Mr Mark McAree
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Date: 26/09/2023

Application reference: EPR/FP3435LA/V006
Operator: Thames Water Utilities Limited
Facility: Maple Lodge Sludge Treatment Centre, Denham Way, Rickmansworth, WD3 9SQ

Ref: Application request for supporting information.

Dear Mark,

I am writing regarding your responses to the two Request for Further Information Notices ("the Notices") we served under Schedule 5 of the Environmental Permitting (England and Wales) Regulations 2016 ("EPR 2016"), and request for further information e-mails that have been sent.

Our current view is that your responses to the above have not provided sufficient detail or clarity to demonstrate your facility will use Best Available Techniques ("BAT"), and not given sufficient regard to our H4 Odour Management – how to comply with your environmental permit guidance.

The outstanding questions to the final Schedule 5 Notice are provided in Appendix 1, with explanations of why these have not been suitably responded to or provided. The key issues are summarised below.

On assessment of your compliance with BAT conclusion 14d, 34 and 53 in our Notice dated 31/07/2023, we submitted question 2 and 3 requesting that for open tanks and processes you confirm in line with BAT how you will store, treat and handle waste and material that may generate diffuse emissions. The requirements under these BAT conclusions set out that these emission sources should be in enclosed buildings and/or enclosed equipment and gases directed emissions to an appropriate abatement system or for utilisation if the gases are biogas. Appropriate abatement systems are outlined in BAT conclusion 53 for tanks pre-AD and BAT 34 for processes undertaking the biological treatment of waste.

The questions required:

- The specification of abatement technology for tanks pre-anaerobic digestion, and the explanation of why the proposed abatement would be effective.
- A commitment that if produced digestate is still biologically active, and you are producing combustible biogas you will take steps to collect the biogas and direct this to your gas collection system in line with BAT 14; and

- For open tanks that do not produce an explosive environment (i.e. less biologically active) that you will enclose, collect and direct the waste gas emissions to an appropriate abatement system in line with BAT 14, 34 or 54.

Your response to these questions stated that, “Thames Water commits to following BAT 14 and depending on the risk posed by the waste in terms of diffuse emissions to air, will use the appropriate BAT 14 techniques which includes BAT14 d. Any proposed solutions, such as coverings and collection systems, will be subject to a risk- based approach.” Your response does not clarify what you mean by “subject to a risk based approach”. It does not commit to implement BAT 14d and indicates the use of other techniques instead of BAT 14d. If alternative approaches to BAT are sought, detailed proposals and designs must be submitted with your application. We cannot permit proposals which consider novel methods without assessment. The responses therefore do not provide us with confidence that you will meet the requirements of BAT 14d, 34 and 53. Further details in relation to this are provided in the Appendix 1 below for each question raised and response provided.

Based on the points above, we currently have significant concerns regarding the proposed management and control of site operations and infrastructure to minimise the potential for significant environmental impact in relation to your ability to demonstrate the use of BAT.

We have not yet come to a decision on your application and are giving you a final opportunity to provide any further information in respect of our previous further information requests that you want us to take it into account. You should submit this in writing by **24/10/2023** to:

sarah.raymond@environment-agency.gov.uk.

Please be aware we will not make multiple requests for this. If you choose not to respond, or any further response is inadequate, given the opportunities we have afforded you to provide additional information it is likely we will just proceed to determine the application based on the information we have. Therefore, please ensure any response fully details the information you wish us to consider and addresses all outstanding points raised in this letter by the date requested.

Yours sincerely

Sarah Raymond
Permitting Officer – Installations

cc: Maria Woods

cc: Nicola Telcik

Appendix 1

The below appendix confirms outstanding questions as per the Notices issued, and requests for further information sent. Notes after the identified questions outline our current assessment of the information provided, and reason for the question remaining unanswered/requiring further clarification.

Section 1 – Best Available Techniques BAT - Outstanding responses to Notice dated 31/07/2023.

Question 2 - Abatement of assets pre-anaerobic digestion

You have advised in your response to question 8 of Schedule 5 notice dated 06/06/2023, "Any abatement technology implemented in line with BAT 14d and BAT34 will be gas engines or odour control units depending upon the outcomes of a risk-based approach, which includes PAS110 digestate stability and targeted monitoring of releases from open top tanks." This does not address odour abatement pre anaerobic digestion which should be in line with BAT 14d and BAT 53. Under BREF guidance BAT conclusion 14d you must store, treat and handling waste and material that may generate diffuse emissions in enclosed buildings and/or enclosed equipment and collect and direct emissions to an appropriate abatement system. Appropriate abatement systems are outlined in BAT conclusion 53 for tanks pre-AD.

a) *For your tanks pre-anaerobic digestion (identified as picket fence thickeners, SAS tank, reception tank and sludge blending tank) specify the abatement technology that will be implemented in line with BAT 14d and BAT 53 to treat air emissions.*

b) *b) Provide a written statement which explains why the abatement plant will be effective at treating point source waste gas and odour emissions*

Your response submitted on the 29/08/2023 does not answer the questions raised. You have not specified the abatement technology that will be implemented providing potential options but giving no firm commitment in line with BAT 14d and BAT 53. You therefore did not explain how the chosen abatement plant will be effective. Your response also raises concerns over your interpretation of BAT with comments such as "Any proposed solutions, such as coverings and collection systems, will be subject to a risk-based approach" giving no explanation of what you would proposed as a risk based approach, or what this means.

Your activity includes prior to the anaerobic digestion (AD) process (the biological treatment of waste) the thickening and dewatering process which is a directly associated activity (DAA) of the AD process. The BAT AELs are appropriate for the activity defined under the BREF as 'Treatment of water-based liquid waste'. The BREF provides examples of wastes that would be considered as water-based liquid wastes. These include wastes under the category '19 08 wastes from waste water treatment plants not otherwise specified'. The treatment of this waste in the dewatering and thickening stage and the subsequent emissions to air from connected abatement will be subject to the BAT AELs specified within BAT conclusion 8 and any odour control unit that serves this DAA must meet the requirements of BAT 53.

BAT 53 requires that "In order to reduce emissions of HCl, NH_3 and organic compounds to air, **BAT is to apply BAT 14d** (Containment, collection and treatment of diffuse emissions) and to use one or a combination of the techniques including adsorption, biofilter, thermal oxidation and/or wet scrubbing.

Please note that we have previously clarified this is application EPR/MP3338LU/V004 and would expect that this approach is fully understood. Please note that emissions monitoring and compliance with the BAT AELs will only be required if these pollutants are identified within the composition of the emissions to air at this location. No assessments for these emission points were submitted with your application, therefore, an improvement condition to determine the composition of emissions to air would be included in any issued permit.

It is our view that your statement "Thames Water commits to following BAT 14 and depending on the risk posed by the waste in terms of diffuse emissions to air, will use the appropriate BAT 14 techniques which includes BAT14d. Any proposed solutions, such as coverings and collection systems, will be subject to a risk- based approach." does not fully commit to implementing BAT 14d and BAT 53 for open tanks pre-anaerobic digestion, and potentially looks to consider alternatives approaches without explanation or justification. We cannot grant a permit where there is no proposal – as a minimum we need to understand what technologies you would employ in line with BAT. Vague references to a risk-based approach does not provide us with confidence that BAT will be achieved. To clarify the question above we will require:

a) **Full commitment to cover all pre-anaerobic digestion tanks identified as the picket fence thickeners, SAS tank, reception tank and sludge blending tank in line with BAT 14d.**
b) **The specification of the abatement technology that will be implemented in line with BAT 14d and BAT 53 to treat air emissions.**
c) **The proposed NGR of the OCUs air abatement plant emission points.**
d) **A written statement which explains why the abatement plant will be effective at treating point source waste gas and odour emissions.**

Question 3 - Appropriate abatement and commitment to BAT

We have identified within your response that you have stated that "We (Thames) are developing solution types that will be effective at treating point source waste gas or odour, that can be optioned and have site specific details applied to them if the risk-based approach and monitoring demonstrate that it is needed." We would again state that under BREF guidance for the waste treatment sector BAT conclusion 14 you must ensure that diffuse emissions are contained. This includes techniques such as storing, treating and handling waste and material that may generate diffuse emissions in enclosed buildings and/or equipment, and collecting and directing the emissions to an appropriate abatement system.

If digestate is still biologically active, and you are producing combustible biogas you must take steps to collect the biogas. Biogas should not be vented to the environment. If the source does not produce an explosive environment (i.e. less biologically active) you will need to propose plans to enclose, collect and direct the waste gas emissions to an appropriate abatement system.

You have also stated that "Any proposed solutions, such as coverings and collection systems, will be subject to a risk- based approach including the 'EA Cost benefit methodology'" to which we would confirm that unless the applicability criteria states otherwise, the BAT is usually considered to be affordable across the industry sector for both newly built plant and a "typical" existing plant. A cost benefit analysis in relation to the implementation of covers and abatement would not be appropriate in relation to the Application as it is only relevant in cases which may qualify for a derogation (or deviation) from BAT AELs. In any event, cost alone is not a valid reason for seeking a derogation (or

deviation) from BAT AELs and so is of even less relevance to other aspects of BAT. Any diversion from BAT treatment measures, such as the air abatement systems described in BAT conclusion 14d (and 34) must be supported by evidence that the same level of protection to prevent or minimise diffuse emissions can be achieved. Any deviation from BAT with evidence must be submitted as part of a permit application for assessment. As no proposals with evidence have been provided, a commitment to the standard BAT requirements should be demonstrated.

We also note that you have not included all open tanks in the tanks that you have identified for abatement.

*In light of your response to question 8 of Schedule 5 Notice dated 6/6/2023 we have significant concerns over your commitment and ability to meet BAT and require th*e below clarifications*.*

Confirm that for all open tanks you will undertake the following:

a) *If digestate is still biologically active, and you are producing combustible biogas you will take steps to collect the biogas and direct this to your gas collection system in line with BAT 14.*

b) *For open tanks that do not produce an explosive environment (i.e. less biologically active) you will enclose, collect and direct the waste gas emissions to an appropriate abatement system in line with BAT 14, 34 or 54.*

Your response submitted on the 29/08/2023 does not answer the question raised. You have again advised in your response that “Thames Water commits to following BAT 14 and depending on the risk posed by the waste in terms of diffuse emissions to air, will use the appropriate BAT 14 techniques which includes BAT 14d. Any proposed solutions, such as coverings and collection systems, will be subject to a risk- based approach.” We believe that his response does not fully commit to implementing BAT and looks to consider alternatives approaches without explanation or justification.

The AD process is a biological treatment process which uses natural processes where microorganisms break down organic matter in the absence of oxygen into biogas and digestate. Feedstock of sewage sludge and separately collected waste materials may have wide-ranging physical and chemical characteristics which have varying biogas production potential. Biogas has a varied composition but typically contains predominantly methane, carbon dioxide and nitrogen with traces of hydrogen sulphide and ammonia. Due to the methane component, biogas is combustible and has a significant global warming potential. In addition, fugitive emissions of biogas could also risk fire or explosion, as well as toxicity from gases such as hydrogen sulphide. It is our view that the risk posed by the waste is well known and well established.

The Waste Treatment BREF and BAT conclusion 14 states:
“In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques. These techniques include the Containment, collection and treatment of diffuse emissions”.

We recognise that Thames are not currently able to identify the levels of biogas that may be discharged to atmosphere from open tanks post AD as no evidence or analysis has

been conducted, however the large quantities of waste feedstock and relatively short HRT indicate that the produced digestate stored in the open tanks could be unstable and be still producing biogas after it has been discharged into the open from your digester tanks. We as the Environment Agency (EA) have taken a pragmatic approach to the covering of tanks with the implementation of improvement conditions (IC). However, we will only implement these ICs if firm commitments are provided. The IC for open tanks post AD will allow Thames to gather evidence and produce an evaluation of your process and digestate. A clear understanding of Maple Lodge's optimal conditions in the digester will enable Thames to determine what tank cover and gas infrastructure you must implement.

The IC will require that Thames must implement a plan to enclose unstable digestate storage/treatment tanks and channel gases to gas utilisation plant or gas storage infrastructure.

Should the digestion process be identified as stable with the digestate having minimal potential for biogas production, the open tanks must still be covered in accordance with BAT conclusion 14d. A stable digestate does not allow the operator to continue to store the waste material within open tanks due to the nature and risk of the waste material.

We therefore require that Thames provide written confirmation that they will commit to covering the Primary Digesters (as these tanks have floating roofs in place which we believe are emitting diffuse emissions), and secondary digesters, and that biogas generated will (if appropriate) be utilised as a fuel or stored for utilisation off site.

Confirm that for all open tanks undertaking AD and post AD you will undertake the following:

a) **You will enclose the 8 primary digester tanks and take steps to collect the biogas and direct this to your gas collection system in line with BAT 14.**
b) **For the Secondary digesters if digestate is still biologically active, and you are producing combustible biogas you will take steps to collect the biogas and direct this to your gas collection system in line with BAT 14.**
c) **If the secondary digesters do not produce an explosive environment (i.e. less biologically active) you will enclose, collect and direct the waste gas emissions to an appropriate abatement system in line with BAT 14 and 34.**

4) Leak Detection and repair plan (LDAR)

You stated in Table 2.1 that flame ionisation detection will be carried out every 12 months but provided no justification for this frequency. We would expect that LDAR monitoring takes place once every 6 months (note, this frequency may be reduced in agreement with the Environment Agency should results dictate).

Update your LDAR plan to undertake flame ionisation detection every 6 months.

You have advised in your response "Please see updated document "TW_STC_EPR_08a_MPL_APPH" attached to this response" however you are still advising that flame ionisation detection will be carried out every 12 months and have provided no justification for this frequency. This question remains outstanding and requires a response.

END OF APPENDIX