**Appendix 3 – Maple Lodge STC determination timescale**

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| **Date** | **Overview** |
| 09/07/2021 | Application received by Thames Water Utilities Limited (TWUL) |
| 10/06/2022 | Application withdrawn by TWUL due to missing information |
| 01/08/2022 | Application resubmitted by TWUL this included:* An ADBA assessment identifying a class 2 (medium risk) containment assessment
* Containment assessment report which provided a site plan only
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| 24/01/2023 | J840 – STC IED Containment Maple Lodge STC – containment options report provided. This included a containment option that provided *“The total design spill volume comprises of 15,600m3 from 25% of the total sludge tank inventory volume. The 25% scenario exceeds both the 110% and single largest tank plus rainfall volumes rules and hence becomes the critical Design Spill Volume.”* (Appendix 5) |
| 27/01/2023 | The Agency sent a request for further information (RFI) and payment (Appendix 17) which included:* Question 2b – Relating to the proposed containment option being outside of the permitted boundary
* Question 6e - Relating to how TUWL intended to address the risk from floating roof digesters
* Question 6f – Relating to the covering of open tanks
* Question 5a – Relating to emissions returned to the Waste water Treatment Works (WwTW)
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| 10/02/2023 | TUWL responded to RFI (Appendix 6) this included:* An updated ADBA assessment identifying a class 2 (medium risk) containment assessment.
* A revised permit boundary that included the containment solution proposed
* A revised J840 – STC IED Containment Maple Lodge STC – containment options report provided. This included a containment option that provided *“The total design spill volume comprises of 15,600m3 from 25% of the total sludge tank inventory volume. The 25% scenario exceeds both the 110% and single largest tank plus rainfall volumes rules and hence becomes the critical Design Spill Volume.”*
* Floating roof drawing designs
* A commitment to covering of open tanks stating *“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). “*
* Document ‘Response to Maple Lodge RFI 27th January 2023 final’ relating to the sampling of indirect emission to water which included a commitment to undertake;
	+ “(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).” and
	+ “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.”
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| 27/02/2023 | The Agency sent a further clarification on the responses received. (Appendix 30) This included a request for TUWL to confirm that they would; * Provide confirmation that you will meet BAT and fully enclose the floating roof digesters.
* Provide confirmation that you agree to implement a plan containing final designs, and an implementation schedule for the enclosure of floating roof digesters, and that this plan will contain a detailed description of the proposed gas utilisation plant, gas storage infrastructure for the biogas produced during anaerobic digestion, pressure relief valves and gas pipework.
* Confirm that you understand the requirements of this IC. Should you wish to deviate from this requirement, your application must be supported with detailed and evidence based alternative measures.
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| 10/03/2023 | TUWL responded (Appendix 31) advising that *“Thames Water commits to ensuring primary digestors meet the requirements of IED by replacement of each asset, containment of diffuse emissions or providing an equivalent solution in accordance with BAT 14 and 14d. Thames Water commits to implementing an engineering design, which may result in replacement of tanks or reduction in number of applicable tanks. The plan will include any proposed amendments to gas utilisation plant, gas storage infrastructure for the biogas produced during anaerobic digestion, pressure relief valves and gas pipework that may be required. 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. “* |
| 10/03/2023 | The application was duly made |
| 06/06/2023 | The Agency sent a Schedule 5 notice (Appendix 27) requesting further information. This included:* Question 8 – In line with BAT conclusion 14d which requires that *you must collect and direct emissions to an appropriate abatement system* a request to provide the abatement technology to be used in the enclosure of open tanks
* Question 10 – In line with *BAT conclusion 14 which requires that you must contain, collect and treat diffuse emissions, storing, treating and handling waste and material that may generate diffuse emissions in enclosed equipment, and BAT conclusion 15 which requires that BAT is to use flaring only for safety reasons or for non-routine operating conditions by ensuring the correct plant design and plant management. An explanation of the solution to prevent emissions from floating roof digesters, and that the gas recovery system would have suitable capacity.*
* Question 11 and 12 – Requiring calculations to demonstrate that secondary containment proposal met the volumes proposed, details on the flood gates proposed, a request to consider jetting, and updated spill modelling.
* Question 22 – Relating to the sampling of indirect emission to the head of the works
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| 04/07/2023 | TUWL responded to the Schedule 5 notice (Appendix 7). This included:* Question 8 – The response did not provided specific abatement technology to be used but advised that “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. “. That TWUL 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. “and further stating that “Any proposed solutions, such as coverings and collection systems, will be subject to a risk- based approach including the ‘EA Cost benefit methodology’ and deliverability informed by health and safety considerations. “
* Question 10 – TWUL confirmed that “an engineering design would be undertaken that would address the gas storage infrastructure. In the context of the existing floating roofs, the biogas storage infrastructure that will be operational at the end of this project will not utilise floating roofs and the system will include a roof design that will contain the produced biogas and prevent diffuse emissions. The exact design of the roofs will be established during the detail design phase of the project and will be informed by number of tanks that remain in use and whether they are refurbishment of the existing tank structures or replacements. The roof designs will be in accordance with Thames Water’s Asset Standard’s and water industry standard specifications. “
* Question 11 and 12 – This included a revised containment options report and confirmation that statement “Please see section 3.3.2 of the revised containment options report, which details the choice of the 25% rule, and includes the appropriate volumes. This is expanded in section 3.4.1. The solution is set out in section 4 of the report.”
* Question 22 – TWUL confirmed that “Thames Water commits to undertake the sampling and analysis on permitted waste imports to the head of the works at Maple Lodge STW. The sampling and analysis will be carried out in line with the EA risk assessment guidance. “
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| 31/07/2023 | The Agency sent a 2nd Schedule 5 Notice (Appendix 8) including questions on:* Question 2 – In line with *BAT conclusion 14d which requires that 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.* Abatement of tanks pre-AD
* Question 3 – In line with BAT 14d and 34 confirmation that if digestate is still biologically active and biogas is still being produced that steps will be taken 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 tanks will be enclosed with gases collected and directed the waste gas emissions to an appropriate abatement system in line with BAT 14, 34 or 54.
* Question 5 – Confirmation that BAT is the standard that is required to be met.
* Question 6 - Secondary containment – request to provide spill modelling, address jetting and that final designs will be undertaken by a competent individual
* Question 7 – A request to confirm in line with guidance Surface water pollution risk assessment for your environmental permit that TUWL would make sure the laboratory tests for all pollutants which they expect to find in the discharge (not just those specified in BAT conclusion 7) and that TUWL would use an appropriate ‘minimum reporting value’ (MRV) (usually 10% of the environmental quality standards (EQS)).
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| 01/08/2023 | Request from TUWLs consultant to have a “30 minute call for them to explain their proposed solution to you and how they intend to address your questions” |
| 08/08/2023 | Meeting to discuss TUWL Secondary containment Schedule 5 responses. At this meets TUWL raised the use of ‘Credible Scenarios’ in a visual presentation that was not provided to the Agency |
| 11/08/2023 | The Agency wrote to TUWL to confirm the use of credible scenarios and what would need to be provided to demonstrate that they would provide adequate secondary containment. (Appendix 10) |
| 29/08/2023 | TUWL responded to the 2nd Schedule 5 notice (Appendix 32). This included:* Question 2 – TUWL did not provide the abatement technology to be used, and again provided a high level statement which stated “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. Any abatement technology implemented would be in line with BAT 14d and BAT53 and would be appropriately sized odour control units, depending upon the outcomes of a risk-based approach, which includes monitoring and modelling of releases from pre-anaerobic digestion open top tanks. Any abatement technology used by Thames Water will be in line with BAT14d and BAT53. Odour control units may be based on either activated carbon and / or a biofilter based process, depending on the nature of the odour to be abated and the type of tank. There could be a primary stage, prior to the carbon or biofilter, of a chemical scrubber to remove any excess ammonia, again this requirement is linked to the tank contents and volume of air to be handled.”
* Question 3 - TUWL again did not answer the question and provided the following high level statements “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. 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. Any abatement technology implemented would be in line with BAT 14, BAT 34 and BAT53 and would be appropriately sized odour control units, depending upon the outcomes of a risk-based approach, which includes monitoring and modelling of any releases. “
* Question 5 – TUWL confirmed that “The solution to be implemented for the containment and collection of diffuse emissions will meet the requirements of BAT and recognised standards. “
* Question 6 – TUWL provided an updated containment assessment report and confirmed that “The current containment wall height for the Secondary Digesters Area is controlled by the space constraints in that area of the site and the requirement to store 25% of the contained tanks volume.“
* Question 7 – TUWL advised that “*Thames Water commits to undertaking (using a UKAS accredited laboratory where available)”, and “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); and 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. “*
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| 26/09/2023 | Following the high level responses provided by TUWL the Agency wrote to TUWL on the 26/09/2023 (Appendix 18) as our view was that TUWLs “responses to the above have not provided sufficient detail or clarity to demonstrate your facility will use Best Available Techniques (“BAT”),” in this letter we requested that TUWL:* Provide a full commitment to cover open tanks pre-AD, confirm the abatement technology to be used and explain how any abatement would be effective.
* Confirm that for all open tanks undertaking AD and post AD TUWL would:
* 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.
* 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.
* 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.
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| 24/10/2023 | TUWL responded to the ‘final opportunity letter’ dated 26/09/2024 (Appendix 19) in this they advised that:* For open tanks pre-AD – “Thames Water is committed to meeting the requirements 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.”
* For appropriate abatement and open tanks post AD “Thames Water is committed to meeting the requirements 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 the potential covering of open topped tank requirements by the stated deadline of December 2024, delivery timescales will be subject to the outcome of PR24 and subsequent price review discussions.”

TUWL further advised in their e-mail that “Thames Water would like to highlight that it is committed to meeting the requirements of BAT. A full BAT risk assessment is required to determine the detailed design for Maple Lodge secondary containment. The ‘containment options report’ dated October 2023 (with updated Process Flow Diagram - attached) is an outline solution that is 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 reviews discussions.” |
| 28/02/2024 | The Agency issued a draft permit for operator review |
| 13/03/2024 | TUWL responded to the draft permit (Appendix 15) advising that “Thames Water is committed to meeting the requirements of BAT/BREF. However, Thames Water is not able to commit to meeting all IED Permit requirements by the stated deadline of 31st March 2025. Delivery timescales will be subject to the outcome of PR24 and subsequent price review discussions.” |
| 19/03/2024 | The Agency responded to TUWLs comments (Appendix 15) advising that:“Thames were first notified on the 2 April 2019 that all of their sewage sludge AD facilities, including this site, were required to comply with the Environmental Permitting Regulations 2016 which includes the transposed requirements of the IED. The original implementation date for all operators to be compliant with the Waste Treatment BAT conclusions was 17 August 2022 but this has been extended to allow operators more time to develop and implement solutions that comply with the relevant conclusions. As Thames has now already had nearly 5 years to develop and implement solutions which meet BAT prior to the issue of this permit and your site continues to operate, the Environment Agency (EA) consider that the implementation date of 31 March 2025 has, and does provide sufficient time to implement the improvements required. The EA have received no detailed proposals in support of key BAT requirements or evidence to demonstrate why this date would not be achievable for their full implementation. It should be noted that funding and cost alone is not considered sufficient or appropriate as a reason for deviation from BAT. A deviation from BAT needs to be supported by detailed technical justifications which demonstrably provide an at least equivalent level of environmental protection. The commitment of Thames to meeting the requirements of BAT/BREF is welcomed, however, the qualification of that commitment to be subject to the outcome of PR24 and subsequent price review discussions is not acceptable. “ |
| 25/03/2024 | Permit issued |