. The prevailing wind is from the SW, so receptors R2 and R3 are less likely to be impacted.

In line with M9, ambient sampling will be conducted to identify background emissions. A sampling round, consisting of four individual sampling points, each with its own agar plate will be carried out. One point will be located upwind of the OCU stack to give a background concentration, and one OCU specific point will be located downwind. Other downwind locations are covered by the monitoring points for the cake pad:

Upwind sample location (approx.) which is 25-50m SW of the OCU: TQ 0373 9252*

Downwind sample location which is approx. 145m NW of the OCU: TQ 0362 9261

Downwind sample location which is approx. 185m N of the OCU: TQ 0376 9273

Downwind sample location which is approx. 250m E of the OCU: TQ 0399 9253*

Distances to sampling points at Maple Lodge are restricted by the presence of woodland which may inhibit some sampling points being used. Therefore, NGR's for sampling locations

are only 8 digits at present, to allow the contractor flexibility as to precise location, taking into account access (and security) for the sampling plates.

Cake pad

Upwind sample location which is approx. 50m SW of the cake pad: TQ 0385 9234

Downwind sample location 1 which is approx. 110m N of the pad: TQ 0399 9253*

Downwind sample location 2 which is approx. 85m NE of the pad: TQ 0402 9248

Downwind sample location 3 which is approx. 185 NW of the pad: TQ 0373 9252*

NGR's for sampling locations are 8 digits at present, to allow the contractor flexibility as to precise location, taking into account access (and security) for the sampling plates.

*shared sampling points.

2) Provide information in Application form Part C2 – General – varying a bespoke permit

a) Your ability as an operator. You have provided 'Appendix B – COTC', which provides your initial registration for " 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)" subject to the provision of relevant forms. The activity that you have applied for requires CIWM (WAMITAB) Level 4 Medium Risk Operator Competence for Anaerobic Digestion (MROC5). As a minimum to progress your application, we require evidence of registration for an appropriate scheme, or evidence of how you will provide the relevant technical competence at permit issue.

b) Q5a – Provide a plan or plans for the site. You have provided 'Appendix A figures'. On assessment of these plans they do not include all of the land on which your activities take place. i.e. the containment solutions proposed in 'Maple Lodge STC – Containment Options Report,' Dated August 2022.

i. Update Appendix A and all relevant site plans to include all areas on which all the installation activities take place.

ii. Ensure all relevant management plans i.e. odour management plan, bioaerosol management plan, LDAR plan include all areas on which the activities take place.

Note: (For information only) . Under guidance Develop a management system: environmental permits - GOV.UK (www.gov.uk) your plan must show buildings and other main constructions, and points designated to control pollution which would include your proposed containment solutions. It should be noted that any permit issued would regulate activities applied for, which would be identified in table S1.1 of the permit. Should assets be included that do not form part of the installation activities being applied for (as a result of the containment boundary), they should be clearly identified, but would not be regulated under the issued permit as they would not form part of the installation activity.

c) Q5b - Do any of the variations you plan to make need extra land to be included in the permit. On reviewing your site condition report the National Grid Reference (NGR) is not located within your permit boundary. Provide an updated site condition report with the correct NGR

d) Q5b - Do any of the variations you plan to make need extra land to be included in the permit . On review of your site condition report you have not identified 'relevant hazardous substances', or carried out a stage 1 -3 assessment within the site condition report (SCR) in line with guidance EC Commission Guidance on baseline reporting (2014/C 136/03) dated 6th May 2014. Update your site condition report to:

i. Identify 'Relevant Hazardous Substances (RHS)' – by consideration of the chemical and physical properties of each hazardous substance [composition, solubility, toxicity, mobility, physical state (solid, liquid or gas)] and determine whether any of these substances are capable of causing soil and/or groundwater contamination.

ii. Include a Stage 1- 3 assessment within the SCR (Further details of the Stage 1 – 3 assessment are set out within EC Commission Guidance on baseline reporting (2014/C

136/03) dated 6th May 2014. This is in accordance with Schedule 7 (paragraph 5 [m]) of the EPR regulations 2016 / Article 22 of IED. It is also referred to in the draft H5 guidance.)

e) Question 6 – Environmental Risk assessment. Under guidance Risk assessments for your environmental permit - GOV.UK (www.gov.uk) you must identify risks, explain what the environmental impact could be and explain what measures you will take to reduce risks. You have identified in your application that you have floating roof digesters, but provided no information on the design. Provide an explanation of the floating roof digesters design, implementation, and management to demonstrate that they meet the requirements set out in BAT 14 which are to contain diffuse emissions.

f) Question 6 – Environmental Risk assessment. Under guidance Risk assessments for your environmental permit - GOV.UK (www.gov.uk) you must identify risks, explain what the environmental impact could be and explain what measures you will take to reduce risks. You have identified in your application that you have open tanks. You have advised that you will undertake monitoring of open tanks, however this does not demonstrate how you will achieve BAT or provide us with enough information to assess. You must clearly demonstrate how you will meet the requirements set out in BAT 14 which are to contain diffuse emissions. We can see no evidence of how diffuse emission will be managed for these tanks, or measures that you will take to reduce risks. Section 7 of guidance Biological waste treatment: appropriate measures for permitted facilities - Guidance - GOV.UK (www.gov.uk) provides further information on what is required. Submit a risk assessment which provides methods for containing and abating emissions from open tanks, or provide alternative measures with evidence of how they will provide the same level of environmental protection at BAT.

Note: To confirm any proposals submitted must provide evidence to demonstrate how you will meet Best available techniques: environmental permits - GOV.UK (www.gov.uk). Specifically BAT 14 requires that tanks containing biologically active materials that have the potential to generate diffuse emissions must be carried out in enclosed equipment.

Should you need to demonstrate that your anaerobic digestion process has been effective, and that digestate stored in these tanks is stable, we would require evidence to demonstrate through testing in line with PAS 110 PAS110_2014.pdf (wrap.org.uk) 'Annex A (normative) Minimum anaerobic digestate stability requirements', or an equivalent standard/methodology. Should the residual biogas potential test digestate show the digestate to be unstable we will require tanks to be enclosed, with any resultant biogas diverted to your gas system. We would require this to be carried out through the completion of improvement conditions.

For any tanks identified as not biologically active, we require that you submit proposals for the covering of tanks in line with guidance Covering Slurry Lagoons (publishing.service.gov.uk), Biological waste treatment: appropriate measures for permitted facilities - 1. When appropriate measures apply - Guidance - GOV.UK (www.gov.uk) and BAT 14.

Answer 2

2a) Following Thames Water's, original communications with the Environment Agency and 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 Water intends to follow option B for TCM provision at Maple STC.

[https://ciwmquals.co.uk/competence/operator-competence/](#)

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existing Continuing Competence becomes due.

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| Risk | Description of Waste Facility Covered | Standard Rules Permit | Continuing Competence | Qualification/ Certificate (one of the following options) |
|--------|--|--|-----------------------|--|
| Medium | Anaerobic digestion facility including use of the resultant biogas | SR2012No11, SR2021No6, SR2021No7, SR2021No10 | AD | CIWM (WAMITAB) Level 4 Medium Risk Operator Competence for Anaerobic Digestion (601/8515/6) (MROC5) CIWM (WAMITAB) Level 4 Certificate in Waste and Resource Management (603/3581/6) (VRQ407) |

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2b) The site plan has been updated and is included as a revised Figure A2 ("B22849AM-JAC-MPL-DR-0002-P03). The areas of additional land are all located within the wider sewage works controlled by Thames Water. The relevant management plans remain valid as the additional areas will not give rise to significant emissions of odour and bioaerosol and will be designed to minimise likelihood of leaks occurring.

We confirm all relevant management plans are updated as below to include the permit boundary being applied for.

Bioaerosol Risk Assessment – Figures B & C are updated with the new permitted boundary and the updated Risk Assessment is supplied as an attachment ("Appendix F Maple Lodge Bioaerosol Risk Assessment Feb2023"). The rest of the assessment remains valid as there are no additional receptors identified as a result of the new permit boundary being applied for, and, existing receptors are no closer as a result of the new permit boundary being applied for.

Odour Management Plan – **Figure C** is updated with the new permit boundary for the site and the new OMP is supplied as an attachment 'REDACTED FINAL Maple Lodge STW SERV Odour Management Plan v4.1 July 2022 UPDATED SITE PLAN'. There are no additional sources of odour as a result of the new permit boundary being applied for. Spillages contained within the new area, if they were to occur, will be managed as per existing odour control measures

Accident Management Plan – this Management Plan does not include a site plan within the document. No additional hazards above those that have already been identified are anticipated to be present within the new permit boundary being applied for. The current version of the Management Plan is considered to be updated in line with the new areas and remains valid.

LDAR – this Management Plan does not include a site plan within the document. The new permit boundary being applied for does not include additional items which may give rise to biogas and therefore this assessment is considered to be updated in line with the new permit boundary and remains valid.

Residue Management Plan – this Management Plan does not include a site plan within the document. The new permit boundary being applied for does not include use of or storage of

additional residues (raw materials, water or waste streams) compared with those already identified within the existing Management Plan. The current version of the Management Plan is considered to be updated in line with the new permit boundary and remains valid.

2c) An updated Site Condition Report including the correct NGR located within the permit boundary is included below as Appendix A.

2d)– An updated Site Condition Report including a Stage 1-3 assessment of relevant hazardous substances is included below in Appendix A.

2e) Question 6 Floating roof digesters

The digesters at Maple Lodge are all of a similar design, using a wet seal to minimise the release of biogas from the floating roof structure. The floating roof sits on a 'lip' or 'ledge' within the fixed digester body (see attached drawings listed below). The seal is formed of sludge which is located within the fixed digester body. In order for the roof to operate and retain biogas correctly, it must move telescopically, enabled by a small gap between the edge of the digester body and the outer edge of the floating roof.

Drawings:

'Drawing 0080550.pdf045f7c3' - overview Maple Lodge digester domes

'Drawing 0080563.pdf045fc6'6' - diagram showing floating roof operation with lip.

'Drawing 0054189.pdf04570e9' - engineering drawing Maple Lodge Primary Digester

The floating roof digesters are operated in accordance with the above design principles. Thames Water continuously monitors the level of the gas bells and uses process controls to minimise the risk of diffuse emissions by:

- Adjusting the throttle valve on each digester outlet to balance the relative amount of biogas stored within each floating roof
- Managing consumption of biogas via operation of the CHP
- Use of the flare stack to manage storage of excess biogas in emergency circumstances

2f) Thames Water commits to covering permitted open top tanks at the facility in accordance with the IED and BAT 14. Thames Water will take a risk-based approach, including use of PAS110, to determine our approach to abatement if required for individual tanks at Maple Lodge. Thames Water confirm that our approach to abatement includes use of a biogas system if required. Engineering design assessment may result in replacement of tanks or reduction in number of applicable tanks. Our programme of delivery will need to be phased so that for each location a minimum number of existing AD tanks are always in continued operation to ensure process requirements are met. Thames Water will use PAS110 to determine whether individual tanks are biologically active. Non-biologically active tanks will be considered in accordance with the guidance Covering Slurry Lagoons (publishing.service.gov.uk).

3) Provide information in Application form Part C3 – General – varying a bespoke permit

a) Q1 – What activities are you applying to vary. You have identified in 'Table C3-1a – Types of activities' under activity S5.4 A1(b)(i), annex I and II codes and descriptions 'D10 Incineration on land'. We can see no mention in your non-technical summary of why D10 Incineration on land' is required. Provide an explanation of why you are applying for D10 Incineration on land, or confirm that this is not required.

b) Table 3 – Technical standards. You have advised in your response "Will be updated as and when the EA guidance is issued", and identified LFTGNO8: guidance for Monitoring landfill gas engine emissions. Under guidance Part C3 varying a bespoke installation permit (publishing.service.gov.uk) you must identify any relevant guidance in Technical guidance for regulated industry sectors: environmental permitting – GOV.UK (www.gov.uk), and relevant best available techniques (BAT). It should also be noted that LFTGNO8 is superseded Biological waste

treatment: appropriate measures for permitted facilities - Guidance - GOV.UK (www.gov.uk). Provide an updated C3 form identifying the relevant technical standards that your site will comply with.

c) Q3b – General Requirements. You have provided 'Table C3-3b (iv) - Environmental Risk Assessment and Accident Management Plan'. This does not meet the requirements of guidance Develop a management system: environmental permits - GOV.UK (www.gov.uk) and is missing key information such as review dates, emergency contacts etc. Your accident management plan must be a standalone document. Provide an accident management plan that meets the requirements of Develop a management system: environmental permits - GOV.UK (www.gov.uk).

d) Q3 - Operating Techniques - You have not provided your waste pre-acceptance and acceptance procedures in line with (Best Available Techniques (BAT) Reference Document for Waste Treatment Industrial Emissions Directive 2010/75/EU Integrated Pollution Prevention and Control (europa.eu)) BAT 2. Provide a copy of your waste preacceptance and acceptance procedures.

e) Q3 Operating Techniques – You have provided document 'B22849AZ-JA-MAPLS1ZZ100-CA-P-0001 – 01082022' ADBA assessment. On review of this it does not seem to be completed for your site, identifying materials such as Chicken Manure, and potatoes in your material feedstock, and . Provide an fully completed ADBA assessment for the activities that you are applying for to confirm the relevant containment class.

f) Q3 operating techniques – You have identified on your emission point plan flares at locations A6, A7 and A9. Your current permit advises that emission point A6 and A7 are being decommissioned, and your non-technical summary refers to only two flares. Provide an explanation of how flares will only be used on site in the event of an emergency, confirm if flares identified at emission points A6 and A7 are still to be decommissioned.

g) Q4a – Monitoring - Requires that you provide environmental monitoring, for example, bio-aerosol monitoring, surface water or groundwater, noise, ambient air monitoring, process and land monitoring. You must describe the frequency of any monitoring, the measurement methodology you will use and the procedure for evaluating your results. You must provide a permanent means of access to monitoring points. On assessment of your response you have provided some emission to air points in section 5, but not included all potential emissions, or relevant parameters. For all relevant emissions as outlined in guidance Part C3 varying a bespoke installation permit (publishing.service.gov.uk), provide:

i. The national grid reference of the monitoring point

ii. The frequency of monitoring.

iii. The methodology used for monitoring. You should use recognized standards such as British EN standards or ISO standards.

iv. The procedures (written documents) you follow to assess the measures.

h) Q4b9 – BS EN 15259 - You have answered no to question in section 4, but not provided information on how the standards in BS EN 15259 will be met. Provide an assessment to how the standards in BS EN 15259 will be met.

Answer 3

Please see attached 'Part C3 – Maple Lodge STC v2'

3a) 'D10 Incineration on land' will be used to allow for the emergency flare to operate and combust biogas as a Directly Associated Activity to the main listed activity. Biogas will only be combusted to maintain integrity of the biogas collection system and will occur at emission point A9. This code may be removed from the permit.

3b) Table 3 – Technical standards is reproduced below.

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) | Biological waste treatment: appropriate measures for permitted facilities BAT Conclusions for Waste Treatment | https://www.gov.uk/guidance/biological-waste-treatment-appropriate-measures-for-permitted-facilities 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.) |

5c – Please see attached “Maple Lodge Accident Management Plan v2.pdf” which fulfils the criteria of a standalone management plan.

5d – Please find attached copies of waste pre-acceptance and waste acceptance procedures for Thames Water operations:

1. Acceptance of Third-Party Waste Imports EMS-EES-012 Version 7.0
2. Acceptance of TWUL Inter-site Sludge and Cake EMS-DOC.071 v1.0

5e - ADBA tool. An updated assessment is included as a separate document

5f – Question 3 Operating Techniques (flares).

Emission points A6 and A7 are now decommissioned and no longer operable.

- Decommissioned flare A6 has been disconnected, is inoperable but the flare structure remains in situ
- Decommissioned flare A7 has been disconnected is inoperable but the flare structure remains in situ.

Updated site plan A2 shows the only remaining biogas flare as emission point A9. There is only one ground mounted biogas flare available for use in an emergency situation.

- **The non-technical summary is updated with the following replacement paragraphs 7 and 8:**

“Biogas from each floating roof joins a common biogas line, is pressurised, and transferred for use on site within the CHP engines or boilers. The biogas lines are fitted with foam traps and condensate pots which capture entrained foam and moisture for discharge to the site drainage. **One biogas flare is available for use in emergency.** The floating roof biogas holders are fitted with pressure relief valves as a safety precaution in the event of over pressurising of the system.

Biogas is combusted within one of the two CHP engines at the site, generated electricity is used within the site and exported to the National Grid. Heat generated by the CHP engines is used to maintain primary digester temperatures via heat exchange with auxiliary boilers available to provide additional heating as required. Boilers are dual fuelled by both biogas and fuel oil. CHP

engines are classified as 'existing' combustion plant under the Medium Combustion Plant Directive. In the event there is excess biogas, i.e. more than the CHP engines or boilers can utilise, or in the event that the CHP engines or boilers are unavailable, ***there is one ground mounted emergency flare. This is utilised under 10% of the year or less than 876 hours per year.***

- The technical summary is updated with the following replacement text (paragraph 5 of Biogas section)

"In the event of excess biogas, due to CHP engines or boilers being unavailable or there being more biogas than the CHP engines or boilers can utilise, *there is one ground mounted emergency flare which can combust biogas. Two old ground mounted flares are decommissioned and removed from the permit via this variation. The flare is utilised under 10% of the year, less than 876 hours per year and use of flares is recorded via SCADA.* There is a second bulk fuel oil tanks onsite used exclusively by the standby generators. Both oil tanks are bunded, aboveground, with aboveground fuel oil pipework delivering fuel oil to the relevant combustion asset."

- Reference to Emission Point A6 should be deleted from existing Table C3-2a Emissions to Air from Part C3 of the variation application.
- All references to multiple flares within Tables C3-3b (i) – C3-3b (iv) should be read as a singular flare, namely the biogas flare at emission point A9.
- Text in Question 4a of Form C3 referring to "A6 and A9" should read as reference to A9 only. Monitoring details for A9 are provided below in the updated table.

5g –

| Monitoring point | NGR | Monitoring frequency | Methodology (standard) | Assessment procedures |
|------------------------|-------------------|-----------------------------|------------------------|--|
| Boilers 2a, 2b, 2c, 2d | TQ 04113 92240 | Annual | | Note to be made in a log of the total number of hours each boiler is run on gas oil only |
| A5a (Boiler 2a) | TQ 04113 92240 | Oxides of Nitrogen – Annual | BS EN 14792 | |
| A5b (Boiler 2b) | | Oxides of Nitrogen – Annual | BS EN 14792 | |
| A5c (Boiler 2c) | | Oxides of Nitrogen – Annual | BS EN 14792 | |
| A5d (Boiler 2d) | | Oxides of Nitrogen – Annual | BS EN 14792 | |

| | | | | |
|-------------------------------|-------------------|--|--|--|
| A8a (CHP Engine 2a) | TQ 03897 92312 | Oxides of Nitrogen – Annual Carbon Monoxide – Annual VOCs - Annual | BS EN 14792 BS EN 15058 BS EN 12619:2013 | |
| A8b (CHP Engine 2a) | TQ 03897 92312 | Oxides of Nitrogen – Annual Carbon Monoxide – Annual VOCs - Annual | BS EN 14792 BS EN 15058 BS EN 12619:2013 | |
| A9(Biogas Flare) | TQ 04038 92074 | Hours of operation - continuous | | |
| | | If over 876 hours then: Oxides of Nitrogen – Annual Carbon Monoxide – Annual VOCs - Annual | BS EN 14792 | BS EN 15058 BS EN 12619:2013 |
| A10 (Import OCU) | TQ 03755 92551 | Hydrogen sulphide Once every six months | CEN TS 13649 for sampling | NIOSH 6013 for analysis |
| | | Ammonia: Once every six months | EN ISO 2187 or CEN TS 13649 or equivalent. | NIOSH 6016 for analysis |
| A11 (MCP Standby Generator 1) | TQ 03786 92164 | Once every 1,500hrs of operation with a minimum frequency of once every five years (the determination date being 28/1/2020). Sulphur Dioxide Oxides of Nitrogen Carbon monoxide | In accordance with EA TGN M5. EN 15267-4 | Until 1 January 2025, EN 50379-2. From 1 January 2025, MCERTS |

| | | | | |
|--|-------------------|--|---|--|
| A12 (MCP Standby Generator 2) | TQ 03786 92171 | Once every 1,500hrs of operation with a minimum frequency of once every five years (the determination date being 28/1/2020). Sulphur Dioxide Oxides of Nitrogen Carbon monoxide | In accordance with EA TGN M5. EN 15267-4 | Until 1 January 2025, EN 50379-2. From 1 January 2025, MCERTS |
| A13 (Primary digester PRV) | TQ 04105 92152 | n/a | | |
| A14 (Primary digester PRV) | TQ 04132 92146 | n/a | | |
| A15 (Primary digester PRV) | TQ 04104 92125 | n/a | | |
| A16 (Primary digester PRV) | TQ 04127 92122 | n/a | | |
| A17 (Primary digester PRV) | TQ 04096 92059 | n/a | | |
| A18 (Primary digester PRV) | TQ 04120 92056 | n/a | | |
| A19 (Primary digester PRV) | TQ 04091 92027 | n/a | | |
| A20 (Primary digester PRV) | TQ 04117 92024 | n/a | | |
| S1 – Primary Sludge Picket Fence Thickener Liquors | TQ 04176 92114 | n/a | MCERTS or ISO/IEC 17025 | |
| S2 – SAS Picket Fence Thickener Liquors | TQ 04186 92168 | n/a | MCERTS or ISO/IEC 17025 | |
| S3 - SAS Thickening Belt Liquors | TQ 04191 92202 | n/a | MCERTS or ISO/IEC 17025 | |
| S4 – Primary Sludge Drum Thickener Liquors | TQ 0417092156 | n/a | MCERTS or ISO/IEC 17025 | |

| | | | | |
|--|----------------|-----|-------------------------|--|
| S5 – Sludge Dewatering Centrifuge Centrate | TQ 03918 92369 | n/a | MCERTS or ISO/IEC 17025 | |
| | | | | |

5h - As an existing operational site sampling locations and sampling ports may not meet all of the requirements for BS EN 15259, but these are being checked onsite.

The CHP engines have a permanent testing platform. The smaller 1x4 boilers do not require and emissions testing platform as they can be tested from ground.

4) Provide information in Application form Part C4 – General – varying a bespoke waste operation permit

a) Q1 – What waste operations are you applying to vary – On review of 'Table C3-1b(iii): Waste accepted for temporary storage and transfer or treatment'. You have not provided a non-technical summary, or provided information on how you will comply with the relevant appropriate measures for this waste activity.

- i. Update you non-technical summary to include an explanations of the activity identified as 'Waste accepted for temporary storage and transfer or treatment'.
- ii. Provide an explanation of how you will comply with the relevant appropriate measures (Biological waste treatment: appropriate measures for permitted facilities - 1. When appropriate measures apply - Guidance - GOV.UK (www.gov.uk))
- iii. Alternatively confirm that you will not be applying for this waste activity as part of your permit application.

b) Q1 – Types of waste accepted. On review of 'Table C3-1b(i) Waste accepted into Anaerobic Digestion import point'. Note 2 states "Where wastes are imported which would cause the digester outputs to fall outside of the Sludge Use in Agriculture Regulations, those wastes in Table 1 will not currently be accepted. Null waste returns will be provided to demonstrate that these wastes have not been processed." Your application is for the resultant cake to be used under the Sludge Use in Agriculture Regulations, you have provided no information on how you will manage your process for co-digestion.

- i. Confirm that you will not be undertaking co-digestion, and identify the EWC codes that you will remove from your application, or
- ii. Provide a non-technical summary and BAT assessment to demonstrate how you will operate the site for co-digestion.

Answer 4

4a) TWUL intend to undertake this activity at the site.

Non-Technical Summary

Thames Water will import treated sludge cake from other works, for temporary storage on the site cake pad, pending offsite recovery. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import, including checking whether the incoming cake complies with the requirements of SUIAR and BAS.

Cake will be offloaded into a bay, and visually checked. The waste stream is the same as that arising from the treatment of sludge within the Maple Lodge 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 cake pad, for the shortest time practicable, the duration depending on factors such as prevailing weather and availability of the landbank.

Please see amended Table C3-1b(iii) below

ii) Please see attached 'Acceptance of TWUL Inter-Site Sludge and Cake EMS-DOC.071 v1.0'

Table C3-1b(iii) Waste accepted for temporary storage and transfer

| Waste Code | Description of Waste |
|-------------------|---|
| 19 02 06 | sludges from physico/chemical treatment other than those mentioned in 19 02 05 (sewage sludge only) ^[note 3] |

4b) Thames Water confirms that they will not be undertaking co-digestion at Maple Lodge STC and have re-produced a version of Table C3-1b(i) which identifies the EWC codes to be used for digestion.

Table C3-1b(i): Waste accepted into Anaerobic Digestion import point

| Waste Code | Description of Waste |
|--|--|
| 16 10 02 | aqueous liquid wastes other than those mentioned in 16 10 01 ^[note 1] |
| 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 08 09 | grease and oil mixture from oil / water separation containing only edible oil and fats |
| 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) |
| Note 1 – comprising but not limited to: Centrate liquor Final effluent from wastewater treatment works | |

5) Emissions returned to the WwTW.

The waste anaerobic digestion process produces effluent and is discharged off site to the Maple Lodge Wastewater Treatment Works. Effluent discharged to the head of the works is a point source emission to sewer. BAT conclusion 3 requires operators to have an emissions inventory for the effluent. We acknowledge that applicants may not hold this information in order to inform a quantitative risk assessment for existing discharges. For the purpose of duly making, provide the following information:

a) Provide a summary of the sampling and analysis methodology of the effluent discharged and specify the likely pollutants in the effluent (guidance here Monitoring discharges to water: guidance on selecting a monitoring approach - GOV.UK (www.gov.uk) and Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk)).

- b) Provide a written statement with a commitment to undertake the sampling and analysis in line with BAT3.
- c) Provide a written statement with a commitment that those undertaking the sampling and analysis will be by accredited to MCERTs or provide evidence of equivalent standards.
- d) Provide a revised drainage plan which identifies the effluent sampling point for the effluent discharge from the installation.
- e) Advise the NGR of the effluent/s sampling point.

Answer 5

Please see attached reply 'Response to RFI_Q5_Maple Liquor 20230208' further to which please note that Thames Water commits to:

- a. undertaking (using a UKAS accredited laboratory where available) a chemical analysis of the waste water which tests for ALL pollutants which we expect to find in the discharge (not just Ammonia, BOD, Solids, flow, pH and data on bio-eliminability) and that we will use an appropriate 'minimum reporting value' (MRV) (usually 10% of the environmental quality standards (EQS) where this is analytically achievable).
- b. the sampling and chemical analysis being undertaken in line with guidance Surface water pollution risk assessment for your environmental permit - GOV.UK (www.gov.uk) for all pollutants we expect to find.

Appendix A1 – Maple Lodge STC Site Condition Report

SITE CONDITION REPORT TEMPLATE

For full details, see H5 *SCR guide for applicants* v2.0 4 August 2008

COMPLETE SECTIONS 1-3 AND SUBMIT WITH APPLICATION

DURING THE LIFE OF THE PERMIT: MAINTAIN SECTIONS 4-7

AT SURRENDER: ADD NEW DOC REFERENCE IN 1.0; COMPLETE SECTIONS 8-10; & SUBMIT WITH YOUR SURRENDER APPLICATION.

| 1.0 SITE DETAILS | |
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| Name of the applicant | Thames Water Utilities Limited |
| Activity address | Maple Lodge Sludge Treatment Centre Maple Lodge Sewage Treatment Works Denham Way Maple Lodge Rickmansworth WD3 9SQ |
| National grid reference | TQ 04153 92131 (<i>updated</i>) |
| Document reference and dates for Site Condition Report at permit application and surrender | Environmental Permit Variation Application – Maple Lodge Sludge Treatment Centre. Document number: TW_STC_EPR_08a, EPR/FP3535LA/V006 (<i>updated</i>) Date: February 2023 |
| Document references for site plans (including location and boundaries) | Please see site plans in Appendix A. |

Note:

In Part A of the application form you must give us details of the site's location and provide us with a site plan. We need a detailed site plan (or plans) showing:

- Site location, the area covered by the site condition report, and the location and nature of the activities and/or waste facilities on the site.
- Locations of receptors, sources of emissions/releases, and monitoring points.
- Site drainage.
- Site surfacing.

If this information is not shown on the site plan required by Part A of the application form, then you should submit the additional plan or plans with this site condition report.

| 2.0 Condition of the land at permit issue | |
|--|--|
| Environmental setting including: <ul style="list-style-type: none"> • geology • hydrogeology • surface waters | <p>The River Colne runs along the sites northern and eastern boundary (giving way to the Grand Union Canal along the eastern boundary). To the south is Lynster's Lake and to the west is Maple Lodge Nature Reserve consisting of woods, Marsh Lake and Clubhouse Lake.</p> <p>Information from the Environment Agency's online flood maps show that while the majority of the site is at a very low risk of river flooding, parts of the site are at an elevated risk. This includes some areas where sludge assets are located where there is a low risk of flooding and other areas of the site where there is a high risk. There is a very low risk from surface water flooding.</p> <p>The geology of the site is a bedrock of Lewes Nodular Chalk Formation which are shallow marine in origin. This is overlain by</p> |

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| | <p>sedimentary alluvium clay, silt, sand and gravel from fluvial origins.</p> <p>Parts of the site are within the boundaries of a Source Protection Zone 1.</p> <p>Bedrock deposits are classified as Principal and superficial deposits are classified as Secondary A.</p> |
| <p>Pollution history including:</p> <ul style="list-style-type: none"> • pollution incidents that may have affected land • historical land-uses and associated contaminants • any visual/olfactory evidence of existing contamination • evidence of damage to pollution prevention measures | <p>The site is located within a generally rural area of Hertfordshire.</p> <p>The installation activities at the site are part of a wider TWUL operated sewage treatment works which handles and treats material which is similar in composition and makeup to the wastes treated within the installation.</p> <p>Prior to 1900 the site was agricultural fields and undeveloped. A Canal has been located in or around the current Grand Union Canal since the 1870s. The presence of Harefield Lime Works and Springwell Chalk Pit are noted in the historical maps prior to the 1900s, with the Lime Works changing to Distemper Works in the 1910s (paint works).</p> <p>Sewage works of the Chorleywood U.D.C appear in the records from the mid-1930s slightly north and west of the current works. Works in the current location and of a similar form are recorded in the 1960s and are expanded in the 1970s.</p> <p>There are some potential pollution incidents on record with the Environment Agency associated with the site. Four records have been found: one incident that was both a Category 3 (Minor) to land and Category 2 (significant) to water caused by diesel, and three incidents that were Category 2 (significant) incidents to water caused by sludge, final effluent and other organic chemicals or products.</p> |
| Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available) | Unknown – although the works was operated as a sewage works in its earliest phase, the site will therefore likely be contaminated with sewage related compounds, including E. coli and heavy metals. |
| Baseline soil and groundwater reference data | <p>None collected.</p> <p>Substances that may be present by storage and use within the newly permitted installation are listed within the Tables of the Residue Management Plan (as previously supplied). These substances (or similar substances used in the same processes) have been used historically at the site since it first operated.</p> <p>The following substances may be ‘relevant hazardous substances’:</p> <ul style="list-style-type: none"> • Diesel • Oil • Grease |

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| | <ul style="list-style-type: none"> • Anti-freeze <p>These substances are stored in and around the CHP engines, and are used in their routine operation and maintenance.</p> <p>All other hazardous substances have been removed from assessment as they are not considered relevant. This is because storage and use are controlled at the site.</p> <p>Substances are stored within suitably engineered containers/with containment and volumes are small enough for spillage to be contained prior to reaching a sensitive environment. Use of substances is carefully managed to minimise the likelihood of an accidental release.</p> |
| Supporting information | Thames Water has not collected baseline data at this time and acknowledges the risks that this may pose when it comes to surrender of the permit. However, there are no plans to close the site in the foreseeable future |

| 3.0 Permitted activities | |
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| Permitted activities | <p>Operation of an anaerobic digestion plant for sewage sludge waste and imported sewage sludge wastes and combustion of biogas within a CHP engine to generate electricity for use on site.</p> <p>Imports of waste to the works inlet for treatment via the UWWTD route.</p> |
| Non-permitted activities undertaken | <ul style="list-style-type: none"> • Discharging of waste • Storage of waste • Storage of biogas • Physical blending of wastes • Storage of raw materials |
| <p>Document references for:</p> <ul style="list-style-type: none"> • plan showing activity layout; and • environmental risk assessment. | Please see the Technical Summary in Chapter 2 of the main application document. |

Note:

In Part B of the application form you must tell us about the activities that you will undertake at the site. You must also give us an environmental risk assessment. This risk assessment must be based on our guidance (*Environmental Risk Assessment - EPR H1*) or use an equivalent approach.

It is essential that you identify in your environmental risk assessment all the substances used and produced that could pollute the soil or groundwater if there were an accident, or if measures to protect land fail.

These include substances that would be classified as 'dangerous' under the Control of Major Accident Hazards (COMAH) regulations and also raw materials, fuels, intermediates, products, wastes and effluents.

If your submitted environmental risk assessment does not adequately address the risks to soil and groundwater, we may need to request further information from you or even refuse your permit application.

| 4.0 Changes to the activity | |
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| Have there been any changes to the activity boundary? | If yes, provide a plan showing the changes to the activity boundary. |
| Have there been any changes to the permitted activities? | If yes, provide a description of the changes to the permitted activities |
| Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities? | If yes, list of them |
| Checklist of supporting information | <ul style="list-style-type: none"> Plan showing any changes to the boundary (where relevant) Description of the changes to the permitted activities (where relevant) List of 'dangerous substances' used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant) |

| 5.0 Measures taken to protect land | |
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| Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked. If you can't, you need to collect land and/or groundwater data to assess whether the land has deteriorated. | |
| Checklist of supporting information | <ul style="list-style-type: none"> Inspection records and summary of findings of inspections for all pollution prevention measures Records of maintenance, repair and replacement of pollution prevention measures |

| 6.0 Pollution incidents that may have had an impact on land, and their remediation | |
|---|---|
| Summarise any pollution incidents that may have damaged the land. Describe how you investigated and remedied each one. If you can't, you need to collect land and /or groundwater reference data to assess whether the land has deteriorated while you've been there. | |
| Checklist of supporting information | <ul style="list-style-type: none"> Records of pollution incidents that may have impacted on land Records of their investigation and remediation |

| 7.0 Soil gas and water quality monitoring (where undertaken) | | |
|---|----|--|
| Provide details of any soil gas and/or water monitoring you did. Include a summary of the findings. Say whether it shows that the land deteriorated as a result of the permitted activities. If it did, outline how you investigated and remedied this. | | |
| Checklist supporting information | of | <ul style="list-style-type: none">• Description of soil gas and/or water monitoring undertaken• Monitoring results (including graphs) |

8.0 Decommissioning and removal of pollution risk

Describe how the site was decommissioned. Demonstrate that all sources of pollution risk have been removed. Describe whether the decommissioning had any impact on the land. Outline how you investigated and remedied this.

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| Checklist of supporting information | <ul style="list-style-type: none"> • Site closure plan • List of potential sources of pollution risk • Investigation and remediation reports (where relevant) |
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9.0 Reference data and remediation (where relevant)

Say whether you had to collect land and/or groundwater data. Or say that you didn't need to because the information from sections 3, 4, 5 and 6 of the Surrender Site Condition Report shows that the land has not deteriorated.

If you did collect land and/or groundwater reference data, summarise what this entailed, and what your data found. Say whether the data shows that the condition of the land has deteriorated, or whether the land at the site is in a "satisfactory state". If it isn't, summarise what you did to remedy this. Confirm that the land is now in a "satisfactory state" at surrender.

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| Checklist of supporting information | <ul style="list-style-type: none"> • Land and/or groundwater data collected at application (if collected) • Land and/or groundwater data collected at surrender (where needed) • Assessment of satisfactory state • Remediation and verification reports (where undertaken) |
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10.0 Statement of site condition

Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that:

- the permitted activities have stopped
- decommissioning is complete, and the pollution risk has been removed
- the land is in a satisfactory condition.